



PUBLIC WORKS

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MEMORANDUM

DATE April 10, 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: March 2017

Biosolids Received (wet tons):	1715.52 tons received 3/1 through 3/31
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 3/31/17. 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 9 windrows have been moved to the curing section and combined for a total of 7 curing windrows. Sampling was performed on March 7, 2017. 915.24 tons of compost was sent to Life Soils.
Attachments:	A-P: 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# 17-2-1																						
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	2/2/17	160	150	131	130	140	134	120	119	146	140	112	110	142	130	112	110	147	138.5	118.75	117.25	
2	2/3/17	162	158	142	136	158	158	138	126	158	148	128	126	150	144	130	128	157	152	134.5	129	
3	2/4/17	164	162	144	138	158	160	144	134	162	156	140	132	158	156	136	130	160.5	158.5	141	133.5	
4	2/5/17																					
5	2/6/17	150	155	160	160	150	156	160	162	158	164	165	161	155	160	148	150	153.25	158.75	158.25	158.25	
6	2/7/17	140	152	159	158	150	159	160	140	160	160	158	150	160	160	160	158	152.5	157.75	159.25	151.5	
7	2/8/17	138	138	141	143	143	160	160	160	133	138	150	153	132	141	150	151	136.5	144.25	150.25	151.75	
8	2/9/17	135	138	142	144	141	160	160	160	138	140	150	155	136	142	150	151	137.5	145	150.5	152.5	
9	2/10/17	136	135	140	140	134	138	140	140	140	141	143	152	140	140	142	142	137.5	138.5	141.25	143.5	
10	2/11/17	132	135	140	140	134	138	140	141	141	142	144	150	140	140	141	142	136.75	138.75	141.25	143.25	
11	2/12/17																					
12	2/13/17	143	158	160	161	150	160	161	161	150	158	160	161	138	150	161	162	145.25	156.5	160.5	161.25	
13	2/14/17	141	145	159	152	151	164	152	138	163	164	152	140	152	161	156	148	151.75	158.5	154.75	144.5	
14	2/15/17	140	142	160	148	146	152	154	141	158	165	158	140	146	158	150	137	147.5	154.25	155.5	141.5	
15	2/16/17	140	146	142	151	145	153	156	150	152	164	164	154	140	149	158	155	144.25	153	155	152.5	
16	2/17/17	140	151	158	160	143	160	162	160	150	160	161	160	140	154	163	160	143.25	156.25	161	160	
17	2/18/17	138	151	158	162	143	160	162	160	150	161	164	160	138	154	160	160	142.25	156.5	161	160.5	
18	2/19/17																					
19	2/20/17	136	148	156	162	140	161	162	154	143	166	164	153	144	160	158	152	140.75	158.75	160	155.25	
20	2/21/17	136	146	149	162	138	154	164	158	135	164	164	157	135	159	160	152	136	155.75	159.25	157.25	Turn
21	2/22/17	145	148	162	160	156	160	160	153	158	162	161	152	149	153	160	154	152	155.75	160.75	154.75	
22	2/23/17	150	160	155	161	148	151	159	153	150	162	161	156	156	150	164	161	151	155.75	159.75	157.75	
23	2/24/17	136	137	158	161	136	160	160	161	140	150	160	160	150	142	158	160	140.5	147.25	159	160.5	
24	2/25/17	138	140	160	161	136	150	161	161	140	151	160	162	136	142	160	160	137.5	145.75	160.25	161	Turn
25	2/26/17																					
26	2/27/17	144	162	172	172	144	169	172	165	159	169	172	171	163	168	168	166	152.5	167	171	168.5	
27	2/28/17	155	166	171	170	146	162	168	167	141	166	171	170	154	165	170	167	149	164.75	170	168.5	
28	3/1/17	151	162	170	170	139	157	166	166	151	163	168	168	153	163	169	168	148.5	161.25	168.25	168	
29	3/2/17	148	151	166	172	156	162	168	169	146	160	166	169	157	164	167	169	151.75	159.25	166.75	169.75	
30	3/3/17	140	146	160	166	144	154	160	162	136	153	160	162	146	151	162	165	141.5	151	160.5	163.75	
31	3/4/17	136	141	156	160	135	149	160	161	137	150	160	160	133	150	162	162	135.25	147.5	159.5	160.75	

Attachment B

MSAP Process Temperature Chart Windrow# 17-2-4																						
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	2/5/17																					
2	2/6/17	140	152	159	159	149	158	166	142	160	160	160	150	161	160	160	160	152.5	157.5	161.25	152.75	
3	2/7/17	151	160	161	161	160	163	164	160	152	164	169	170	150	160	164	165	153.25	161.75	164.5	164	
4	2/8/17	142	150	151	150	153	158	150	140	142	151	152	143	138	150	158	160	143.75	152.25	152.75	148.25	
5	2/9/17	140	150	151	150	150	160	150	140	142	151	152	143	140	150	160	162	143	152.75	153.25	148.75	
6	2/10/17	136	142	158	160	138	142	151	151	140	145	151	153	138	142	143	150	138	142.75	150.75	153.5	
7	2/11/17	136	140	158	161	136	141	150	150	141	143	151	153	136	140	143	150	137.25	141	150.5	153.5	
8	2/12/17																					
9	2/13/17	148	158	161	160	153	160	160	158	151	160	161	160	140	158	158	161	148	159	160	159.75	
10	2/14/17	146	158	159	148	150	153	156	143	145	150	134	160	150	170	159	140	147.75	157.75	152	147.75	
11	2/15/17	146	162	154	139	150	160	154	138	151	150	134	160	142	166	153	136	147.25	159.5	148.75	143.25	
12	2/16/17	140	148	160	153	146	162	157	144	146	155	149	160	138	160	162	150	142.5	156.25	157	151.75	
13	2/17/17	136	152	160	160	142	158	160	161	143	153	153	160	136	151	160	161	139.25	153.5	158.25	160.5	
14	2/18/17	136	150	160	160	145	158	160	161	140	150	155	160	136	151	160	161	139.25	152.25	158.75	160.5	
15	2/19/17																					
16	2/20/17	132	153	162	156	140	156	160	151	140	160	154	144	140	160	165	155	138	157.25	160.25	151.5	
17	2/21/17	131	160	163	155	136	161	162	155	138	156	158	152	132	156	165	158	134.25	158.25	162	155	Turn
18	2/22/17	138	164	163	153	137	161	160	152	144	160	154	143	134	160	162	151	138.25	161.25	159.75	149.75	
19	2/23/17	146	150	164	158	148	160	159	148	152	157	150	144	138	148	161	156	146	153.75	158.5	151.5	
20	2/24/17	143	151	152	160	151	160	161	161	141	151	153	152	140	150	153	160	143.75	153	154.75	158.25	
21	2/25/17	140	150	152	160	151	160	161	161	141	151	155	152	140	148	150	161	143	152.25	154.5	158.5	
22	2/26/17																					
23	2/27/17	150	168	176	176	152	140	160	170	144	131	148	165	136	145	153	161	145.5	146	159.25	168	Turn
24	2/28/17	153	165	172	173	153	169	171	168	148	167	172	172	136	164	170	166	147.5	166.25	171.25	169.75	
25	3/1/17	143	167	174	174	147	166	170	168	159	168	173	173	146	158	171	170	148.75	164.75	172	171.25	
26	3/2/17	149	165	174	175	158	165	170	169	154	165	171	172	139	161	170	170	150	164	171.25	171.5	
27	3/3/17	150	160	166	165	155	158	161	161	148	160	162	164	140	160	166	166	148.25	159.5	163.75	164	
28	3/4/17	150	160	160	160	150	154	161	161	146	160	160	161	140	160	162	162	146.5	158.5	160.75	161	

