

Hsu, Benjamin

From: Wiesman, Ronald <WiesmanR@hillsboroughcounty.org>
Sent: Wednesday, February 13, 2019 3:04 PM
To: Morgan, Steve; Barker, Maurice; Kautz, Lance; SWD_Waste
Cc: Byer, Kimberly; Schinella, Beth; O'Neill, Joseph; Ruiz, Larry
Subject: Hillsborough County January Composting Report
Attachments: January2019 Rpt.pdf

Mr. Morgan,

The January composting report for Hillsborough County is attached.
Please advise should you have any questions concerning the information provided.

Thank you,

Ron Wiesman II

Senior Supervisor

Solid Waste Management Division
Transportation & Utilities Services

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SOLID WASTE MANAGEMENT

PO Box 1110 Tampa, FL 33601-1110
813-272-5680

MEMORANDUM

DATE February 13, 2019

TO: Steve Morgan, Environmental Permitting Manager, FDEP
Maurice Barker, Biosolids Coordinator, FDEP
Lance Kautz, Environmental Specialist I, FDEP

FROM: Ron Wiesman, Senior Supervisor, Solid Waste
Management Division

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: January 2019

Biosolids Received (wet tons):	1089.57 tons of biosolids received for the month.
Source of Biosolids:	Hillsborough County Falkenburg AWWTP
Source of Bulking Agent:	Consolidated Resource Recovery
General Description of Activities:	<ul style="list-style-type: none"> • All incoming biosolids were mixed with bulking agent and formed into windrows on the same day as received. • 6 windrows were formed and in active composting as of 1/31/19. • Windrow temperatures were monitored daily. • 1 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). • 8 windrow has been turned. • Sampling was performed on January 30, 2019. • 21.71 tons of finished compost was delivered to University Of Florida - Gulf Coast Research and Education Center. • 0 tons of finished compost was picked up by Life Soils.
Attachments:	A-I: Windrow construction and temperature records.

RWW/ya
Attachments

CC: Beth Schinella, Division Director, Utility Operations, PUD
Kim Byer, Division Director, Solid Waste Management Division
Joseph O'Neill, Professional Engineer II, Solid Waste Management Division
Larry Ruiz, Section Manager, Solid Waste Management Division]

