



PUBLIC WORKS

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MEMORANDUM

DATE June 9, 2017

TO: Steve Morgan, Environmental Permitting Manager, FDEP
Lance Kautz, Environmental Specialist I, FDEP

FROM: Larry Ruiz, Section Manager, Public Works, SWMD

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: April 2017

Biosolids Received (wet tons):	1539.39 tons received 5/1 through 5/31
Source of Biosolids:	Hillsborough County Falkenburg AWWTP
Source of Bulking Agent:	Hillsborough County South County Yard Waste Processing Site
General Description of Activities:	All incoming biosolids were mixed with bulking agent and formed into windrows on the same day as received. 9 total windrows are in active composting as of 5/31/17. Windrow temperatures were monitored daily. 10 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). 12 windrows have been turned. The previous 8 windrows have been moved to the curing section and combined for a total of 8 curing windrows. Sampling was performed on May 24, 2017. 1049.20 tons of compost was picked up by Life Soils.
Attachments:	A-Q: Windrow construction and temperature records.

LER/rww
Attachments

CC: Beth Schinella, Division Director, Utility Operations, PUD
Kim Byer, Division Director, Solid Waste Management Division, PWD
Ron Wiesman, Manager, Southeast County Landfill, PWD/SWMD

Attachment A

MSAP Process Temperature Chart Windrow# 17-4-4																						
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	4/5/17	155	158	144	128	163	164	140	127	161	153	144	125	164	152	141	120	160.75	156.75	142.25	125	
2	4/6/17	150	160	151	142	165	164	161	141	168	164	160	148	166	160	150	143	162.25	162	155.5	143.5	
3	4/7/17	162	161	158	142	160	161	160	143	163	162	160	151	158	156	151	142	160.75	160	157.25	144.5	
4	4/8/17	163	162	160	142	160	162	161	150	161	162	159	152	150	156	150	141	158.5	160.5	157.5	146.25	
5	4/9/17																					
6	4/10/17	158	162	151	137	165	166	163	154	160	164	156	145	162	166	159	152	161.25	164.5	157.25	147	
7	4/11/17	145	162	156	143	151	166	163	154	156	164	158	147	153	166	160	150	151.25	164.5	159.25	148.5	
8	4/12/17	142	158	160	153	150	161	163	160	158	160	160	159	160	161	160	160	152.5	160	160.75	158	
9	4/13/17	140	143	151	160	150	153	160	162	142	148	151	153	148	152	158	162	145	149	155	159.25	
10	4/14/17	140	148	152	160	155	156	160	161	142	150	153	156	149	156	160	162	146.5	152.5	156.25	159.75	
11	4/15/17	140	150	158	160	158	160	161	160	143	153	158	158	153	160	161	162	148.5	155.75	159.5	160	
12	4/16/17																					
13	4/17/17	144	162	158	148	152	164	164	159	139	162	161	154	146	167	164	156	145.25	163.75	161.75	154.25	
14	4/18/17	150	166	162	152	151	165	162	154	141	164	163	156	146	164	160	151	147	164.75	161.75	153.25	
15	4/19/17	151	161	163	162	150	160	161	163	150	160	161	161	142	148	152	163	148.25	157.25	159.25	162.25	
16	4/20/17	140	158	163	163	152	160	162	162	158	161	161	163	158	161	161	163	152	160	161.75	162.75	
17	4/21/17	141	143	150	148	131	141	143	150	141	143	143	148	132	140	143	151	136.25	141.75	144.75	149.25	Turn
18	4/22/17	148	158	160	160	152	161	162	162	158	160	160	160	150	160	163	170	152	159.75	161.25	163	
19	4/23/17																					
20	4/24/17	149	165	172	166	158	167	175	173	150	165	172	171	137	159	169	175	148.5	164	172	171.25	
21	4/25/17	129	152	164	171	145	147	155	168	151	161	168	170	130	148	154	168	138.75	152	160.25	169.25	
22	4/26/17	138	141	155	160	150	150	153	158	151	153	153	160	140	143	148	161	144.75	146.75	152.25	159.75	Turn
23	4/27/17	150	158	162	163	148	158	161	162	140	156	163	168	150	152	161	161	147	156	161.75	163.5	
24	4/28/17	150	160	163	170	150	158	160	162	140	161	140	162	158	156	166	166	149.5	158.75	157.25	165	
25	4/29/17	150	158	161	163	152	162	166	167	150	163	158	166	158	162	168	168	152.5	161.25	163.25	166	
26	4/30/17																					
27	5/1/17	152	168	168	165	150	168	172	170	148	166	170	170	154	166	170	170	151	167	170	168.75	
28	5/2/17	164	168	168	164	161	169	172	170	168	170	168	168	164	168	168	170	164.25	168.75	169	168	Turn
29	5/3/17	162	168	169	168	160	170	172	172	161	168	171	170	158	168	170	171	160.25	168.5	170.5	170.25	
30	5/4/17	162	165	170	169	160	170	172	172	161	168	171	170	158	168	170	171	160.25	167.75	170.75	170.5	

