

## Johnson, Sabrina O

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**From:** Wiesman, Ronald <WiesmanR@hillsboroughcounty.org>  
**Sent:** Friday, May 3, 2019 12:44 PM  
**To:** Morgan, Steve; Barker, Maurice; Kautz, Lance; SWD\_Waste  
**Cc:** Byer, Kimberly; Schinella, Beth; O'Neill, Joseph; Ruiz, Larry  
**Subject:** Hillsborough County April Composting Report  
**Attachments:** April2019 Rpt.pdf

Mr. Morgan,

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

Thank you,

### Ron Wiesman II

#### Manager

Solid Waste Management Division  
Transportation & Utilities Services

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**P:** (813) 671-7707 VOIP 42801

**M:** (813) 455-2194

**E:** [wiesmanr@HCFLGov.net](mailto:wiesmanr@HCFLGov.net)

**W:** <http://HCFLGOV.net>

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### Hillsborough County

15960 County Road 672 Lithia, FL 33547

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**SOLID WASTE MANAGEMENT**

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

**MEMORANDUM**

**DATE** May 3, 2019

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

**INFRASTRUCTURE SERVICES  
ADMINISTRATOR**

John Lyons

**FROM:** Ron Wiesman, Manager, Solid Waste Management Division

**SUBJECT:** Hillsborough County Biosolids Composting Monthly Report: April 2019

Biosolids Received (wet tons):	775.96 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"> <li>• All incoming biosolids were mixed with bulking agent and formed into windrows on the same day as received.</li> <li>• 5 windrows were formed and in active composting as of 4/30/19.</li> <li>• Windrow temperatures were monitored daily.</li> <li>• 8 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP).</li> <li>• 8 windrow has been turned.</li> <li>• Sampling was performed on April 17, 2019.</li> <li>• 296.54 tons of finished compost was picked up by Life Soils.</li> </ul>
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

<b>MSAP Process Temperature Chart Windrow# 19-3-5</b>																						
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	3/6/19	140	151	160	151	140	158	162	165	132	154	150	149	138	136	132	119	137.5	149.75	151	146	
2	3/7/19	146	154	159	152	145	158	166	170	141	150	152	157	141	138	135	130	143.25	150	153	152.25	
3	3/8/19	150	157	161	154	150	155	159	161	144	154	154	159	146	144	137	134	147.5	152.5	152.75	152	
4	3/9/19	148	156	160	156	149	151	155	166	148	155	154	160	152	154	148	141	149.25	154	154.25	155.75	
5	3/10/19																					
6	3/11/19	148	169	158	158	153	160	164	164	142	156	154	160	148	154	152	148	147.75	159.75	157	157.5	
7	3/12/19	146	150	157	163	140	143	149	161	140	148	154	163	140	151	156	164	141.5	148	154	162.75	
8	3/13/19	147	152	158	164	145	147	151	159	144	150	155	163	141	150	158	163	144.25	149.75	155.5	162.25	
9	3/14/19	148	156	161	161	158	166	172	173	148	161	164	164	142	156	162	162	149	159.75	164.75	165	
10	3/15/19	135	139	146	155	140	152	157	165	147	156	160	164	148	155	160	163	142.5	150.5	155.75	161.75	
11	3/16/19	136	140	144	149	141	148	152	159	143	149	153	161	151	159	162	166	142.75	149	152.75	158.75	
12	3/17/19																					
13	3/18/19	150	150	154	158	138	150	163	168	158	163	158	163	147	149	155	158	148.25	153	157.5	161.75	
14	3/19/19	148	156	161	164	151	158	161	162	151	163	162	164	142	146	157	161	148	155.75	160.25	162.75	
15	3/20/19	131	133	132	136	133	138	142	152	139	143	147	162	136	140	143	148	134.75	138.5	141	149.5	
16	3/21/19	133	135	135	138	135	140	145	152	142	146	151	163	139	144	148	149	137.25	141.25	144.75	150.5	
17	3/22/19	135	141	154	165	133	145	155	166	141	151	164	162	138	142	153	163	136.75	144.75	156.5	164	
18	3/23/19	137	145	157	169	136	150	157	169	144	156	167	163	140	144	157	168	139.25	148.75	159.5	167.25	
19	3/24/19																					
20	3/25/19	146	153	160	166	154	161	165	169	140	148	157	163	142	149	156	161	145.5	152.75	159.5	164.75	
21	3/26/19	149	156	162	168	153	163	167	173	143	150	159	165	145	152	160	163	147.5	155.25	162	167.25	
22	3/27/19	141	138	136	135	139	137	137	134	135	141	137	133	140	141	137	132	138.75	139.25	136.75	133.5	
23	3/28/19	144	141	140	140	156	159	157	152	144	146	145	141	143	147	145	138	146.75	148.25	146.75	142.75	
24	3/29/19	140	149	152	159	150	155	155	153	141	144	151	159	141	151	159	161	143	149.75	154.25	158	
25	3/30/19	147	152	158	157	149	151	153	158	142	148	158	160	147	153	160	163	146.25	151	157.25	159.5	
26	3/31/19																					
27	4/1/19	139	148	152	155	144	150	160	161	141	148	150	159	138	144	146	156	140.5	147.5	152	157.75	
28	4/2/19	140	151	155	163	148	151	159	162	144	147	159	160	141	148	155	161	143.25	149.25	157	161.5	
29	4/3/19	139	148	153	162	151	155	159	164	142	147	156	162	146	151	155	164	144.5	150.25	155.75	163	
30	4/4/19	140	144	144	159	144	148	150	159	144	149	153	160	143	155	159	162	142.75	149	151.5	160	
31	4/5/19	138	140	147	152	143	148	152	160	148	150	156	158	139	149	151	155	142	146.75	151.5	156.25	