Attachment C

MSAP Process Temperature Chart Windrow# 17-2-9																						
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	2/10/17	150	145	139	136	161	155	145	138	155	151	142	132	151	151	142	130	154.25	150.5	142	134	
2	2/11/17	152	145	140	140	162	155	145	141	155	150	140	136	150	150	142	136	154.75	150	141.75	138.25	
3	2/12/17																					
4	2/13/17	150	152	158	146	143	151	160	141	150	152	158	138	150	158	160	142	148.25	153.25	159	141.75	
5	2/14/17	161	155	132	150	165	169	156	141	158	161	149	140	153	164	158	156	159.25	162.25	148.75	146.75	
6	2/15/17	159	160	136	152	164	163	158	142	146	159	155	144	138	156	160	156	151.75	159.5	152.25	148.5	
7	2/16/17	132	132	156	156	156	144	152	150	157	157	152	152	134	149	159	157	144.75	145.5	154.75	153.75	
8	2/17/17	134	150	160	161	150	160	162	161	140	142	158	160	151	160	160	160	143.75	153	160	160.5	
9	2/18/17	136	150	161	161	152	161	160	160	145	142	158	160	150	160	160	160	145.75	153.25	159.75	160.25	
10	2/19/17																					
11	2/20/17	146	163	154	144	163	168	162	154	150	160	158	152	150	164	160	155	152.25	163.75	158.5	151.25	
12	2/21/17	145	163	163	152	149	162	163	157	146	156	158	156	148	162	160	155	147	160.75	161	155	
13	2/22/17	134	161	161	150	140	161	160	152	138	152	158	155	144	159	160	152	139	158.25	159.75	152.25	
14	2/23/17	144	165	162	153	133	153	158	154	150	155	158	158	132	142	159	159	139.75	153.75	159.25	156	
15	2/24/17	150	160	163	163	136	158	160	162	142	158	160	161	136	143	153	160	141	154.75	159	161.5	
16	2/25/17	150	157	161	165	136	160	160	162	144	160	160	161	136	140	151	160	141.5	154.25	158	162	
17	2/26/17																					
18	2/27/17	138	162	162	156	132	154	160	157	140	142	156	158	139	145	158	159	137.25	150.75	159	157.5	Turn
19	2/28/17	150	157	159	163	142	146	159	159	152	148	153	159	152	158	158	160	149	152.25	157.25	160.25	
20	3/1/17	136	161	162	157	132	153	161	157	134	151	153	159	132	150	161	161	133.5	153.75	159.25	158.5	
21	3/2/17	146	166	165	159	125	149	161	159	152	159	156	159	128	142	155	161	137.75	154	159.25	159.5	
22	3/3/17	140	153	160	160	140	153	161	163	140	150	160	168	131	143	152	158	137.75	149.75	158.25	162.25	
23	3/4/17	140	151	160	161	140	150	161	160	138	155	160	170	138	140	150	160	139	149	157.75	162.75	
24	3/5/17																					
25	3/6/17	145	153	160	159	136	150	160	163	136	145	153	169	131	150	159	159	137	149.5	158	162.5	Turn
26	3/7/17	126	153	164	158	125	148	162	159	128	142	149	157	128	143	157	160	126.75	146.5	158	158.5	
27	3/8/17	126	153	164	158	125	148	162	159	128	142	149	157	128	143	157	160	126.75	146.5	158	158.5	
28	3/9/17	144	166	168	161	122	147	161	160	136	150	152	157	124	138	156	160	131.5	150.25	159.25	159.5	
29	3/10/17	141	150	157	160	149	155	158	160	144	149	152	165	150	160	162	163	146	153.5	157.25	162	
30	3/11/17	150	160	162	163	152	160	162	163	152	161	170	170	150	160	162	169	151	160.25	164	166.25	
31	3/12/17																					
32	3/13/17	140	142	150	150	140	150	158	160	132	142	150	152	131	141	150	152	135.75	143.75	152	153.5	