Attachment B

MSAP Process Temperature Chart Windrow# 17-4-7																						
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	4/8/17	132	131	128	123	132	130	123	120	151	158	120	108	161	162	156	148	144	145.25	131.75	124.75	
2	4/9/17																					
3	4/10/17	162	166	162	155	160	163	148	125	145	138	127	111	158	141	154	145	156.25	152	147.75	134	
4	4/11/17	158	166	159	152	158	162	152	136	156	152	144	132	160	162	158	150	158	160.5	153.25	142.5	
5	4/12/17	138	161	166	162	143	141	155	152	152	160	158	153	153	162	166	161	146.5	156	161.25	157	
6	4/13/17	148	152	158	161	150	153	160	162	150	158	162	162	143	148	161	163	147.75	152.75	160.25	162	
7	4/14/17	150	155	160	162	153	159	162	162	149	158	161	160	142	154	161	163	148.5	156.5	161	161.75	
8	4/15/17	152	162	166	164	161	163	163	161	148	158	161	158	140	160	162	166	150.25	160.75	163	162.25	
9	4/16/17																					
10	4/17/17	132	154	166	169	135	162	164	154	150	152	168	168	142	147	170	166	139.75	153.75	167	164.25	
11	4/18/17	136	155	166	166	139	164	164	153	149	151	166	167	141	148	170	169	141.25	154.5	166.5	163.75	
12	4/19/17	142	160	163	170	140	143	160	163	148	150	162	164	140	151	158	160	142.5	151	160.75	164.25	
13	4/20/17	152	161	170	171	141	158	162	163	148	150	160	161	133	143	158	160	143.5	153	162.5	163.75	
14	4/21/17	150	160	163	170	140	158	161	163	148	150	159	160	138	151	153	160	144	154.75	159	163.25	
15	4/22/17	142	158	163	170	150	160	163	163	150	154	156	158	133	152	161	163	143.75	156	160.75	163.5	
16	4/23/17																					
17	4/24/17	138	150	165	167	132	157	165	156	140	152	148	152	131	145	166	165	135.25	151	161	160	
18	4/25/17	131	154	166	167	130	150	160	154	139	152	145	153	130	138	162	165	132.5	148.5	158.25	159.75	
19	4/26/17	140	143	152	152	142	151	153	160	151	158	161	163	151	153	160	164	146	151.25	156.5	159.75	Turn
20	4/27/17	150	161	170	172	148	160	161	163	150	153	162	162	140	152	160	161	147	156.5	163.25	164.5	
21	4/28/17	151	160	162	168	150	158	161	163	143	151	152	161	140	148	152	160	146	154.25	156.75	163	
22	4/29/17	150	160	162	162	148	152	158	161	138	143	152	160	143	152	160	163	144.75	151.75	158	161.5	
23	4/30/17																					
24	5/1/17	158	164	170	171	155	162	168	170	146	158	170	172	148	162	170	171	151.75	161.5	169.5	171	Turn
25	5/2/17	160	168	164	161	152	164	170	168	147	158	164	166	149	158	166	165	152	162	166	165	
26	5/3/17	156	166	166	165	150	162	170	168	144	156	167	170	146	157	169	170	149	160.25	168	168.25	
27	5/4/17	154	162	168	170	148	158	169	168	142	156	168	170	144	158	172	173	147	158.5	169.25	170.25	
28	5/5/17	154	160	168	168	149	154	164	166	148	158	162	166	144	156	170	170	148.75	157	166	167.5	
29	5/6/17	152	158	164	166	148	152	160	162	150	158	160	162	142	150	166	168	148	154.5	162.5	164.5	
30	5/7/17																					
31	5/8/17	152	156	160	162	148	150	156	160	148	152	158	160	140	146	150	154	147	151	156	159	
32	5/9/17	152	154	159	160	148	150	155	160	148	152	156	158	138	142	144	149	146.5	149.5	153.5	156.75	

Attachment C

MSAP Process Temperature Chart Windrow# 17-4-12																						
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	4/13/17	154	150	140	132	140	140	120	112	146	138	124	118	150	142	131	126	147.5	142.5	128.75	122	
2	4/14/17	160	160	148	138	144	144	132	124	152	148	138	126	154	152	142	138	152.5	151	140	131.5	
3	4/15/17	158	158	150	148	151	156	143	141	156	146	144	141	156	143	152	146	155.25	150.75	147.25	144	
4	4/16/17																					
5	4/17/17	160	162	156	152	160	162	152	150	161	164	152	149	160	162	150	152	160.25	162.5	152.5	150.75	
6	4/18/17	158	160	163	162	162	163	156	150	158	160	158	150	154	157	158	158	158	158	158.75	155	
7	4/19/17	160	162	165	163	158	160	156	150	158	160	154	150	152	157	158	158	157	159.75	158.25	155.25	
8	4/20/17	158	161	164	161	160	162	156	151	159	161	154	151	150	156	159	160	156.75	160	158.25	155.75	
9	4/21/17	150	153	160	161	151	152	150	158	143	153	158	161	150	152	160	160	148.5	152.5	157	160	
10	4/22/17	150	158	160	161	140	156	160	160	140	142	150	160	132	143	152	160	140.5	149.75	155.5	160.25	
11	4/23/17																					
12	4/24/17	140	163	163	156	136	157	161	146	148	161	157	146	146	156	162	163	142.5	159.25	160.75	152.75	
13	4/25/17	138	148	160	158	142	148	160	152	137	157	157	148	146	134	151	162	140.75	146.75	157	155	
14	4/26/17	138	140	150	153	150	151	158	160	152	153	160	162	148	152	158	161	147	149	156.5	159	
15	4/27/17	138	150	152	158	145	131	140	150	150	158	160	161	150	152	151	150	145.75	147.75	150.75	154.75	
16	4/28/17	139	152	153	158	138	141	143	150	150	152	160	161	153	160	161	160	145	151.25	154.25	157.25	
17	4/29/17	140	143	152	160	148	152	153	161	148	150	158	162	140	148	152	161	144	148.25	153.75	161	
18	4/30/17																					
19	5/1/17	142	143	156	156	148	136	158	160	148	164	161	153	140	135	143	154	144.5	144.5	154.5	155.75	
20	5/2/17	140	156	161	159	146	142	160	159	147	164	162	156	140	144	148	155	143.25	151.5	157.75	157.25	
21	5/3/17	138	151	160	158	146	156	164	162	146	157	160	152	138	157	158	158	142	155.25	160.5	157.5	
22	5/4/17	136	143	160	160	142	141	163	160	142	152	163	156	136	158	160	161	139	148.5	161.5	159.25	
23	5/5/17	133	140	141	143	140	151	152	152	143	148	151	151	138	140	150	157	138.5	144.75	148.5	150.75	
24	5/6/17	152	155	158	162	144	151	156	162	156	160	156	154	136	140	144	146	147	151.5	153.5	156	Turn
25	5/7/17																					
26	5/8/17	150	154	160	162	156	154	152	152	160	162	154	154	154	156	154	152	155	156.5	155	155	
27	5/9/17	148	156	162	152	154	154	152	151	156	160	154	152	154	154	152	151	153	156	155	151.5	
28	5/10/17	158	155	152	150	150	151	150	150	148	152	154	150	152	151	150	150	152	152.25	151.5	150	
29	5/11/17	168	172	164	162	170	170	160	158	164	166	164	160	164	161	156	156	166.5	167.25	161	159	Turn
30	5/12/17	162	170	170	170	160	166	166	162	160	165	168	166	162	166	160	158	161	166.75	166	164	
31	5/13/17	158	162	167	171	156	161	166	169	158	162	164	170	160	164	168	170	158	162.25	166.25	170	

Attachment D

MSAP Process Temperature Chart Windrow# 17-4-15																						
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	4/16/17																					
2	4/17/17	161	166	158	149	164	160	152	141	159	155	131	114	167	162	151	130	162.75	160.75	148	133.5	
3	4/18/17	163	166	160	148	163	166	160	150	158	159	138	123	158	166	164	154	160.5	164.25	155.5	143.75	
4	4/19/17	132	150	158	160	152	160	160	162	153	162	163	163	145	160	161	162	145.5	158	160.5	161.75	
5	4/20/17	133	151	161	161	153	160	160	152	142	158	161	163	158	161	163	162	146.5	157.5	161.25	159.5	
6	4/21/17	133	158	161	161	150	160	161	160	147	158	161	163	140	148	153	162	142.5	156	159	161.5	
7	4/22/17	140	161	162	162	142	158	161	162	150	158	153	151	140	151	158	160	143	157	158.5	158.75	
8	4/23/17																					
9	4/24/17	142	155	163	163	144	158	165	163	150	161	159	151	143	156	161	157	144.75	157.5	162	158.5	
10	4/25/17	140	141	160	164	146	131	152	158	134	154	157	150	142	136	154	154	140.5	140.5	155.75	156.5	
11	4/26/17	140	150	152	160	150	150	160	163	148	152	153	160	140	143	150	153	144.5	148.75	153.75	159	
12	4/27/17	140	151	158	158	160	161	158	153	150	158	160	160	152	158	158	160	150.5	157	158.5	157.75	
13	4/28/17	150	152	158	160	140	151	160	162	143	152	158	160	158	161	160	160	147.75	154	159	160.5	
14	4/29/17	146	141	143	160	150	158	162	162	160	163	161	160	140	142	150	161	149	151	154	160.75	
15	4/30/17																					
16	5/1/17	140	154	160	161	148	156	162	161	140	154	160	162	139	154	160	163	141.75	154.5	160.5	161.75	
17	5/2/17	136	152	160	161	145	154	162	162	136	152	162	164	134	149	158	161	137.75	151.75	160.5	162	
18	5/3/17	135	150	161	160	142	153	162	162	136	151	162	162	135	148	162	162	137	150.5	161.75	161.5	
19	5/4/17	136	151	160	161	140	152	162	161	136	152	162	161	136	148	161	160	137	150.75	161.25	160.75	
20	5/5/17	134	150	160	160	138	151	161	160	134	151	162	161	135	146	160	160	135.25	149.5	160.75	160.25	Turn
21	5/6/17	138	150	158	161	140	153	162	159	137	153	161	163	136	150	161	161	137.75	151.5	160.5	161	
22	5/7/17																					
23	5/8/17	156	153	151	149	152	151	150	149	148	151	150	150	156	155	152	150	153	152.5	150.75	149.5	
24	5/9/17	158	158	164	159	155	158	156	154	154	158	156	155	158	160	158	158	156.25	158.5	158.5	156.5	
25	5/10/17	162	167	167	164	158	164	163	160	159	164	165	163	159	165	167	164	159.5	165	165.5	162.75	
26	5/11/17	160	160	165	165	158	162	164	162	158	163	166	168	158	162	166	168	158.5	161.75	165.25	165.75	
27	5/12/17	158	162	168	170	158	161	164	166	158	162	166	166	158	161	166	166	158	161.5	166	167	
28	5/13/17	154	162	170	170	159	162	170	170	156	162	170	170	152	162	166	168	155.25	162	169	169.5	Turn
29	5/14/17																					
30	5/15/17	150	158	164	166	158	160	168	166	150	156	162	164	158	160	164	168	154	158.5	164.5	166	
31	5/16/17	148	154	168	169	152	156	171	170	146	154	168	170	152	155	168	170	149.5	154.75	168.75	169.75	
32	5/17/17	146	150	172	172	146	152	172	172	145	151	171	172	146	153	172	172	145.75	151.5	171.75	172	

Attachment E

MSAP Process Temperature Chart Windrow# 17-4-20																						
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	4/21/17	136	134	130	130	148	146	136	132	145	144	134	132	142	138	122	120	142.75	140.5	130.5	128.5	
2	4/22/17	158	158	142	138	158	159	146	140	160	160	148	142	159	158	146	140	158.75	158.75	145.5	140	
3	4/23/17																					
4	4/24/17	160	162	162	158	160	162	162	160	160	163	164	156	160	160	161	158	160	161.75	162.25	158	
5	4/25/17	160	162	163	159	161	164	163	162	159	162	162	158	161	162	163	158	160.25	162.5	162.75	159.25	
6	4/26/17	141	148	152	160	151	153	162	162	143	152	160	163	150	151	163	163	146.25	151	159.25	162	
7	4/27/17	140	150	158	163	152	161	168	161	151	160	162	161	150	160	163	162	148.25	157.75	162.75	161.75	
8	4/28/17	150	158	161	161	151	160	160	160	150	153	157	151	140	141	141	162	147.75	153	154.75	158.5	
9	4/29/17	140	142	142	148	141	153	152	161	150	158	161	163	148	153	158	162	144.75	151.5	153.25	158.5	
10	4/30/17																					
11	5/1/17	136	156	162	158	138	165	165	159	141	159	160	161	154	159	157	158	142.25	159.75	161	159	
12	5/2/17	138	153	163	159	137	164	166	159	144	159	158	160	154	161	156	158	143.25	159.25	160.75	159	
13	5/3/17	140	152	159	163	136	153	166	163	142	156	165	159	153	158	153	160	142.75	154.75	160.75	161.25	
14	5/4/17	136	150	152	162	135	151	166	160	141	156	159	160	156	162	156	158	142	154.75	158.25	160	
15	5/5/17	134	148	151	158	140	142	162	161	138	148	156	158	152	160	153	156	141	149.5	155.5	158.25	
16	5/6/17	152	156	149	149	159	162	158	154	158	162	155	154	156	160	159	157	156.25	160	155.25	153.5	Turn
17	5/7/17																					
18	5/8/17	154	160	163	162	150	156	165	164	150	159	165	165	155	160	163	163	152.25	158.75	164	163.5	
19	5/9/17	156	156	152	150	149	162	158	156	164	160	154	152	160	158	152	150	157.25	159	154	152	
20	5/10/17	163	166	162	156	165	168	166	164	167	166	160	158	165	166	162	156	165	166.5	162.5	158.5	
21	5/11/17	170	172	165	160	171	172	170	170	170	171	164	162	171	174	168	162	170.5	172.25	166.75	163.5	Turn
22	5/12/17	170	172	170	165	170	174	174	172	172	173	168	166	168	172	173	170	170	172.75	171.25	168.25	
23	5/13/17	170	172	172	169	168	172	174	173	170	171	167	165	172	176	171	172	170	172.75	171	169.75	
24	5/14/17																					
25	5/15/17	164	169	172	170	158	166	172	173	166	170	170	168	166	168	174	174	163.5	168.25	172	171.25	
26	5/16/17	158	166	172	174	148	160	171	173	162	168	172	170	158	162	174	176	156.5	164	172.25	173.25	
27	5/17/17	160	160	172	174	156	162	171	173	162	166	172	172	158	164	175	176	159	163	172.5	173.75	

