

Hsu, Benjamin

From: Wiesman, Ronald <WiesmanR@hillsboroughcounty.org>
Sent: Thursday, March 07, 2019 3:11 PM
To: Morgan, Steve; Barker, Maurice; Kautz, Lance; SWD_Waste
Cc: Byer, Kimberly; Schinella, Beth; O'Neill, Joseph; Ruiz, Larry
Subject: Hillsborough County February Composting Report
Attachments: February2019 Rpt.pdf

Mr. Morgan,

The February 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

P: (813) 671-7707 VOIP 42801

M: (813) 455-2194

E: wiesmanr@HCFLGov.net

W: <http://HCFLGOV.net>

Hillsborough County

15960 County Road 672 Lithia, FL 33547

[Facebook](#) | [Twitter](#) | [YouTube](#) | [LinkedIn](#) | [HCFL Stay Safe](#)

Please note: All correspondence to or from this office is subject to Florida's Public Records law.



**BOARD OF COUNTY
COMMISSIONERS**

Ken Hagan
Pat Kemp
Lesley "Les" Miller, Jr.
Sandra L. Murman
Kimberly Overman
Mariella Smith
Stacy R. White

COUNTY ADMINISTRATOR

Michael S. Merrill

COUNTY ATTORNEY

Christine M. Beck

INTERNAL AUDITOR

Peggy Caskey

**INFRASTRUCTURE SERVICES
ADMINISTRATOR**

John Lyons

SOLID WASTE MANAGEMENT

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

MEMORANDUM

DATE March 7, 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: February 2019

Biosolids Received (wet tons):	980.77 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 2/28/19. • Windrow temperatures were monitored daily. • 8 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). • 8 windrow has been turned. • Sampling was performed on February 19, 2019. • 959.79 tons of finished compost was picked up by Life Soils.
Attachments:	A-J: 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# 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	
28	2/1/19	166	168	170	176	159	163	169	174	156	163	169	174	164	172	174	177	161.25	166.5	170.5	175.25	
29	2/2/19	160	165	168	174	160	163	170	172	160	165	171	173	166	172	174	180	161.5	166.25	170.75	174.75	
30	2/3/19																					
31	2/4/19	162	169	172	175	156	166	171	176	152	161	166	170	161	170	176	178	157.75	166.5	171.25	174.75	

Attachment B

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	
23	2/1/19	159	163	166	171	162	165	170	173	162	168	174	175	172	177	176	175	163.75	168.25	171.5	173.5	
24	2/2/19	155	163	168	171	165	165	168	172	166	170	172	172	170	171	173	175	164	167.25	170.25	172.5	
25	2/3/19																					
26	2/4/19	155	163	169	172	163	167	169	170	158	165	172	173	169	172	173	174	161.25	166.75	170.75	172.25	
27	2/5/19	155	164	170	172	153	161	172	174	162	168	174	176	166	169	171	172	159	165.5	171.75	173.5	Turn
28	2/6/19	165	170	170	161	166	174	175	168	178	177	173	164	175	177	174	165	171	174.5	173	164.5	
29	2/7/19	137	143	150	159	139	148	158	165	147	158	162	165	145	148	154	162	142	149.25	156	162.75	
30	2/8/19	138	160	161	166	148	157	161	168	158	162	163	170	160	165	170	173	151	161	163.75	169.25	
31	2/9/19	140	157	162	168	150	159	165	174	160	167	170	175	165	169	172	175	153.75	163	167.25	173	
32	2/10/19																					
33	2/11/19																					Moved

