



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

Lab #	2879995	Report of Analysis		Report Number: 19-004-4016																																																																																																																																																	
Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352		 Robert Ferris Account Manager 402-829-9871																																																																																																																																																		
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Lab #	2879995	Biological & Physical Properties			Report Number: 19-004-4016
Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352			 Robert Ferris Client Service Representative 402-829-9871	
Date Sampled:	2018-12-20			STA ANALYSIS	
Date Received:	2018-12-21				
Sample ID:	FC ROCAL 7-23-18				
	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties					
Germination	100		%	1	TMECC 05.05A
Germination Vigor	100		%	1	TMECC 05.05A
CO ₂ OM Evolution	0.89		mgCO ₂ -C/gOM/day	0.01	TMECC 05.08B
CO ₂ Solids Evolution	0.78		mgCO ₂ -C/gTS/day	0.01	TMECC 05.08B
Fecal Coliform		23	mpn/g	0.2	EPA 1681
Stability Rating	Stable		N/A	N/A	TMECC 05.08B
Physical Properties					
Bulk Density (Loose)	977		lbs/cu yard	1	WT/VOL
Bulk Density (Packed)	1213		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	0		---	---	Microscopic
Max. Particle Length		1.0	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

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19-004-4016

DATE RECEIVED:

2018-12-21

Organic Matter %		Greater than 20% indicates a desirable range for compost on a dry weight basis.
31.20	As Received	
40.25	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.
8.5:1		

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
22.48		

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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2018-12-21

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	
4.6	
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

5.8

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)

5.41

Average Nutrient Content Dry Weight

<2 = Low, >5 = High

2-1.5-1

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%.

19-004-4016

REPORT DATE
Jan 04, 2019
 RECEIVED DATE
Dec 21, 2018

SEND TO
27791



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

ISSUE DATE
Jan 04, 2019

**CITY OF RICHLAND
 DOUG BULLOCK
 PO BOX 190
 RICHLAND WA 99352**

REPORT OF ANALYSIS
 For: (27791) CITY OF RICHLAND
 STA ANALYSIS

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

Sample ID: FC ROCAL 7-23-18	Lab Number: 2879995		Date Sampled: 2018-12-20				
Cadmium (total)	n.d.	0.62	mg/kg	0.50	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Chromium (total)	17.8	22.9	mg/kg	1.00	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Mercury (total)	0.09	0.11	mg/kg	0.05	EPA 7471	pld8-2018/12/26	bab2-2018/12/28
Lead (total)	8.5	11.0	mg/kg	5.0	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Molybdenum (total)	5.4	6.9	mg/kg	1.0	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Nickel (total)	15.5	20.0	mg/kg	1.0	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Zinc (total)	213.7	275.7	mg/kg	2.0	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Copper (total)	140	180	mg/kg	1	EPA 6010	ras7-2018/12/24	bab2-2018/12/28
Arsenic (total)	4.25	5.48	mg/kg	0.5	EPA 6020	ras7-2018/12/28	bab2-2018/12/28

EPA 1681 holding time of < 24 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. 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:

Rob Ferris
 Account Manager
 ferris@midwestlabs.com (402)829-9871

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

2879995-995
Samples: Page: 1 1/2
Ashlyn Himm
2016 12 21 12:37

OFFICIAL Seal of Testing Assurance
Compost Sample Chain of Custody Form

STA Laboratory: Midwest Laboratories Tel: (403) 334-1770
 Address: 13611 "B" St. FAX: (403) 334-9121
 Email: _____
 City, State Zip code: Omaha, Nebraska 68144-3693

Client/Reporting Company: City of Richland Tel: (509) 942-7481
 Contact Name: Steve Brewer FAX: (509) 942-7346
 Billing Address: A.O. Box 190 Email: SBREWER@CI.
MS # 27 Richland, WA, US
 City, State Zip code: Richland, WA 99353

Send Results to: Steve Brewer
 City, State Zip code: P.O. Box 190 MS#27 Richland, WA 99353

Name or Source of Sample(s): City of Richland Compost Facility
 Name of Person(s), Sample Collector(s): DOUG BULLOCK

LABORATORY USE ONLY Storage Locations
 Freezer _____ Cold Room _____ Storage Shelf _____

Sample Condition: _____
 Temperature: _____ Matodor: _____ Moisture: _____

Sample Type: POINT COMPOSITE STRATIFIED INTERVAL
 P.O. Number: _____

USCC Member: YES NO

SELECTION OF ANALYSIS. Refer to <http://www.tnec.org/cap/methods.html> for details.
 STA Sulte: State DOT Tests (indicate State); A, B, C - Specify other tests in fields A through C. (e.g., tests required for regulated samples, etc.) NOTE! STA analytical results via the STA Compost Technical Data Sheet and this Chain of Custody form are submitted to STA program management.