Attachment F

MSAP Process Temperature Chart Windrow# 17-4-24																						
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	4/25/17	156	148	130	117	156	151	130	113	124	145	156	122	155	157	150	118	147.75	150.25	141.5	117.5	
2	4/26/17	155	158	144	128	163	164	140	127	161	153	144	125	164	152	141	120	160.75	156.75	142.25	125	
3	4/27/17	162	160	148	136	166	162	140	136	168	166	152	130	166	152	135	128	165.5	160	143.75	132.5	
4	4/28/17	161	150	152	158	158	160	160	160	158	161	162	141	160	161	161	138	159.25	158	158.75	149.25	
5	4/29/17	160	161	162	163	158	162	168	170	148	153	162	148	150	152	160	145	154	157	163	156.5	
6	4/30/17																					
7	5/1/17	151	159	159	156	156	153	159	162	146	151	159	162	148	154	161	156	150.25	154.25	159.5	159	
8	5/2/17	150	162	161	157	152	158	157	161	144	150	155	159	149	160	160	156	148.75	157.5	158.25	158.25	
9	5/3/17	157	164	161	154	152	164	156	160	143	148	154	158	144	159	163	156	149	158.75	158.5	157	
10	5/4/17	148	162	162	156	152	165	162	158	142	151	157	160	140	154	162	158	145.5	158	160.75	158	
11	5/5/17	140	148	158	160	145	158	160	161	153	150	156	158	140	150	156	158	144.5	151.5	157.5	159.25	
12	5/6/17	148	155	162	166	148	159	162	160	154	157	158	161	146	155	159	160	149	156.5	160.25	161.75	
13	5/7/17																					
14	5/8/17	152	161	165	163	156	161	164	158	156	158	160	162	152	158	161	160	154	159.5	162.5	160.75	
15	5/9/17	151	160	164	163	156	160	165	159	154	158	161	162	150	158	162	160	152.75	159	163	161	
16	5/10/17	154	159	165	164	157	162	163	162	152	157	163	160	154	159	166	163	154.25	159.25	164.25	162.25	
17	5/11/17	154	161	165	164	156	161	164	162	152	156	163	161	154	158	165	163	154	159	164.25	162.5	
18	5/12/17	152	160	164	164	156	160	163	161	154	158	162	160	146	156	164	162	152	158.5	163.25	161.75	
19	5/13/17	158	162	164	162	155	160	162	158	150	160	161	163	147	160	164	165	152.5	160.5	162.75	162	
20	5/14/17																					
21	5/15/17	142	152	157	161	148	154	161	164	144	150	159	159	142	152	158	161	144	152	158.75	161.25	
22	5/16/17	143	156	163	162	140	154	161	161	136	150	158	160	136	150	159	161	138.75	152.5	160.25	161	
23	5/17/17	144	156	161	162	142	156	161	160	132	148	160	161	140	152	160	160	139.5	153	160.5	160.75	
24	5/18/17	160	166	158	154	150	152	156	154	150	152	152	150	148	150	151	152	152	155	154.25	152.5	Turn
25	5/19/17	158	165	164	158	155	156	158	156	155	155	156	156	155	158	158	156	155.75	158.5	159	156.5	
26	5/20/17	157	164	167	163	160	164	160	158	158	163	160	158	160	164	164	160	158.75	163.75	162.75	159.75	
27	5/21/17																					
28	5/22/17	154	161	166	166	156	160	164	162	156	160	164	164	156	161	164	163	155.5	160.5	164.5	163.75	
29	5/23/17	149	161	165	165	152	161	163	164	156	161	164	164	152	158	162	161	152.25	160.25	163.5	163.5	
30	5/24/17	168	170	158	154	168	170	162	156	162	168	160	156	163	165	161	154	165.25	168.25	160.25	155	Turn
31	5/25/17	165	168	160	160	166	168	164	162	164	168	162	160	170	170	165	160	166.25	168.5	162.75	160.5	
32	5/26/17	155	160	166	166	160	165	168	165	162	165	170	170	165	168	166	163	160.5	164.5	167.5	166	
33	5/27/17	150	160	166	168	152	160	166	168	144	158	165	167	144	159	170	170	147.5	159.25	166.75	168.25	