Attachment C

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	
17	2/1/19	149	155	163	169	145	151	164	162	151	153	158	159	154	158	160	162	149.75	154.25	161.25	163	
18	2/2/19	150	158	165	169	150	152	158	164	150	153	158	162	160	161	161	162	152.5	156	160.5	164.25	Turn
19	2/3/19																					
20	2/4/19	146	158	166	171	148	160	171	174	146	154	162	170	162	169	173	175	150.5	160.25	168	172.5	
21	2/5/19	160	164	168	170	166	171	173	174	146	155	161	168	160	166	170	170	158	164	168	170.5	
22	2/6/19	156	159	162	171	165	170	172	175	150	160	164	170	158	162	168	170	157.25	162.75	166.5	171.5	
23	2/7/19	145	160	154	165	165	168	172	175	152	163	167	173	156	159	167	170	154.5	162.5	165	170.75	
24	2/8/19	150	155	158	170	151	158	161	170	156	163	170	172	162	163	168	170	154.75	159.75	164.25	170.5	
25	2/9/19	155	159	164	169	152	161	169	173	159	165	171	173	160	165	167	169	156.5	162.5	167.75	171	Turn
26	2/10/19																					
27	2/11/19	140	158	166	172	153	161	166	174	148	159	166	172	148	155	164	170	147.25	158.25	165.5	172	
28	2/12/19	159	162	164	167	155	158	162	165	151	156	162	166	143	156	161	170	152	158	162.25	167	
29	2/13/19	157	160	162	167	156	159	165	167	148	153	168	168	143	158	165	170	151	157.5	165	168	
30	2/14/19	147	158	166	173	155	164	171	175	142	154	162	173	144	162	168	172	147	159.5	166.75	173.25	
31	2/15/19																					Moved

Attachment D

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	
11	2/1/19	153	156	159	161	153	156	162	169	146	152	156	159	154	157	162	166	151.5	155.25	159.75	163.75	
12	2/2/19	153	156	159	161	153	156	162	169	146	152	156	159	154	157	162	166	151.5	155.25	159.75	163.75	
13	2/3/19																					
14	2/4/19	155	158	161	165	150	155	163	171	150	155	160	162	158	162	166	168	153.25	157.5	162.5	166.5	
15	2/5/19	152	158	164	167	140	148	152	157	142	151	163	167	148	158	163	163	145.5	153.75	160.5	163.5	Turn
16	2/6/19	156	161	165	168	150	152	152	160	159	164	168	170	162	165	165	165	156.75	160.5	162.5	165.75	
17	2/7/19	159	163	170	172	140	145	151	164	160	168	171	173	162	165	169	173	155.25	160.25	165.25	170.5	
18	2/8/19	138	144	160	165	150	157	162	166	148	163	172	173	148	151	159	171	146	153.75	163.25	168.75	
19	2/9/19	138	147	157	162	147	157	162	166	145	154	159	168	140	147	158	170	142.5	151.25	159	166.5	
20	2/10/19																					
21	2/11/19	146	152	161	167	146	152	160	165	144	156	161	166	138	154	160	167	143.5	153.5	160.5	166.25	Turn
22	2/12/19	161	164	166	170	152	158	163	165	150	154	157	162	151	158	158	159	153.5	158.5	161	164	
23	2/13/19	156	161	168	171	150	157	164	169	148	152	158	164	150	156	157	159	151	156.5	161.75	165.75	
24	2/14/19	145	158	171	174	140	158	167	175	142	150	158	164	145	152	158	165	143	154.5	163.5	169.5	
25	2/15/19	140	144	160	161	136	138	138	140	136	141	145	147	140	145	151	158	138	142	148.5	151.5	
26	2/16/19	135	141	158	163	134	138	142	140	134	142	149	162	143	148	156	165	136.5	142.25	151.25	157.5	
27	2/17/19																					
28	2/18/19	149	156	162	168	154	161	165	172	162	168	170	169	148	155	159	164	153.25	160	164	168.25	Turn
29	2/19/19	152	158	165	168	154	166	166	171	160	167	169	171	147	155	158	164	153.25	161.5	164.5	168.5	
30	2/20/19																					Moved

Attachment E

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	
6	2/1/19	150	155	158	163	152	155	155	166	160	161	166	169	170	171	171	168	158	160.5	162.5	166.5	
7	2/2/19	142	147	152	159	143	149	154	163	155	158	161	164	168	168	171	164	152	155.5	159.5	162.5	
8	2/3/19																					
9	2/4/19	150	155	158	163	152	155	155	166	160	161	166	169	170	171	171	168	158	160.5	162.5	166.5	
10	2/5/19	166	170	173	172	158	163	166	164	153	160	162	160	156	163	168	168	158.25	164	167.25	166	
11	2/6/19	150	162	168	167	148	151	162	162	156	160	162	161	148	163	165	168	150.5	159	164.25	164.5	
12	2/7/19	134	142	149	164	140	144	148	156	153	159	166	171	155	160	164	170	145.5	151.25	156.75	165.25	
13	2/8/19	152	156	162	163	153	160	160	163	155	160	166	170	150	153	160	163	152.5	157.25	162	164.75	
14	2/9/19	149	154	158	160	154	157	161	163	159	160	163	165	150	154	158	160	153	156.25	160	162	
15	2/10/19																					
16	2/11/19	152	163	166	169	142	156	164	167	146	162	166	166	146	161	168	171	146.5	160.5	166	168.25	Turn
17	2/12/19	156	155	150	150	153	156	160	161	150	150	147	145	156	164	166	169	153.75	156.25	155.75	156.25	
18	2/13/19	161	168	168	163	157	165	169	171	152	158	155	155	159	164	168	171	157.25	163.75	165	165	
19	2/14/19	165	177	178	175	163	170	173	174	166	168	165	156	160	166	174	174	163.5	170.25	172.5	169.75	
20	2/15/19	155	158	160	165	132	138	140	145	155	161	168	170	148	153	157	160	147.5	152.5	156.25	160	
21	2/16/19	158	164	167	173	132	142	147	153	157	162	168	171	152	156	159	156	149.75	156	160.25	163.25	
22	2/17/19																					
23	2/18/19	154	154	150	145	164	168	170	172	154	161	161	156	157	168	169	170	157.25	162.75	162.5	160.75	Turn
24	2/19/19	155	156	158	155	163	168	171	171	157	164	165	164	155	165	168	170	157.5	163.25	165.5	165	
25	2/20/19	153	155	160	161	160	165	168	170	153	160	163	167	150	158	166	170	154	159.5	164.25	167	
26	2/21/19	140	147	148	154	150	148	144	144	148	151	155	161	150	153	158	161	147	149.75	151.25	155	
27	2/22/19	139	142	146	154	145	149	151	151	141	145	157	172	146	155	160	173	142.75	147.75	153.5	162.5	
28	2/23/19	144	144	148	157	147	153	151	151	144	149	159	169	148	154	162	170	145.75	150	155	161.75	
29	2/24/19																					
30	2/25/19	147	148	150	152	146	150	152	155	144	148	157	165	149	156	161	169	146.5	150.5	155	160.25	
31	2/26/19																					Moved