Attachment D

MSAP Process Temperature Chart Windrow# 17-2-13																						
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	2/14/17	150	133	119	113	146	132	113	106	148	128	107	98	138	123	104	94	145.5	129	110.75	102.75	
2	2/15/17	156	136	122	115	145	131	115	113	156	128	109	99	148	136	112	98	151.25	132.75	114.5	106.25	
3	2/16/17	152	153	138	129	157	147	128	120	157	155	138	117	161	150	137	114	156.75	151.25	135.25	120	
4	2/17/17	150	150	158	138	143	158	160	134	160	142	151	132	143	158	160	132	149	152	157.25	134	
5	2/18/17	146	150	158	140	141	160	160	138	158	142	150	136	143	156	160	140	147	152	157	138.5	
6	2/19/17																					
7	2/20/17	158	165	154	142	142	159	149	140	158	164	157	140	156	163	151	142	153.5	162.75	152.75	141	
8	2/21/17	160	166	157	146	146	162	158	149	154	162	156	144	150	162	151	148	152.5	163	155.5	146.75	
9	2/22/17	160	162	152	148	155	159	149	150	151	161	153	148	144	161	152	152	152.5	160.75	151.5	149.5	
10	2/23/17	143	160	155	148	132	157	156	156	152	164	155	150	160	165	152	156	146.75	161.5	154.5	152.5	
11	2/24/17	140	158	161	162	136	142	160	161	136	143	140	156	136	158	160	161	137	150.25	155.25	160	
12	2/25/17	141	160	161	161	136	140	160	161	136	140	160	160	136	160	160	161	137.25	150	160.25	160.75	
13	2/26/17																					
14	2/27/17	158	164	162	157	138	155	162	158	142	158	162	158	135	162	163	150	143.25	159.75	162.25	155.75	
15	2/28/17	153	164	163	159	142	160	161	156	158	165	160	156	141	159	164	156	148.5	162	162	156.75	
16	3/1/17	156	164	160	155	140	161	163	157	151	164	162	155	154	168	165	156	150.25	164.25	162.5	155.75	
17	3/2/17	144	160	160	157	145	162	163	157	153	165	162	155	149	166	165	156	147.75	163.25	162.5	156.25	
18	3/3/17	140	158	160	161	141	151	158	160	142	160	160	158	142	158	161	162	141.25	156.75	159.75	160.25	
19	3/4/17	140	160	160	161	141	150	160	160	136	131	142	150	140	151	160	162	139.25	148	155.5	158.25	
20	3/5/17																					
21	3/6/17	143	153	159	152	138	151	159	160	131	138	150	150	152	160	162	158	141	150.5	157.5	155	Turn
22	3/7/17	141	162	160	157	139	159	162	159	144	160	161	153	146	164	166	163	142.5	161.25	162.25	158	
23	3/8/17	141	162	160	157	139	159	162	159	144	160	161	153	146	164	166	163	142.5	161.25	162.25	158	
24	3/9/17	124	157	161	156	133	160	164	164	136	154	164	158	146	168	168	163	134.75	159.75	164.25	160.25	
25	3/10/17	131	140	155	160	132	148	157	160	140	150	158	160	131	140	150	168	133.5	144.5	155	162	
26	3/11/17	131	143	158	161	134	150	160	160	140	152	160	160	131	142	153	168	134	146.75	157.75	162.25	
27	3/12/17																					
28	3/13/17	150	152	153	158	141	148	150	151	140	141	143	148	140	143	150	151	142.75	146	149	152	Turn
29	3/14/17	140	150	159	162	155	161	165	165	138	145	162	168	144	152	161	165	144.25	152	161.75	165	
30	3/15/17	126	132	150	168	128	148	159	165	118	143	154	164	118	136	156	168	122.5	139.75	154.75	166.25	
31	3/16/17	130	142	150	160	140	150	158	161	138	142	153	163	138	140	152	162	136.5	143.5	153.25	161.5	

Attachment E

MSAP Process Temperature Chart Windrow# 17-2-16																						
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	2/17/17	140	140	138	136	140	142	131	128	140	136	132	130	140	150	145	132	140	142	136.5	131.5	
2	2/18/17	156	152	140	136	145	140	144	141	141	138	141	140	140	150	160	142	145.5	145	146.25	139.75	
3	2/19/17																					
4	2/20/17	140	145	144	140	144	140	146	146	140	152	146	148	150	155	152	149	143.5	148	147	145.75	
5	2/21/17	140	146	150	148	143	148	148	145	144	155	158	150	148	160	154	150	143.75	152.25	152.5	148.25	
6	2/22/17	138	138	152	152	142	152	150	150	144	158	152	152	146	153	152	156	142.5	150.25	151.5	152.5	
7	2/23/17	136	149	154	156	142	158	156	156	142	158	157	158	152	156	151	158	143	155.25	154.5	157	
8	2/24/17	140	158	160	161	140	150	158	160	140	150	160	161	148	152	160	158	142	152.5	159.5	160	
9	2/25/17	140	160	160	161	140	152	160	161	140	152	161	161	141	150	162	160	140.25	153.5	160.75	160.75	
10	2/26/17																					
11	2/27/17	160	165	156	160	132	162	155	161	158	151	161	160	153	160	158	160	150.75	159.5	157.5	160.25	
12	2/28/17	161	164	159	161	139	164	161	161	157	157	160	160	150	160	157	162	151.75	161.25	159.25	161	
13	3/1/17	160	168	168	164	136	162	159	152	158	156	148	143	149	159	158	154	150.75	161.25	158.25	153.25	
14	3/2/17	142	156	162	155	142	162	159	150	163	158	150	144	145	161	160	156	148	159.25	157.75	151.25	
15	3/3/17	140	152	158	160	150	158	153	150	140	152	160	161	132	150	153	158	140.5	153	156	157.25	
16	3/4/17	140	160	160	161	141	150	160	160	141	151	142	150	140	151	160	162	140.5	153	155.5	158.25	
17	3/5/17																					
18	3/6/17	143	153	158	158	150	155	158	156	142	152	158	153	140	150	151	151	143.75	152.5	156.25	154.5	Turn
19	3/7/17	150	166	165	156	138	160	158	153	150	161	159	154	146	162	159	154	146	162.25	160.25	154.25	
20	3/8/17	150	166	165	156	138	160	158	153	150	161	159	156	146	162	159	154	146	162.25	160.25	154.75	
21	3/9/17	150	160	165	157	136	162	159	153	160	162	158	154	156	167	162	157	150.5	162.75	161	155.25	
22	3/10/17	150	160	162	161	138	148	152	155	131	138	148	150	140	150	155	160	139.75	149	154.25	156.5	
23	3/11/17	152	160	162	161	148	151	158	160	132	141	150	160	143	153	160	160	143.75	151.25	157.5	160.25	
24	3/12/17																					
25	3/13/17	140	143	150	150	132	132	148	150	140	143	150	140	137	141	142	143	137.25	139.75	147.5	145.75	Turn
26	3/14/17	140	158	162	163	131	157	161	160	142	161	163	161	150	155	160	161	140.75	157.75	161.5	161.25	
27	3/15/17	161	170	168	162	153	161	163	159	152	167	164	161	157	166	169	164	155.75	166	166	161.5	
28	3/16/17	140	158	161	163	150	160	162	162	143	162	163	163	140	160	163	163	143.25	160	162.25	162.75	
29	3/17/17	140	160	161	163	151	165	170	173	150	150	161	161	150	161	163	163	147.75	159	163.75	165	
30	3/18/17	140	158	162	163	150	168	172	173	150	152	160	162	151	161	162	163	147.75	159.75	164	165.25	

Attachment F

MSAP Process Temperature Chart Windrow# 17-2-20																								
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	2/21/17	152	148	126	112	138	122	116	112	150	130	110	95	118	116	100	96	139.5	129	113	103.75			
2	2/22/17	161	149	132	128	142	125	121	120	155	134	117	97	126	121	106	100	146	132.25	119	111.25			
3	2/23/17	152	157	151	136	151	147	132	124	164	158	131	110	131	138	125	108	149.5	150	134.75	119.5			
4	2/24/17	163	160	152	136	161	162	160	142	161	160	150	138	158	158	140	1	160.75	160	150.5	104.25			
5	2/25/17	160	160	152	136	160	162	161	140	161	162	151	147	153	158	140	140	158.5	160.5	151	140.75			
6	2/26/17																							
7	2/27/17	158	172	170	164	148	165	159	155	144	161	161	156	160	160	154	134	152.5	164.5	161	152.25			
8	2/28/17	151	168	168	165	156	167	155	150	154	166	162	158	162	162	152	136	155.75	165.75	159.25	152.25			
9	3/1/17	147	170	169	163	160	164	157	152	147	166	166	157	166	166	156	142	155	166.5	162	153.5			
10	3/2/17	146	170	168	163	154	165	157	152	153	166	165	157	153	162	155	142	151.5	165.75	161.25	153.5			
11	3/3/17	144	166	169	163	132	142	154	160	150	158	160	160	140	151	153	160	141.5	154.25	159	160.75			
12	3/4/17	142	165	168	163	134	150	160	161	140	160	162	162	140	151	160	160	139	156.5	162.5	161.5			
13	3/5/17																							
14	3/6/17	142	164	164	163	132	141	150	153	131	143	153	159	145	155	159	151	137.5	150.75	156.5	156.5			
15	3/7/17	144	163	167	165	136	164	164	162	140	161	163	160	154	166	159	150	143.5	163.5	163.25	159.25			
16	3/8/17	144	163	167	165	136	164	164	162	140	161	163	160	154	166	159	150	143.5	163.5	163.25	159.25			
17	3/9/17	141	160	167	165	138	162	161	157	134	160	164	159	145	161	165	155	139.5	160.75	164.25	159			
18	3/10/17	140	140	141	150	140	151	160	160	158	159	160	160	131	138	150	150	142.25	147	152.75	155			
19	3/11/17	140	141	143	152	142	153	160	162	160	162	163	162	132	140	150	150	143.5	149	154	156.5			
20	3/12/17																							
21	3/13/17	138	142	143	150	131	140	142	143	131	138	140	151	141	151	158	160	135.25	142.75	145.75	151			
22	3/14/17	131	155	161	162	158	163	158	150	145	160	165	165	131	163	165	160	141.25	160.25	162.25	159.25			
23	3/15/17	130	132	159	168	142	151	164	172	146	156	168	171	154	166	171	167	143	151.25	165.5	169.5	Turn		
24	3/16/17	160	170	171	172	140	162	170	171	142	153	168	170	140	148	150	163	145.5	158.25	164.75	169			
25	3/17/17	160	161	163	140	150	161	162	163	140	160	160	160	150	160	161	161	150	160.5	161.5	156			
26	3/18/17	158	162	163	168	150	160	163	163	143	160	161	163	150	162	162	162	150.25	161	162.25	164			
27	3/19/17																							
28	3/20/17	137	138	138	148	138	142	143	146	135	135	143	158	148	156	154	154	139.5	142.75	144.5	151.5	Turn		
29	3/21/17	132	152	166	175	134	158	173	176	132	160	176	174	153	171	177	169	137.75	160.25	173	173.5			
30	3/22/17	156	161	170	171	158	162	170	172	152	160	170	172	150	160	163	170	154	160.75	168.25	171.25			

Attachment G

MSAP Process Temperature Chart Windrow# 17-2-23																							
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	2/24/17	150	131	101	97	150	133	98	94	134	95	89	88	131	97	90	102	141.25	114	94.5	95.25		
2	2/25/17	150	140	130	112	156	148	126	116	148	136	101	99	142	132	108	112	149	139	116.25	109.75		
3	2/26/17	156	144	134	118	155	152	138	126	151	140	118	110	150	140	121	116	153	144	127.75	117.5		
4	2/27/17	158	148	136	128	152	154	148	136	152	145	128	118	152	145	139	118	153.5	148	137.75	125		
5	2/28/17	162	154	140	133	152	152	152	140	154	156	144	132	155	156	142	131	155.75	154.5	144.5	134		
6	3/1/17	167	160	143	134	142	162	168	153	156	159	156	141	161	156	139	136	156.5	159.25	151.5	141		
7	3/2/17	156	160	148	135	151	167	170	160	156	160	153	139	162	156	139	148	156.25	160.75	152.5	145.5		
8	3/3/17	141	142	153	158	134	152	160	161	140	160	162	162	140	151	160	160	138.75	151.25	158.75	160.25		
9	3/4/17	132	150	152	158	131	140	148	150	140	140	140	150	142	140	149	157	136.25	142.5	147.25	153.75		
10	3/5/17																						
11	3/6/17	147	160	160	158	143	159	163	163	142	150	155	150	145	149	140	138	144.25	154.5	154.5	152.25		
12	3/7/17	154	168	166	156	142	152	166	166	148	164	161	151	144	159	147	136	147	160.75	160	152.25		
13	3/8/17	154	168	166	156	141	152	166	166	148	164	161	151	144	159	147	136	146.75	160.75	160	152.25		
14	3/9/17	146	161	164	151	141	164	173	166	158	171	164	154	154	163	151	142	149.75	164.75	163	153.25		
15	3/10/17	131	140	152	160	131	140	152	158	138	160	160	160	131	148	160	161	132.75	147	156	159.75		
16	3/11/17	140	148	160	161	133	143	155	160	141	160	161	162	132	150	160	161	136.5	150.25	159	161		
17	3/12/17																						
18	3/13/17	138	141	142	142	138	141	143	150	136	138	141	142	131	140	141	142	135.75	140	141.75	144		
19	3/14/17	140	155	160	165	131	152	158	160	131	158	162	163	140	150	152	152	135.5	153.75	158	160	Turn	
20	3/15/17	172	175	170	166	158	168	171	170	154	172	172	166	139	163	159	153	155.75	169.5	168	163.75		
21	3/16/17	140	140	142	150	150	143	152	158	132	150	160	162	140	158	161	163	140.5	147.75	153.75	158.25		
22	3/17/17	131	140	158	161	148	150	150	155	150	160	161	163	140	140	140	150	142.25	147.5	152.25	157.25		
23	3/18/17	130	142	160	163	150	150	153	160	151	160	162	163	148	138	141	150	144.75	147.5	154	159		
24	3/19/17																						
25	3/20/17	152	150	145	150	155	160	155	153	156	159	160	157	153	156	154	156	154	156.25	153.5	154	Turn	
26	3/21/17	160	176	167	155	146	170	172	158	157	170	170	163	162	171	169	157	156.25	171.75	169.5	158.25		
27	3/22/17	150	158	162	163	142	171	172	173	160	163	170	171	142	153	161	162	148.5	161.25	166.25	167.25		
28	3/23/17	166	176	176	172	149	170	175	172	158	173	176	171	159	168	173	167	158	171.75	175	170.5		
29	3/24/17	138	160	170	172	150	161	161	162	151	163	170	171	160	168	171	171	149.75	163	168	169		
30	3/25/17	150	161	170	172	151	161	161	162	143	160	161	168	158	163	170	172	150.5	161.25	165.5	168.5		

Attachment H

MSAP Process Temperature Chart Windrow# 17-2-27																							
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	2/28/17	163	162	150	131	153	166	157	143	159	161	144	126	130	112	100	93	151.25	150.25	137.75	123.25		
2	3/1/17	158	157	145	131	155	164	147	145	159	161	144	126	148	141	122	110	155	155.75	139.5	128		
3	3/2/17	152	161	150	133	156	167	160	148	152	162	150	124	148	151	140	120	152	160.25	150	131.25		
4	3/3/17	158	152	150	132	150	148	140	130	150	140	140	121	151	148	140	120	152.25	147	142.5	125.75		
5	3/4/17	160	160	153	143	150	142	140	136	150	150	143	141	150	143	141	131	152.5	148.75	144.25	137.75		
6	3/5/17																						
7	3/6/17	141	159	162	159	132	150	158	160	150	160	162	162	138	152	158	160	140.25	155.25	160	160.25		
8	3/7/17	131	161	166	160	134	164	168	162	152	166	161	151	140	162	164	160	139.25	163.25	164.75	158.25		
9	3/8/17	136	161	166	160	134	164	168	162	152	166	161	151	140	162	164	160	140.5	163.25	164.75	158.25		
10	3/9/17	147	163	165	158	151	167	168	162	148	160	163	163	139	150	164	162	146.25	160	165	161.25		
11	3/10/17	150	160	161	160	140	160	161	162	140	158	163	160	140	158	160	160	142.5	159	161.25	160.5		
12	3/11/17	151	160	162	160	142	160	161	163	143	160	163	170	142	158	160	161	144.5	159.5	161.5	163.5		
13	3/12/17																						
14	3/13/17	142	158	161	163	132	140	150	158	131	140	150	160	132	142	152	160	134.25	145	153.25	160.25		
15	3/14/17	140	160	165	160	131	150	159	160	150	152	159	152	150	160	163	161	142.75	155.5	161.5	158.25		
16	3/15/17	148	150	161	163	138	136	151	158	142	148	162	160	156	139	162	163	146	143.25	159	161		
17	3/16/17	160	166	170	171	158	163	162	172	161	170	170	168	160	162	168	170	159.75	165.25	167.5	170.25	Turn	
18	3/17/17	160	168	170	170	160	160	171	170	161	170	171	171	160	162	165	170	160.25	165	169.25	170.25		
19	3/18/17	160	168	170	171	158	162	170	170	160	170	171	171	161	163	168	170	159.75	165.75	169.75	170.5		
20	3/19/17																						
21	3/20/17	138	146	149	146	138	142	144	144	141	144	144	144	142	146	145	143	139.75	144.5	145.5	144.25		
22	3/21/17	134	164	169	162	132	163	172	161	138	157	166	155	141	166	167	155	136.25	162.5	168.5	158.25		
23	3/22/17	141	161	170	171	151	160	168	170	140	158	163	168	153	162	170	171	146.25	160.25	167.75	170	Turn	
24	3/23/17	147	166	174	171	139	153	168	170	146	164	172	166	150	165	172	168	145.5	162	171.5	168.75		
25	3/24/17	140	143	161	164	140	142	160	162	140	152	166	160	133	141	162	160	138.25	144.5	162.25	161.5		
26	3/25/17	138	140	156	166	134	138	151	156	132	140	160	152	141	150	151	153	136.25	142	154.5	156.75		
27	3/26/17																						
28	3/27/17	153	162	168	173	133	153	164	169	154	164	168	168	152	166	162	168	148	161.25	165.5	169.5	Turn	
29	3/28/17	149	158	162	166	140	154	162	166	153	161	166	165	149	161	160	164	147.75	158.5	162.5	165.25		
30	3/29/17	138	143	152	160	141	150	158	162	150	152	160	163	142	150	158	160	142.75	148.75	157	161.25		
31	3/30/17	143	152	160	162	150	153	160	161	148	152	158	161	151	158	161	163	148	153.75	159.75	161.75		

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-2	
Windrow Construction:			Date Commenced: 2-28-17		Date Completed: 3-2-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
2/28/17	Ron Wiesman	21.98	28.57	56.00		
2/28/17	Ron Wiesman	21.88	28.44	56.00		
2/28/17	Ron Wiesman	22.66	29.46	56.00	44.00	
3/1/17	Mike Bayne	23.48	30.52	56.00		
3/1/17	Mike Bayne	22.02	28.63	56.00		
3/1/17	Mike Bayne	21.42	27.85	56.00	44.00	
3/2/17	Jerry Devoe	21.39	27.81	56.00		
3/2/17	Jerry Devoe	19.52	25.38	56.00		
3/2/17	Jerry Devoe	22.59	27.81	56.00	48.00	
Totals		196.94	254.46	504.00	136.00	0.00
Windrow Construction ratio: 2.52 /1						
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-2																						
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	3/3/17	160	158	153	143	150	142	140	130	148	150	142	140	150	143	141	130	152	148.25	144	135.75	
2	3/4/17	160	160	153	143	150	142	140	130	150	150	143	141	150	143	141	131	152.5	148.75	144.25	136.25	
3	3/5/17																					
4	3/6/17	142	145	150	148	140	143	143	143	142	149	149	142	140	141	140	135	141	144.5	145.5	142	
5	3/7/17	161	166	160	148	157	160	152	139	159	162	153	142	162	163	157	140	159.75	162.75	155.5	142.25	
6	3/8/17	158	166	163	152	156	160	150	136	152	164	155	148	158	162	159	143	156	163	156.75	144.75	
7	3/9/17	158	166	163	150	156	160	150	136	152	164	155	148	158	162	159	143	156	163	156.75	144.25	
8	3/10/17	156	155	160	160	152	150	147	138	154	151	150	150	152	160	160	152	153.5	154	154.25	150	
9	3/11/17	150	160	158	160	148	153	150	140	150	151	158	158	148	156	158	160	149	155	156	154.5	
10	3/12/17																					
11	3/13/17	138	150	160	161	132	141	150	158	140	148	153	161	140	141	150	151	137.5	145	153.25	157.75	
12	3/14/17	138	151	160	161	148	155	158	158	150	159	160	161	148	160	161	160	146	156.25	159.75	160	
13	3/15/17	140	155	159	157	138	156	160	154	135	159	159	156	137	156	158	150	137.5	156.5	159	154.25	
14	3/16/17	130	142	153	158	132	143	150	160	142	153	160	160	140	150	158	160	136	147	155.25	159.5	
15	3/17/17	136	140	150	152	141	150	160	160	150	160	160	160	145	160	161	162	143	152.5	157.75	158.5	
16	3/18/17	138	142	150	152	141	152	158	160	150	158	160	160	148	160	161	163	144.25	153	157.25	158.75	
17	3/19/17																					
18	3/20/17	152	165	166	160	136	156	154	154	139	160	161	157	134	159	163	154	140.25	160	161	156.25	Turn
19	3/21/17	139	162	166	159	132	149	162	157	138	161	161	156	132	156	162	157	135.25	157	162.75	157.25	
20	3/22/17	133	142	153	160	131	140	150	152	138	150	153	158	130	142	152	158	133	143.5	152	157	
21	3/23/17	132	154	164	162	138	159	165	156	140	163	166	162	139	155	160	158	137.25	157.75	163.75	159.5	
22	3/24/17	132	140	141	143	138	141	142	142	130	140	143	142	133	142	141	143	133.25	140.75	141.75	142.5	
23	3/25/17	123	142	153	160	131	143	150	152	140	148	153	160	138	150	152	158	133	145.75	152	157.5	
24	3/26/17																					
25	3/27/17	154	164	171	168	165	170	171	163	156	166	166	160	156	165	168	166	157.75	166.25	169	164.25	Turn
26	3/28/17	148	160	166	168	164	167	170	166	152	163	164	166	152	163	166	166	154	163.25	166.5	166.5	
27	3/29/17	140	158	162	170	160	163	170	171	150	160	163	170	151	161	163	168	150.25	160.5	164.5	169.75	
28	3/30/17	140	148	158	162	140	151	160	162	150	160	163	170	132	143	158	161	140.5	150.5	159.75	163.75	
29	3/31/17	140	150	158	161	150	160	161	160	148	160	160	160	143	158	160	162	145.25	157	159.75	160.75	

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-7	
Windrow Construction:			Date Commenced: 3-3-17		Date Completed: 3-7-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/3/17	Jerry Devoe	22.20	28.86	56.00		
3/3/17	Jerry Devoe	21.48	27.92	56.00		
3/3/17	Jerry Devoe	22.19	28.85	56.00	44.00	
3/4/17	Oscar Ochoa	21.63	28.12	56.00		
3/4/17	Jerry Devoe	22.48	29.22	56.00	36.00	
3/6/17	Mike Bayne	22.15	28.80	56.00		
3/6/17	Mike Bayne	22.81	29.65	56.00		
3/6/17	Mike Bayne	22.10	28.73	56.00	44.00	
3/7/17	Mike Bayne	22.62	29.41	56.00	20.00	
Totals		199.66	259.56	504.00	144.00	0.00
Windrow Construction ratio: 2.50 /1						
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-7																						
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	3/8/17	151	163	161	151	147	158	152	137	155	163	162	139	160	146	126	116	153.25	157.5	150.25	135.75	
2	3/9/17	150	161	166	151	160	164	159	146	158	166	164	142	153	143	116	114	155.25	158.5	151.25	138.25	
3	3/10/17	151	150	160	151	160	152	160	151	160	162	162	144	150	142	140	130	155.25	151.5	155.5	144	
4	3/11/17	140	140	150	153	140	140	160	160	160	158	151	146	160	158	150	132	150	149	152.75	147.75	
5	3/12/17																					
6	3/13/17	132	142	151	153	140	150	158	160	131	131	140	152	140	143	150	143	135.75	141.5	149.75	152	
7	3/14/17	131	150	158	160	143	153	159	160	131	154	160	160	138	158	160	161	135.75	153.75	159.25	160.25	
8	3/15/17	132	132	149	159	141	150	142	152	134	143	168	165	131	152	149	145	134.5	144.25	152	155.25	
9	3/16/17	133	150	158	152	136	140	142	153	140	140	152	158	135	138	142	150	136	142	148.5	153.25	
10	3/17/17	140	153	161	162	131	135	150	161	150	160	162	160	140	151	157	160	140.25	149.75	157.5	160.75	
11	3/18/17	140	153	161	162	132	138	151	162	153	161	162	162	142	150	158	161	141.75	150.5	158	161.75	
12	3/19/17																					
13	3/20/17	136	140	156	162	132	148	156	160	148	138	162	166	140	150	159	160	139	144	158.25	162	
14	3/21/17	135	145	159	163	136	155	161	164	140	147	167	165	140	152	157	153	137.75	149.75	161	161.25	
15	3/22/17	140	153	160	162	140	158	161	161	132	140	150	160	140	153	161	162	138	151	158	161.25	
16	3/23/17	136	142	160	162	136	155	162	162	133	142	164	164	141	158	162	162	136.5	149.25	162	162.5	
17	3/24/17	136	142	158	160	138	156	162	166	135	147	160	162	140	156	158	161	137.25	150.25	159.5	162.25	
18	3/25/17	138	142	150	160	140	158	162	168	140	151	158	161	136	152	158	160	138.5	150.75	157	162.25	
19	3/26/17																					
20	3/27/17	166	171	172	166	154	166	172	165	138	158	167	169	150	167	171	168	152	165.5	170.5	167	Turn
21	3/28/17	158	168	171	172	156	165	171	172	156	165	169	170	155	168	170	170	156.25	166.5	170.25	171	
22	3/29/17	140	161	170	170	153	163	170	171	160	162	168	172	160	168	170	172	153.25	163.5	169.5	171.25	
23	3/30/17	158	163	170	170	150	158	162	163	151	162	170	170	141	158	162	168	150	160.25	166	167.75	
24	3/31/17	130	151	153	160	140	152	158	162	138	141	144	146	130	141	150	153	134.5	146.25	151.25	155.25	Turn