Attachment G

MSAP Process Temperature Chart Windrow# 17-4-27																						
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	4/28/17	150	152	153	158	141	148	150	150	143	152	158	160	138	141	141	150	143	148.25	150.5	154.5	
2	4/29/17	143	140	142	150	140	151	153	158	142	148	151	153	150	152	153	158	143.75	147.75	149.75	154.75	
3	4/30/17																					
4	5/1/17	148	157	157	149	156	154	154	160	158	164	160	152	158	150	155	156	155	156.25	156.5	154.25	
5	5/2/17	144	158	157	149	154	156	155	159	156	164	161	155	156	152	155	156	152.5	157.5	157	154.75	
6	5/3/17	140	157	160	155	154	159	154	160	146	161	160	155	156	158	155	158	149	158.75	157.25	157	
7	5/4/17	141	155	160	160	153	161	155	159	144	156	162	160	157	160	158	159	148.75	158	158.75	159.5	
8	5/5/17	140	152	158	160	148	156	158	159	142	150	160	159	144	156	159	160	143.5	153.5	158.75	159.5	
9	5/6/17	145	154	158	159	150	156	160	158	155	156	160	158	148	156	158	155	149.5	155.5	159	157.5	
10	5/7/17																					
11	5/8/17	156	160	160	154	154	158	160	151	158	160	158	152	152	156	154	152	155	158.5	158	152.25	
12	5/9/17	156	159	161	154	155	158	160	150	158	160	158	150	156	162	160	150	156.25	159.75	159.75	151	
13	5/10/17	156	160	160	152	157	160	160	151	158	162	159	156	156	162	160	150	156.75	161	159.75	152.25	
14	5/11/17	157	161	158	152	159	161	161	153	157	163	160	160	156	162	160	154	157.25	161.75	159.75	154.75	
15	5/12/17	156	161	156	152	152	164	161	154	153	166	161	162	156	162	161	158	154.25	163.25	159.75	156.5	
16	5/13/17	156	158	156	153	148	151	154	150	146	150	154	156	150	154	154	155	150	153.25	154.5	153.5	
17	5/14/17																					
18	5/15/17	152	156	156	158	150	156	158	156	146	153	161	154	146	142	148	152	148.5	151.75	155.75	155	Turn
19	5/16/17	146	155	156	158	144	150	156	156	144	150	160	155	140	140	150	156	143.5	148.75	155.5	156.25	
20	5/17/17	144	154	155	156	142	148	156	156	142	150	161	157	136	142	152	158	141	148.5	156	156.75	
21	5/18/17	144	152	159	155	145	156	163	160	146	159	162	160	152	160	163	162	146.75	156.75	161.75	159.25	
22	5/19/17	146	154	158	156	145	156	159	159	148	156	160	160	151	158	160	160	147.5	156	159.25	158.75	
23	5/20/17	150	155	155	158	146	156	160	158	149	154	157	160	151	156	156	158	149	155.25	157	158.5	
24	5/21/17																					
25	5/22/17	146	158	160	159	150	159	161	161	148	154	158	158	148	158	163	162	148	157.25	160.5	160	Turn
26	5/23/17	162	161	158	158	164	164	162	160	164	162	158	156	164	164	160	161	163.5	162.75	159.5	158.75	
27	5/24/17	160	161	160	164	163	162	162	164	163	162	164	162	164	164	163	163	162.5	162.25	162.25	163.25	
28	5/25/17	160	160	162	168	160	162	162	166	160	164	166	166	162	166	168	166	160.5	163	164.5	166.5	
29	5/26/17	160	162	164	168	154	162	166	168	150	160	169	170	148	158	168	168	153	160.5	166.75	168.5	
30	5/27/17	152	163	166	169	149	162	165	170	150	161	168	169	148	160	168	170	149.75	161.5	166.75	169.5	

Attachment H

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-1	
Windrow Construction:			Date Commenced: 4-27-17	Date Completed: 5-1-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
4/27/17	Mike Bayne	23.14	30.08	40.00	16.00	
4/27/17	Mike Bayne	20.06	26.08	40.00	16.00	22
4/28/17	Oscar Ochoa	22.07	28.69	40.00	16.00	
4/28/17	Oscar Ochoa	19.81	25.75	40.00	16.00	
4/29/17	Oscar Ochoa	22.44	29.17	40.00	16.00	44
4/29/17	Oscar Ochoa	22.39	29.11	40.00	16.00	
4/29/17	Jerry Devoe	18.74	24.36	40.00	16.00	
5/1/17	Jerry Devoe	22.69	29.50	40.00	16.00	44
5/1/17	Oscar Ochoa	22.45	29.19	40.00	16.00	22
Totals		193.79	251.93	360.00	144.00	132.00
Windrow Construction ratio:		2.52 /1				
Note: Yard waste yards = number of buckets * 4.00						

Attachment I

MSAP Process Temperature Chart Windrow# 17-5-1																						
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	5/2/17	131	119	117	103	153	154	156	158	156	147	131	116	139	161	163	156	144.75	145.25	141.75	133.25	
2	5/3/17	159	151	127	111	149	162	162	158	155	153	135	122	144	169	167	162	151.75	158.75	147.75	138.25	
3	5/4/17	157	158	141	128	141	155	160	158	144	151	136	125	141	162	166	160	145.75	156.5	150.75	142.75	
4	5/5/17	158	153	151	140	144	148	152	150	158	153	152	150	142	160	162	163	150.5	153.5	154.25	150.75	
5	5/6/17	161	154	156	142	146	151	156	153	160	160	152	155	141	161	163	162	152	156.5	156.75	153	
6	5/7/17																					
7	5/8/17	156	150	152	145	146	153	158	160	158	164	153	158	140	158	161	160	150	156.25	156	155.75	
8	5/9/17	150	155	163	161	142	148	160	160	157	165	159	158	138	159	161	163	146.75	156.75	160.75	160.5	
9	5/10/17	148	152	160	162	144	147	160	161	161	163	162	161	160	162	163	168	153.25	156	161.25	163	
10	5/11/17	150	153	158	160	140	143	158	160	161	163	163	163	158	160	160	161	152.25	154.75	159.75	161	
11	5/12/17	146	140	142	144	139	146	148	151	149	155	162	163	140	149	162	161	143.5	147.5	153.5	154.75	
12	5/13/17	142	141	142	145	140	145	148	150	149	155	160	163	142	150	155	161	143.25	147.75	151.25	154.75	
13	5/14/17																					
14	5/15/17	140	142	143	150	150	153	158	160	138	140	142	143	142	138	142	150	142.5	143.25	146.25	150.75	
15	5/16/17	144	146	152	150	134	144	150	152	140	149	151	146	142	150	160	163	140	147.25	153.25	152.75	
16	5/17/17	151	153	158	160	142	150	151	152	142	148	150	150	150	152	158	160	146.25	150.75	154.25	155.5	
17	5/18/17	152	158	160	161	132	142	148	151	150	153	158	160	142	151	158	160	144	151	156	158	
18	5/19/17	160	161	162	160	143	158	161	168	160	162	163	163	158	162	162	162	155.25	160.75	162	163.25	
19	5/20/17	160	161	161	160	140	157	161	168	160	160	165	163	150	160	161	162	152.5	159.5	162	163.25	
20	5/21/17																					
21	5/22/17	129	142	151	160	132	143	153	158	146	164	166	163	130	144	158	162	134.25	148.25	157	160.75	
22	5/23/17	166	162	156	152	165	164	160	156	160	164	161	156	156	158	154	152	161.75	162	157.75	154	Turn
23	5/24/17	138	140	140	141	132	133	140	142	133	140	143	151	132	132	133	140	133.75	136.25	139	143.5	
24	5/25/17	132	138	142	151	138	142	150	152	140	151	152	158	132	140	142	150	135.5	142.75	146.5	152.75	
25	5/26/17	150	160	163	163	160	162	163	170	161	168	170	175	160	168	169	170	157.75	164.5	166.25	169.5	Turn
26	5/27/17	151	158	163	163	160	162	165	170	161	168	170	171	162	168	170	170	158.5	164	167	168.5	
27	5/28/17																					
28	5/29/17																					
29	5/30/17	140	148	154	161	141	147	154	160	156	165	170	172	151	160	168	171	147	155	161.5	166	