Attachment F

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-2-4		
Windrow Construction:			Date Commenced: 1-31-19		Date Completed: 2-4-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
1/31/19	Mike Bayne	21.48	27.92	44	22	
1/31/19	Mike Bayne	23.76	30.89	44	22	60
2/1/19	Jerry Devoe	23.43	30.46	44	22	
2/1/19	Jerry Devoe	21.93	28.51	44	22	60
2/2/19	Jerry Devoe	23.26	30.24	44	22	
2/2/19	Jerry Devoe	22.11	28.74	44	22	60
2/4/19	Oscar Ochoa	21.12	27.46	44	22	
2/4/19	Oscar Ochoa	17.50	22.75	44	22	60
Totals		174.59	226.97	352.00	176.00	240.00
Windrow Construction ratio:			3.38 /1			
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-2-4																						
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	2/5/19	160	150	146	131	160	150	138	130	154	140	120	118	152	148	132	134	156.5	147	134	128.25	
2	2/6/19	161	158	152	142	158	148	146	136	150	144	134	126	156	152	140	142	156.25	150.5	143	136.5	
3	2/7/19	156	152	157	140	145	147	147	142	145	149	154	144	142	147	152	150	147	148.75	152.5	144	
4	2/8/19	148	156	157	148	146	148	148	146	148	150	152	156	142	147	154	154	146	150.25	152.75	151	
5	2/9/19	152	155	157	157	152	148	150	155	151	146	151	156	140	147	158	154	148.75	149	154	155.5	
6	2/10/19																					
7	2/11/19	160	162	160	166	160	162	159	158	158	165	166	159	143	155	160	163	155.25	161	161.25	161.5	
8	2/12/19	162	164	158	153	166	168	166	158	147	156	161	163	166	165	165	164	160.25	163.25	162.5	159.5	
9	2/13/19	163	167	164	163	162	162	167	165	149	155	160	160	161	161	160	160	158.75	161.25	162.75	162	
10	2/14/19	167	171	171	169	156	158	158	155	152	158	160	157	157	162	164	162	158	162.25	163.25	160.75	
11	2/15/19	140	155	158	161	148	155	161	162	147	152	160	160	140	148	151	163	143.75	152.5	157.5	161.5	
12	2/16/19	143	152	160	168	152	158	164	163	150	156	161	167	145	158	163	167	147.5	156	162	166.25	
13	2/17/19																					
14	2/18/19	146	153	157	163	156	162	164	163	156	162	166	165	163	166	169	169	155.25	160.75	164	165	
15	2/19/19	148	155	159	164	155	163	165	165	155	164	167	169	167	167	170	172	156.25	162.25	165.25	167.5	
16	2/20/19	150	154	158	161	150	159	163	160	150	157	162	168	165	167	169	172	153.75	159.25	163	165.25	
17	2/21/19	153	155	159	162	154	158	162	162	153	157	160	166	158	161	165	171	154.5	157.75	161.5	165.25	Turn
18	2/22/19	158	162	164	169	162	165	169	173	158	164	169	174	160	165	169	173	159.5	164	167.75	172.25	
19	2/23/19	160	164	167	172	160	166	170	175	155	163	168	176	155	159	162	163	157.5	163	166.75	171.5	
20	2/24/19																					
21	2/25/19	137	140	146	149	140	145	151	162	136	140	144	152	139	145	146	150	138	142.5	146.75	153.25	
22	2/26/19	134	138	143	148	142	148	155	169	135	139	149	155	137	141	147	157	137	141.5	148.5	157.25	Turn
23	2/27/19	142	147	152	159	144	154	159	166	141	145	150	151	148	152	155	158	143.75	149.5	154	158.5	
24	2/28/19	149	155	160	163	147	153	156	164	152	156	158	155	158	163	167	169	151.5	156.75	160.25	162.75	

Attachment G

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-2-8		
Windrow Construction:			Date Commenced: 2-5-19	Date Completed: 2-8-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/5/19	Oscar Ochoa	21.69	28.20	44	22	
2/5/19	Oscar Ochoa	21.77	28.30	44	22	60
2/6/19	Mike Bayne	23.50	30.55	44	22	
2/6/19	Mike Bayne	21.49	27.94	44	22	60
2/7/19	Mike Bayne	23.23	30.20	44	22	
2/7/19	Mike Bayne	18.36	23.87	44	22	60
2/8/19	Jerry Devoe	22.05	28.67	44	22	
2/8/19	Jerry Devoe	20.75	26.98	44	22	60
Totals		172.84	224.69	352.00	176.00	240.00
Windrow Construction ratio:		3.42 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-2-8																						
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	2/9/19	148	150	144	138	152	149	144	132	149	139	130	129	143	130	126	124	148	142	136	130.75	
2	2/10/19																					
3	2/11/19	155	152	152	150	153	144	148	138	145	156	152	143	148	152	150	140	150.25	151	150.5	142.75	
4	2/12/19	162	162	161	160	150	151	148	145	154	156	155	146	156	158	158	158	155.5	156.75	155.5	152.25	
5	2/13/19	158	161	163	160	149	152	150	146	152	155	151	149	155	157	158	157	153.5	156.25	155.5	153	
6	2/14/19	147	158	158	151	152	155	151	143	153	155	148	144	155	163	166	162	151.75	157.75	155.75	150	
7	2/15/19	150	155	160	162	150	155	160	163	160	160	163	165	140	145	147	151	150	153.75	157.5	160.25	
8	2/16/19	158	164	169	172	148	153	159	165	155	160	164	169	135	142	148	156	149	154.75	160	165.5	
9	2/17/19																					
10	2/18/19	159	166	168	168	152	163	168	168	143	156	160	163	142	153	163	169	149	159.5	164.75	167	
11	2/19/19	157	166	170	173	153	165	168	170	152	158	164	170	146	155	163	171	152	161	166.25	171	
12	2/20/19	155	163	168	171	155	166	170	170	155	155	161	168	141	148	152	158	151.5	158	162.75	166.75	
13	2/21/19	143	158	160	163	145	148	159	163	147	151	158	165	144	147	150	157	144.75	151	156.75	162	
14	2/22/19	141	149	152	162	142	148	157	163	146	153	158	163	140	145	149	154	142.25	148.75	154	160.5	
15	2/23/19	143	148	154	162	144	149	161	164	149	155	162	166	143	147	152	157	144.75	149.75	157.25	162.25	
16	2/24/19																					
17	2/25/19	136	147	152	158	140	148	151	155	142	146	147	149	142	148	154	158	140	147.25	151	155	
18	2/26/19	136	146	153	161	139	147	153	158	139	140	142	142	142	147	153	160	139	145	150.25	155.25	
19	2/27/19	138	142	146	154	148	154	160	168	134	145	154	161	138	147	158	164	139.5	147	154.5	161.75	
20	2/28/19	139	143	150	162	152	158	164	171	150	153	159	169	132	135	142	149	143.25	147.25	153.75	162.75	

