

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

Lab # 8713179	Repo	rt of Analys	is	Report Num	ber: 20-024-4004
Account:	DOUG BULLOCI	<			-
27791	CITY OF RICHLA	AND		1/4	0_
	PO BOX 190			16M	700
	RICHLAND WAS	99352		Rob	ert Ferris
				Accou	nt Manager
Date Sampled:	2020-01-09			4	829-9871
Date Received:	2020-01-10			COMPOST	
Sample ID:	FC RAW ASP 8				
					Total content,
			Analysis	Analysis	lbs per ton
			(as rec'd)	(dry weight)	(as rec'd)
NUTRIENTS					
Nitrogen					
Total Nitroge	en	%	1.95	3.01	39.0
Organic Nitro	ogen	%	1.67	2.57	33.4
Ammonium I	Nitrogen	%	0.280	0.431	5.6
Nitrate Nitrog	gen	%	< 0.01		
Major and Seco	ndary Nutrients				
Phosphorus		%	0.40	0.62	8.0
Phosphorus	as P2O5	%	0.92	1.42	18.4
Potassium		%	0.81	1.25	16.2
Potassium a	s K2O	%	0.98	1.51	19.6
Sulfur		%	0.26	0.40	5.2
Calcium		%	1.52	2.34	30.4
Magnesium		%	0.36	0.55	7.2
Sodium		%	0.070	0.108	1.4
Micronutrients					
Iron		ppm	8110	12498	16.2
Manganese		ppm	165	254	0.3
Boron		ppm	< 100		
OTHER PROPERTIES		0/	05.44		
Moisture		%	35.11		400= -
Total Solids		%	64.89	-0.55	1297.8
Organic I	Vlatter	%	33.00	50.86	660.0
Ash		%	31.10	47.93	622.0
Total Carbor		%	17.80	27.43	
Chloride		%	0.21	0.32	
pH			5.7		
Conductivity	1:5 (Soluble Salts)	mS/cm	5.67		

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

Lab # 8713179	Biologica	al & Ph	nysical Pro	perties	Report Num	nber: 20-024-4004
Account:	DOUG BULL	OCK				
27791	CITY OF RIC	CHLANI)		1/11	Fess
	PO BOX 190	1			1000	1
	RICHLAND V	VA 993	352		Rob	ert Ferris
					Client Servi	ce Representative
Date Sampled:	2020-01-09				402	-829-9871
Date Received:	2020-01-10			[0	COMPOST	
Sample ID:	FC RAW ASI	P 8				
	An	alysis	Analysis			
	(as	rec'd)	(dry weight)	Units	Detection Limit	Method
Biological Properties						
Germination		100		%	1	TMECC 05.05A
Germination Vig	or 1	100		%	1	TMECC 05.05A
CO ₂ OM Evolution	on 0).52		mgCO ₂ -C/gOM	•	TMECC 05.08B
CO ₂ Solids Evol	ution 0).74		mgCO ₂ -C/gTS		TMECC 05.08B
Fecal Coliform			1221	mpn/g	0.2	EPA 1681
Stability Rating	St	table		N/A	N/A	TMECC 05.08B
Physical Properties						
Bulk Density (Lo	ose)	792		lbs/cu yard	1	WT/VOL
Bulk Density (Pa	•	011		lbs/cu yard	1	WT/VOL
Film Plastics	,	n.d.		%	0.25	Microscopic
Glass Fragment		n.d.		%	0.25	Microscopic
Hard Plastics		n.d.		%	0.25	Microscopic
Metal Fragment	r	n.d.		%	0.25	Microscopic
Sharps	Ab	sent				Microscopic
Max. Particle Le	ngth		1.5	inches	N/A	TMECC Sieve
Sieve % Passing	g 3"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 2"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 1.5"		100	%	0.01	TMECC Sieve
Sieve % Passing	j 1"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 3/4"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 5/8"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 3/8"		99	%	0.01	TMECC Sieve
Sieve % Passing	g 1/4"		97	%	0.01	TMECC Sieve

Compost Results Interpretations

Page 1

Report #:
DATE RECEIVED:

20-024-4004 2020-01-10

Organic Matter %

33.00 As Received 50.86 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 %

35.11

<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 #: DATE RECEIVED: 20-024-4004 2020-01-10

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	
5.7	
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 #:
DATE RECEIVED:

20-024-4004

pH Value

5.7

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.

				A	G INDEX CHA	RT				
salt injury possible			t drainage cha lity and low sa		уои і	may use on so qu	ils with poor d ality, or high s		water	for all soils
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

5.93 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%.