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-4	
Windrow Construction:			Date Commenced: 5-1-17		Date Completed: 5-4-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/1/17	Mike Bayne	22.13	28.77	40.00	16.00	
5/2/17	Mike Bayne	25.39	33.01	40.00	16.00	28
5/2/17	Mike Bayne	23.49	30.54	40.00	16.00	
5/2/17	Mike Bayne	22.14	28.78	40.00	16.00	
5/3/17	Mike Bayne	23.51	30.56	40.00	16.00	44
5/3/17	Oscar Ochoa	24.22	31.49	40.00	16.00	
5/3/17	Oscar Ochoa	22.22	28.89	40.00	16.00	
5/4/17	Oscar Ochoa	21.80	28.34	40.00	16.00	44
5/4/17	Jerry Devoe	21.92	28.50	40.00	16.00	28
Totals		206.82	268.87	360.00	144.00	144.00
Windrow Construction ratio:		2.41 /1				
Note: Yard waste yards = number of buckets * 4.00						

Attachment K

MSAP Process Temperature Chart Windrow# 17-5-4																						
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	5/5/17	141	140	138	134	131	132	133	132	132	140	140	140	132	141	142	138	134	138.25	138.25	136	
2	5/6/17	162	164	152	138	145	141	141	134	143	145	150	146	140	151	146	138	147.5	150.25	147.25	139	
3	5/7/17																					
4	5/8/17	158	157	154	142	145	149	140	136	139	148	152	152	141	153	162	154	145.75	151.75	152	146	
5	5/9/17	148	156	156	158	140	153	156	144	140	144	151	153	145	150	158	159	143.25	150.75	155.25	153.5	
6	5/10/17	153	160	160	160	142	148	151	151	138	140	142	150	144	152	148	153	144.25	150	150.25	153.5	
7	5/11/17	152	158	161	161	152	158	161	161	142	140	142	143	145	152	148	152	147.75	152	153	154.25	
8	5/12/17	142	146	152	155	140	151	151	153	144	138	144	144	142	154	150	150	142	147.25	149.25	150.5	
9	5/13/17	140	145	150	155	144	150	151	153	142	138	140	144	140	144	148	150	141.5	144.25	147.25	150.5	
10	5/14/17																					
11	5/15/17	150	151	152	153	133	138	141	145	153	160	160	161	140	141	150	148	144	147.5	150.75	151.75	
12	5/16/17	135	150	153	148	131	140	146	144	144	144	150	152	140	140	151	151	137.5	143.5	150	148.75	
13	5/17/17	140	142	150	151	138	141	143	143	142	133	138	140	138	140	156	142	139.5	139	146.75	144	
14	5/18/17	143	152	158	160	153	158	161	163	140	142	148	151	140	143	155	151	144	148.75	155.5	156.25	
15	5/19/17	150	153	158	160	140	150	152	158	132	133	140	141	134	140	157	158	139	144	151.75	154.25	
16	5/20/17	145	150	160	160	138	148	150	158	133	136	140	141	136	144	156	160	138	144.5	151.5	154.75	
17	5/21/17																					
18	5/22/17	162	162	158	156	164	162	159	160	164	162	156	156	163	162	160	158	163.25	162	158.25	157.5	Turn
19	5/23/17	158	162	164	164	159	162	160	162	162	162	164	164	162	160	164	164	160.25	161.5	163	163.5	
20	5/24/17	150	158	161	162	150	158	160	160	152	164	166	168	132	158	168	168	146	159.5	163.75	164.5	
21	5/25/17	160	163	168	170	158	161	163	168	151	163	163	163	163	170	170	171	158	164.25	166	168	
22	5/26/17	160	170	170	172	140	145	150	160	150	160	160	161	150	158	160	160	150	158.25	160	163.25	
23	5/27/17	162	170	170	171	140	143	151	158	151	158	160	162	151	153	160	162	151	156	160.25	163.25	
24	5/28/17																					
25	5/29/17																					
26	5/30/17	166	172	173	169	168	173	174	174	163	175	172	172	166	173	172	171	165.75	173.25	172.75	171.5	Turn
27	5/31/17	162	171	173	172	165	173	173	174	160	175	173	173	162	171	172	172	162.25	172.5	172.75	172.75	

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-8	
Windrow Construction:			Date Commenced: 5-4-17	Date Completed: 5-8-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/4/17	Oscar Ochoa	21.60	28.08	40.00	16.00	22
5/5/17	Oscar Ochoa	22.03	28.64	40.00	16.00	
5/5/17	Oscar Ochoa	20.53	26.69	40.00	16.00	
5/5/17	Oscar Ochoa	19.38	25.19	40.00	16.00	44
5/6/17	Oscar Ochoa	21.22	27.59	40.00	16.00	
5/6/17	Jerry Devoe	23.07	29.99	40.00	16.00	
5/6/17	Jerry Devoe	22.44	29.17	40.00	16.00	44
5/8/17	Oscar Ochoa	22.24	28.91	40.00	16.00	
5/8/17	Oscar Ochoa	22.30	28.99	40.00	16.00	22
Totals		194.81	253.25	360.00	128.00	132.00
Windrow Construction ratio:		2.45 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-8																						
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	5/9/17	164	169	156	141	151	140	152	130	136	149	144	133	152	162	166	150	150.75	155	154.5	138.5	
2	5/10/17	158	160	160	158	151	158	160	142	150	158	160	160	152	150	156	153	152.75	156.5	159	153.25	
3	5/11/17	150	156	158	156	151	158	161	161	151	153	158	160	153	160	161	162	151.25	156.75	159.5	159.75	
4	5/12/17	132	141	140	142	132	144	150	150	138	140	144	152	131	160	162	165	133.25	146.25	149	152.25	
5	5/13/17	136	140	141	142	138	145	150	150	138	140	145	152	132	160	161	165	136	146.25	149.25	152.25	
6	5/14/17																					
7	5/15/17	138	142	143	143	140	148	151	151	150	152	153	160	138	143	150	152	141.5	146.25	149.25	151.5	
8	5/16/17	146	153	163	161	145	145	147	140	150	156	141	149	140	148	166	164	145.25	150.5	154.25	153.5	
9	5/17/17	150	152	158	160	150	152	152	151	150	158	160	162	140	151	153	153	147.5	153.25	155.75	156.5	
10	5/18/17	141	143	153	160	160	162	163	168	153	158	160	161	162	168	168	170	154	157.75	161	164.75	
11	5/19/17	138	140	142	148	163	170	170	170	158	160	161	162	140	143	152	158	149.75	153.25	156.25	159.5	
12	5/20/17	137	140	141	150	166	170	170	170	155	160	161	162	140	141	156	160	149.5	152.75	157	160.5	
13	5/21/17																					
14	5/22/17	136	142	153	163	160	153	164	163	152	141	156	165	141	146	165	171	147.25	145.5	159.5	165.5	
15	5/23/17	136	142	146	158	158	151	158	165	148	131	151	160	140	151	152	166	145.5	143.75	151.75	162.25	
16	5/24/17	133	144	132	138	154	150	158	161	146	140	143	151	141	152	158	161	143.5	146.5	147.75	152.75	
17	5/25/17	132	142	133	138	156	150	152	153	140	140	142	150	132	138	140	142	140	142.5	141.75	145.75	
18	5/26/17	151	160	161	161	160	161	165	170	151	160	160	161	140	150	151	160	150.5	157.75	159.25	163	Turn
19	5/27/17	153	160	160	16+	162	163	168	168	151	158	160	161	143	150	152	158	152.25	157.75	160	162.33	
20	5/28/17																					
21	5/29/17																					
22	5/30/17	160	168	164	161	152	164	170	168	147	158	164	166	149	158	166	165	152	162	166	165	
23	5/31/17	150	162	157	170	148	161	153	161	145	156	160	168	146	158	168	170	147.25	159.25	159.5	167.25	