Attachment G

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-2-13	
Windrow Construction:			Date Commenced: 2-9-19		Date Completed: 2-13-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/9/19	Oscar Ochoa	21.69	28.20	44	22	
2/9/19	Oscar Ochoa	21.77	28.30	44	22	60
2/11/19	Mike Bayne	23.50	30.55	44	22	
2/11/19	Mike Bayne	21.49	27.94	44	22	60
2/12/19	Mike Bayne	23.23	30.20	44	22	
2/12/19	Mike Bayne	18.36	23.87	44	22	60
2/13/19	Jerry Devoe	22.05	28.67	44	22	40
Totals		152.09	197.72	308.00	154.00	220.00
Windrow Construction ratio:		3.45 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-2-13																						
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	2/14/19	156	155	155	156	158	160	156	156	156	158	158	150	156	152	148	136	36	156.25	154.25	149.5	
2	2/15/19	155	161	161	163	155	161	162	163	150	158	161	158	160	153	147	140	155	158.25	157.75	156	
3	2/16/19	155	162	165	165	156	159	164	170	156	160	167	162	160	153	150	146	156.75	158.5	161.5	160.75	
4	2/17/19																					
5	2/18/19	154	163	168	170	164	168	171	171	160	168	172	174	168	168	167	166	161.5	166.75	169.5	170.25	
6	2/19/19	155	165	169	172	163	166	170	173	158	167	173	173	166	168	171	172	160.5	166.5	170.75	172.5	
7	2/20/19	150	155	157	162	160	163	168	171	153	157	166	168	160	165	168	171	155.75	160	164.75	168	
8	2/21/19	144	151	156	159	153	160	165	169	149	155	158	163	158	160	161	165	151	156.5	160	164	
9	2/22/19	147	150	155	158	154	158	163	166	148	156	159	162	154	158	160	167	150.75	155.5	159.25	163.25	
10	2/23/19	150	153	156	160	157	161	165	168	152	159	164	166	157	159	163	169	154	158	162	165.75	
11	2/24/19																					
12	2/25/19	140	145	151	159	149	154	157	163	141	147	150	152	138	141	148	151	142	146.75	151.5	156.25	
13	2/26/19	138	143	148	159	147	153	158	163	139	142	146	153	133	136	142	154	139.25	143.5	148.5	157.25	
14	2/27/19	155	158	162	167	145	149	156	164	142	146	148	153	140	145	149	155	145.5	149.5	153.75	159.75	
15	2/28/19	150	153	159	169	152	158	162	164	152	158	164	168	147	151	155	161	150.25	155	160	165.5	