## Attachment B

<b>MSAP Process Temperature Chart Windrow# 19-3-11</b>																						
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	3/12/19	149	152	156	159	155	158	158	155	148	156	161	161	151	156	157	155	150.75	155.5	158	157.5	
2	3/13/19	151	157	161	165	154	159	162	165	150	154	160	162	150	157	156	155	151.25	156.75	159.75	161.75	
3	3/14/19	156	154	151	140	161	162	160	157	150	154	160	164	154	154	153	150	155.25	156	156	152.75	
4	3/15/19	139	142	147	153	151	157	163	160	152	158	164	162	149	154	159	155	147.75	152.75	158.25	157.5	
5	3/16/19	140	144	151	155	149	154	159	159	150	160	166	164	155	159	166	158	148.5	154.25	160.5	159	
6	3/17/19																					
7	3/18/19	156	162	166	164	155	160	158	158	150	162	164	164	153	160	160	157	153.5	161	162	160.75	
8	3/19/19	150	163	168	168	161	166	161	160	138	153	156	160	135	146	155	159	146	157	160	161.75	
9	3/20/19	136	145	150	159	146	154	163	163	133	137	146	154	140	146	154	158	138.75	145.5	153.25	158.5	
10	3/21/19	154	160	160	158	158	164	160	158	142	151	160	166	156	166	166	160	152.5	160.25	161.5	160.5	
11	3/22/19	163	167	170	162	154	144	159	159	165	169	171	170	154	158	162	163	159	159.5	165.5	163.5	
12	3/23/19	166	169	173	166	157	148	158	160	168	171	173	171	158	161	166	167	162.25	162.25	167.5	166	
13	3/24/19																					
14	3/25/19	163	168	170	170	153	158	163	168	158	168	171	171	160	166	170	172	158.5	165	168.5	170.25	Turn
15	3/26/19	161	167	172	173	154	160	164	169	155	164	172	174	160	165	172	174	157.5	164	170	172.5	
16	3/27/19	148	154	157	163	150	160	167	170	156	164	168	173	161	166	170	172	153.75	161	165.5	169.5	
17	3/28/19	150	153	152	148	159	165	166	165	153	160	163	161	150	154	159	163	153	158	160	159.25	
18	3/29/19	145	151	156	163	150	152	157	163	160	163	165	169	140	144	151	161	148.75	152.5	157.25	164	
19	3/30/19	148	151	155	167	149	151	155	157	158	160	165	167	138	145	150	165	148.25	151.75	156.25	164	
20	3/31/19																					
21	4/1/19	160	160	162	166	150	151	155	150	158	151	166	170	150	155	157	165	154.5	154.25	160	162.75	Turn
22	4/2/19	160	163	166	170	150	153	162	162	159	160	165	166	153	159	161	166	155.5	158.75	163.5	166	
23	4/3/19	160	165	169	172	150	156	161	163	160	164	167	171	158	162	162	166	157	161.75	164.75	168	
24	4/4/19	151	156	166	167	159	160	163	167	154	159	161	166	150	152	155	166	153.5	156.75	161.25	166.5	
25	4/5/19	155	157	163	167	161	162	162	165	158	160	163	165	150	152	157	161	156	157.75	161.25	164.5	
26	4/6/19	158	161	167	171	165	167	170	170	160	165	161	172	149	158	163	168	158	162.75	165.25	170.25	
27	4/7/19																					
28	4/8/19	131	133	139	145	131	133	149	155	131	135	140	141	131	133	139	146	131	133.5	141.75	146.75	
29	4/9/19	133	135	139	141	132	135	137	134	132	134	136	137	131	132	134	136	132	134	136.5	137	