Attachment A

MSAP Process Temperature Chart Windrow# 18-12-12																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/13/18	149	162	171	178	142	154	163	170	140	150	157	160	168	177	182	180	149.75	160.75	168.25	172	
2	12/14/18	138	156	160	160	144	153	158	163	154	160	163	165	158	166	172	174	148.5	158.75	163.25	165.5	
3	12/15/18	146	159	163	167	150	155	161	165	157	160	165	168	162	164	169	173	153.75	159.5	164.5	168.25	
4	12/16/18																					
5	12/17/18	139	152	169	172	147	158	162	164	156	164	168	171	154	162	166	167	149	159	166.25	168.5	
6	12/18/18	140	154	160	163	146	152	157	162	143	151	152	160	151	160	168	172	145	154.25	159.25	164.25	
7	12/19/18	142	152	160	162	140	150	158	162	150	161	168	166	149	168	166	160	145.25	157.75	163	162.5	
8	12/20/18	144	153	160	161	141	149	160	161	142	153	159	163	146	154	163	159	143.25	152.25	160.5	161	
9	12/21/18	144	154	159	160	138	144	148	146	136	141	147	150	135	142	153	161	138.25	145.25	151.75	154.25	
10	12/22/18	142	154	160	162	140	150	152	148	138	146	152	152	139	147	158	162	139.75	149.25	155.5	156	
11	12/23/18																					
12	12/24/18	140	154	163	166	142	160	166	169	158	162	164	164	140	153	162	168	145	157.25	163.75	166.75	
13	12/25/18																					
14	12/26/18	137	142	159	165	138	147	155	162	141	156	163	166	140	156	168	172	139	150.25	161.25	166.25	
15	12/27/18	140	149	155	167	139	145	155	160	140	152	160	162	141	151	152	163	140	149.25	155.5	163	
16	12/28/18	144	150	152	158	141	140	139	140	135	139	140	141	138	141	151	165	139.5	142.5	145.5	151	Turn
17	12/29/18	145	151	155	160	148	145	145	140	140	144	141	140	141	145	148	150	143.5	146.25	147.25	147.5	
18	12/30/18																					
19	12/31/18	145	154	160	162	150	152	150	146	144	151	150	144	146	152	156	152	146.25	152.25	154	151	
20	1/1/19																					
21	1/2/19	145	157	165	173	150	156	162	167	153	160	166	170	148	163	171	176	149	159	166	171.5	Turn
22	1/3/19	148	156	167	174	153	158	160	169	154	165	169	173	150	166	173	178	151.25	161.25	167.25	173.5	
23	1/4/19	156	160	165	171	156	155	159	162	149	154	158	162	157	160	163	167	154.5	157.25	161.25	165.5	
24	1/5/19	152	160	166	168	154	158	160	162	148	154	160	162	158	161	163	166	153	158.25	162.25	164.5	
25	1/6/19																					
26	1/7/19	162	164	165	166	166	168	168	170	160	166	168	170	160	164	164	170	162	165.5	166.25	169	Turn
27	1/8/19	160	164	170	171	162	168	172	172	152	162	170	172	154	162	170	171	157	164	170.5	171.5	
28	1/9/19	162	166	170	172	156	166	172	173	152	162	170	172	158	162	170	171	157	164	170.5	172	
29	1/10/19	166	168	172	172	153	166	172	173	152	164	171	172	160	166	170	170	157.75	166	171.25	171.75	
30	1/11/19	164	166	172	172	157	165	172	173	157	164	170	172	158	165	172	171	159	165	171.5	172	

Attachment B

MSAP Process Temperature Chart Windrow# 18-12-17																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/18/18	143	150	151	145	142	154	156	156	145	152	153	151	142	150	153	150	143	151.5	153.25	150.5	
2	12/19/18	162	165	164	159	158	163	164	162	152	156	160	160	158	158	149	136	157.5	160.5	159.25	154.25	
3	12/20/18	163	164	166	162	155	160	162	163	149	151	157	156	154	152	149	149	155.25	156.75	158.5	157.5	
4	12/21/18	160	162	160	160	154	160	162	162	152	154	158	158	154	158	156	152	155	158.5	159	158	
5	12/22/18	158	161	162	160	154	162	162	163	151	155	161	160	154	160	162	160	154.25	159.5	161.75	160.75	
6	12/23/18																					
7	12/24/18	156	158	158	156	156	163	166	165	158	165	166	165	168	175	176	174	159.5	165.25	166.5	165	
8	12/25/18																					
9	12/26/18	156	160	160	159	148	161	166	167	143	159	165	167	157	168	174	174	151	162	166.25	166.75	
10	12/27/18	145	153	160	167	148	160	164	169	144	155	160	165	134	143	149	151	142.75	152.75	158.25	163	
11	12/28/18	144	150	155	162	150	152	160	170	150	152	152	150	140	143	152	155	146	149.25	154.75	159.25	
12	12/29/18	145	148	152	155	151	155	162	163	151	151	158	160	141	145	155	165	147	149.75	156.75	160.75	
13	12/30/18																					
14	12/31/18	142	148	156	158	150	154	162	163	148	152	160	160	142	148	160	161	145.5	150.5	159.5	160.5	
15	1/1/19																					
16	1/2/19	141	148	154	157	135	140	150	156	136	145	159	164	142	153	163	166	138.5	146.5	156.5	160.75	Turn
17	1/3/19	145	150	157	163	141	143	151	158	139	147	160	162	144	155	162	168	142.25	148.75	157.5	162.75	
18	1/4/19	134	152	157	162	150	156	161	160	147	150	160	162	147	156	160	166	144.5	153.5	159.5	162.5	
19	1/5/19	140	150	158	162	146	155	162	162	145	150	161	162	144	154	161	166	143.75	152.25	160.5	163	
20	1/6/19																					
21	1/7/19	158	162	160	158	160	161	160	159	161	162	160	160	162	162	160	158	160.25	161.75	160	158.75	Turn
22	1/8/19	174	178	173	168	174	178	178	174	161	175	178	172	146	168	174	176	169.67	174.75	175.75	172.5	
23	1/9/19	146	150	164	171	144	157	168	171	150	155	163	168	148	154	162	171	147	154	164.25	170.25	
24	1/10/19	140	148	152	161	140	145	152	162	140	143	160	166	146	152	160	164	141.5	147	156	163.25	
25	1/11/19	145	152	161	168	144	151	165	161	150	151	155	155	150	150	155	161	147.25	151	159	161.25	
26	1/12/19	150	155	158	163	145	150	161	160	148	150	157	161	141	152	156	160	146	151.75	158	161	
27	1/13/19																					
28	1/14/19	145	157	162	176	143	154	160	166	148	150	152	158	150	156	162	170	146.5	154.25	159	167.5	Turn
29	1/15/19	155	160	166	171	156	161	166	171	154	161	166	171	138	152	158	170	150.75	158.5	164	170.75	
30	1/16/19	139	146	156	165	150	156	161	166	142	150	154	166	138	145	156	165	142.25	149.25	156.75	165.5	

Attachment C

MSAP Process Temperature Chart Windrow# 18-12-22																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/23/18	148	152	150	148	143	148	146	148	138	146	148	148	144	148	140	138	143.25	148.5	146	145.5	
2	12/24/18	152	160	166	168	150	155	158	161	140	148	152	152	148	150	142	144	147.5	153.25	154.5	156.25	
3	12/25/18																					
4	12/26/18	141	152	160	164	138	157	163	165	141	149	153	156	136	141	145	152	139	149.75	155.25	159.25	
5	12/27/18	153	155	159	162	151	148	150	153	147	149	153	159	146	149	155	163	149.25	150.25	154.25	159.25	
6	12/28/18	155	160	160	161	155	150	150	150	148	150	152	160	150	155	160	161	152	153.75	155.5	158	
7	12/29/18	152	161	162	163	151	155	155	160	150	152	155	162	151	155	160	161	151	155.75	158	161.5	
8	12/30/18																					
9	12/31/18	152	160	162	162	152	155	158	161	152	154	155	161	154	158	162	163	152.5	156.75	159.25	161.75	
10	1/1/19																					
11	1/2/19	153	158	161	166	153	155	160	162	154	154	156	160	160	163	167	165	155	157.5	161	163.25	Turn
12	1/3/19	156	159	163	167	156	159	163	166	157	159	158	163	158	166	164	165	156.75	160.75	162	165.25	
13	1/4/19	155	160	164	169	150	158	162	162	154	153	158	163	154	162	162	164	153.25	158.25	161.5	164.5	
14	1/5/19	154	160	163	166	146	156	160	163	150	155	158	162	151	158	162	165	150.25	157.25	160.75	164	
15	1/6/19																					
16	1/7/19	161	162	160	159	158	160	161	158	156	158	155	155	160	162	161	160	158.75	160.5	159.25	158	Turn
17	1/8/19	174	170	159	151	140	150	155	148	150	154	158	162	174	174	165	156	159.5	162	159.25	154.25	
18	1/9/19	160	164	167	170	157	161	164	152	148	156	156	153	165	170	168	160	157.5	162.75	163.75	158.75	
19	1/10/19	145	149	154	160	132	135	141	150	141	144	148	151	136	145	153	160	138.5	143.25	149	155.25	
20	1/11/19	148	159	161	161	148	157	162	161	142	151	157	163	144	150	160	162	145.5	154.25	160	161.75	
21	1/12/19	150	155	157	162	140	144	158	157	140	150	155	161	135	140	151	150	141.25	147.25	155.25	157.5	
22	1/13/19																					
23	1/14/19	153	158	166	172	156	163	168	172	149	156	160	170	155	161	166	171	153.25	159.5	165	171.25	Turn
24	1/15/19	146	157	163	170	151	157	163	170	160	164	168	171	138	158	163	169	148.75	159	164.25	170	
25	1/16/19	153	164	170	174	150	158	164	170	155	162	166	173	141	148	155	164	149.75	158	163.75	170.25	
26	1/17/19	135	150	158	164	144	149	154	160	138	143	150	161	140	144	150	163	139.25	146.5	153	162	
27	1/18/19	140	144	155	158	148	152	157	165	140	150	157	162	138	144	151	158	141.5	147.5	155	160.75	
28	1/19/19	145	154	160	163	147	152	157	163	141	146	153	165	148	151	157	165	145.25	150.75	156.75	164	
29	1/20/19																					
30	1/21/19	148	152	158	165	160	161	168	160	145	148	160	161	141	151	160	168	148.5	153	161.5	163.5	
31	1/22/19	151	162	165	168	162	166	168	165	148	158	161	162	140	152	163	170	150.25	159.5	164.25	166.25	

Attachment D

MSAP Process Temperature Chart Windrow# 18-12-29																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/30/18																					
2	12/31/18	140	144	140	138	140	146	142	139	146	148	144	136	142	138	136	132	142	144	140.5	136.25	
3	1/1/19																					
4	1/2/19	140	144	141	139	133	143	149	155	141	155	159	163	136	141	144	150	137.5	145.75	148.25	151.75	
5	1/3/19	143	146	147	142	136	145	150	152	144	157	161	165	140	143	148	155	140.75	147.75	151.5	153.5	
6	1/4/19	145	149	148	150	142	148	148	145	150	154	160	164	144	148	148	145	145.25	149.75	151	151	
7	1/5/19	146	151	156	152	145	150	158	155	151	156	162	162	150	152	154	152	148	152.25	157.5	155.25	
8	1/6/19																					
9	1/7/19	148	150	156	154	144	150	158	156	146	152	160	162	148	156	158	156	146.5	152	158	157	
10	1/8/19	148	152	156	156	160	161	158	156	143	151	157	159	148	160	163	163	149.75	156	158.5	158.5	
11	1/9/19	150	154	160	162	142	148	152	156	143	150	158	160	145	156	162	163	145	152	158	160.25	
12	1/10/19	147	150	155	162	150	157	162	170	138	149	156	158	140	148	154	162	143.75	151	156.75	163	
13	1/11/19	152	161	165	162	150	158	160	162	144	148	154	157	140	141	140	140	146.5	152	154.75	155.25	
14	1/12/19	150	157	160	161	151	162	163	162	150	151	157	155	148	152	155	157	149.75	155.5	158.75	158.75	
15	1/13/19																					
16	1/14/19	146	155	158	160	150	157	158	157	148	147	155	161	157	163	167	167	150.25	155.5	159.5	161.25	
17	1/15/19	137	149	155	157	158	163	164	164	160	158	154	151	146	158	166	168	150.25	157	159.75	160	Turn
18	1/16/19	155	148	138	135	160	171	174	173	151	151	144	141	170	172	166	157	159	160.5	155.5	151.5	
19	1/17/19	158	165	170	173	153	158	161	165	155	161	165	171	158	163	168	171	156	161.75	166	170	
20	1/18/19	148	152	158	160	149	151	157	160	148	161	150	162	153	155	161	162	149.5	154.75	156.5	161	
21	1/19/19	161	168	172	175	156	162	164	166	157	160	164	169	163	165	170	172	159.25	163.75	167.5	170.5	
22	1/20/19																					
23	1/21/19	152	158	162	161	158	161	165	166	160	161	160	168	150	155	160	161	155	158.75	161.75	164	Turn
24	1/22/19	157	161	165	166	163	165	167	170	159	163	165	168	153	156	159	160	158	161.25	164	166	
25	1/23/19	156	168	172	169	168	175	173	166	152	170	174	174	158	162	166	165	158.5	168.75	171.25	168.5	
26	1/24/19	136	145	149	153	138	150	161	165	132	141	146	156	153	160	162	164	139.75	149	154.5	159.5	
27	1/25/19	140	148	151	155	143	153	158	162	138	144	151	160	150	158	161	163	142.75	150.75	155.25	160	
28	1/26/19	140	145	150	158	141	148	158	165	140	143	148	163	152	156	162	165	143.25	148	154.5	162.75	
29	1/27/19																					Moved

Attachment E

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-1-4	
Windrow Construction:			Date Commenced: 12-31-18	Date Completed: 1-4-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/31/18	Oscar Ochoa	18.96	24.65	44	20	
12/31/18	Oscar Ochoa	21.47	27.91	44	20	60
1/2/19	Mike Bayne	21.79	28.33	44	20	
1/2/19	Mike Bayne	22.58	29.35	44	20	60
1/3/19	Mike Bayne	19.57	25.44	44	20	
1/3/19	Jerry Devoe	18.86	24.52	44	20	60
1/4/19	Jerry Devoe	26.31	34.20	44	20	50
Totals		149.54	194.40	308.00	140.00	230.00
Windrow Construction ratio:		3.49 /1				

Note: Yard waste yards = number of buckets * 4.00

MSAP Process Temperature Chart Windrow# 19-1-4																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/5/19	158	154	152	150	151	152	150	140	161	160	156	144	152	154	154	150	155.5	155	153	146	
2	1/6/19																					
3	1/7/19	156	158	160	156	163	164	160	144	158	160	160	146	162	161	156	154	159.75	160.75	159	150	
4	1/8/19	164	168	160	160	151	152	150	140	161	161	156	144	164	167	164	156	160	162	157.5	150	
5	1/9/19	153	156	158	163	150	151	153	158	141	144	151	155	155	160	162	168	149.75	152.75	156	161	
6	1/10/19	138	141	147	153	155	160	161	163	143	146	152	156	142	145	145	148	144.5	148	151.25	155	
7	1/11/19	148	152	160	161	160	166	165	140	150	152	160	162	150	158	163	165	152	157	162	157	
8	1/12/19	144	150	157	155	151	155	161	160	148	152	155	156	148	150	153	158	147.75	151.75	156.5	157.25	
9	1/13/19																					
10	1/14/19	156	161	164	163	152	156	156	154	156	162	163	158	162	164	164	159	156.5	160.75	161.75	158.5	
11	1/15/19	162	166	164	158	161	164	163	159	167	171	172	172	156	163	167	169	161.5	166	166.5	164.5	
12	1/16/19	155	158	162	164	141	142	146	154	134	143	151	158	155	163	168	172	146.25	151.5	156.75	162	
13	1/17/19	135	142	150	165	140	145	150	159	149	155	160	166	145	149	156	161	142.25	147.75	154	162.75	
14	1/18/19	140	148	153	155	138	144	149	161	153	157	161	160	154	156	161	163	146.25	151.25	156	159.75	
15	1/19/19	139	146	155	164	143	148	154	159	152	157	162	165	148	152	158	163	145.5	150.75	157.25	162.75	
16	1/20/19																					
17	1/21/19	140	150	161	162	140	148	152	155	148	155	160	162	140	148	152	155	142	150.25	156.25	158.5	Turn
18	1/22/19	144	156	160	160	143	145	149	152	150	158	159	159	144	155	155	154	145.25	153.5	155.75	156.25	
19	1/23/19	150	152	150	147	161	164	156	150	170	166	150	143	166	169	165	160	161.75	162.75	155.25	150	
20	1/24/19	160	166	168	166	164	165	162	157	162	162	162	166	168	171	171	168	163.5	166	165.75	164.25	
21	1/25/19	161	165	167	166	160	163	160	152	163	164	164	168	160	168	173	169	161	165	166	163.75	
22	1/26/19	162	162	168	166	150	160	161	160	161	160	163	165	162	168	170	171	158.75	162.5	165.5	165.5	
23	1/27/19																					
24	1/28/19	138	144	148	154	143	149	154	157	140	143	143	134	133	138	142	149	138.5	143.5	146.75	148.5	Turn
25	1/29/19	140	146	154	164	146	154	158	163	143	149	155	165	136	149	155	162	141.25	149.5	155.5	163.5	
26	1/30/19	158	162	164	166	148	152	155	156	148	151	154	157	142	144	155	160	149	152.25	157	159.75	
27	1/31/19	160	166	166	164	162	170	172	176	171	175	176	178	153	161	168	171	161.5	168	170.5	172.25	

