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Lab #	70250077		Report of Analysis		Report Number: 23-079-4230
<b>Account:</b> 34024	DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073			 Robert Ferris Account Manager 402-829-9871	
<b>Date Sampled:</b> <b>Date Received:</b> <b>Sample ID:</b>	2023-02-27 2023-02-28 5090847-1				
				Compost Pkg	
					Total content, lbs per ton (as rec'd)
					Analysis (as rec'd)
					Analysis (dry weight)
<b>NUTRIENTS</b>					
Nitrogen					
Total Nitrogen	%	0.96	1.16	19.2	
Organic Nitrogen	%	0.79	0.96	15.8	
Ammonium Nitrogen	%	0.151	0.183	3.0	
Nitrate Nitrogen	%	0.02	0.02	0.4	
Major and Secondary Nutrients					
Phosphorus	%	0.35	0.42	7.0	
Phosphorus as P2O5	%	0.80	0.97	16.0	
Potassium	%	0.54	0.65	10.8	
Potassium as K2O	%	0.65	0.79	13.0	
Sulfur	%	0.31	0.38	6.2	
Calcium	%	2.99	3.63	59.8	
Magnesium	%	0.73	0.89	14.6	
Sodium	%	0.080	0.097	1.6	
Micronutrients					
Iron	ppm	8900	10793	17.8	
Manganese	ppm	259	314	0.5	
Boron	ppm	< 100	---	---	
<b>OTHER PROPERTIES</b>					
Moisture	%	17.54			
Total Solids	%	82.46	1649.2		
Organic Matter	%	21.30	25.83	426.0	
Ash	%	61.00	73.98	1220.0	
Total Carbon	%	9.55	11.58		
Chloride	%	0.07	0.08		
pH		7.5			
Conductivity 1:5 (Soluble Salts)	mS/cm	2.38			

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Lab #	70250077	<b>Biological &amp; Physical Properties</b>	Report Number: 23-079-4230																																																																																																																																																								
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Compost Results Interpretations

Page 1

Report #:

23-079-4230

DATE RECEIVED:

2023-02-28

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
21.30	As Received	
25.83	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.
9.9:1		

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
17.54		

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
2.4

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

Report #: 23-079-4230  
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**pH Value**  
7.5

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)**

2.92 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%.

**23-079-4230**

REPORT DATE  
**Mar 20, 2023**  
 RECEIVED DATE  
**Feb 28, 2023**

SEND TO  
**34024**



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ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
 DAVID SCHILLINGER  
 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: **5090847-1** Lab Number: **70250077** Date Sampled: **2023-02-27 1300**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	cjb1-2023/03/06	sn17-2023/03/06
Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	erw9-2023/03/17	th1-2023/03/20
Chromium (total)	11.3	13.7	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Mercury (total)	0.15	0.18	mg/kg	0.05	EPA 7471	mss3-2023/03/16	th1-2023/03/20
Lead (total)	9.4	11.4	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Molybdenum (total)	2.2	2.7	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Nickel (total)	10.1	12.2	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Zinc (total)	137.5	166.8	mg/kg	2.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Copper (total)	101	122	mg/kg	1	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Arsenic (total)	3.14	3.81	mg/kg	0.5	EPA 6020	n1o7-2023/03/16	th1-2023/03/20
Aluminum (total)	5410	6560	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Cobalt (total)	2.27	2.75	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Total neutralizing value (CaCO3 eq)	7.4	9.0	%	0.1	AOAC 955.01	jed2-2023/03/07	eas2-2023/03/07

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

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**23-079-4230**

REPORT DATE  
**Mar 20, 2023**

SEND TO  
**34024**

RECEIVED DATE  
**Feb 28, 2023**



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ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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, MPN = most probable number, ppm = parts per million, mg/kg

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121 • www.midwestlabs.com

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Compost Results Interpretations

Page 1

Report #:

23-079-4231

DATE RECEIVED:

2023-02-28

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
22.40	As Received	
27.72	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.
10:1		

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
19.18		

>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	
2.5	
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

7.6

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)

3.23

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%.