### Attachment C

<b>MSAP Process Temperature Chart Windrow# 19-3-16</b>																						
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	3/17/19																					
2	3/18/19	151	159	163	166	151	158	161	160	152	158	158	151	136	134	132	128	147.5	152.25	153.5	151.25	
3	3/19/19	144	148	150	149	139	137	135	132	137	142	146	144	138	140	137	132	139.5	141.75	142	139.25	
4	3/20/19	141	148	153	167	147	154	158	173	138	144	147	154	132	137	141	146	139.5	145.75	149.75	160	
5	3/21/19	143	151	159	168	148	157	160	172	142	150	152	156	135	141	144	149	142	149.75	153.75	161.25	
6	3/22/19	134	146	155	171	147	164	167	166	148	154	159	162	134	156	163	167	140.75	155	161	166.5	
7	3/23/19	138	149	157	173	153	165	170	168	152	156	161	166	138	160	164	169	145.25	157.5	163	169	
8	3/24/19																					
9	3/25/19	162	166	167	168	155	157	156	154	158	161	161	159	148	161	168	172	155.75	161.25	163	163.25	
10	3/26/19	163	168	168	168	156	160	161	158	157	162	163	162	150	161	169	173	156.5	162.75	165.25	165.25	
11	3/27/19	156	161	163	166	158	160	159	158	156	161	163	163	154	158	159	158	156	160	161	161.25	
12	3/28/19	149	162	168	171	161	166	166	165	158	162	161	157	161	165	166	166	157.25	163.75	165.25	164.75	
13	3/29/19	149	151	155	165	149	151	162	166	142	151	159	166	150	160	161	161	147.5	153.25	159.25	164.5	
14	3/30/19	150	155	157	163	147	150	157	165	148	155	160	165	152	158	160	165	149.25	154.5	158.5	164.5	
15	3/31/19																					
16	4/1/19	144	145	150	157	143	149	150	155	148	151	157	162	138	144	150	157	143.25	147.25	151.75	157.75	
17	4/2/19	140	144	151	155	140	148	150	155	150	155	162	165	140	144	151	160	142.5	147.75	153.5	158.75	Turn
18	4/3/19	151	157	162	164	146	149	152	157	157	160	164	168	144	149	154	161	149.5	153.75	158	162.5	
19	4/4/19	140	144	147	150	160	160	161	165	149	153	156	160	140	144	154	157	147.25	150.25	154.5	158	
20	4/5/19	143	147	147	148	158	160	165	167	148	152	156	161	145	148	155	162	148.5	151.75	155.75	159.5	
21	4/6/19	155	155	156	157	158	162	166	169	150	157	160	163	148	150	153	167	152.75	156	158.75	164	
22	4/7/19																					
23	4/8/19	149	153	155	158	159	162	164	166	151	156	159	162	148	152	155	161	151.75	155.75	158.25	161.75	Turn
24	4/9/19	132	134	136	134	131	133	136	141	132	134	135	134	132	133	135	138	131.75	133.5	135.5	136.75	
25	4/10/19	150	155	166	169	160	167	172	174	165	169	172	176	163	170	172	176	159.5	165.25	170.5	173.75	
26	4/11/19	144	161	170	174	169	176	177	178	167	175	176	176	166	171	175	178	161.5	170.75	174.5	176.5	
27	4/12/19	150	155	163	174	166	172	175	177	165	169	174	175	166	170	174	176	161.75	166.5	171.5	175.5	
28	4/13/19	141	151	163	173	155	159	167	173	150	158	162	171	152	157	163	169	149.5	156.25	163.75	171.5	
29	4/14/19																					
30	4/15/19	136	140	147	152	146	150	152	154	139	144	150	153	140	144	149	152	140.25	144.5	149.5	152.75	

