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Lab #	8868785	Report of Analysis		Report Number: 21-067-4233																																																																																																																																																	
Account: 34024	KARLA ADAMI CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073		 Robert Ferris Account Manager 402-829-9871																																																																																																																																																		
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Lab #	8868785	Biological & Physical Properties			Report Number: 21-067-4233	
Account: 34024	KARLA ADAMI CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073			 Robert Ferris Client Service Representative 402-829-9871		
Date Sampled: Date Received: Sample ID:	2021-02-22 2021-02-23 921393-1					
		Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties						
Germination	100		%	1		TMECC 05.05A
Germination Vigor	87.4		%	1		TMECC 05.05A
CO ₂ OM Evolution	0.68		mgCO ₂ -C/gOM/day	0.01		TMECC 05.08B
CO ₂ Solids Evolution	0.38		mgCO ₂ -C/gTS/day	0.01		TMECC 05.08B
Fecal Coliform		14	mpn/g	0.2		EPA 1681
Salmonella		< 0.26	mpn/4g	0.26		EPA 1682
Stability Rating	Stable		N/A	N/A		TMECC 05.08B
Physical Properties						
Bulk Density (Loose)	1365		lbs/cu yard	1		WT/VOL
Bulk Density (Packed)	1483		lbs/cu yard	1		WT/VOL
Film Plastics	n.d.		%	0.25		Microscopic
Glass Fragments	n.d.		%	0.25		Microscopic
Hard Plastics	n.d.		%	0.25		Microscopic
Metal Fragment	n.d.		%	0.25		Microscopic
Sharps	Absent		---	---		Microscopic
Max. Particle Length		0.5	inches	N/A		TMECC Sieve
Sieve % Passing 3"		100	%	0.01		TMECC Sieve
Sieve % Passing 2"		100	%	0.01		TMECC Sieve
Sieve % Passing 1.5"		100	%	0.01		TMECC Sieve
Sieve % Passing 1"		100	%	0.01		TMECC Sieve
Sieve % Passing 3/4"		100	%	0.01		TMECC Sieve
Sieve % Passing 5/8"		100	%	0.01		TMECC Sieve
Sieve % Passing 3/8"		100	%	0.01		TMECC Sieve
Sieve % Passing 1/4"		100	%	0.01		TMECC Sieve

Compost Results Interpretations

Page 1

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DATE RECEIVED:

2021-02-23

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
20.80	As Received	
27.64	Dry Weight	

Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.

C/N Ratio		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.
9.2:1		

All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.

Moisture %		<35% = Indicates overly dry compost >55% = Indicates overly wet compost
24.75		

Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.

Compost Results Interpretations

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Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5
2.4

Conductivity Level	Interpretation
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations

Page 3

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pH Value

8.1

0 to 14 scale with 6 to 8 as normal pH levels for compost

A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)

>10

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART										
<i>salt injury possible</i>	<i>use on soils with excellent drainage characteristics, good water quality and low salts</i>				<i>you may use on soils with poor drainage, poor water quality, or high salts</i>				<i>for all soils</i>	
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

2.76

Average Nutrient Content Dry Weight

<2 = Low, >5 = High

1-0.5-0.5

Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

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REPORT DATE
Mar 08, 2021
 RECEIVED DATE
Feb 23, 2021

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34024



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ISSUE DATE
Mar 08, 2021

**CITY OF LARAMIE WWTP
 KARLA ADAMI
 PO BOX C
 LARAMIE WY 82073**

REPORT OF ANALYSIS
 For: (34024) CITY OF LARAMIE WWTP
 Compost Pkg

Analysis	Sample ID: 921393-1	Lab Number: 8868785	Date Sampled: 2021-02-22 1300	Level Found		Reporting		Analyst- Date	Verified- Date
				As Received	Dry Weight	Units	Limit		

Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Chromium (total)	11.5	15.3	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Mercury (total)	0.21	0.28	mg/kg	0.05	EPA 7471	pid8-2021/02/25	kkh9-2021/02/26
Lead (total)	11.5	15.3	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Molybdenum (total)	1.8	2.4	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Nickel (total)	8.9	11.8	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Zinc (total)	158.2	210.3	mg/kg	2.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Copper (total)	108	144	mg/kg	1	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Arsenic (total)	2.66	3.54	mg/kg	0.5	EPA 6020	ras7-2021/02/26	kkh9-2021/02/26
Aluminum (total)	4470	5940	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Cobalt (total)	1.99	2.64	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Total neutralizing value (CaCO3 eq)	7.2		%	0.1	AOAC 955.01	jed2-2021/02/24	ees2-2021/03/03

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

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21-067-4233

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**CITY OF LARAMIE WWTP
KARLA ADAMI
PO BOX C
LARAMIE WY 82073**

REPORT OF ANALYSIS
For: (34024) CITY OF LARAMIE WWTP
Compost Pkg

Analysis	Level Found	As Received	Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
----------	-------------	-------------	------------	-------	-----------------	--------	--------------	---------------

EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.
n.d. = not detected , ppm = parts per million, mg/kg

For questions please contact:


Heather Ramig
 Heather Ramig
 Senior Account Manager
 hramig@midwestlabs.com (402)829-9891

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Nitrogen																																																																																																																																																					
Total Nitrogen	%	1.10	1.50	22.0																																																																																																																																																	
Organic Nitrogen	%	0.97	1.33	19.5																																																																																																																																																	
Ammonium Nitrogen	%	0.126	0.172	2.5																																																																																																																																																	
Nitrate Nitrogen	%	< 0.01	----	----																																																																																																																																																	
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Phosphorus	%	0.38	0.52	7.6																																																																																																																																																	
Phosphorus as P2O5	%	0.87	1.19	17.4																																																																																																																																																	
Potassium	%	0.48	0.65	9.6																																																																																																																																																	
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Manganese	ppm	207	282	0.4																																																																																																																																																	
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Total Solids	%	73.30		1466.0																																																																																																																																																	
Organic Matter	%	26.70	36.43	534.0																																																																																																																																																	
Ash	%	46.20	63.03	924.0																																																																																																																																																	
Total Carbon	%	10.73	14.64																																																																																																																																																		
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Lab #	8868786	Biological & Physical Properties			Report Number: 21-067-4234	
Account: 34024	KARLA ADAMI CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073			 Robert Ferris Client Service Representative 402-829-9871		
Date Sampled: Date Received: Sample ID:	2021-02-22 2021-02-23 921393-2					
		Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties						
Germination	100		%	1	TMECC 05.05A	
Germination Vigor	86.9		%	1	TMECC 05.05A	
CO ₂ OM Evolution	0.47		mgCO ₂ -C/gOM/day	0.01	TMECC 05.08B	
CO ₂ Solids Evolution	0.34		mgCO ₂ -C/gTS/day	0.01	TMECC 05.08B	
Fecal Coliform		33	mpn/g	0.2	EPA 1681	
Salmonella		< 0.26	mpn/4g	0.26	EPA 1682	
Stability Rating	Stable		N/A	N/A	TMECC 05.08B	
Physical Properties						
Bulk Density (Loose)	1432		lbs/cu yard	1	WT/VOL	
Bulk Density (Packed)	1601		lbs/cu yard	1	WT/VOL	
Film Plastics	n.d.		%	0.25	Microscopic	
Glass Fragments	n.d.		%	0.25	Microscopic	
Hard Plastics	n.d.		%	0.25	Microscopic	
Metal Fragment	n.d.		%	0.25	Microscopic	
Sharps	Absent		---	---	Microscopic	
Max. Particle Length		0.5	inches	N/A	TMECC Sieve	
Sieve % Passing 3"		100	%	0.01	TMECC Sieve	
Sieve % Passing 2"		100	%	0.01	TMECC Sieve	
Sieve % Passing 1.5"		100	%	0.01	TMECC Sieve	
Sieve % Passing 1"		100	%	0.01	TMECC Sieve	
Sieve % Passing 3/4"		100	%	0.01	TMECC Sieve	
Sieve % Passing 5/8"		100	%	0.01	TMECC Sieve	
Sieve % Passing 3/8"		100	%	0.01	TMECC Sieve	
Sieve % Passing 1/4"		100	%	0.01	TMECC Sieve	

Compost Results Interpretations

Page 1

Report #:

21-067-4234

DATE RECEIVED:

2021-02-23

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
26.70	As Received	
36.43	Dry Weight	

Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.

C/N Ratio		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.
9.8:1		

All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.

Moisture %		<35% = Indicates overly dry compost >55% = Indicates overly wet compost
26.70		

Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.

Compost Results Interpretations

Page 2

Report #:

21-067-4234

DATE RECEIVED:

2021-02-23

Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5
1.9

Conductivity Level	Interpretation
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations
Page 3

Report #: 21-067-4234
DATE RECEIVED: 2021-02-23

pH Value
8.0

0 to 14 scale with 6 to 8 as normal pH levels for compost
A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)
>10

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART										
<i>salt injury possible</i>	<i>use on soils with excellent drainage characteristics, good water quality and low salts</i>				<i>you may use on soils with poor drainage, poor water quality, or high salts</i>				<i>for all soils</i>	
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

3.48 Average Nutrient Content Dry Weight <2 = Low, >5 = High
1-1-0.5 Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

21-067-4234

REPORT DATE
Mar 08, 2021
 RECEIVED DATE
Feb 23, 2021

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34024



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**CITY OF LARAMIE WWTP
 KARLA ADAMI
 PO BOX C
 LARAMIE WY 82073**

REPORT OF ANALYSIS
 For: (34024) CITY OF LARAMIE WWTP
 Compost Pkg

Analysis	Level Found		Reporting			Analyst- Date	Verified- Date
	As Received	Dry Weight	Units	Limit	Method		

Sample ID: 921393-2	Lab Number: 8868786		Date Sampled: 2021-02-22 1300				
Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Chromium (total)	10.3	14.0	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Mercury (total)	0.09	0.12	mg/kg	0.05	EPA 7471	pid8-2021/02/25	kkh9-2021/02/26
Lead (total)	8.5	11.6	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Molybdenum (total)	1.5	2.1	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Nickel (total)	8.2	11.2	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Zinc (total)	110.3	150.5	mg/kg	2.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Copper (total)	88.7	121	mg/kg	1	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Arsenic (total)	2.48	3.38	mg/kg	0.5	EPA 6020	ras7-2021/02/26	kkh9-2021/02/26
Aluminum (total)	4840	6610	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Cobalt (total)	2.04	2.79	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Total neutralizing value (CaCO3 eq)	8.6		%	0.1	AOAC 955.01	jed2-2021/02/24	ees2-2021/03/03

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

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21-067-4234

REPORT DATE
Mar 08, 2021

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34024

ISSUE DATE
Mar 08, 2021

RECEIVED DATE
Feb 23, 2021



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**CITY OF LARAMIE WWTP
KARLA ADAMI
PO BOX C
LARAMIE WY 82073**

REPORT OF ANALYSIS
For: (34024) CITY OF LARAMIE WWTP
Compost Pkg

Analysis	Level Found	As Received	Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
----------	-------------	-------------	------------	-------	-----------------	--------	--------------	---------------

EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.
n.d. = not detected , ppm = parts per million, mg/kg

For questions please contact:


Heather Ramig
Heather Ramig
Senior Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.


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Lab #	8868787	Report of Analysis		Report Number: 21-067-4235																																																																																																																																																	
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Compost Results Interpretations

Page 1

Report #:

21-067-4235

DATE RECEIVED:

2021-02-23

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
26.20	As Received	
33.27	Dry Weight	

Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.

C/N Ratio		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.
10.2:1		

All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.

Moisture %		<35% = Indicates overly dry compost
21.26		

>55% = Indicates overly wet compost

Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.

Compost Results Interpretations

Page 2

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Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5	
2.0	
Conductivity Level	Interpretation
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations

Page 3

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pH Value

8.0

0 to 14 scale with 6 to 8 as normal pH levels for compost

A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)

>10

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART										
<i>salt injury possible</i>	<i>use on soils with excellent drainage characteristics, good water quality and low salts</i>				<i>you may use on soils with poor drainage, poor water quality, or high salts</i>				<i>for all soils</i>	
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