Attachment H

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-2-19	
Windrow Construction:			Date Commenced: 2-13-19		Date Completed: 2-19-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/13/19	Mike Bayne	17.55	22.82	44	22	40
2/14/19	Mike Bayne	23.55	30.62	44	22	
2/14/19	Mike Bayne	21.55	28.02	44	22	60
2/15/19	Mike Bayne	18.54	24.10	44	22	
2/15/19	Jerry Devoe	18.93	24.61	44	22	60
2/16/19	Jerry Devoe	23.70	30.81	44	22	40
2/18/19	Oscar Ochoa	21.19	27.55	44	22	40
2/19/19	Oscar Ochoa	21.70	28.21	44	22	
2/19/19	Oscar Ochoa	22.61	29.39	44	22	60
Totals		189.32	246.12	396.00	198.00	300.00
Windrow Construction ratio:		3.63 /1				

Note: Yard waste yards = number of buckets * 4.00

MSAP Process Temperature Chart Windrow# 19-2-19																						
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	2/20/19	132	129	127	126	132	131	128	126	130	129	126	123	133	132	129	127	131.75	130.25	127.5	125.5	
2	2/21/19	135	137	137	132	140	139	136	134	144	140	138	137	147	142	140	140	141.5	139.5	137.75	135.75	
3	2/22/19	140	143	148	154	142	147	154	163	145	152	160	162	145	149	153	161	143	147.75	153.75	160	
4	2/23/19	143	147	149	158	144	150	157	166	148	156	163	167	147	152	157	163	145.5	151.25	156.5	163.5	
5	2/24/19																					
6	2/25/19	140	144	149	156	144	151	156	162	150	154	###	162	146	151	157	161	145	150	3905.3	160.25	
7	2/26/19	137	143	149	159	139	146	150	161	149	152	159	163	144	151	155	160	142.25	148	153.25	160.75	
8	2/27/19	137	142	147	157	148	153	159	163	152	157	165	167	139	143	146	151	144	148.75	154.25	159.5	
9	2/28/19	133	145	148	159	153	155	158	165	150	156	163	170	152	158	166	172	147	153.5	158.75	166.5	

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-2-23	
Windrow Construction:			Date Commenced: 2-20-19		Date Completed: 2-23-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/20/19	Mike Bayne	22.11	28.74	44	22	
2/20/19	Mike Bayne	23.91	31.08	44	22	60
2/21/19	Mike Bayne	23.92	31.10	44	22	
2/21/19	Mike Bayne	21.64	28.13	44	22	60
2/22/19	Jerry Devoe	21.01	27.31	44	22	
2/22/19	Jerry Devoe	20.96	27.25	44	22	60
2/23/19	Oscar Ochoa	19.40	25.22	44	22	
2/23/19	Oscar Ochoa	20.20	26.26	44	22	60
Totals		173.15	225.10	352.00	176.00	240.00
Windrow Construction ratio:		3.41 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-2-23																						
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	2/24/19																					
2	2/25/19	140	144	150	150	150	155	159	160	150	157	161	161	149	155	161	161	147.25	152.75	157.75	158	
3	2/26/19	139	144	152	163	150	156	160	162	152	157	160	162	150	154	160	162	147.75	152.75	158	162.25	
4	2/27/19	147	156	164	165	145	150	164	170	155	159	164	168	146	157	162	168	148.25	155.5	163.5	167.75	
5	2/28/19	155	165	169	171	160	165	168	172	158	164	169	173	148	155	162	164	155.25	162.25	167	170	

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-2-28	
Windrow Construction:			Date Commenced: 2-25-19	Date Completed: 2-28-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/25/19	Oscar Ochoa	20.93	27.21	44	22	
2/25/19	Oscar Ochoa	22.08	28.70	44	22	60
2/26/19	Oscar Ochoa	22.42	29.15	44	22	
2/26/19	Oscar Ochoa	19.39	25.21	44	22	60
2/27/19	Mike Bayne	21.70	28.21	44	22	
2/27/19	Mike Bayne	16.97	22.06	44	22	60
2/28/19	Mike Bayne	22.26	28.94	44	22	40
Totals		145.75	189.48	308.00	154.00	220.00
Windrow Construction ratio:		3.60 /1				
Note: Yard waste yards = number of buckets * 4.00						