## Attachment D

<b>MSAP Process Temperature Chart Windrow# 19-3-21</b>																						
<b>Temperature: Shading equals temperature 131 or greater for PFRP.</b>																						
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	3/22/19	158	160	163	155	141	148	152	154	133	143	149	155	156	145	141	139	147	149	151.25	150.75	
2	3/23/19	162	164	166	154	144	151	154	160	135	148	152	159	158	152	145	140	149.75	153.75	154.25	153.25	
3	3/24/19																					
4	3/25/19	163	163	157	152	158	161	163	163	163	163	158	145	157	154	150	146	160.25	160.25	157	151.5	
5	3/26/19	162	165	160	158	156	162	165	166	160	162	160	157	156	158	158	153	158.5	161.75	160.75	158.5	
6	3/27/19	159	162	161	157	158	164	168	170	145	158	164	165	137	145	152	155	149.75	157.25	161.25	161.75	
7	3/28/19	156	162	165	163	163	168	168	169	164	168	170	170	151	163	168	170	158.5	165.25	167.75	168	
8	3/29/19	155	160	161	161	150	158	160	163	153	159	160	163	158	160	163	161	154	159.25	161	162	
9	3/30/19	158	161	162	164	156	161	163	168	158	162	163	167	158	160	160	162	157.5	161	162	165.25	
10	3/31/19																					
11	4/1/19	149	147	150	154	150	153	159	163	148	148	152	161	148	150	155	159	148.75	149.5	154	159.25	
12	4/2/19	150	155	160	160	150	151	159	163	150	153	159	162	148	151	157	161	149.5	152.5	158.75	161.5	
13	4/3/19	153	156	159	163	156	159	164	171	153	156	161	168	152	156	161	165	153.5	156.75	161.25	166.75	
14	4/4/19	140	146	151	155	148	151	157	161	150	155	161	163	155	157	160	163	148.25	152.25	157.25	160.5	
15	4/5/19	144	148	151	156	150	155	161	167	163	159	161	165	158	161	163	165	153.75	155.75	159	163.25	
16	4/6/19	148	150	155	162	152	155	168	171	155	160	163	168	160	165	163	168	153.75	157.5	162.25	167.25	
17	4/7/19																					
18	4/8/19	152	159	163	166	149	153	152	152	154	156	160	164	148	152	153	156	150.75	155	157	159.5	
19	4/9/19	134	135	134	141	134	138	140	144	136	138	140	143	133	135	141	142	134.25	136.5	138.75	142.5	Turn
20	4/10/19	162	169	172	175	163	169	171	174	155	161	167	171	168	171	175	178	162	167.5	171.25	174.5	
21	4/11/19	171	176	176	175	168	174	177	179	158	165	173	176	172	178	179	179	167.25	173.25	176.25	177.25	
22	4/12/19	168	172	176	175	163	169	172	178	150	162	169	171	165	173	177	176	161.5	169	173.5	175	
23	4/13/19	159	165	170	174	158	163	168	172	159	167	170	173	160	165	171	178	159	165	169.75	174.25	
24	4/14/19																					
25	4/15/19	154	158	160	160	143	158	164	168	159	164	166	166	148	165	168	168	151	161.25	164.5	165.5	Turn
26	4/16/19	170	167	162	152	166	170	170	166	160	162	161	154	152	154	153	146	162	163.25	161.5	154.5	
27	4/17/19	160	165	164	164	167	170	171	169	164	167	168	166	155	157	159	163	161.5	164.75	165.5	165.5	
28	4/18/19	157	162	167	174	149	154	165	170	160	164	168	173	159	165	169	172	156.25	161.25	167.25	172.25	
29	4/19/19	140	152	158	163	155	158	150	150	148	155	160	163	152	159	166	169	148.75	156	158.5	161.25	
30	4/20/19	144	152	156	161	155	160	161	163	150	154	161	164	155	159	160	163	151	156.25	159.5	162.75	

