



PUBLIC WORKS

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Lucia E. Garsys

MEMORANDUM

DATE January 16, 2018

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

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

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: December 2017

Biosolids Received (wet tons):	1462.46 tons of biosolids received for the month.
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 windrows were formed and in active composting as of 12/31/17. Windrow temperatures were monitored daily. 9 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). 12 windrows have been turned. The previous 7 windrows have been moved to the curing section and combined for a total of 8 curing windrows. Sampling was performed on December 20, 2017. 790.22 tons of finished compost was picked up by 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
Joseph O'Neill, Professional Engineer II, Solid Waste Management Division, PWD
Ron Wiesman, Manager, Solid Waste Management Division, PWD

Attachment A

MSAP Process Temperature Chart Windrow# 17-11-4																						
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	11/5/17																					
2	11/6/17	124	123	122	122	133	132	127	125	122	114	111	111	126	125	123	123	126.25	123.5	120.75	120.25	
3	11/7/17	133	129	126	125	133	131	128	128	134	124	118	116	133	128	127	126	133.25	128	124.75	123.75	
4	11/8/17	138	129	126	126	140	134	132	132	139	127	122	119	140	136	132	132	139.25	131.5	128	127.25	
5	11/9/17	146	133	133	131	147	137	136	134	144	134	132	131	146	138	134	134	145.75	135.5	133.75	132.5	
6	11/10/17	138	136	136	133	147	140	138	138	146	140	136	133	146	145	138	136	144.25	140.25	137	135	
7	11/11/17	141	148	144	140	149	144	144	140	148	144	140	136	146	148	144	140	146	146	143	139	
8	11/12/17																					
9	11/13/17	156	150	148	148	150	155	160	156	151	145	143	145	146	153	152	156	150.75	150.75	150.75	151.25	
10	11/14/17	154	152	152	150	154	160	160	158	152	152	154	150	152	156	158	161	153	155	156	154.75	
11	11/15/17	152	153	158	160	162	160	158	160	152	156	158	152	155	160	158	160	155.25	157.25	158	158	
12	11/16/17	155	153	152	157	158	158	156	158	155	159	158	156	152	160	161	162	155	157.5	156.75	158.25	
13	11/17/17	150	152	150	156	152	154	150	152	151	156	158	156	148	158	160	161	150.25	155	154.5	156.25	
14	11/18/17	146	148	152	156	148	152	146	144	146	151	158	156	148	156	158	159	147	151.75	153.5	153.75	
15	11/19/17																					
16	11/20/17	145	145	154	154	143	146	147	147	139	142	159	156	147	158	150	152	143.5	147.75	152.5	152.25	
17	11/21/17	160	158	155	152	152	152	150	148	160	161	159	156	152	157	159	159	156	157	155.75	153.75	
18	11/22/17	145	146	152	154	143	147	148	148	156	155	156	152	151	152	154	156	148.75	150	152.5	152.5	
19	11/23/17																					
20	11/24/17	147	147	150	158	145	148	150	148	142	145	145	147	150	148	148	151	146	147	148.25	151	Turn
21	11/25/17	152	155	155	152	148	144	150	151	148	145	145	146	150	151	153	152	149.5	148.75	150.75	150.25	
22	11/26/17																					
23	11/27/17	146	152	158	160	152	160	158	160	152	158	160	162	155	160	162	162	151.25	157.5	159.5	161	
24	11/28/17	135	148	159	165	159	162	165	168	160	164	168	172	162	168	170	170	154	160.5	165.5	168.75	
25	11/29/17	134	146	160	165	156	160	166	170	160	162	166	171	160	164	170	171	152.5	158	165.5	169.25	
26	11/30/17	132	143	162	165	152	166	169	172	158	162	166	170	155	161	169	171	149.25	158	166.5	169.5	Turn
27	12/1/17	148	161	168	168	148	162	164	163	152	164	166	168	132	158	168	168	145	161.25	166.5	166.75	
28	12/2/17	150	160	170	172	150	164	168	166	160	164	168	170	148	164	170	170	152	163	169	169.5	
29	12/3/17																					
30	12/4/17	158	164	170	171	155	162	168	170	146	158	170	172	148	162	170	171	151.75	161.5	169.5	171	