Attachment F

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-1-9		
Windrow Construction:			Date Commenced: 1-4-19		Date Completed: 1-9-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/4/19	Jerry Devoe	24.39	31.71	44	20	50
1/5/19	Jerry Devoe	21.72	28.24	44	20	
1/5/19	Jerry Devoe	21.92	28.50	44	20	60
1/7/19	Oscar Ochoa	23.05	29.97	44	20	
1/7/19	Oscar Ochoa	21.80	28.34	44	20	60
1/8/19	Oscar Ochoa	22.51	29.26	44	20	
1/8/19	Oscar Ochoa	21.67	28.17	44	20	60
1/9/19	Mike Bayne	21.40	27.82	44	20	
1/9/19	Mike Bayne	26.03	33.84	44	20	60
Totals		204.49	265.84	396.00	180.00	290.00
Windrow Construction ratio:		3.26 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-1-9																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/10/19	148	150	141	131	142	135	131	129	141	137	132	130	134	122	122	120	141.25	136	131.5	127.5	
2	1/11/19	151	148	144	136	148	140	136	133	146	146	140	135	140	134	131	129	146.25	142	137.75	133.25	
3	1/12/19	155	152	148	140	156	158	145	141	152	150	146	138	151	146	138	131	153.5	151.5	144.25	137.5	
4	1/13/19																					
5	1/14/19	152	154	150	144	158	160	158	152	157	160	160	147	158	152	152	142	156.25	156.5	155	146.25	
6	1/15/19	150	154	154	145	140	148	158	156	158	156	148	155	159	156	152	146	151.75	153.5	153	150.5	
7	1/16/19	145	153	153	144	164	163	157	156	152	154	156	156	150	146	138	156	152.75	154	151	153	
8	1/17/19	148	153	158	162	138	143	147	155	157	161	164	160	140	147	155	155	145.75	151	156	158	
9	1/18/19	148	151	161	163	138	144	150	155	152	160	163	162	140	144	150	153	144.5	149.75	156	158.25	
10	1/19/19	150	154	159	162	141	145	150	156	160	164	168	162	145	149	154	161	149	153	157.75	160.25	
11	1/20/19																					
12	1/21/19	140	148	151	160	148	150	151	155	151	158	163	166	140	155	160	166	144.75	152.75	156.25	161.75	
13	1/22/19	146	153	161	166	147	152	152	152	156	162	165	165	148	157	164	168	149.25	156	160.5	162.75	
14	1/23/19	148	158	164	164	156	158	153	141	164	167	167	160	162	171	173	174	157.5	163.5	164.25	159.75	
15	1/24/19	146	157	162	164	142	150	156	161	152	155	153	146	145	156	164	166	146.25	154.5	158.75	159.25	
16	1/25/19	143	155	161	163	140	148	152	161	150	154	152	148	148	160	162	168	145.25	154.25	156.75	160	
17	1/26/19	151	156	161	164	141	150	158	160	150	158	155	155	150	153	162	165	148	154.25	159	161	
18	1/27/19																					
19	1/28/19	139	136	140	147	140	152	156	160	142	146	150	152	132	138	141	145	138.25	143	146.75	151	Turn
20	1/29/19	141	138	144	148	139	152	155	161	146	151	158	151	133	142	145	153	139.75	145.75	150.5	153.25	
21	1/30/19	157	157	158	161	150	152	154	166	156	155	158	158	155	158	160	164	154.5	155.5	157.5	162.25	
22	1/31/19	152	158	164	172	162	168	174	176	166	172	177	177	170	176	177	178	162.5	168.5	173	175.75	