## Attachment E

<b>MSAP Process Temperature Chart Windrow# 19-3-26</b>																						
<b>Temperature: Shading equals temperature 131 or greater for PFRP.</b>																						
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	3/27/19	141	140	137	134	159	159	157	154	158	157	155	144	161	163	156	150	154.75	154.75	151.25	145.5	
2	3/28/19	161	163	163	164	154	161	164	163	162	166	166	158	158	166	171	155	158.75	164	166	160	
3	3/29/19	140	149	150	157	150	155	158	162	151	153	166	162	151	155	163	163	148	153	159.25	161	
4	3/30/19	138	140	157	163	147	152	158	157	156	160	165	167	155	160	162	163	149	153	160.5	162.5	
5	3/31/19																					
6	4/1/19	140	144	141	139	144	151	155	157	151	155	163	161	152	154	160	163	146.75	151	154.75	155	
7	4/2/19	138	144	151	160	144	148	152	159	150	153	160	162	150	155	166	165	145.5	150	157.25	161.5	
8	4/3/19	141	150	157	166	147	152	157	164	149	154	159	163	152	156	163	165	147.25	153	159	164.5	
9	4/4/19	144	154	160	165	150	157	163	165	151	155	159	166	160	163	166	171	151.25	157.25	162	166.75	
10	4/5/19	146	151	155	162	154	155	157	160	158	161	163	163	158	161	165	169	154	157	160	163.5	
11	4/6/19	152	155	158	166	155	157	160	162	160	165	166	166	158	166	166	171	156.25	160.75	162.5	166.25	
12	4/7/19																					
13	4/8/19	134	136	148	154	149	155	160	161	152	155	157	160	149	163	157	160	146	152.25	155.5	158.75	
14	4/9/19	131	134	137	148	132	134	136	140	132	135	138	141	132	133	135	140	131.75	134	136.5	142.25	Turn
15	4/10/19	140	150	152	162	144	155	160	165	144	147	150	153	139	143	150	152	141.75	148.75	153	158	
16	4/11/19	142	148	156	161	148	160	165	167	143	146	148	156	136	144	152	158	142.25	149.5	155.25	160.5	
17	4/12/19	145	153	155	163	150	157	162	166	148	150	152	158	140	148	152	157	145.75	152	155.25	161	
18	4/13/19	145	151	160	169	149	156	162	171	142	149	154	168	150	155	162	171	146.5	152.75	159.5	169.75	
19	4/14/19																					
20	4/15/19	142	146	152	161	140	146	151	153	152	155	157	158	141	145	159	160	143.75	148	154.75	158	Turn
21	4/16/19	152	162	170	171	162	165	169	171	159	166	170	172	163	166	166	162	159	164.75	168.75	169	
22	4/17/19	157	163	169	171	161	166	170	172	158	162	168	169	158	165	166	168	158.5	164	168.25	170	
23	4/18/19	160	164	168	172	162	166	171	173	155	162	169	172	153	156	165	173	157.5	162	168.25	172.5	
24	4/19/19	155	162	166	170	144	156	163	171	162	166	166	171	150	155	160	166	152.75	159.75	163.75	169.5	
25	4/20/19	152	159	162	166	151	155	159	165	161	163	166	171	153	158	161	163	154.25	158.75	162	166.25	
26	4/21/19																					
27	4/22/19	148	153	157	169	148	150	157	165	133	136	140	145	140	143	145	150	142.25	145.5	149.75	157.25	
28	4/23/19	150	152	157	157	141	146	154	161	141	148	154	157	140	158	166	166	143	151	157.75	160.25	
29	4/24/19	142	148	150	153	138	141	145	149	141	143	149	151	132	136	140	144	138.25	142	146	149.25	Turn
30	4/25/19	147	153	158	162	140	145	148	153	145	149	152	145	135	137	144	149	141.75	146	150.5	152.25	
31	4/26/19	155	159	160	162	143	148	151	155	146	150	151	155	138	142	148	150	145.5	149.75	152.5	155.5	