Attachment B

MSAP Process Temperature Chart Windrow# 17-11-7																						
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	11/8/17	155	151	143	137	156	140	129	119	146	138	134	131	139	117	109	106	149	136.5	128.75	123.25	
2	11/9/17	162	158	148	140	156	148	139	130	157	145	134	127	150	132	121	117	156.25	145.75	135.5	128.5	
3	11/10/17	152	148	140	138	145	141	140	136	150	152	148	140	153	155	142	138	150	149	142.5	138	
4	11/11/17	153	154	144	140	154	150	142	138	158	154	152	146	153	152	145	140	154.5	152.5	145.75	141	
5	11/12/17																					
6	11/13/17	150	153	154	156	152	158	158	158	161	163	160	148	158	163	163	159	155.25	159.25	158.75	155.25	
7	11/14/17	148	153	156	156	150	158	159	159	161	162	160	156	156	163	164	161	153.75	159	159.75	158	
8	11/15/17	148	154	157	158	144	157	159	159	160	161	160	156	155	163	165	163	151.75	158.75	160.25	159	
9	11/16/17	146	155	155	153	143	154	159	159	160	161	156	152	152	162	162	164	150.25	158	158	157	
10	11/17/17	145	152	154	156	145	152	158	158	156	158	152	150	154	160	162	160	150	155.5	156.5	156	
11	11/18/17	145	150	151	157	148	151	156	156	143	156	143	148	152	157	160	160	147	153.5	152.5	155.25	
12	11/19/17																					
13	11/20/17	152	156	158	156	151	155	154	150	150	150	146	148	152	153	156	156	151.25	153.5	153.5	152.5	
14	11/21/17	158	158	154	152	155	154	150	146	152	151	144	146	147	148	154	154	153	152.75	150.5	149.5	
15	11/22/17	150	152	158	160	150	151	154	155	150	150	148	146	147	150	150	154	149.25	150.75	152.5	153.75	
16	11/23/17																					
17	11/24/17	152	160	161	162	153	155	155	153	152	152	151	148	150	155	153	150	151.75	155.5	155	153.25	
18	11/25/17	155	160	163	162	155	160	162	160	157	158	155	155	150	152	150	150	154.25	157.5	157.5	156.75	Turn
19	11/26/17																					
20	11/27/17	155	160	165	166	154	160	161	159	156	160	158	161	154	158	158	152	154.75	159.5	160.5	159.5	
21	11/28/17	156	160	165	166	153	159	160	158	154	160	162	163	152	156	161	155	153.75	158.75	162	160.5	
22	11/29/17	150	158	162	165	154	160	160	156	150	156	164	164	148	150	158	154	150.5	156	161	159.75	
23	11/30/17	146	157	160	164	157	162	161	156	143	152	167	169	142	152	160	158	147	155.75	162	161.75	
24	12/1/17	144	156	160	165	154	160	160	162	142	152	166	168	142	151	162	160	145.5	154.75	162	163.75	Turn
25	12/2/17	157	165	168	168	166	168	170	171	169	173	175	173	169	172	172	170	165.25	169.5	171.25	170.5	
26	12/3/17																					
27	12/4/17	161	167	170	172	152	160	163	165	143	158	168	172	157	164	164	158	153.25	162.25	166.25	166.75	
28	12/5/17	171	170	168	164	163	166	162	160	165	163	162	160	156	159	156	155	163.75	164.5	162	159.75	
29	12/6/17	156	166	166	165	150	162	170	168	144	156	167	170	146	157	169	170	149	160.25	168	168.25	
30	12/7/17	154	162	168	170	148	158	169	168	142	156	168	170	144	158	172	173	147	158.5	169.25	170.25	
31	12/8/17	154	160	168	168	149	154	164	166	148	158	162	166	144	156	170	170	148.75	157	166	167.5	
32	12/9/17	152	158	164	166	148	152	160	162	150	158	160	162	142	150	166	168	148	154.5	162.5	164.5	

Attachment C

MSAP Process Temperature Chart Windrow# 17-11-10																						
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	11/11/17	129	125	122	121	127	126	123	120	120	121	118	116	117	119	118	116	123.25	122.75	120.25	118.25	
2	11/12/17																					
3	11/13/17	146	142	133	130	140	136	134	131	141	132	130	130	148	138	131	126	143.75	137	132	129.25	
4	11/14/17	148	144	140	135	142	140	138	136	144	140	136	132	146	142	134	131	145	141.5	137	133.5	
5	11/15/17	149	145	144	140	143	141	141	140	145	149	140	140	146	146	143	141	145.75	145.25	142	140.25	
6	11/16/17	150	150	148	142	151	146	143	144	149	147	144	142	148	153	150	150	149.5	149	146.25	144.5	
7	11/17/17	152	150	147	141	152	148	144	144	148	147	144	142	150	150	148	148	150.5	148.75	145.75	143.75	
8	11/18/17	143	149	146	140	151	150	146	140	144	147	144	142	150	144	150	148	147	147.5	146.5	142.5	
9	11/19/17																					
10	11/20/17	148	148	145	141	151	153	152	150	155	157	156	151	148	148	145	140	150.5	151.5	149.5	145.5	
11	11/21/17	158	155	150	144	150	150	146	141	159	156	148	144	145	146	144	141	153	151.75	147	142.5	
12	11/22/17	147	150	150	148	146	150	155	155	157	160	156	152	147	148	148	146	149.25	152	152.25	150.25	
13	11/23/17																					
14	11/24/17	150	151	151	140	152	155	157	153	160	161	160	158	149	150	148	146	152.75	154.25	154	149.25	
15	11/25/17	150	153	155	158	148	156	163	158	140	154	157	155	140	148	140	136	144.5	152.75	153.75	151.75	
16	11/26/17																					
17	11/27/17	148	150	154	156	148	158	162	158	146	156	158	156	148	152	156	152	147.5	154	157.5	155.5	
18	11/28/17	149	148	156	156	150	158	161	159	152	160	159	157	151	161	160	158	150.5	156.75	159	157.5	
19	11/29/17	146	150	156	158	148	156	161	160	150	158	160	161	151	160	161	160	148.75	156	159.5	159.75	Turn
20	11/30/17	155	151	146	142	142	143	141	140	156	160	160	156	156	158	155	152	152.25	153	150.5	147.5	
21	12/1/17	154	155	156	154	148	158	161	160	156	162	164	164	152	158	158	160	152.5	158.25	159.75	159.5	
22	12/2/17	152	158	162	160	159	168	170	170	155	166	169	170	150	158	162	164	154	162.5	165.75	166	
23	12/3/17																					
24	12/4/17	147	148	148	148	150	149	148	148	150	151	150	148	144	149	150	156	147.75	149.25	149	150	
25	12/5/17	151	153	158	159	149	157	150	152	150	154	150	156	144	150	152	158	148.5	153.5	152.5	156.25	
26	12/6/17	148	152	159	160	146	154	152	154	146	153	152	154	142	148	153	157	145.5	151.75	154	156.25	Turn
27	12/7/17	159	166	169	173	166	171	174	172	158	167	170	174	149	158	160	160	158	165.5	168.25	169.75	
28	12/8/17	162	162	158	156	164	162	159	160	164	162	156	156	163	162	160	158	163.25	162	158.25	157.5	
29	12/9/17	158	162	164	164	159	162	160	162	162	162	164	164	162	160	164	164	160.25	161.5	163	163.5	
30	12/10/17																					
31	12/11/17	148	161	168	168	148	162	164	163	152	164	166	168	132	158	168	168	145	161.25	166.5	166.75	
32	12/12/17	150	160	170	172	150	164	168	166	160	164	168	170	148	164	170	170	152	163	169	169.5	

Attachment D

MSAP Process Temperature Chart Windrow# 17-11-14																						
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	11/15/17	158	152	136	133	159	154	144	131	160	154	148	136	148	148	139	134	156.25	152	141.75	133.5	
2	11/16/17	160	154	148	140	160	154	148	136	165	162	154	138	146	148	140	132	157.75	154.5	147.5	136.5	
3	11/17/17	164	150	150	144	156	152	150	138	166	164	160	140	140	146	140	136	156.5	153	150	139.5	
4	11/18/17	141	147	155	157	143	147	148	140	145	149	148	144	146	148	144	140	143.75	147.75	148.75	145.25	
5	11/19/17																					
6	11/20/17	145	147	151	155	150	155	151	148	161	162	162	160	148	150	148	145	151	153.5	153	152	
7	11/21/17	141	146	153	156	151	153	150	145	153	159	157	153	143	146	138	145	147	151	149.5	149.75	
8	11/22/17	144	149	151	155	147	150	148	144	156	160	160	154	148	150	146	146	148.75	152.25	151.25	149.75	
9	11/23/17																					
10	11/24/17	148	150	152	155	148	152	150	147	160	163	162	160	150	152	148	146	151.5	154.25	153	152	
11	11/25/17	144	148	154	156	148	154	152	150	158	162	162	160	150	154	154	150	150	154.5	155.5	154	
12	11/26/17																					
13	11/27/17	140	146	154	158	148	154	154	152	154	162	162	161	150	154	156	156	148	154	156.5	156.75	
14	11/28/17	132	142	155	160	150	154	154	153	146	160	163	161	151	156	159	160	144.75	153	157.75	158.5	
15	11/29/17	132	142	154	160	144	154	152	152	144	158	162	162	148	154	160	160	142	152	157	158.5	Turn
16	11/30/17	132	141	153	160	140	144	148	147	141	148	155	158	142	150	153	155	138.75	145.75	152.25	155	
17	12/1/17	136	138	152	158	141	146	156	158	148	152	158	160	140	146	150	154	141.25	145.5	154	157.5	
18	12/2/17	132	138	152	157	144	149	156	156	148	152	156	158	138	142	144	149	140.5	145.25	152	155	
19	12/3/17																					
20	12/4/17	158	167	169	169	139	155	162	169	152	154	152	144	153	160	161	162	150.5	159	161	161	Turn
21	12/5/17	156	166	168	169	152	160	164	168	150	156	156	153	154	162	163	166	153	161	162.75	164	
22	12/6/17	158	160	162	165	156	161	162	165	150	158	163	152	150	160	165	162	153.5	159.75	163	161	
23	12/7/17	144	158	164	168	148	161	169	174	155	158	159	155	150	156	162	165	149.25	158.25	163.5	165.5	
24	12/8/17	148	161	168	168	148	162	164	163	152	164	166	160	148	158	168	168	149	161.25	166.5	164.75	
25	12/9/17	150	160	170	164	150	164	168	162	154	164	168	160	148	164	170	170	150.5	163	169	164	
26	12/10/17																					
27	12/11/17	146	156	160	160	144	158	162	162	144	156	161	162	144	156	159	161	144.5	156.5	160.5	161.25	
28	12/12/17	139	151	162	167	142	141	152	164	158	163	163	161	136	152	160	164	143.75	151.75	159.25	164	Turn
29	12/13/17	158	160	157	160	160	168	163	163	165	168	164	161	138	143	143	144	155.25	159.75	156.75	157	
30	12/14/17	171	174	176	177	140	156	166	171	159	164	166	166	144	148	152	154	153.5	160.5	165	167	