A B C

Client Sample ID and Special Instructions	1. List Feedstocks 2. Check all that apply 3. List % by volume. (Optional)	Collection Date/Time	Sample Matrix	Composting Operation Type	Shipping Temperature	Indicate Compost Analysis Requirements (*Identify state)	LAB USE ONLY Job Number & Sample Status
FC 2000 7-23-18	<input checked="" type="checkbox"/> Green waste <input type="checkbox"/> Manure <input type="checkbox"/> Food <input checked="" type="checkbox"/> Biosolids <input type="checkbox"/> MSW <input type="checkbox"/> Wood <input type="checkbox"/> Carcass <input type="checkbox"/> Fish Waste <input type="checkbox"/> Grease, Fats	Date: <u>12-20-18</u> Time: <u>GRAB COMP</u> Initials: <u>DB</u>	<input checked="" type="radio"/> Compost <input type="radio"/> Feedstock <input type="radio"/> Mulch <input type="radio"/> _____ <input type="radio"/> _____	<input checked="" type="radio"/> Windrow <input type="radio"/> Static pile <input type="radio"/> In-Vessel <input type="radio"/> _____ <input type="radio"/> _____	<input type="radio"/> Ambient <input checked="" type="radio"/> Wet Ice <input type="radio"/> Dry Ice	STA Suite State DOT Identify State A B	2879995

INFORM THE STA LABORATORY AND SPECIFY THE REQUIRED LABORATORY TESTS WHEN SUBMITTING REGULATED COMPOST SAMPLES (please use spaces A, B and C provided above).

PLEASE PROVIDE SPECIFIC FEEDSTOCK AND OPERATIONAL DETAIL IN THE SPACE PROVIDED.
YOUR VOLUNTEERED INFORMATION PROVIDES USCC STANDARDS AND PRACTICES COMMITTEE WITH CRUTIAL DATA NEEDED TO BETTER UNDERSTAND THE COMPOSTING PROCESS AND COMPOST END USES.

FECAL COLIFORM ONLY (NO SALMONELLA)

Releasing Signature 1	<u>Doug Bulluck</u>	Date	<u>12-20-18</u>	Time	<u>1400</u>	Receiving Signature 1	<u>AS</u>	Date	<u>12/21/18</u>	Time	<u>1225</u>
Releasing Signature 2		Date		Time		Receiving Signature 2		Date		Time	
Releasing Signature 3		Date		Time		Receiving Signature 3		Date		Time	
Releasing Signature 4		Date		Time		Receiving Signature 4		Date		Time	

9-4th Jan 18 13



Sample Acceptance Checklist

Document Number: RC CHKLIST 001

Revision No.: 3

Effective Date: 1/31/17

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2879995-995
Samples: Page: 1 2/2
Ashya Himen
2018 12 21 12:37

Lab Number:

Thermometer Used: [] Therm Fisher IR 13

Cooler Intact: [X] Yes [] No

Received on Ice: [X] Yes [] No

Hand Delivered: [] Yes [X] No

Sample Temperature (°C): 9.4°

Date & Initials of person accepting samples: AH 12/21/18

Comments:

Table with 5 columns: Question, Yes, No, N/A, Comments. Rows include Chain of Custody present?, Chain of Custody complete?, Sample ID(s), Sample Location(s), Client Contact, Analysis Requested, Sampler name on COC, Date & Time of collection, Sample labels match COC, Written in indelible ink, Labels indicate proper preservation, Chain of Custody relinquished with signature, Samples arrived within hold time, Sufficient volume, Appropriate containers used, Filtered volume received for dissolved tests, Headspace in VOA vials, Trip Blank present.

Client Notification/Resolution: Date/Time Contacted:

Person Contacted: Contacted By:

Comments/Resolution: