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Lab # 70002532 **Report of Analysis** Report Number: 21-294-4071

Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352
Date Sampled:	2021-09-29
Date Received:	2021-09-30
Sample ID:	COR Finished 24-35

Robert Ferris
Account Manager
402-829-9871

City of Richland Finished Compost
Rows 24-35

		Analysis (as rec'd)	Analysis (dry weight)	Total content, lbs per ton (as rec'd)
NUTRIENTS				
Nitrogen				
Total Nitrogen	%	1.85	2.49	37.0
Organic Nitrogen	%	1.53	2.06	30.7
Ammonium Nitrogen	%	0.316	0.425	6.3
Nitrate Nitrogen	%	< 0.01	----	----
Major and Secondary Nutrients				
Phosphorus	%	0.41	0.55	8.2
Phosphorus as P2O5	%	0.94	1.26	18.8
Potassium	%	0.94	1.26	18.8
Potassium as K2O	%	1.13	1.52	22.6
Sulfur	%	0.25	0.34	5.0
Calcium	%	1.81	2.43	36.2
Magnesium	%	0.45	0.61	9.0
Sodium	%	0.090	0.121	1.8
Micronutrients				
Iron	ppm	11400	15335	22.8
Manganese	ppm	224	301	0.4
Boron	ppm	< 100	----	----
OTHER PROPERTIES				
Moisture	%	25.66		
Total Solids	%	74.34		1486.8
Organic Matter	%	40.60	54.61	812.0
Ash	%	32.70	43.99	654.0
Total Carbon	%	18.78	25.26	
Chloride	%	0.30	0.40	
pH		6.7		
Conductivity 1:5 (Soluble Salts)	mS/cm	5.92		

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Lab # 70002532 **Biological & Physical Properties** Report Number: 21-294-4071

Account: 27791	DOUG BULLOCK CITY OF RICHLAND PO BOX 190 RICHLAND WA 99352
Date Sampled:	2021-09-29
Date Received:	2021-09-30
Sample ID:	COR Finished 24-35

Robert Ferris
Client Service Representative
402-829-9871

City of Richland Finished Compost
Rows 24-35

	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties					
Germination	100		%	1	TMECC 05.05A
Germination Vigor	73.8		%	1	TMECC 05.05A
CO_2 OM Evolution	0.8		$mgCO_2$-C/gOM/day	0.01	TMECC 05.08B
CO_2 Solids Evolution	1.93		$mgCO_2$-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)	556		lbs/cu yard	1	WT/VOL
Bulk Density (Packed)	944		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		2.5	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"		96	%	0.01	TMECC Sieve

Compost Results Interpretations

Page 1

Report #:	21-294-4071
DATE RECEIVED:	2021-09-30

Organic Matter %

40.60	As Received
54.61	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

10.2:1

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 %

25.66

<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 #:	21-294-4071
DATE RECEIVED:	2021-09-30

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
5.9

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 #: 21-294-4071

DATE RECEIVED: 2021-09-30

pH Value

6.7

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)

5.27	Average Nutrient Content Dry Weight	<2 = Low, >5 = High
2-1-1	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
City of Richland Finished Compost
Rows 24-35
22100879

Analysis	Level Found As Received	Level Found Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **COR Finished 24-35** Lab Number: **70002532** Date Sampled: **2021-09-29 1051**							
Cadmium (total)	0.60	0.80	mg/kg	0.50	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Chromium (total)	10.7	14.4	mg/kg	1.00	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Mercury (total)	0.07	0.09	mg/kg	0.05	EPA 7471	pjd8-2021/10/07	trh1-2021/10/08
Lead (total)	9.1	12.3	mg/kg	5.0	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Molybdenum (total)	2.4	3.3	mg/kg	1.0	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Nickel (total)	11.6	15.6	mg/kg	1.0	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2021/10/05	trh1-2021/10/08
Zinc (total)	153.7	206.8	mg/kg	2.0	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Copper (total)	68.9	92.7	mg/kg	1	EPA 6010	ery3-2021/10/04	trh1-2021/10/08
Arsenic (total)	3.97	5.34	mg/kg	0.5	EPA 6020	pjd8-2021/10/08	trh1-2021/10/08