Attachment E

MSAP Process Temperature Chart Windrow# 17-11-17																						
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	11/18/17	127	121	117	114	105	103	101	99	113	112	111	111	112	111	110	109	114.25	111.75	109.75	108.25	
2	11/19/17																					
3	11/20/17	142	139	133	129	140	139	136	130	135	133	131	129	133	131	128	126	137.5	135.5	132	128.5	
4	11/21/17	151	154	152	130	138	138	136	131	137	135	136	129	138	134	131	130	141	140.25	138.75	130	
5	11/22/17	144	138	136	132	136	137	136	136	137	140	144	136	138	140	142	147	138.75	138.75	139.5	137.75	
6	11/23/17																					
7	11/24/17	145	140	140	138	138	140	138	136	140	141	144	138	140	142	144	150	140.75	140.75	141.5	140.5	
8	11/25/17	136	146	157	158	145	148	144	147	142	150	153	150	140	144	151	155	140.75	147	151.25	152.5	
9	11/26/17																					
10	11/27/17	142	152	160	162	148	160	156	152	148	158	162	162	148	152	154	156	146.5	155.5	158	158	
11	11/28/17	138	158	162	162	146	158	158	154	144	154	160	163	154	156	158	160	145.5	156.5	159.5	159.75	
12	11/29/17	138	156	164	163	144	160	160	158	146	158	164	164	152	154	160	160	145	157	162	161.25	
13	11/30/17	140	154	164	164	140	160	160	158	150	160	165	166	150	154	161	162	145	157	162.5	162.5	
14	12/1/17	136	148	162	161	142	158	158	157	150	160	166	165	152	155	160	162	145	155.25	161.5	161.25	
15	12/2/17	132	138	164	157	144	156	156	156	151	158	165	165	169	169	167	165	149	155.25	163	160.75	
16	12/3/17																					
17	12/4/17	157	160	166	168	154	162	164	160	140	158	167	172	149	154	160	163	150	158.5	164.25	165.75	Turn
18	12/5/17	162	165	168	168	168	164	162	158	151	160	165	171	148	148	158	160	157.25	159.25	163.25	164.25	
19	12/6/17	158	162	165	165	158	162	162	162	159	162	164	164	158	161	163	162	158.25	161.75	163.5	163.25	
20	12/7/17	158	165	166	167	159	158	162	162	148	158	164	168	158	162	166	168	155.75	160.75	164.5	166.25	
21	12/8/17	156	158	165	165	160	160	158	161	150	156	160	160	150	160	156	156	154	158.5	159.75	160.5	
22	12/9/17	156	158	164	165	160	162	159	162	154	158	160	160	154	160	156	156	156	159.5	159.75	160.75	
23	12/10/17																					
24	12/11/17	156	158	162	164	161	162	160	158	158	161	161	161	158	161	156	155	158.25	160.5	159.75	159.5	
25	12/12/17	154	157	162	165	148	154	155	156	148	154	159	156	142	142	145	147	148	151.75	155.25	156	
26	12/13/17	150	157	153	144	152	152	150	148	142	144	144	143	144	146	151	138	147	149.75	149.5	143.25	Turn
27	12/14/17	167	166	164	163	168	166	164	162	160	161	159	158	151	154	158	162	161.5	161.75	161.25	161.25	
28	12/15/17	134	148	160	165	157	163	171	176	158	162	167	173	160	158	161	163	152.25	157.75	164.75	169.25	
29	12/16/17	138	150	162	170	152	161	170	172	156	160	170	170	152	158	165	170	149.5	157.25	166.75	170.5	
30	12/17/17																					
31	12/18/17	146	156	166	168	148	158	168	170	152	156	166	168	144	159	170	170	147.5	157.25	167.5	169	Turn
32	12/19/17	143	152	158	162	160	166	166	162	152	160	162	162	152	160	164	167	151.75	159.5	162.5	163.25	
33	12/20/17	140	156	162	166	158	163	166	168	150	156	162	166	148	154	163	166	149	157.25	163.25	166.5	