**23-079-4231**

REPORT DATE  
**Mar 20, 2023**  
 RECEIVED DATE  
**Feb 28, 2023**

SEND TO  
**34024**



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 www.midwestlabs.com

ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
 DAVID SCHILLINGER  
 PO BOX C  
 LARAMIE WY 82073**

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

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

Sample ID: **5090847-2** Lab Number: **70250078** Date Sampled: **2023-02-27 1300**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	cjb1-2023/03/06	sn17-2023/03/06
Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	erw9-2023/03/17	th1-2023/03/20
Chromium (total)	11.9	14.7	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Mercury (total)	0.11	0.14	mg/kg	0.05	EPA 7471	mss3-2023/03/16	th1-2023/03/20
Lead (total)	12.0	14.9	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Molybdenum (total)	1.9	2.4	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Nickel (total)	10.6	13.1	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Zinc (total)	143.6	177.7	mg/kg	2.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Copper (total)	100	124	mg/kg	1	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Arsenic (total)	3.03	3.75	mg/kg	0.5	EPA 6020	n1o7-2023/03/16	th1-2023/03/20
Aluminum (total)	5730	7090	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Cobalt (total)	2.34	2.89	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Total neutralizing value (CaCO3 eq)	7.4	9.1	%	0.1	AOAC 955.01	jed2-2023/03/07	eas2-2023/03/07

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**23-079-4231**

REPORT DATE  
**Mar 20, 2023**

SEND TO  
**34024**

RECEIVED DATE  
**Feb 28, 2023**



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ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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, MPN = most probable number, ppm = parts per million, mg/kg

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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Lab #	70250079	Report of Analysis		Report Number: 23-079-4232																																																																																																																																																	
<b>Account:</b> 34024	DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073		 Robert Ferris Account Manager 402-829-9871																																																																																																																																																		
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Lab #	70250079	<b>Biological &amp; Physical Properties</b>			Report Number: 23-079-4232
<b>Account:</b> 34024	DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073			 Robert Ferris Client Service Representative 402-829-9871	
<b>Date Sampled:</b>	2023-02-27			Compost Pkg	
<b>Date Received:</b>	2023-02-28				
<b>Sample ID:</b>	5090847-3				
	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
<b>Biological Properties</b>					
Germination	100		%	1	TMECC 05.05A
Germination Vigor	87.5		%	1	TMECC 05.05A
CO <sub>2</sub> OM Evolution	0.52		mgCO <sub>2</sub> -C/gOM/day	0.01	TMECC 05.08B
CO <sub>2</sub> Solids Evolution	0.25		mgCO <sub>2</sub> -C/gTS/day	0.01	TMECC 05.08B
Fecal Coliform		2	mpn/g	0.2	EPA 1681
Stability Rating	Stable		N/A	N/A	TMECC 05.08B
<b>Physical Properties</b>					
Bulk Density (Loose)	1045		lbs/cu yard	1	WT/VOL
Bulk Density (Packed)	1163		lbs/cu yard	1	WT/VOL
Film Plastics	n.d.		%	0.1	TMECC 03.08
Glass Fragments	n.d.		%	0.1	TMECC 03.08
Hard Plastics	n.d.		%	0.1	TMECC 03.08
Metal Fragment	n.d.		%	0.1	TMECC 03.08
Sharps	absent		---	0.1	TMECC 03.08
Max. Particle Length		1.5	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"		99	%	0.01	TMECC Sieve

Compost Results Interpretations

Page 1

Report #:

23-079-4232

DATE RECEIVED:

2023-02-28

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
20.30	As Received	
25.66	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
20.90		

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 #:

23-079-4232

DATE RECEIVED:

2023-02-28

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
3.1

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

Page 3

Report #:

23-079-4232

DATE RECEIVED:

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pH Value

7.6

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)

3.12

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%.