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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70002532-532
Samples: 1 Page: 1/3
Ashlyn Himan
2021 09 30 11:13

SUBMITTAL FORM

Order Number: 990847
Order Date: 2021-09-29 13:46:43
Submitted By: Toby Billings

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

Sample Description: City of Richland Finished Compost
Sample Description 2: Rows 24-35
Project/PO Number: Will Send

SAMPLES FOR ANALYSIS

Compost

990847-1
Sample ID: COR Finished 24-35
Time Sampled: 1051
Date Sampled: 2021-09-29

70002532

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)*

9.2 C ~~AU~~

990847-1

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SUBFORM NUMBER:
836541

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PAGE: 1

99084,
On my lab, coolant
print due to
internet down.
Doug

ACCOUNT NO: 27791
CITY OF RICHLAND
~~DOUG BULLOCK~~ Toby Billings
PO BOX 190
RICHLAND, WA 99352

SAMPLE DESCRIPTION
STA WO SALMONELLA

PO NUMBER:

700025532-532
Samples: 1 Page: 2/3
Ashlyn Himan
2021 09 30 11:13

Automatic Order Submittal Form

PLACED BY: Robert A Ferris

	SAMPLE ID	DATE/TIME SAMPLED	MATRIX	TESTS REQUESTED	CONTAINER COUNT	COMMENTS
1	City of Richland Finished Compost Rows 24-35	9/29/21 10:51	Soil/Compost	STA WO SALMONELLA	1	G/C
2						
3						
4						
5						
6						
7						
8						
9						
10						

Sampled by:(Signature) Toby Billings	Temp on Arrival	Cooler arrived intact?	Relinquished by(Signature)	Date/Time	Received by(Signature)
Relinquished by(Signature)	Date/Time	Received by(Signature)	Relinquished by(Signature)	Date/Time	Received in lab (Signature)

CHAIN OF CUSTODY

US COMPOSING COUNCIL

70002532-532 Samples: 1 Page: 3/3 Ashlyn Himan 2021 09 30 11:13

OFFICIAL Seal of Testing Assurance Compost Sample Chain of Custody Form

STA Laboratory: Midwest Labs — Tel: 402 334 7770
Address: 3611 B. Street — FAX:
Email:
City, State Zip code: Omaha, NE 68144

Client/Reporting Company: City of Richland Wastewater — Tel: 509 942 7485
Contact Name: Toby Billings — FAX:
Billing Address: 625 Swift Blvd MS29 — Email: tbillings@ci.richland.wa.gov
City, State Zip code:

Send Results to: same
City, State Zip code:

Name or Source of Sample(s): City of Richland Finished Compost Row 24-35
Name of Person(s), Sample Collector(s): Toby Billings

LABORATORY USE ONLY *Storage Locations*
Freezer ____ Cold Room ____ Storage Shelf ____
Sample Condition: ____
Temperature: ____ Malodor: ____ Moisture: ____

Sample Type: O POINT ☒ COMPOSITE O STRATIFIED O INTERVAL
P.O. Number: Will Send ASAP
USCC Member: ☒ YES O NO

SELECTION OF ANALYSIS. *Refer to http://www.tmecc.org/cap/methods.html for details.* STA Suite; 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
STA No Fecal	+ Salmonella	

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
City of Richland FC Row 24-35	☒ Green waste ☐ Carcass ☐ Manure ☐ Fish Waste ☐ Food ☐ Grease, Fats ☒ Biosolids ☐ MSW ☐ Wood	Date: 9/29/21 Time: 1051 Initials: TB	Compost ☒ Feedstock O Mulch O	Windrow O Static pile ☒ In-Vessel O	Ambient O Wet Ice ☒ Dry Ice O	STA Suite ☒ State DOT ☐ Identify State ☐ A ☒ B ☒ C ☐	

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.

9/25 10:55/10:58/10:41/10:46/10:51

Releasing Signature 1		Date 9/29/21	Time 12:03	Receiving Signature 1		Date 9/30/21	Time 1110
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