Attachment G

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-1-15	
Windrow Construction:			Date Commenced: 1-10-19		Date Completed: 1-15-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/10/19	Mike Bayne	24.26	31.54	44	20	
1/10/19	Mike Bayne	24.74	32.16	44	20	60
1/11/19	Jerry Devoe	18.15	23.60	44	20	
1/11/19	Jerry Devoe	20.16	26.21	44	20	60
1/12/19	Jerry Devoe	20.80	27.04	44	20	
1/12/19	Jerry Devoe	19.80	25.74	44	20	60
1/14/19	Oscar Ochoa	19.63	25.52	44	20	
1/14/19	Oscar Ochoa	15.87	20.63	44	20	60
1/15/19	Oscar Ochoa	18.73	24.35	44	20	
1/15/19	Oscar Ochoa	21.65	28.15	44	20	60
Totals		203.79	264.93	440.00	200.00	300.00
Windrow Construction ratio:		3.55 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-1-15																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/16/19	138	135	132	130	130	128	128	124	136	134	130	130	132	132	130	126	134	132.25	130	127.5	
2	1/17/19	134	139	141	141	138	135	131	125	137	142	146	140	146	138	137	132	138.75	138.5	138.75	134.5	
3	1/18/19	136	141	144	150	145	132	135	138	140	148	148	144	138	144	148	140	139.75	141.25	143.75	143	
4	1/19/19	139	143	147	145	151	146	144	140	141	149	152	155	137	144	149	146	142	145.5	148	146.5	
5	1/20/19																					
6	1/21/19	150	155	158	162	160	163	154	150	160	165	151	148	150	158	160	160	155	160.25	155.75	155	
7	1/22/19	157	163	160	157	158	166	156	152	163	163	154	149	152	161	161	162	157.5	163.25	157.75	155	
8	1/23/19	161	168	168	164	153	160	164	164	168	174	176	177	151	160	163	163	158.25	165.5	167.75	167	
9	1/24/19	156	160	162	160	158	164	167	166	144	153	160	163	151	160	165	164	152.25	159.25	163.5	163.25	
10	1/25/19	154	157	160	162	154	159	162	165	140	148	152	162	148	155	161	165	149	154.75	158.75	163.5	
11	1/26/19	161	160	162	161	163	161	163	165	142	158	161	163	153	163	162	164	154.75	160.5	162	163.25	
12	1/27/19																					
13	1/28/19	134	137	145	149	139	143	145	149	140	136	142	149	140	144	147	153	138.25	140	144.75	150	
14	1/29/19	138	142	149	156	138	142	149	156	138	144	148	155	138	142	146	152	138	142.5	148	154.75	
15	1/30/19	144	153	156	162	144	161	162	160	146	151	156	158	150	155	155	157	146	155	157.25	159.25	
16	1/31/19	146	154	160	164	145	156	161	161	150	152	158	160	151	156	159	160	148	154.5	159.5	161.25	