**23-079-4232**

REPORT DATE  
**Mar 20, 2023**  
 RECEIVED DATE  
**Feb 28, 2023**

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ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
 DAVID SCHILLINGER  
 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: **5090847-3** Lab Number: **70250079** Date Sampled: **2023-02-27 1300**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	cjb1-2023/03/06	sn17-2023/03/06
Cadmium (total)	n.d.	0.51	mg/kg	0.50	EPA 6010	erw9-2023/03/17	th1-2023/03/20
Chromium (total)	11.5	14.5	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Mercury (total)	0.09	0.12	mg/kg	0.05	EPA 7471	mss3-2023/03/16	th1-2023/03/20
Lead (total)	11.4	14.4	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Molybdenum (total)	1.7	2.1	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Nickel (total)	9.6	12.2	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Zinc (total)	133.0	168.2	mg/kg	2.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Copper (total)	103	130	mg/kg	1	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Arsenic (total)	3.06	3.87	mg/kg	0.5	EPA 6020	n1o7-2023/03/16	th1-2023/03/20
Aluminum (total)	5500	6950	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Cobalt (total)	2.17	2.74	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Total neutralizing value (CaCO3 eq)	6.5	8.2	%	0.1	AOAC 955.01	jed2-2023/03/07	eas2-2023/03/07

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**23-079-4232**

REPORT DATE  
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SEND TO  
**34024**

RECEIVED DATE  
**Feb 28, 2023**



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ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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, MPN = most probable number, ppm = parts per million, mg/kg

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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Lab # 70250080		Report of Analysis		Report Number: 23-079-4233	
<b>Account:</b> 34024		DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073		 Robert Ferris Account Manager 402-829-9871	
<b>Date Sampled:</b> <b>Date Received:</b> <b>Sample ID:</b>		2023-02-27 2023-02-28 5090847-4			
				Total content, lbs per ton (as rec'd)	
		Analysis (as rec'd)		Analysis (dry weight)	
<b>NUTRIENTS</b>					
Nitrogen					
Total Nitrogen	%	1.06	1.28	21.2	
Organic Nitrogen	%	0.90	1.08	17.9	
Ammonium Nitrogen	%	0.164	0.198	3.3	
Nitrate Nitrogen	%	< 0.01	----	----	
Major and Secondary Nutrients					
Phosphorus	%	0.35	0.42	7.0	
Phosphorus as P2O5	%	0.80	0.96	16.0	
Potassium	%	0.56	0.67	11.2	
Potassium as K2O	%	0.67	0.81	13.4	
Sulfur	%	0.31	0.37	6.2	
Calcium	%	3.07	3.70	61.4	
Magnesium	%	0.72	0.87	14.4	
Sodium	%	0.080	0.096	1.6	
Micronutrients					
Iron	ppm	9630	11601	19.3	
Manganese	ppm	246	296	0.5	
Boron	ppm	< 100	----	----	
<b>OTHER PROPERTIES</b>					
Moisture	%	16.99			
Total Solids	%	83.01		1660.2	
Organic Matter	%	20.30	24.45	406.0	
Ash	%	62.40	75.17	1248.0	
Total Carbon	%	10.83	13.05		
Chloride	%	0.07	0.08		
pH		7.6			
Conductivity 1:5 (Soluble Salts)	mS/cm	2.39			

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Lab #	70250080	<b>Biological &amp; Physical Properties</b>	Report Number: 23-079-4233																																																																																																																																																						
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Compost Results Interpretations

Page 1

Report #:

23-079-4233

DATE RECEIVED:

2023-02-28

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
20.30	As Received	
24.45	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
16.99		

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
2.4

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

7.6

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)

3.05

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%.