REPORT NUMBER

20-024-4004

Jan 24, 2020 Jan 10, 2020



PAGE

6/9

ISSUE DATE

Jan 24, 2020

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

PO BOX 190

RICHLAND WA 99352

CITY OF RICHLAND

DOUG BULLOCK

REPORT OF ANALYSIS

COMPOST For: (27791) CITY OF RICHLAND

Level F	ound		Reporting I imit	Method	Analyst- Date	Verified-
Lab Number: 8713179	Date Sample	ed: 2020-01	-09			
n.d.	n.d.	mg/kg	0.50	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
11.9	18.4	mg/kg	1.00	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
0.08	0.13	mg/kg	0.05	EPA 7471	pjd8-2020/01/14	trh1-2020/01/16
10.0	15.4	mg/kg	5.0	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
5.3	8.2	mg/kg	1.0	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
22.6	34.8	mg/kg	1.0	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2020/01/14	trh1-2020/01/16
171.1	263.7	mg/kg	2.0	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
96.0	148	mg/kg	_	EPA 6010	ery3-2020/01/13	trh1-2020/01/16
3.42	5.27	mg/kg	0.5	EPA 6020	ras7-2020/01/15	trh1-2020/01/16
	Level F As Received Lab Number: 8713179 n.d. 11.9 0.08 10.0 5.3 22.6 n.d. 171.1 96.0 3.42	ed el Fc	el Found ed Dry Weight Units Date Sampled: 2020-0 d. n.d. mg/kg .9 18.4 mg/kg .0 15.4 mg/kg .0 15.4 mg/kg .0 418.4 mg/kg .0 34.8 mg/kg .1 263.7 mg/kg .1 263.7 mg/kg .0 148 mg/kg	el Found Rep ed Dry Weight Units Li Date Sampled: 2020-01-09 d. n.d. mg/kg 0 .9 18.4 mg/kg 1 .9 15.4 mg/kg 1 .0 15.4 mg/kg 0 .0 34.8 mg/kg 1 .6 34.8 mg/kg 1 .d. n.d. mg/kg 1 .1 263.7 mg/kg 1 .0 148 mg/kg 1 .0 148 mg/kg 1	Reporting ed Dry Weight Units Limit Date Sampled: 2020-01-09 d. n.d. mg/kg 0.50 .9 18.4 mg/kg 1.00 .0 15.4 mg/kg 5.0 .0 15.4 mg/kg 1.0 .3 8.2 mg/kg 1.0 .3 8.2 mg/kg 1.0 .6 34.8 mg/kg 1.0 .d. n.d. mg/kg 2.0 .d. 1.263.7 mg/kg 2.0 .0 148 mg/kg 0.5	ed Dry Weight Units Limit Method Analyst-Date ed Dry Weight Units Limit Method Date Date Sampled: 2020-01-09 d. n.d. mg/kg 0.50 EPA 6010 ery3-2020/01/13 .9 18.4 mg/kg 1.00 EPA 6010 ery3-2020/01/13 .9 15.4 mg/kg 0.05 EPA 6010 ery3-2020/01/13 .0 15.4 mg/kg 1.0 EPA 6010 ery3-2020/01/13 .3 8.2 mg/kg 1.0 EPA 6010 ery3-2020/01/13 .6 34.8 mg/kg 1.0 EPA 6010 ery3-2020/01/13 .6 34.8 mg/kg 1.0 EPA 6010 ery3-2020/01/13 .1 263.7 mg/kg 1.0 EPA 6010 ery3-2020/01/14 .1 263.7 mg/kg 1.0 EPA 6010 ery3-2020/01/13 .2 5.27 mg/kg 0.5 EPA 6020 ery3-2020/01/13 .2

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, ppm = mg/kg

For questions please contact:

Account Manager Rob Ferris

rferris@midwestlabs.com (402)829-9871 The result(s) issued on this report only reflect the analysis of the sample(s) submitted.