## Attachment F

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 19-4-1	
Windrow Construction:			Date Commenced: 3-27-19		Date Completed: 4-1-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/27/19	Jerry Devoe	21.90	28.47	44	22	
3/27/19	Jerry Devoe	21.41	27.83	44	22	60
3/28/19	Jerry Devoe	23.50	30.55	44	22	
3/28/19	Oscar Ochoa	18.83	24.48	44	22	60
3/29/19	Oscar Ochoa	18.44	23.97	44	22	40
3/30/19	Mike Bayne	19.97	25.96	44	22	
3/30/19	Mike Bayne	22.25	28.93	44	22	60
4/1/19	Mike Bayne	21.65	28.15	44	22	50
Totals		167.95	218.34	352.00	176.00	270.00
Windrow Construction ratio:			3.65 /1			
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 19-4-1																						
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	4/2/19	139	132	131	131	144	139	136	134	149	141	139	136	150	148	144	141	145.5	140	137.5	135.5	
2	4/3/19	160	165	167	167	162	165	169	169	156	159	145	140	155	157	148	144	158.25	161.5	157.25	155	
3	4/4/19	149	153	158	163	155	159	162	166	154	159	154	146	158	159	152	148	154	157.5	156.5	155.75	
4	4/5/19	158	161	163	166	158	162	165	168	157	160	159	152	161	164	160	156	158.5	161.75	161.75	160.5	
5	4/6/19	150	163	168	172	160	163	168	171	160	163	160	156	161	163	162	158	157.75	163	164.5	164.25	
6	4/7/19																					
7	4/8/19	153	159	163	167	159	162	165	166	156	159	161	163	159	161	162	163	156.75	160.25	162.75	164.75	
8	4/9/19	135	138	141	154	138	142	145	147	137	139	141	144	137	140	142	145	136.75	139.75	142.25	147.5	
9	4/10/19	151	157	160	163	160	166	160	158	144	155	159	161	140	146	151	162	148.75	156	157.5	161	
10	4/11/19	154	160	165	165	149	154	166	166	148	159	166	166	144	148	156	163	148.75	155.25	163.25	165	
11	4/12/19	151	160	166	165	151	159	163	167	153	160	164	167	152	157	160	164	151.75	159	163.25	165.75	
12	4/13/19	160	166	169	171	163	168	171	170	160	165	168	168	157	160	165	169	160	164.75	168.25	169.5	
13	4/14/19																					
14	4/15/19	149	157	164	165	143	152	158	164	148	158	162	166	151	156	162	165	147.75	155.75	161.5	165	Turn
15	4/16/19	152	160	168	167	156	162	165	172	155	162	166	172	152	161	166	165	153.75	161.25	166.25	169	
16	4/17/19	156	164	170	168	160	166	168	171	158	164	168	171	157	166	168	169	157.75	165	168.5	169.75	
17	4/18/19	163	167	172	170	159	163	166	175	159	163	170	174	161	166	174	177	160.5	164.75	170.5	174	
18	4/19/19	158	166	169	170	155	166	170	171	155	160	166	171	160	163	169	172	157	163.75	168.5	171	
19	4/20/19	160	162	168	171	150	157	160	166	155	162	169	170	160	160	160	163	156.25	160.25	164.25	167.5	
20	4/21/19																					
21	4/22/19	144	147	153	165	134	138	144	160	132	140	140	145	140	144	144	149	137.5	142.25	145.25	154.75	
22	4/23/19	161	169	173	162	145	148	150	153	144	146	152	156	154	158	162	166	151	155.25	159.25	159.25	
23	4/24/19	150	153	160	161	144	150	157	163	144	149	157	162	151	155	155	150	147.25	151.75	157.25	159	Turn
24	4/25/19	155	159	162	165	148	153	159	162	146	150	154	159	154	159	163	169	150.75	155.25	159.5	163.75	
25	4/26/19	158	161	163	164	151	158	161	165	150	153	157	160	159	161	165	172	154.5	158.25	161.5	165.25	
26	4/27/19	160	165	164	163	153	160	165	167	157	166	167	167	161	166	167	171	157.75	164.25	165.75	167	
27	4/28/19																					
28	4/29/19	150	161	167	172	148	155	159	165	135	141	152	159	136	148	157	164	142.25	151.25	158.75	165	
29	4/30/19	155	162	166	165	157	163	166	172	148	155	161	166	152	149	150	156	153	157.25	160.75	164.75	



## Attachment G

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-4-5		
Windrow Construction:		Date Commenced: 4-1-19		Date Completed: 4-5-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/1/19	Mike Bayne	20.79	27.03	44	22	50
4/2/19	Mike Bayne	20.28	26.36	44	22	
4/2/19	Mike Bayne	21.69	28.20	44	22	60
4/3/19	Oscar Ochoa	23.49	30.54	44	22	
4/3/19	Oscar Ochoa	21.72	28.24	44	22	60
4/4/19	Oscar Ochoa	21.61	28.09	44	22	40
4/5/19	Jerry Devoe	23.67	30.77	44	22	
4/5/19	Jerry Devoe	21.60	28.08	44	22	50
Totals		174.85	227.31	352.00	176.00	260.00
Windrow Construction ratio:		3.47 /1				