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-11	
Windrow Construction:			Date Commenced: 5-8-17		Date Completed: 5-11-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/8/17	Oscar Ochoa	24.49	31.84	40.00	16.00	20
5/9/17	Oscar Ochoa	23.36	30.37	40.00	16.00	
5/9/17	Oscar Ochoa	18.36	23.87	40.00	16.00	
5/9/17	Oscar Ochoa	20.49	26.64	40.00	16.00	
5/9/17	Oscar Ochoa	23.16	30.11	40.00	16.00	52
5/10/17	Oscar Ochoa	22.16	28.81	40.00	16.00	
5/10/17	Oscar Ochoa	22.10	28.73	40.00	16.00	20
5/11/17	Mike Bayne	23.22	30.19	40.00	16.00	20
Totals		177.34	230.54	320.00	128.00	112.00
Windrow Construction ratio:		2.43 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-11																						
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	5/12/17	150	152	152	150	140	140	139	132	150	140	132	131	140	136	150	148	145	142	143.25	140.25	
2	5/13/17	150	155	152	149	145	145	138	131	152	140	136	131	140	138	150	140	146.75	144.5	144	137.75	
3	5/14/17																					
4	5/15/17	142	148	151	153	153	158	158	160	148	152	152	151	150	153	158	161	148.25	152.75	154.75	156.25	
5	5/16/17	140	148	148	145	131	156	156	146	147	164	164	160	149	155	155	151	141.75	155.75	155.75	150.5	
6	5/17/17	140	150	148	146	158	160	160	160	148	160	150	151	150	154	153	152	149	156	152.75	152.25	
7	5/18/17	140	156	150	152	150	158	161	161	150	158	160	162	150	152	153	160	147.5	156	156	158.75	
8	5/19/17	150	160	161	161	158	161	162	162	150	158	160	162	150	158	158	161	152	159.25	160.25	161.5	
9	5/20/17	150	161	161	160	150	160	161	163	151	160	160	161	150	160	158	157	150.25	160.25	160	160.25	
10	5/21/17																					
11	5/22/17	148	154	164	158	149	165	163	151	156	168	168	165	148	160	164	164	150.25	161.75	164.75	159.5	
12	5/23/17	147	156	163	157	153	165	163	156	153	165	165	166	145	157	163	164	149.5	160.75	163.5	160.75	
13	5/24/17	150	160	158	151	161	162	162	160	161	163	168	170	160	163	168	168	158	162	164	162.25	
14	5/25/17	151	160	160	160	160	162	162	161	158	160	160	158	160	162	163	168	157.25	161	161.25	161.75	
15	5/26/17	150	153	150	160	160	150	163	160	140	150	150	160	160	160	162	160	152.5	153.25	156.25	160	
16	5/27/17	153	154	153	158	160	152	163	163	142	150	153	158	158	162	162	163	153.25	154.5	157.75	160.5	
17	5/28/17																					
18	5/29/17																					
19	5/30/17	151	154	154	151	151	154	154	152	150	154	154	152	156	159	159	154	152	155.25	155.25	152.25	
20	5/31/17	155	162	155	168	155	161	166	166	142	158	162	162	161	166	168	168	153.25	161.75	162.75	166	

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-15	
Windrow Construction:			Date Commenced: 5-11-17		Date Completed: 5-15-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/11/17	Mike Bayne	22.33	29.03	40.00	16.00	
5/11/17	Mike Bayne	23.32	30.32	40.00	16.00	22
5/12/17	Mike Bayne	20.42	26.55	40.00	16.00	
5/12/17	Jerry Devoe	22.38	29.09	40.00	16.00	
5/12/17	Jerry Devoe	22.47	29.21	40.00	16.00	44
5/13/17	Oscar Ochoa	15.37	19.98	40.00	16.00	12
5/15/17	Mike Bayne	21.86	28.42	40.00	16.00	
5/15/17	Mike Bayne	22.25	28.93	40.00	16.00	
5/15/17	Mike Bayne	19.34	25.14	40.00	16.00	48
Totals		189.74	246.66	360.00	144.00	126.00
Windrow Construction ratio:		2.55 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-15																						
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	5/16/17	141	146	152	130	143	158	161	162	148	153	158	160	142	148	150	143	143.5	151.25	155.25	148.75	
2	5/17/17	146	150	148	137	143	158	161	162	148	153	158	160	142	148	150	150	144.75	152.25	154.25	152.25	
3	5/18/17	150	151	143	143	150	152	158	160	142	151	153	158	132	138	140	142	143.5	148	148.5	150.75	
4	5/19/17	143	150	151	151	152	160	163	168	162	166	163	163	158	160	160	160	153.75	159	159.25	160.5	
5	5/20/17	140	150	151	151	150	160	163	160	160	165	160	160	155	160	160	160	151.25	158.75	158.5	157.75	
6	5/21/17																					
7	5/22/17	140	154	162	158	140	156	165	160	142	158	166	165	146	156	161	158	142	156	163.5	160.25	
8	5/23/17	143	158	162	159	140	152	168	159	148	160	162	164	150	155	160	156	145.25	156.25	163	159.5	
9	5/24/17	152	153	158	160	138	140	140	141	153	160	160	162	152	153	152	152	148.75	151.5	152.5	153.75	
10	5/25/17	140	143	150	153	138	140	140	141	153	158	160	161	158	160	161	161	147.25	150.25	152.75	154	
11	5/26/17	132	141	141	150	155	160	161	162	160	161	160	160	150	160	154	155	149.25	155.5	154	156.75	
12	5/27/17	132	140	143	152	153	161	162	162	158	161	161	163	152	158	153	153	148.75	155	154.75	157.5	
13	5/28/17																					
14	5/29/17																					
15	5/30/17	152	161	164	160	142	155	164	166	136	156	161	162	160	157	153	146	147.5	157.25	160.5	158.5	
16	5/31/17	154	162	166	166	134	140	158	160	138	158	161	161	158	158	154	146	146	154.5	159.75	158.25	