Attachment K

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-10	
Windrow Construction:			Date Commenced: 3-7-17		Date Completed: 3-10-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/7/17	Mike Bayne	23.31	30.30	56.00		
3/7/17	Mike Bayne	22.38	29.09	56.00	36.00	
3/8/17	Mike Bayne	22.80	29.64	56.00		
3/8/17	Mike Bayne	23.16	30.11	56.00		
3/8/17	Jerry Devoe	22.04	28.65	56.00	44.00	
3/9/17	Jerry Devoe	21.80	28.34	56.00		
3/9/17	Jerry Devoe	22.42	29.15	56.00		
3/9/17	Jerry Devoe	20.38	26.49	56.00	44.00	
3/10/17	Oscar Ochoa	21.64	28.13	56.00	20.00	
Totals		199.93	259.91	504.00	144.00	0.00
Windrow Construction ratio:		2.49 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-10																						
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	3/11/17	141	142	131	129	131	138	140	142	150	141	140	130	158	151	140	131	145	143	137.75	133	
2	3/12/17																					
3	3/13/17	140	142	142	143	141	143	141	138	131	138	141	140	140	143	143	140	138	141.5	141.75	140.25	
4	3/14/17	150	155	155	148	159	159	151	143	155	151	142	142	150	155	152	144	153.5	155	150	144.25	
5	3/15/17	150	161	157	153	156	143	157	158	150	146	157	148	150	160	162	154	151.5	152.5	158.25	153.25	
6	3/16/17	150	163	159	158	140	148	153	161	141	150	160	150	148	158	160	155	144.75	154.75	158	156	
7	3/17/17	150	160	160	160	148	155	160	163	140	160	160	156	146	152	158	160	146	156.75	159.5	159.75	
8	3/18/17	148	158	160	161	150	160	161	163	150	160	158	158	143	150	158	160	147.75	157	159.25	160.5	
9	3/19/17																					
10	3/20/17	146	153	158	161	149	148	161	162	147	153	149	160	144	150	146	162	146.5	151	153.5	161.25	
11	3/21/17	143	156	157	162	148	158	153	161	158	158	146	161	143	149	147	160	148	155.25	150.75	161	
12	3/22/17	142	154	160	161	150	160	161	162	150	158	160	160	140	148	158	161	145.5	155	159.75	161	
13	3/23/17	139	154	163	163	146	156	158	162	146	152	151	160	138	148	160	160	142.25	152.5	158	161.25	
14	3/24/17	136	152	161	162	144	154	160	162	140	149	159	161	138	149	160	161	140	151	160	161.5	
15	3/25/17	140	152	160	163	141	150	158	162	139	143	160	163	140	148	158	162	140	148.25	159	162.5	
16	3/26/17																					
17	3/27/17	164	174	178	175	142	163	173	176	170	176	177	172	164	168	170	174	160	170.25	174.5	174.25	Turn
18	3/28/17	160	171	174	171	156	166	171	172	164	168	173	169	159	166	168	171	159.75	167.75	171.5	170.75	
19	3/29/17	150	153	160	168	150	158	161	163	160	162	170	170	140	151	160	163	150	156	162.75	166	
20	3/30/17	148	151	170	170	150	160	162	170	160	161	163	163	140	152	161	170	149.5	156	164	168.25	
21	3/31/17	140	151	160	168	158	162	170	171	150	160	163	163	158	163	162	161	151.5	159	163.75	165.75	

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-14	
Windrow Construction:			Date Commenced: 3-10-17		Date Completed: 3-14-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/10/17	Oscar Ochoa	23.66	30.76	56.00		
3/10/17	Oscar Ochoa	22.39	29.11	56.00	36.00	
3/11/17	Jerry Devoe	21.93	28.51	56.00		
3/11/17	Jerry Devoe	19.97	25.96	56.00		
3/11/17	Jerry Devoe	20.60	26.78	56.00	44.00	
3/13/17	Oscar Ochoa	21.67	28.17	56.00		
3/13/17	Oscar Ochoa	18.47	24.01	56.00		
3/13/17	Oscar Ochoa	20.91	27.18	56.00	44.00	
3/14/17	Oscar Ochoa	15.78	20.51	56.00	20.00	
Totals		185.38	240.99	504.00	144.00	0.00
Windrow Construction ratio:		2.69 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-14																						
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	3/15/17	160	168	157	150	161	152	137	133	168	162	140	126	163	159	143	130	163	160.25	144.25	134.75	
2	3/16/17	150	150	148	140	150	153	150	142	158	160	158	150	161	158	150	140	154.75	155.25	151.5	143	
3	3/17/17	155	160	165	160	140	158	151	144	156	158	156	150	160	161	158	152	152.75	159.25	157.5	151.5	
4	3/18/17	154	159	164	156	158	160	158	150	152	158	158	150	158	162	160	155	155.5	159.75	160	152.75	
5	3/19/17																					
6	3/20/17	165	165	156	150	159	164	161	154	156	152	138	156	154	168	167	158	158.5	162.25	155.5	154.5	
7	3/21/17	162	162	155	156	159	166	162	152	154	154	143	160	149	168	164	160	156	162.5	156	157	
8	3/22/17	150	160	161	162	141	158	160	161	142	158	160	160	143	161	162	163	144	159.25	160.75	161.5	
9	3/23/17	148	163	155	150	142	157	162	156	157	160	150	161	158	168	167	158	151.25	162	158.5	156.25	
10	3/24/17	140	158	156	160	148	150	158	163	150	154	163	163	151	158	160	162	147.25	155	159.25	162	
11	3/25/17	140	153	160	163	153	160	161	162	152	158	160	161	143	160	162	163	147	157.75	160.75	162.25	
12	3/26/17																					
13	3/27/17	149	152	156	162	152	162	161	156	147	160	156	160	149	164	165	156	149.25	159.5	159.5	158.5	
14	3/28/17	146	150	156	161	148	160	162	160	142	156	159	160	144	160	164	160	145	156.5	160.25	160.25	
15	3/29/17	142	141	152	160	143	158	162	163	141	148	158	160	141	153	161	160	141.75	150	158.25	160.75	
16	3/30/17	140	152	160	160	142	160	160	162	140	152	160	160	131	140	142	161	138.25	151	155.5	160.75	
17	3/31/17	140	150	158	160	143	160	161	162	141	150	142	140	133	161	161	162	139.25	155.25	155.5	156	

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-3-17		
Windrow Construction:			Date Commenced: 3-14-17		Date Completed: 3-17-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/14/17	Oscar Ochoa	22.76	29.59	56.00		
3/14/17	Oscar Ochoa	19.73	25.65	56.00	20.00	
3/15/17	Mike Bayne	22.79	29.63	56.00		
3/15/17	Mike Bayne	22.97	29.86	56.00		
3/15/17	Mike Bayne	22.54	29.30	56.00	44.00	
3/16/17	Mike Bayne	22.74	29.56	56.00		
3/16/17	Mike Bayne	22.60	29.38	56.00		
3/16/17	Mike Bayne	23.24	30.21	56.00	44.00	
3/17/17	Jerry Devoe	23.01	29.91	56.00	20.00	
Totals		202.38	263.09	504.00	128.00	0.00
Windrow Construction ratio:		2.40 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-17																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	3/18/17	130	152	135	140	143	153	160	161	160	162	162	140	140	140	132	120	143.25	151.75	147.25	140.25	
2	3/19/17																					
3	3/20/17	154	156	137	119	134	149	145	133	162	153	132	122	161	158	142	125	152.75	154	139	124.75	
4	3/21/17	156	161	150	132	138	158	151	134	146	152	136	129	158	158	142	128	149.5	157.25	144.75	130.75	
5	3/22/17	142	142	152	151	132	143	150	150	140	143	142	140	138	140	141	138	138	142	146.25	144.75	
6	3/23/17	136	161	157	146	133	156	153	138	157	163	146	136	158	163	156	140	146	160.75	153	140	
7	3/24/17	143	152	158	162	150	153	161	163	140	148	152	161	142	150	153	158	143.75	150.75	156	161	
8	3/25/17	142	160	162	168	140	148	151	153	150	160	160	162	141	150	151	153	143.25	154.5	156	159	
9	3/26/17																					
10	3/27/17	146	164	166	165	144	162	159	158	151	166	159	161	159	166	155	158	150	164.5	159.75	160.5	
11	3/28/17	142	160	163	164	146	161	160	160	151	162	162	162	155	164	159	160	148.5	161.75	161	161.5	
12	3/29/17	140	158	160	163	150	160	162	162	151	161	161	168	152	162	161	161	148.25	160.25	161	163.5	
13	3/30/17	131	150	158	160	150	158	161	160	138	140	160	161	148	150	152	156	141.75	149.5	157.75	159.25	
14	3/31/17	143	153	160	162	140	152	160	161	136	138	150	153	150	158	162	163	142.25	150.25	158	159.75	