MSAP Process Temperature Chart Windrow# 19-4-5																						
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	4/6/19	145	143	140	135	150	147	143	136	150	147	143	139	149	146	141	138	148.5	145.75	141.75	137	
2	4/7/19																					
3	4/8/19	145	148	153	145	138	141	151	140	156	153	150	147	156	154	141	139	148.75	149	148.75	142.75	
4	4/9/19	136	140	142	145	133	136	134	145	134	136	142	152	131	133	137	141	133.5	136.25	138.75	145.75	
5	4/10/19	140	148	153	159	157	160	158	155	150	158	156	156	144	152	152	148	147.75	154.5	154.75	154.5	
6	4/11/19	141	151	159	160	162	164	161	157	155	166	158	158	148	162	158	154	151.5	160.75	159	157.25	
7	4/12/19	150	155	161	160	165	169	161	160	157	163	156	160	150	157	161	160	155.5	161	159.75	160	
8	4/13/19	145	154	160	161	140	146	152	163	140	148	154	160	147	155	162	161	143	150.75	157	161.25	
9	4/14/19																					
10	4/15/19	139	145	149	154	141	152	161	164	140	146	153	158	151	160	166	168	142.75	150.75	157.25	161	
11	4/16/19	151	156	164	168	153	156	159	162	151	158	165	165	164	168	170	170	154.75	159.5	164.5	166.25	
12	4/17/19	150	154	165	170	151	157	163	167	150	156	165	167	160	168	172	173	152.75	158.75	166.25	169.25	
13	4/18/19	136	139	145	154	146	152	156	162	148	154	160	162	150	157	161	166	145	150.5	155.5	161	
14	4/19/19	133	135	141	152	150	152	159	160	150	152	161	165	150	155	166	167	145.75	148.5	156.75	161	
15	4/20/19	136	139	140	148	152	155	160	161	152	160	163	165	148	152	161	165	147	151.5	156	159.75	
16	4/21/19																					
17	4/22/19	136	144	148	152	149	155	159	161	148	141	148	156	136	144	148	152	142.25	146	150.75	155.25	Turn
18	4/23/19	138	144	149	154	145	150	152	156	150	158	152	154	138	144	150	155	142.75	149	150.75	154.75	
19	4/24/19	140	144	152	156	138	140	145	151	153	160	163	166	140	143	152	157	142.75	146.75	153	157.5	
20	4/25/19	145	150	156	159	142	146	149	154	156	163	169	166	144	147	154	160	146.75	151.5	157	159.75	
21	4/26/19	150	153	158	160	147	150	152	156	159	161	168	166	150	157	160	162	151.5	155.25	159.5	161	
22	4/27/19	155	153	153	150	151	155	157	159	162	163	163	165	155	166	171	173	155.75	159.25	161	161.75	
23	4/28/19																					
24	4/29/19	162	166	170	172	140	148	155	161	142	146	150	155	148	156	162	165	148	154	159.25	163.25	Turn
25	4/30/19	166	169	172	174	150	157	166	169	161	156	163	165	155	159	162	161	158	160.25	165.75	167.25	

## Attachment H

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-4-11		
Windrow Construction:			Date Commenced: 4-6-19		Date Completed: 4-11-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/6/19	Jerry Devoe	22.64	29.43	44	22	50
4/8/19	Oscar Ochoa	21.47	27.91	44	22	
4/8/19	Mike Bayne	21.74	28.26	44	22	60
4/9/19	Oscar Ochoa	21.72	28.24	44	22	
4/9/19	Oscar Ochoa	21.66	28.16	44	22	60
4/10/19	Oscar Ochoa	21.85	28.41	44	22	
4/10/19	Mike Bayne	21.66	28.16	44	22	60
4/11/19	Mike Bayne	21.72	28.24	44	22	50
<b>Totals</b>		174.46	226.80	352.00	176.00	280.00
<b>Windrow Construction ratio:</b>		3.56 /1				

<b>MSAP Process Temperature Chart Windrow# 19-4-11</b>																						
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	4/12/19	136	140	141	138	140	144	138	136	140	136	133	132	145	140	138	136	140.25	140	137.5	135.5	
2	4/13/19	148	152	152	148	158	156	154	150	155	159	162	162	156	145	142	138	154.25	153	152.5	149.5	
3	4/14/19																					
4	4/15/19	158	159	159	159	150	155	158	161	152	156	158	156	161	161	152	146	155.25	157.75	156.75	155.5	
5	4/16/19	152	156	156	154	154	162	160	158	156	162	154	151	158	161	159	152	155	160.25	157.25	153.75	
6	4/17/19	150	157	160	160	161	165	161	158	158	161	155	151	153	161	164	156	155.5	161	160	156.25	
7	4/18/19	150	155	160	160	156	158	162	160	150	158	158	154	152	159	163	158	152	157.5	160.75	158	
8	4/19/19	149	156	162	161	156	158	162	161	150	155	159	156	155	160	162	161	152.5	157.25	161.25	159.75	
9	4/20/19	146	152	161	161	152	159	160	161	149	154	159	155	155	160	162	160	150.5	156.25	160.5	159.25	
10	4/21/19																					
11	4/22/19	150	150	155	162	148	155	158	161	149	156	148	156	158	161	161	162	151.25	155.5	155.5	160.25	
12	4/23/19	151	154	156	157	157	162	164	164	165	171	166	159	154	163	168	168	156.75	162.5	163.5	162	
13	4/24/19	132	138	141	148	138	141	144	147	148	151	155	151	141	147	153	157	139.75	144.25	148.25	150.75	
14	4/25/19	137	143	148	155	141	142	146	152	154	150	157	162	150	158	165	169	145.5	148.25	154	159.5	
15	4/26/19	141	148	155	160	143	148	151	155	153	158	161	165	159	163	168	170	149	154.25	158.75	162.5	
16	4/27/19	152	157	163	167	153	157	163	165	161	166	167	170	161	166	169	172	156.75	161.5	165.5	168.5	
17	4/28/19																					
18	4/29/19	138	145	150	156	142	148	154	158	139	142	148	156	157	162	166	168	144	149.25	154.5	159.5	Turn
19	4/30/19	140	147	152	159	155	159	161	163	144	149	152	161	160	167	170	172	149.75	155.5	158.75	163.75	

## Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-4-16		
Windrow Construction:			Date Commenced: 4-11-19		Date Completed: 4-16-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/11/19	Mike Bayne	21.34	27.74	44	22	50
4/12/19	Jerry Devoe	21.85	28.41	44	22	
4/12/19	Jerry Devoe	21.87	28.43	44	22	60
4/13/19	Jerry Devoe	22.45	29.19	44	22	
4/13/19	Jerry Devoe	20.27	26.35	44	22	60
4/15/19	Oscar Ochoa	22.06	28.68	44	22	
4/15/19	Oscar Ochoa	21.84	28.39	44	22	60
4/16/19	Mike Bayne	22.09	28.72	44	22	50
<b>Totals</b>		173.77	225.90	352.00	176.00	280.00
<b>Windrow Construction ratio:</b>		3.58 /1				

<b>MSAP Process Temperature Chart Windrow# 19-4-16</b>																						
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	4/17/19	138	142	147	144	144	148	150	150	136	143	140	135	134	132	128	126	138	141.25	141.25	138.75	
2	4/18/19	141	146	154	151	147	150	152	148	140	148	144	138	138	135	132	130	141.5	144.75	145.5	141.75	
3	4/19/19	138	146	155	156	147	152	150	152	148	155	156	145	146	148	140	135	144.75	150.25	150.25	147	
4	4/20/19	139	144	150	156	152	155	151	156	150	157	160	152	152	156	148	140	148.25	153	152.25	151	
5	4/21/19																					
6	4/22/19	138	141	153	162	149	152	157	159	152	157	159	160	156	158	156	152	148.75	152	156.25	158.25	
7	4/23/19	165	161	164	167	148	155	161	166	155	158	154	148	158	160	158	156	156.5	158.5	159.25	159.25	
8	4/24/19	132	138	141	148	138	141	144	147	148	151	155	151	141	147	153	165	139.75	144.25	148.25	152.75	
9	4/25/19	134	143	149	154	149	154	159	163	153	157	160	162	140	132	134	138	144	146.5	150.5	154.25	
10	4/26/19	138	148	154	155	153	158	161	165	155	158	161	164	138	136	138	140	146	150	153.5	156	
11	4/27/19	144	151	155	163	157	161	166	171	155	160	161	164	139	142	144	151	148.75	153.5	156.5	162.25	
12	4/28/19																					
13	4/29/19	140	148	156	164	144	154	158	162	161	166	179	172	156	163	166	170	150.25	157.75	164.75	167	
14	4/30/19	155	159	161	166	151	155	159	159	161	167	169	172	160	162	167	170	156.75	160.75	164	166.75	

### Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 19-4-24		
Windrow Construction:			Date Commenced: 4-16-19		Date Completed: 4-24-19	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/16/19	Mike Bayne	21.65	28.15	44	22	50
4/17/19	Mike Bayne	21.94	28.52	44	22	50
4/22/19	Jerry Devoe	22.10	28.73	44	22	
4/22/19	Oscar Ochoa	10.93	14.21	44	22	60
4/23/19	Oscar Ochoa	21.47	27.91	44	22	
4/23/19	Oscar Ochoa	23.55	30.62	44	22	60
4/24/19	Oscar Ochoa	23.37	30.38	44	22	
4/24/19	Mike Bayne	21.14	27.48	44	22	60
<b>Totals</b>		166.15	216.00	352.00	176.00	280.00
<b>Windrow Construction ratio:</b>		3.74 /1				

<b>MSAP Process Temperature Chart Windrow# 19-4-24</b>																						
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	4/25/19	156	163	163	168	151	155	157	156	132	134	135	139	134	138	140	142	143.25	147.5	148.75	151.25	
2	4/26/19	165	168	168	172	157	160	158	160	131	136	138	140	136	138	142	144	147.25	150.5	151.5	154	
3	4/27/19	165	166	171	173	163	166	169	171	144	150	155	144	154	150	148	146	156.5	158	160.75	158.5	
4	4/28/19																					
5	4/29/19	145	161	166	168	151	162	165	165	157	158	153	145	156	158	157	150	152.25	159.75	160.25	157	
6	4/30/19	150	152	159	161	155	159	161	162	160	166	171	170	151	155	160	163	154	158	162.75	164	