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Lab # 70041319 **Report of Analysis** Report Number: 22-006-4031

Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352
Date Sampled:	2021-12-14
Date Received:	2021-12-15
Sample ID:	COR Finished 39-51

Robert Ferris
Account Manager
402-829-9871

COR Finished Compost
Rows 36, 38-51

		Analysis (as rec'd)	Analysis (dry weight)	Total content, lbs per ton (as rec'd)
NUTRIENTS				
Nitrogen				
Total Nitrogen	%	1.57	2.89	31.4
Organic Nitrogen	%	1.32	2.42	26.4
Ammonium Nitrogen	%	0.252	0.463	5.0
Nitrate Nitrogen	%	< 0.01	----	----
Major and Secondary Nutrients				
Phosphorus	%	0.39	0.72	7.8
Phosphorus as P2O5	%	0.89	1.64	17.8
Potassium	%	0.86	1.58	17.2
Potassium as K2O	%	1.04	1.91	20.8
Sulfur	%	0.24	0.44	4.8
Calcium	%	1.64	3.01	32.8
Magnesium	%	0.48	0.88	9.6
Sodium	%	0.060	0.110	1.2
Micronutrients				
Iron	ppm	7020	12904	14.0
Manganese	ppm	150	276	0.3
Boron	ppm	< 100	----	----
OTHER PROPERTIES				
Moisture	%	45.60		
Total Solids	%	54.40		1088.0
Organic Matter	%	28.90	53.13	578.0
Ash	%	25.00	45.96	500.0
Total Carbon	%	13.59	24.98	
Chloride	%	0.18	0.33	
pH		7.7		
Conductivity 1:5 (Soluble Salts)	mS/cm	6.22		

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Lab # 70041319 **Biological & Physical Properties** Report Number: 22-006-4031

Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352
Date Sampled:	2021-12-14
Date Received:	2021-12-15
Sample ID:	COR Finished 39-51

Robert Ferris
Client Service Representative
402-829-9871

COR Finished Compost
Rows 36, 38-51

	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties					
Germination	100		%	1	TMECC 05.05A
Germination Vigor	79.7		%	1	TMECC 05.05A
CO_2 OM Evolution	0.93		$mgCO_2$-C/gOM/day	0.01	TMECC 05.08B
CO_2 Solids Evolution	1.19		$mgCO_2$-C/gTS/day	0.01	TMECC 05.08B
Salmonella		< 0.26	mpn/4g	0.26	TMECC 07.02
Stability Rating	Stable		N/A	N/A	TMECC 05.08B
Physical Properties					
Bulk Density (Loose)	623		lbs/cu yard	1	WT/VOL
Bulk Density (Packed)	960		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		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"		97	%	0.01	TMECC Sieve
Sieve % Passing 1/4"		95	%	0.01	TMECC Sieve

Compost Results Interpretations

Page 1

Report #:	22-006-4031
DATE RECEIVED:	2021-12-15

Organic Matter %

28.90 As Received

53.13 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

8.7:1

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 %

45.60

<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 #:	22-006-4031
DATE RECEIVED:	2021-12-15

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
6.2

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 #: 22-006-4031

DATE RECEIVED: 2021-12-15

pH Value

7.7

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

Nutrients (N+P205+K20)

6.43	Average Nutrient Content Dry Weight	<2 = Low, >5 = High
1.5-1-1	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%.

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CITY OF RICHLAND
DOUG BULLOCK
PO BOX 190
RICHLAND WA 99352

REPORT OF ANALYSIS

For: (27791) CITY OF RICHLAND
COR Finished Compost
Rows 36, 38-51
22101036

Analysis	Level Found As Received	Level Found Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **COR Finished 39-51** Lab Number: **70041319** Date Sampled: **2021-12-14**							
Percent solids	54.40		%	0.01	SM 2540 G-(1997) *	Mmg9-2021/12/21	mgn8-2021/12/21
Cadmium (total)	n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Chromium (total)	7.07	13.0	mg/kg	1.00	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Mercury (total)	0.05	0.10	mg/kg	0.05	EPA 7471	mrs3-2021/12/22	trh1-2021/12/22
Lead (total)	6.2	11.3	mg/kg	5.0	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Molybdenum (total)	2.1	3.8	mg/kg	1.0	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Nickel (total)	7.8	14.3	mg/kg	1.0	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Zinc (total)	127.7	234.8	mg/kg	2.0	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Copper (total)	68.0	125	mg/kg	1	EPA 6010	ery3-2021/12/20	trh1-2021/12/22
Arsenic (total)	2.83	5.20	mg/kg	0.5	EPA 6020	pjd8-2021/12/21	trh1-2021/12/22