**23-079-4233**

REPORT DATE  
**Mar 20, 2023**  
 RECEIVED DATE  
**Feb 28, 2023**

SEND TO  
**34024**



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 www.midwestlabs.com

ISSUE DATE  
**Mar 20, 2023**

**CITY OF LARAMIE WWTP  
 DAVID SCHILLINGER  
 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: **5090847-4** Lab Number: **70250080** Date Sampled: **2023-02-27 1300**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	cjb1-2023/03/06	sn17-2023/03/06
Cadmium (total)	n.d.	0.53	mg/kg	0.50	EPA 6010	erw9-2023/03/17	th1-2023/03/20
Chromium (total)	14.7	17.7	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Mercury (total)	0.09	0.11	mg/kg	0.05	EPA 7471	mss3-2023/03/16	th1-2023/03/20
Lead (total)	10.4	12.6	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Molybdenum (total)	2.0	2.4	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Nickel (total)	10.9	13.1	mg/kg	1.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Zinc (total)	147.9	178.2	mg/kg	2.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Copper (total)	105	127	mg/kg	1	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Arsenic (total)	3.22	3.88	mg/kg	0.5	EPA 6020	n1o7-2023/03/16	th1-2023/03/20
Aluminum (total)	6280	7560	mg/kg	5.0	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Cobalt (total)	2.43	2.93	mg/kg	1.00	EPA 6010	erw9-2023/03/16	th1-2023/03/20
Total neutralizing value (CaCO3 eq)	6.2	7.5	%	0.1	AOAC 955.01	jed2-2023/03/07	eas2-2023/03/07

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

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**23-079-4233**

REPORT DATE  
**Mar 20, 2023**

SEND TO  
**34024**

ISSUE DATE  
**Mar 20, 2023**

RECEIVED DATE  
**Feb 28, 2023**



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**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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, MPN = most probable number, ppm = parts per million, mg/kg

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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


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Lab #	70430549	Report of Analysis		Report Number: 24-080-4013																																																																																																																																																	
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## Compost Results Interpretations

Page 1

Report #:

24-080-4013

DATE RECEIVED:

2024-03-07

### Organic Matter %

20.50 As Received

Greater than 20% indicates a desirable range for compost on a dry weight basis.

29.77 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

8.9:1

20-30 indicates an ideal range for the initial compost process.

10-20 indicates an ideal range for a finished compost.

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 %

31.15

<35% = Indicates overly dry compost

>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	
3.0	
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

Report #: 24-080-4013  
DATE RECEIVED: 2024-03-07

**pH Value**  
7.0

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)**

3.38 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%.

**24-080-4013**

REPORT DATE  
**Mar 20, 2024**

SEND TO  
**34024**

ISSUE DATE  
**Mar 20, 2024**

RECEIVED DATE  
**Mar 07, 2024**



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www.midwestlabs.com

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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: **5210632-1** Lab Number: **70430549** Date Sampled: **2024-03-06 1130**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	Bab0-2024/03/12	sn17-2024/03/13
Cadmium (total)	n.d.	0.61	mg/kg	0.50	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Chromium (total)	8.74	12.7	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Mercury (total)	0.07	0.10	mg/kg	0.05	EPA 7471	Mab7-2024/03/13	th1-2024/03/13
Lead (total)	8.8	12.8	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Molybdenum (total)	1.3	1.9	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Nickel (total)	8.3	12.0	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Zinc (total)	104.8	152.2	mg/kg	2.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Copper (total)	68.0	98.7	mg/kg	1	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Arsenic (total)	2.76	4.01	mg/kg	0.5	EPA 6020	n1o7-2024/03/12	th1-2024/03/13
Aluminum (total)	4420	6420	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Cobalt (total)	2.28	3.31	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Total neutralizing value (CaCO3 eq)	4.9	7.1	%	0.1	AOAC 955.01	jed2-2024/03/08	eas2-2024/03/12