Attachment G

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-1-21		
Windrow Construction:			Date Commenced: 1-16-19		Date Completed: 1-21-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/16/19	Mike Bayne	23.56	30.63	44	20	
1/16/19	Mike Bayne	22.09	28.72	44	20	60
1/17/19	Mike Bayne	21.42	27.85	44	20	
1/17/19	Mike Bayne	19.52	25.38	44	20	60
1/18/19	Jerry Devoe	19.60	25.48	44	20	
1/18/19	Jerry Devoe	21.41	27.83	44	20	60
1/19/19	Jerry Devoe	21.21	27.57	44	20	40
1/21/19	Oscar Ochoa	20.22	26.29	44	20	
1/21/19	Oscar Ochoa	20.30	26.39	44	20	60
Totals		189.33	246.13	396.00	180.00	280.00
Windrow Construction ratio:		3.48 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-1-21																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/22/19	164	162	140	134	165	165	150	136	165	165	150	140	165	164	152	138	164.75	164	148	137	
2	1/23/19	164	162	156	150	165	165	158	148	165	166	156	148	165	164	152	140	164.75	164.25	155.5	146.5	
3	1/24/19	158	164	163	157	152	158	161	163	157	163	160	155	143	150	152	153	152.5	158.75	159	157	
4	1/25/19	155	158	162	160	155	153	160	161	150	158	160	161	141	152	158	158	150.25	155.25	160	160	
5	1/26/19	160	161	161	160	155	161	161	164	160	163	160	160	148	151	151	155	155.75	159	158.25	159.75	
6	1/27/19																					
7	1/28/19	133	136	140	146	141	143	147	152	139	144	149	153	135	137	142	148	137	140	144.5	149.75	
8	1/29/19	132	138	144	152	145	149	155	159	143	148	152	159	140	145	152	160	140	145	150.75	157.5	
9	1/30/19	155	155	156	162	142	141	145	148	152	153	155	162	152	158	163	164	150.25	151.75	154.75	159	
10	1/31/19	152	158	166	166	151	157	164	166	148	154	160	163	152	158	163	165	150.75	156.75	163.25	165	

Attachment H

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-1-26	
Windrow Construction:			Date Commenced: 1-22-19	Date Completed: 1-26-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/22/19	Mike Bayne	23.56	30.63	44	20	
1/23/19	Mike Bayne	22.09	28.72	44	20	60
1/23/19	Mike Bayne	21.42	27.85	44	20	
1/24/19	Mike Bayne	19.52	25.38	44	20	60
1/24/19	Jerry Devoe	19.60	25.48	44	20	
1/25/19	Jerry Devoe	21.41	27.83	44	20	60
1/25/19	Jerry Devoe	21.21	27.57	44	20	40
1/26/19	Oscar Ochoa	20.22	26.29	44	20	
1/26/19	Oscar Ochoa	20.30	26.39	44	20	60
Totals		189.33	246.13	396.00	180.00	280.00
Windrow Construction ratio:		3.48 /1				

Note: Yard waste yards = number of buckets * 4.00

MSAP Process Temperature Chart Windrow# 19-1-26																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/27/19																					
2	1/28/19	142	146	151	156	145	149	153	158	133	139	144	151	132	138	143	149	138	143	147.75	153.5	
3	1/29/19	145	153	158	163	148	154	158	163	139	148	153	159	134	142	146	152	141.5	149.25	153.75	159.25	
4	1/30/19	151	155	157	157	154	156	159	165	153	155	163	166	152	158	158	166	152.5	156	159.25	163.5	
5	1/31/19	151	153	148	144	153	161	161	160	152	156	163	165	156	164	166	168	153	158.5	159.5	159.25	

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-1-30	
Windrow Construction:			Date Commenced: 1-28-19	Date Completed: 1-30-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/28/19	Oscar Ochoa	22.25	28.93	44	20	
1/28/19	Oscar Ochoa	23.73	30.85	44	20	60
1/29/19	Oscar Ochoa	23.50	30.55	44	20	
1/29/19	Oscar Ochoa	21.57	28.04	44	20	
1/29/19	Oscar Ochoa	20.24	26.31	44	20	90
1/30/19	Mike Bayne	21.08	27.40	44	20	
1/30/19	Mike Bayne	20.68	26.88	44	20	60
Totals		153.05	198.97	308.00	140.00	210.00
Windrow Construction ratio:		3.31 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-1-30																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	1/31/19	158	152	136	133	159	154	144	140	160	154	148	142	158	146	132	132	158.75	151.5	140	136.75	