2.79

Average Nutrient Content Dry Weight

<2 = Low, >5 = High

1-0.5-0.5

Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

21-067-4235

REPORT DATE
Mar 08, 2021
 RECEIVED DATE
Feb 23, 2021

SEND TO
34024



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 www.midwestlabs.com

ISSUE DATE
Mar 08, 2021

**CITY OF LARAMIE WWTP
 KARLA ADAMI
 PO BOX C
 LARAMIE WY 82073**

REPORT OF ANALYSIS
 For: (34024) CITY OF LARAMIE WWTP
 Compost Pkg

Analysis	Level Found		Reporting			Analyst- Date	Verified- Date
	As Received	Dry Weight	Units	Limit	Method		

Sample ID: **921393-3** Lab Number: **8868787** Date Sampled: **2021-02-22 1300**

Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Chromium (total)	12.2	15.5	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Mercury (total)	0.13	0.17	mg/kg	0.05	EPA 7471	pid8-2021/02/25	kkh9-2021/02/26
Lead (total)	12.0	15.3	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Molybdenum (total)	2.6	3.3	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Nickel (total)	9.3	11.8	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Zinc (total)	134.2	170.5	mg/kg	2.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Copper (total)	112	142	mg/kg	1	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Arsenic (total)	2.65	3.37	mg/kg	0.5	EPA 6020	ras7-2021/02/26	kkh9-2021/02/26
Aluminum (total)	4720	5990	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Cobalt (total)	2.13	2.71	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Total neutralizing value (CaCO3 eq)	7.6		%	0.1	AOAC 955.01	jed2-2021/02/24	ees2-2021/03/03

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

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21-067-4235

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34024

ISSUE DATE
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Feb 23, 2021



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**CITY OF LARAMIE WWTP
KARLA ADAMI
PO BOX C
LARAMIE WY 82073**

REPORT OF ANALYSIS
For: (34024) CITY OF LARAMIE WWTP
Compost Pkg

Analysis	Level Found	As Received	Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
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EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.
n.d. = not detected , ppm = parts per million, mg/kg

For questions please contact:


Heather Ramig
Heather Ramig
Senior Account Manager
hramig@midwestlabs.com (402)829-9891

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.


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Lab #	8868788	Report of Analysis		Report Number: 21-067-4236																																																																																																																																																	
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Calcium	%	3.76	4.97	75.2																																																																																																																																																	
Magnesium	%	0.58	0.77	11.6																																																																																																																																																	
Sodium	%	0.080	0.106	1.6																																																																																																																																																	
Micronutrients																																																																																																																																																					
Iron	ppm	9380	12399	18.8																																																																																																																																																	
Manganese	ppm	220	291	0.4																																																																																																																																																	
Boron	ppm	< 100	----	----																																																																																																																																																	
OTHER PROPERTIES																																																																																																																																																					
Moisture	%	24.35																																																																																																																																																			
Total Solids	%	75.65		1513.0																																																																																																																																																	
Organic Matter	%	19.10	25.25	382.0																																																																																																																																																	
Ash	%	56.30	74.42	1126.0																																																																																																																																																	
Total Carbon	%	8.71	11.51																																																																																																																																																		
Chloride	%	0.05	0.07																																																																																																																																																		
pH		8.1																																																																																																																																																			
Conductivity 1:5 (Soluble Salts)	mS/cm	2.06																																																																																																																																																			

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Lab #	8868788	Biological & Physical Properties			Report Number: 21-067-4236						
Account: 34024	KARLA ADAMI CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073			 Robert Ferris Client Service Representative 402-829-9871							
Date Sampled:	2021-02-22			Compost Pkg							
Date Received:	2021-02-23										
Sample ID:	921393-4										
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 15%;">Analysis (as rec'd)</th> <th style="width: 15%;">Analysis (dry weight)</th> <th style="width: 10%;">Units</th> <th style="width: 10%;">Detection Limit</th> <th style="width: 15%;">Method</th> </tr> </thead> </table>							Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method						
Biological Properties											
Germination	100		%	1	TMECC 05.05A						
Germination Vigor	86.3		%	1	TMECC 05.05A						
CO ₂ OM Evolution	0.66		mgCO ₂ -C/gOM/day	0.01	TMECC 05.08B						
CO ₂ Solids Evolution	0.35		mgCO ₂ -C/gTS/day	0.01	TMECC 05.08B						
Fecal Coliform		317	mpn/g	0.2	EPA 1681						
Salmonella		< 0.26	mpn/4g	0.26	EPA 1682						
Stability Rating	Stable		N/A	N/A	TMECC 05.08B						
Physical Properties											
Bulk Density (Loose)	1264		lbs/cu yard	1	WT/VOL						
Bulk Density (Packed)	1432		lbs/cu yard	1	WT/VOL						
Film Plastics	n.d.		%	0.25	Microscopic						
Glass Fragments	n.d.		%	0.25	Microscopic						
Hard Plastics	n.d.		%	0.25	Microscopic						
Metal Fragment	n.d.		%	0.25	Microscopic						
Sharps	Absent		---	---	Microscopic						
Max. Particle Length		0.5	inches	N/A	TMECC Sieve						
Sieve % Passing 3"		100	%	0.01	TMECC Sieve						
Sieve % Passing 2"		100	%	0.01	TMECC Sieve						
Sieve % Passing 1.5"		100	%	0.01	TMECC Sieve						
Sieve % Passing 1"		100	%	0.01	TMECC Sieve						
Sieve % Passing 3/4"		100	%	0.01	TMECC Sieve						
Sieve % Passing 5/8"		100	%	0.01	TMECC Sieve						
Sieve % Passing 3/8"		100	%	0.01	TMECC Sieve						
Sieve % Passing 1/4"		100	%	0.01	TMECC Sieve						

Compost Results Interpretations
Page 1

Report #: 21-067-4236
DATE RECEIVED: 2021-02-23

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
19.10	As Received	
25.25	Dry Weight	

Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.

C/N Ratio		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.
10.2:1		

All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.

Moisture %		<35% = Indicates overly dry compost >55% = Indicates overly wet compost
24.35		

Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.

Compost Results Interpretations

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Report #:

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Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5
2.1

Conductivity Level	Interpretation
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations
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pH Value
8.1

0 to 14 scale with 6 to 8 as normal pH levels for compost
A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)
>10

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART										
<i>salt injury possible</i>	<i>use on soils with excellent drainage characteristics, good water quality and low salts</i>				<i>you may use on soils with poor drainage, poor water quality, or high salts</i>				<i>for all soils</i>	
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

3.07 Average Nutrient Content Dry Weight <2 = Low, >5 = High
1-1-0.5 Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

21-067-4236**PAGE 6/7**ISSUE DATE
Mar 08, 2021REPORT DATE
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www.midwestlabs.comCITY OF LARAMIE WWTP
KARLA ADAMI
PO BOX C
LARAMIE WY 82073**REPORT OF ANALYSIS**
For: (34024) CITY OF LARAMIE WWTP
Compost Pkg

Analysis	Level Found		Reporting			Analyst- Date	Verified- Date
	As Received	Dry Weight	Units	Limit	Method		

Sample ID: 921393-4	Lab Number: 8868788		Date Sampled: 2021-02-22 1300				
Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Chromium (total)	11.7	15.5	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Mercury (total)	0.14	0.19	mg/kg	0.05	EPA 7471	pid8-2021/02/25	kkh9-2021/02/26
Lead (total)	12.9	17.1	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Molybdenum (total)	1.8	2.4	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Nickel (total)	9.7	12.8	mg/kg	1.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Zinc (total)	136.2	180.0	mg/kg	2.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Copper (total)	110	145	mg/kg	1	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Arsenic (total)	2.83	3.74	mg/kg	0.5	EPA 6020	ras7-2021/02/26	kkh9-2021/02/26
Aluminum (total)	5220	6900	mg/kg	5.0	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Cobalt (total)	2.23	2.95	mg/kg	1.00	EPA 6010	ery3-2021/02/24	kkh9-2021/02/26
Total neutralizing value (CaCO3 eq)	5.5		%	0.1	AOAC 955.01	jed2-2021/02/24	ees2-2021/03/03

The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

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**CITY OF LARAMIE WWTP
KARLA ADAMI
PO BOX C
LARAMIE WY 82073**

REPORT OF ANALYSIS
For: (34024) CITY OF LARAMIE WWTP
Compost Pkg

Analysis	Level Found	As Received	Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
----------	-------------	-------------	------------	-------	-----------------	--------	--------------	---------------

EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.
n.d. = not detected , ppm = parts per million, mg/kg

For questions please contact:

Heather Ramig
Heather Ramig
Senior Account Manager
hramig@midwestlabs.com (402)829-9891

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