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-3-21		
Windrow Construction:			Date Commenced: 3-17-17		Date Completed: 3-21-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/17/17	Jerry Devoe	22.79	29.63	56.00		
3/17/17	Jerry Devoe	23.58	30.65	56.00	20.00	
3/18/17	Jerry Devoe	21.57	28.04	56.00		
3/18/17	Jerry Devoe	20.46	26.60	56.00		
3/18/17	Jerry Devoe	22.73	29.55	56.00	44.00	
3/20/17	Oscar Ochoa	23.16	30.11	56.00		
3/20/17	Oscar Ochoa	22.41	29.13	56.00		
3/20/17	Oscar Ochoa	22.51	29.26	56.00	44.00	
3/21/17	Oscar Ochoa	21.53	27.99	56.00	20.00	
Totals		200.74	260.96	504.00	128.00	0.00
Windrow Construction ratio:		2.42 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-21																						
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	3/22/17	150	152	151	150	134	140	141	142	140	148	151	153	142	140	138	126	141.5	145	145.25	142.75	
2	3/23/17	160	150	138	125	161	158	137	123	162	168	140	120	150	138	118	130	158.25	153.5	133.25	124.5	
3	3/24/17	138	140	141	138	140	152	160	163	141	148	151	150	138	143	150	152	139.25	145.75	150.5	150.75	
4	3/25/17	140	142	140	141	141	153	158	160	152	160	160	162	158	161	160	161	147.75	154	154.5	156	
5	3/26/17																					
6	3/27/17	154	161	159	145	149	159	156	161	146	165	158	161	159	156	160	162	152	160.25	158.25	157.25	
7	3/28/17	156	160	160	152	150	161	156	160	143	163	160	162	158	160	161	161	151.75	161	159.25	158.75	
8	3/29/17	158	160	161	155	149	160	152	160	142	158	161	163	154	161	161	161	150.75	159.75	158.75	159.75	
9	3/30/17	138	152	160	161	150	158	160	160	132	138	143	158	153	158	153	160	143.25	151.5	154	159.75	
10	3/31/17	158	161	160	158	140	153	160	161	140	152	153	158	150	158	160	161	147	156	158.25	159.5	

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-24	
Windrow Construction:			Date Commenced: 3-21-17		Date Completed: 3-24-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/21/17	Oscar Ochoa	23.63	30.72	56.00		
3/21/17	Oscar Ochoa	22.13	28.77	56.00	20.00	
3/22/17	Mike Bayne	22.44	29.17	56.00		
3/22/17	Mike Bayne	21.41	27.83	56.00		
3/22/17	Mike Bayne	22.38	29.09	56.00	44.00	
3/23/17	Mike Bayne	21.20	27.56	56.00		
3/23/17	Mike Bayne	22.44	29.17	56.00		
3/23/17	Mike Bayne	19.76	25.69	56.00	44.00	
3/24/17	Jerry Devoe	22.18	28.83	56.00	20.00	
Totals		197.57	256.84	504.00	128.00	0.00
Windrow Construction ratio:		2.46 /1				

MSAP Process Temperature Chart Windrow# 17-3-24																						
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	3/25/17	130	143	158	130	152	160	161	128	150	158	158	131	142	153	160	130	143.5	153.5	159.25	129.75	
2	3/26/17																					
3	3/27/17	158	160	147	126	150	152	157	131	157	160	147	133	162	164	151	132	156.75	159	150.5	130.5	
4	3/28/17	150	154	157	136	148	156	158	148	152	155	152	137	160	162	156	146	152.5	156.75	155.75	141.75	
5	3/29/17	133	150	160	162	142	160	160	160	143	150	157	140	160	161	160	161	144.5	155.25	159.25	155.75	
6	3/30/17	140	150	158	160	148	152	152	163	150	158	160	161	150	160	161	163	147	155	157.75	161.75	
7	3/31/17	152	160	161	161	140	158	160	162	150	153	151	151	142	158	161	163	146	157.25	158.25	159.25	

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-28	
Windrow Construction:			Date Commenced: 3-24-17		Date Completed: 3-28-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/24/17	Oscar Ochoa	21.21	27.57	56.00		
3/25/17	Oscar Ochoa	22.21	28.87	56.00	20.00	
3/25/17	Jerry Devoe	23.33	30.33	56.00		
3/27/17	Jerry Devoe	22.06	28.68	56.00		
3/27/17	Jerry Devoe	20.51	26.66	56.00	44.00	
3/27/17	Oscar Ochoa	21.89	28.46	56.00		
3/28/17	Oscar Ochoa	23.03	29.94	56.00		
3/28/17	Oscar Ochoa	21.62	28.11	56.00	44.00	
3/28/17	Oscar Ochoa	22.36	29.07	56.00	20.00	
Totals		198.22	257.69	504.00	128.00	0.00
Windrow Construction ratio:		2.45 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-3-28																						
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	3/29/17																	#####	#####	#####	#####	
2	3/30/17	140	141	138	131	141	143	150	150	140	141	148	150	140	148	152	158	140.25	143.25	147	147.25	
3	3/31/17	140	143	141	138	133	141	150	150	140	150	158	160	141	150	160	160	138.5	146	152.25	152	
4	4/1/17	142	150	152	150	134	140	142	150	140	150	152	158	141	150	153	160	139.25	147.5	149.75	154.5	

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-3-31	
Windrow Construction:			Date Commenced: 3-29-17		Date Completed: 3-31-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
3/29/17	Oscar Ochoa	22.41	29.13	56.00		
3/29/17	Oscar Ochoa	22.95	29.84	56.00		
3/29/17	Oscar Ochoa	22.70	29.51	56.00	44.00	
3/30/17	Jerry Devoe	22.45	29.19	56.00		
3/30/17	Jerry Devoe	22.05	28.67	56.00		
3/30/17	Jerry Devoe	22.33	29.03	56.00	44.00	
3/31/17	Jerry Devoe	22.87	29.73	56.00		
3/31/17	Jerry Devoe	20.77	27.00	56.00		
3/31/17	Oscar Ochoa	22.69	29.50	56.00	44.00	
Totals		201.22	261.59	504.00	132.00	0.00
Windrow Construction ratio:		2.43 /1				