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-5-19		
Windrow Construction:			Date Commenced: 5-16-17	Date Completed: 5-19-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/16/17	Oscar Ochoa	22.46	29.20	40.00	16.00	
5/16/17	Oscar Ochoa	22.45	29.19	40.00	16.00	28
5/17/17	Mike Bayne	22.40	29.12	40.00	16.00	
5/17/17	Mike Bayne	22.33	29.03	40.00	16.00	28
5/18/17	Mike Bayne	22.31	29.00	40.00	16.00	
5/18/17	Mike Bayne	22.54	29.30	40.00	16.00	28
5/19/17	Oscar Ochoa	23.47	30.51	40.00	16.00	
5/19/17	Oscar Ochoa	22.12	28.76	40.00	16.00	
5/19/17	Jerry Devoe	22.39	29.11	40.00	16.00	44
Totals		202.47	263.21	360.00	144.00	128.00
Windrow Construction ratio:		2.40 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-19																						
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	5/20/17	150	150	140	131	141	132	133	132	151	150	141	140	143	145	140	133	146.25	144.25	138.5	134	
2	5/21/17																					
3	5/22/17	163	166	157	146	138	156	161	155	152	158	149	138	161	155	142	136	153.5	158.75	152.25	143.75	
4	5/23/17	156	163	155	150	132	151	160	158	146	159	159	148	158	161	144	142	148	158.5	154.5	149.5	
5	5/24/17	151	153	152	150	132	138	141	148	140	148	152	158	143	142	151	150	141.5	145.25	149	151.5	
6	5/25/17	150	152	152	150	153	158	161	162	150	152	153	160	150	160	162	163	150.75	155.5	157	158.75	
7	5/26/17	155	160	160	160	140	140	141	144	160	160	161	165	160	162	161	161	153.75	155.5	155.75	157.5	
8	5/27/17	158	160	160	160	138	140	141	143	158	161	161	162	160	162	162	163	153.5	155.75	156	157	
9	5/28/17																					
10	5/29/17																					
11	5/30/17	164	164	162	160	138	142	146	146	150	156	160	162	157	162	162	159	152.25	156	157.5	156.75	
12	5/31/17	158	162	162	160	132	134	140	144	154	160	162	162	156	158	162	164	150	153.5	156.5	157.5	

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-5-24	
Windrow Construction:			Date Commenced: 5-20-17		Date Completed: 5-24-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/20/17	Jerry Devoe	21.28	27.66	40.00	16.00	
5/20/17	Jerry Devoe	19.58	25.45	40.00	16.00	22
5/22/17	Mike Bayne	21.74	28.26	40.00	16.00	
5/22/17	Mike Bayne	22.03	28.64	40.00	16.00	
5/22/17	Mike Bayne	22.93	29.81	40.00	16.00	44
5/23/17	Oscar Ochoa	23.16	30.11	40.00	16.00	
5/23/17	Oscar Ochoa	22.28	28.96	40.00	16.00	
5/23/17	Oscar Ochoa	22.42	29.15	40.00	16.00	44
5/24/17	Jerry Devoe	22.44	29.17	40.00	16.00	22
Totals		197.86	257.22	360.00	144.00	132.00
Windrow Construction ratio:		2.47 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-24																						
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	5/25/17	163	166	166	166	165	167	160	144	157	151	135	132	160	174	176	174	161.25	164.5	159.25	154	
2	5/26/17	150	154	161	162	150	150	151	160	151	155	154	160	150	160	160	165	150.25	154.75	156.5	161.75	
3	5/27/17	153	160	162	163	148	152	153	160	153	160	160	158	150	158	163	170	151	157.5	159.5	162.75	
4	5/28/17																					
5	5/29/17																					
6	5/30/17	166	168	166	162	154	157	157	160	149	149	158	158	150	160	162	170	154.75	158.5	160.75	162.5	
7	5/31/17	156	158	163	166	148	152	158	159	158	162	160	158	158	159	161	164	155	157.75	160.5	161.75	

Attachment Q

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-5-27		
Windrow Construction:			Date Commenced: 5-24-17	Date Completed: 5-27-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
5/24/17	Mike Bayne	21.67	28.17	40.00	16.00	
5/25/17	Mike Bayne	19.43	25.26	40.00	16.00	20
5/25/17	Mike Bayne	21.48	27.92	40.00	16.00	
5/25/17	Mike Bayne	22.47	29.21	40.00	16.00	44
5/26/17	Oscar Ochoa	21.96	28.55	40.00	16.00	
5/26/17	Oscar Ochoa	22.76	29.59	40.00	16.00	28
5/27/17	Oscar Ochoa	20.91	27.18	40.00	16.00	
5/27/17	Oscar Ochoa	21.69	28.20	40.00	16.00	
5/27/17	Oscar Ochoa	20.90	27.17	40.00	16.00	44
Totals		193.27	251.25	360.00	144.00	136.00
Windrow Construction ratio:		2.55 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-5-27																									
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	5/28/17																								
2	5/29/17																								
3	5/30/17	158	152	134	124	165	168	164	151	162	160	143	136	156	148	126	114	160.25	157	141.75	131.25				
4	5/31/17	158	152	140	132	158	150	135	132	149	160	165	157	162	165	154	142	156.75	156.75	148.5	140.75				