REPORT NUMBER
22-006-4031

REPORT DATE
Jan 06, 2022

SEND TO
27791

RECEIVED DATE
Dec 15, 2021

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ISSUE DATE
Jan 06, 2022

CITY OF RICHLAND
DOUG BULLOCK
PO BOX 190
RICHLAND WA 99352

REPORT OF ANALYSIS

For: (27791) CITY OF RICHLAND
COR Finished Compost
Rows 36, 38-51
22101036

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

n.d. = not detected , ppm = parts per million, ppm = mg/kg

For questions please contact:

Cole C Parsons
Account Manager
cparsons@midwestlabs.com (402)829-9850

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70041319-319
Samples: 1 Page: 1/3
Ashlyn Himan
2021 12 15 10:45

SUBMITTAL FORM

Order Number: 1013822
Order Date: 2021-12-14 13:10:56
Submitted By: Toby Billings

7.8°C
NG

Account: 27791
CITY OF RICHLAND
PO BOX 190
RICHLAND, WA 99352

Sample Description: COR Finished Compost
Sample Description 2: Rows 36, 38-51
Project/PO Number: 22101036
Comment: No Row 37

SAMPLES FOR ANALYSIS

Compost

1013822-1 Date Sampled: 2021-12-14 **70041319**
Sample ID: COR Finished 39-51
Analysis Requested:
Salmonella *(Percent solids, Salmonella)*
STA w/o Fecal *(Carbon (total), Loss on ignition (OM), Nitrogen (total), Ammonium nitrogen (total), Germination vigor, Sieve (ret) 3-8 in. 9.25 mm, Salmonella, CO2 OM Evolution, CO2 Solids Evolution, Stability rating, % passing - 3" sieve (DW), % passing - 3/4" sieve (DW), % passing - 1" sieve (DW), % passing - 1.5" sieve (DW), % passing - 1/4" sieve (DW), Sieve maximum particle length (Inches), Cadmium (total), Chromium (total), Mercury (total), Lead (total), Molybdenum (total), Nickel (total), Germination, % passing - 5/8" sieve (DW), Conductivity 1:5 dilution, Sulfur (total), Magnesium (total), Iron (total), Calcium (total), Sodium (total), Manganese (total), Bulk density (packed), Bulk density (loose), Film plastic, Glass fragments, Hard plastic, Metal fragments, Sharps, Chloride, Boron (total), Phosphate (P2O5), Nitrate-nitrogen, Ash, Moisture, % passing - 2" sieve (DW), Selenium (total), Zinc (total), Potash (K2O), Copper (total), Arsenic (total), pH)*

Regulatory

Midwest Laboratories®

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

Is this sample for regulatory/permit reporting? ☒ Yes ☐ No

What city/state was your sample collected in? Richland, WA

What agency/state are you reporting? US Composting Council

What type of sample? (Circle One)

Drinking Water For human consumption, 30 hr hold time	**Ground Water**	**Wastewater**
Solid Waste	**Hazardous Waste**	**UST**
Storm Water	**Process Water**	**Livestock**

Compost

SEE REVERSE SIDE FOR SAMPLING INSTRUCTIONS

RC FORM 14-4 Effective 9.13.19

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70041319-319 Samples: 1 Page: 3/3 Ashlyn Himan 2021 12 15 10:45

Sample Acceptance Checklist
Document Number: RC CHKLIST 001
Revision No.: 4
Effective Date: 1/31/2019
Page 1 of 1

Lab Number:

Thermometer Used: ☐ Therm Fisher IR 16

Sample Temperature (°C): 7.8

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

Date & Initials of person accepting samples: KG 12/15/21

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

Client Notification/Resolution: Date/Time Contacted: _____

Person Contacted: _____ Contacted By: _____

Comments/Resolution: _____