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

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**24-080-4013**

REPORT DATE  
**Mar 20, 2024**

SEND TO  
**34024**

ISSUE DATE  
**Mar 20, 2024**

RECEIVED DATE  
**Mar 07, 2024**



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**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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, MPN = most probable number, ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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Lab #	70430550	Report of Analysis		Report Number: 24-080-4015																																																																																																																																																	
<b>Account:</b> 34024	DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073		 Robert Ferris Account Manager 402-829-9871																																																																																																																																																		
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Lab #	70430550	<b>Biological &amp; Physical Properties</b>	Report Number: 24-080-4015						
<b>Account:</b> 34024	DAVID SCHILLINGER CITY OF LARAMIE WWTP PO BOX C LARAMIE WY 82073		 Robert Ferris Client Service Representative 402-829-9871						
<b>Date Sampled:</b>	2024-03-06		Compost Pkg						
<b>Date Received:</b>	2024-03-07								
<b>Sample ID:</b>	5210632-2								
<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
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<b>Biological Properties</b>									
Germination	100		%	1	TMECC 05.05A				
Germination Vigor	97.9		%	1	TMECC 05.05A				
CO <sub>2</sub> OM Evolution	0.79		mgCO <sub>2</sub> -C/gOM/day	0.01	TMECC 05.08B				
CO <sub>2</sub> Solids Evolution	0.64		mgCO <sub>2</sub> -C/gTS/day	0.01	TMECC 05.08B				
Fecal Coliform		675	mpn/g	0.2	EPA 1681				
Stability Rating	Stable		N/A	N/A	TMECC 05.08B				
<b>Physical Properties</b>									
Bulk Density (Loose)	1095		lbs/cu yard	1	WT/VOL				
Bulk Density (Packed)	1517		lbs/cu yard	1	WT/VOL				
Film Plastics	n.d.		%	0.1	TMECC 03.08				
Glass Fragments	n.d.		%	0.1	TMECC 03.08				
Hard Plastics	n.d.		%	0.1	TMECC 03.08				
Metal Fragment	n.d.		%	0.1	TMECC 03.08				
Sharps	absent		---	0.1	TMECC 03.08				
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 #:

24-080-4015

DATE RECEIVED:

2024-03-07

### Organic Matter %

22.20 As Received

30.38 Dry Weight

Greater than 20% indicates a desirable range for compost on a dry weight basis.

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

9.1:1

20-30 indicates an ideal range for the initial compost process.

10-20 indicates an ideal range for a finished compost.

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 %

26.92

<35% = Indicates overly dry compost

>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

Report #:

24-080-4015

DATE RECEIVED:

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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
3.2

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 #: 24-080-4015  
DATE RECEIVED: 2024-03-07

**pH Value**  
7.1

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)**  
3.34 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%.

**24-080-4015**

**PAGE 6/7**

REPORT DATE  
**Mar 20, 2024**

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**34024**

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**Mar 07, 2024**



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**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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: **5210632-2** Lab Number: **70430550** Date Sampled: **2024-03-06 1130**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	Bab0-2024/03/12	sn17-2024/03/13
Cadmium (total)	n.d.	0.65	mg/kg	0.50	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Chromium (total)	10.5	14.4	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Mercury (total)	0.10	0.14	mg/kg	0.05	EPA 7471	Mab7-2024/03/13	th1-2024/03/13
Lead (total)	16.4	22.4	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Molybdenum (total)	1.9	2.6	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Nickel (total)	9.9	13.6	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Zinc (total)	131.4	179.8	mg/kg	2.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Copper (total)	95.0	130	mg/kg	1	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Arsenic (total)	2.78	3.80	mg/kg	0.5	EPA 6020	n1o7-2024/03/12	th1-2024/03/13
Aluminum (total)	4000	5470	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Cobalt (total)	2.43	3.32	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Total neutralizing value (CaCO3 eq)	n.d.	n.d.	%	0.1	AOAC 955.01	jed2-2024/03/08	eas2-2024/03/12

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**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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 , MPN = most probable number , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:


*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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Lab #	Report of Analysis		Report Number: 24-078-4139																																																																																																																																																		
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Lab #	70430551	<b>Biological &amp; Physical Properties</b>	Report Number: 24-078-4139																																																																																																																																																								
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Compost Results Interpretations

Page 1

Report #:

24-078-4139

DATE RECEIVED:

2024-03-07

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
21.90	As Received	
30.04	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.
9.5:1		

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
27.10		

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
3.0

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

7.1

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)

3.39

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%.

**24-078-4139**

**PAGE 6/7**

REPORT DATE  
**Mar 18, 2024**

SEND TO  
**34024**

ISSUE DATE  
**Mar 18, 2024**

RECEIVED DATE  
**Mar 07, 2024**



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 www.midwestlabs.com

**CITY OF LARAMIE WWTP  
 DAVID SCHILLINGER  
 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: **5210632-3** Lab Number: **70430551** Date Sampled: **2024-03-06 1130**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	Maw2-2024/03/12	sn17-2024/03/13
Cadmium (total)	n.d.	0.63	mg/kg	0.50	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Chromium (total)	9.99	13.7	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Mercury (total)	0.13	0.18	mg/kg	0.05	EPA 7471	Mab7-2024/03/13	th1-2024/03/13
Lead (total)	69.0	94.7	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Molybdenum (total)	1.8	2.5	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Nickel (total)	9.5	13.0	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Zinc (total)	125.5	172.1	mg/kg	2.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Copper (total)	89.7	123	mg/kg	1	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Arsenic (total)	2.80	3.84	mg/kg	0.5	EPA 6020	n1o7-2024/03/12	th1-2024/03/13
Aluminum (total)	3690	5060	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Cobalt (total)	2.43	3.34	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Total neutralizing value (CaCO3 eq)	6.3	8.6	%	0.1	AOAC 955.01	jed2-2024/03/08	eas2-2024/03/12

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

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**24-078-4139**

REPORT DATE  
**Mar 18, 2024**

SEND TO  
**34024**

ISSUE DATE  
**Mar 18, 2024**

RECEIVED DATE  
**Mar 07, 2024**



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www.midwestlabs.com

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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 , MPN = most probable number , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:


  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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


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Lab #	70430552	Report of Analysis		Report Number: 24-080-4017																																																																																																																																																	
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Compost Results Interpretations  
Page 1

Report #: 24-080-4017  
DATE RECEIVED: 2024-03-07

Organic Matter %		
19.80	As Received	Greater than 20% indicates a desirable range for compost on a dry weight basis.
27.82	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		
8.5:1		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.

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 %		
28.83		<35% = Indicates overly dry compost >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

Report #:

24-080-4017

DATE RECEIVED:

2024-03-07

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
3.4

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**  
7.1

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)**  
3.27 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%.

**24-080-4017**

REPORT DATE  
**Mar 20, 2024**

SEND TO  
**34024**

ISSUE DATE  
**Mar 20, 2024**

RECEIVED DATE  
**Mar 07, 2024**



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www.midwestlabs.com

**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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: **5210632-4** Lab Number: **70430552** Date Sampled: **2024-03-06 1130**

Salmonella	n.d.	n.d.	MPN/4g	0.26	EPA 1682	Bab0-2024/03/12	sn17-2024/03/13
Cadmium (total)	n.d.	0.60	mg/kg	0.50	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Chromium (total)	10.5	14.7	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Mercury (total)	0.06	0.09	mg/kg	0.05	EPA 7471	Mab7-2024/03/13	th1-2024/03/13
Lead (total)	10.0	14.0	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Molybdenum (total)	1.6	2.2	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Nickel (total)	9.2	13.0	mg/kg	1.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Zinc (total)	138.4	194.4	mg/kg	2.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Copper (total)	84.7	119	mg/kg	1	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Arsenic (total)	2.72	3.82	mg/kg	0.5	EPA 6020	n1o7-2024/03/12	th1-2024/03/13
Aluminum (total)	3880	5450	mg/kg	5.0	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Cobalt (total)	2.33	3.28	mg/kg	1.00	EPA 6010	erw9-2024/03/09	th1-2024/03/13
Total neutralizing value (CaCO3 eq)	4.0	5.6	%	0.1	AOAC 955.01	jed2-2024/03/08	eas2-2024/03/12

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

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**CITY OF LARAMIE WWTP  
DAVID SCHILLINGER  
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 , MPN = most probable number , ppm = parts per million, ppm = mg/kg, ppm = mg/L

For questions please contact:

*Kerri Stanek*  
Kerri Stanek  
Account Manager  
kstanek@midwestlabs.com (402)590-2982

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