OFFICIAL Seal of Testing Assurance Compost Sample Chain of Custody Form

STA Laboratory: Address:	Midwest Laboratorie 13611 B St.	S Tol:(403) 3 FAX:(401) 3 Email:	134-1770 34-9131		LABORA	ATORY USE (J		orage Shelf
Citv. State Zip code: a	OMAHA, Nehrasba 6814	H - 31-02			Sample Co	ondition:	-		
	Spans , North Rd. (8)	11 3611					Malodor: M	aletrear	
Client/Reporting Company	oil -C 0121 1	TOWERS O					O COMPOSITE		O INTERVAL
Contact Name:	City of Richland Steve Brewer P.O. Box 190	10.(209) J	71-17-01			. Number:	O COMPOSITE	O STRATIFIED	O INTERVAL
Dilling Address:	Treve Brewser	[FAN. (509] 9	73 - 1346		F.0	. Number.			
Diffility Address.	4.0. Kax 140	ELIBIT 2 BULM	ER GOCI LICANO	and	LICCO	Member: O YE	0 0 10		
City State Zin pada:	MS # 27 Richland, Wa 9935.	<u> </u>	wa. us					ra/aan/mathada hlml	lar dataila
Card Deputts to	BONIOSON MO AATZ	o)			STA Suite;	State DOT Tests (in	efer tö http://www.tmecc.o dicale State); A, B, C – S;	rg <i>reap/methods.nimi</i> pecify other tests in fie	ids A through C, (e.g.,
Ottu State Zin eede	Steve Brewer P.O	190 V	なおりつ		tests requir	ed for regulated sam	iples, etc.), NOTE STA	analytical results via	the STA Compost
City, State Zip code:	f Sample(s); City of Ric	Jond, Ma	44359			Jala Sheet and this (Chain of Custody form are	submitted to STA pro	gram management.
Name of Generals Servents	of Ric	hlang Com	ost Facili	- K-T	A		B	G	
Name of Person(s), Sample	Collector(s): 1. List Feedstocks						<u> </u>		
Client Sample ID and	1. List Feedstocks 2. Check all that apply	Collection	Sample	Com	posting	Shipping	Indicate Comp		TABLISEOMA
Special Instructions	3. List % by volume. (Optional)	Date/Time	Matrix	Operal	lion Type	Temperature	Requirements (identify state)	8713179
FC ROW	X Green waste Carcass	Date: [.9.]4]0	Compost	V	Vindrow 🏶		STA Sulfie Sease Bor Identify State		0
1 - 40M	Manure Fish Waste		Feedstock O	Sta	atic pile O	Ambient O			
8 92A	Food Grease, Fats	Time: Grab	Mulch Q	tn	-Vessel O	Wet Ice O			-
	X Blosolids	Comp.	o		o				
	MSW Wood	Initials: LB	0		0	Dry Ice O			
INFORM THE STAIL	ABORATORY AND SPECIFY THE REQ	THOUSE LABORATION	V TECTS WHEN OUR	MITTING	PECH AT	ED COMBOST S		and A D and C a	
	C FEEDSTOCK AND OPERATIONAL DE			MITTING	INEGULATI	ED COMPOST SA		JASH. 4	200
YOUR VOLUNTEERED INFORT	MATION PROVIDES USCC STANDARDS AND	D PRACTICES COMMITT	ROVIDED. EE WITH CRUTIAL DATA	NEEDED	TO BETTER I	UNDERSTAND THE	COMPOSTING PROCES	OFC⇒YY .	IND USES
	NO SALM	SNELLA	PLEA	クヒ				101 598	∄ 8713179-179
		·	**************************************						S Samples: Page: 4 1 1/3
							r		
Releasing //	() &	Date Tin	ne Receiv		ALL	July 1	11/	Date Date	Calvin J Sterkel Calomby 2020 01 10 13:00
Signature 1'	<u> </u>	1.9.3030		ature 1	M	<u> </u>	20 115	7	
Reteasing / / Signature 2		Date Tin			. •	1 (Date	Time
Releasing		Date Tin		ature 2				Data	T
Signature 3		Date Tin		/ing ature 3				Date	Time
Releasing		Date Tin						Date	Time
Signature 4	*			ature 4					

Regulatory



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?	X Yes .	١o		
What city/state was your sample collected in?	Richland	Wa.		
What agency/state are you reporting?	U.S. Con	mpost Com	NCIL	
What type of sample? (Circle One)	Drinking Water For human consumption, 30 hr hold time	Ground Water	Wastewater	(Compost)
병사되는 항상 호텔 보고 하고 있다. 그런 기계 모르는 물론이 보고 있다. 나는 사람들은 기계 기계 되었다.	Soilid Waste	Hazardous Waste	UST	
	Storm Water	Process Water	Livestock	
SEE REVE	RSE SIDE FOR SAN	MPLING INSTRUCTIO	ONS	8713179-179 Samples: Page: 1 2/3

RC FORM 14-3 Effective 01.30.19

Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.



Sample Acceptance Checklist Document Number: RC CHKLIST 001

Revision No.: 4

Effective Date: 1/31/2019

Page 1 of 1

Lab Number:							Samples: Page: Page: All 13/3 Samples: Page: Pag
Thermometer Used: Therm Fisher IR 1	3		F	Recei	ved	tact: on Ice:	LYes □ No EYes □ No
Sample Temperature (°C): B. (c			ŀ	Iand	Del	livered:	□ Yes ≯No
Date & Initials of person accepting samples:	Au	_ (7	lD		20	Comments
Chain of Custody present?	Ç _o	Yes		No		N/A	
Sample ID(s):	5	Yes		No		N/A	
Sample Location(s):	42	Yes		No		N/A	
Client contact:	73	Yes		No		N/A	
Analysis Requested:		Yes		No		N/A	
Date & Time of collection:	7	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?	8	Yes		No		N/A	
Samples arrived within hold time?	+72	Yes		No		N/A	
Samples arrived within correct temperature?	-6	Yes		No		N/A	
Sufficient volume?	-	Yes		No		N/A	
Appropriate containers used?	1	Yes		No		N/A	
Filtered volume received for dissolved tests?		Yes		No	4	N/A	
Headspace in VOA vials?		Yes		No		1	333 <u>- 1888 - 1888 - 1</u>
Trip Blank present?		Yes	₩	No		N/A	
Client Notification/Resolution: Date	e/Time C	ontac	ted:				
Person Contacted:	<u> </u>	Co	nta	cted I	Зу:		
Comments/Resolution:		_					:
			_		_		
		_	-				