Attachment F

MSAP Process Temperature Chart Windrow# 17-11-21																						
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	11/22/17	130	129	122	119	129	126	119	118	130	130	128	119	120	117	110	109	127.25	125.5	119.75	116.25	
2	11/23/17																					
3	11/24/17	131	130	128	126	132	130	129	126	136	132	130	127	131	120	119	116	132.5	128	126.5	123.75	
4	11/25/17	134	137	136	133	137	136	132	131	140	139	137	135	132	141	140	138	135.75	138.25	136.25	134.25	
5	11/26/17																					
6	11/27/17	148	150	140	138	140	138	134	132	138	138	138	136	136	142	148	148	140.5	142	140	138.5	
7	11/28/17	148	150	144	142	145	141	138	136	132	137	140	143	137	142	150	153	140.5	142.5	143	143.5	
8	11/29/17	146	148	148	145	146	144	141	140	132	138	142	144	146	150	152	152	142.5	145	145.75	145.25	
9	11/30/17	143	147	149	148	147	146	146	147	132	140	142	142	150	154	157	159	143	146.75	148.5	149	
10	12/1/17	145	148	151	154	150	148	150	151	136	140	144	143	146	152	156	158	144.25	147	150.25	151.5	
11	12/2/17	149	151	154	156	149	148	152	152	135	142	146	144	139	150	153	156	143	147.75	151.25	152	
12	12/3/17																					
13	12/4/17	150	158	163	165	145	149	152	154	150	152	153	155	152	159	159	159	149.25	154.5	156.75	158.25	
14	12/5/17	138	143	150	158	141	152	153	154	142	150	153	157	140	146	160	163	140.25	147.75	154	158	
15	12/6/17	136	142	148	157	138	150	153	155	142	148	154	157	141	148	159	160	139.25	147	153.5	157.25	
16	12/7/17	131	140	145	152	136	148	153	156	140	144	154	156	142	151	154	156	137.25	145.75	151.5	155	
17	12/8/17	135	143	152	157	135	151	156	158	140	146	156	158	141	150	156	157	137.75	147.5	155	157.5	
18	12/9/17	133	142	152	156	134	148	155	158	138	145	156	158	140	149	156	158	136.25	146	154.75	157.5	
19	12/10/17																					
20	12/11/17	151	156	160	158	145	151	152	156	146	151	156	158	150	153	155	158	148	152.75	155.75	157.5	Turn
21	12/12/17	140	145	153	157	142	151	159	162	146	150	154	155	134	153	161	164	140.5	149.75	156.75	159.5	
22	12/13/17	134	136	137	136	139	140	140	140	134	135	135	135	132	135	137	140	134.75	136.5	137.25	137.75	
23	12/14/17	132	141	145	147	141	145	152	156	141	139	140	139	132	141	150	154	136.5	141.5	146.75	149	
24	12/15/17	148	160	166	173	148	157	164	171	146	151	156	157	144	153	163	173	146.5	155.25	162.25	168.5	
25	12/16/17	147	160	165	170	149	160	163	168	147	152	155	160	145	155	162	171	147	156.75	161.25	167.25	
26	12/17/17																					
27	12/18/17	156	164	170	173	153	160	166	171	154	159	161	160	134	146	158	165	149.25	157.25	163.75	167.25	Turn
28	12/19/17	164	162	158	155	160	161	159	156	164	165	165	166	157	152	150	148	161.25	160	158	156.25	
29	12/20/17	156	158	164	160	144	160	164	168	150	156	156	153	152	150	163	166	150.5	156	161.75	161.75	
30	12/21/17	154	156	161	160	142	133	141	150	148	156	160	163	148	149	158	161	148	148.5	155	158.5	
31	12/22/17	150	153	160	160	143	149	153	160	150	155	158	162	138	142	156	160	145.25	149.75	156.75	160.5	
32	12/23/17	152	155	158	161	147	150	154	163	153	155	159	162	133	140	152	160	146.25	150	155.75	161.5	

Attachment G

MSAP Process Temperature Chart Windrow# 17-11-27																						
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	11/28/17	132	135	145	147	142	146	148	146	141	144	141	140	146	156	159	158	140.25	145.25	148.25	147.75	
2	11/29/17	132	140	145	147	144	148	150	148	141	146	142	142	144	150	158	158	140.25	146	148.75	148.75	
3	11/30/17	132	141	145	147	145	150	152	151	141	146	144	144	140	149	152	154	139.5	146.5	148.25	149	
4	12/1/17	136	142	146	148	148	156	158	156	148	152	152	150	140	148	152	156	143	149.5	152	152.5	
5	12/2/17	139	144	147	150	151	158	161	160	155	158	157	154	140	144	150	148	146.25	151	153.75	153	
6	12/3/17																					
7	12/4/17	156	156	155	153	154	157	156	154	152	158	160	160	142	163	166	165	151	158.5	159.25	158	
8	12/5/17	156	158	157	156	150	154	158	158	152	159	158	155	151	153	154	154	152.25	156	156.75	155.75	
9	12/6/17	154	156	158	158	151	156	160	158	153	159	158	158	152	154	157	156	152.5	156.25	158.25	157.5	
10	12/7/17	152	154	160	158	155	161	160	160	153	158	158	158	156	155	160	158	154	157	159.5	158.5	
11	12/8/17	154	152	160	158	154	161	162	160	152	156	162	163	148	158	159	160	152	156.75	160.75	160.25	
12	12/9/17	154	150	162	160	152	162	163	162	150	156	162	162	144	156	158	160	150	156	161.25	161	
13	12/10/17																					
14	12/11/17	152	151	162	161	150	158	162	161	150	158	162	161	145	154	158	161	149.25	155.25	161	161	
15	12/12/17	148	151	151	152	159	163	164	162	156	158	158	156	149	162	163	162	153	158.5	159	158	Turn
16	12/13/17	142	154	161	162	156	161	161	158	140	153	156	158	160	166	166	163	149.5	158.5	161	160.25	
17	12/14/17	144	147	149	153	155	156	154	151	138	148	150	152	149	153	159	161	146.5	151	153	154.25	
18	12/15/17	165	166	164	161	165	159	154	147	161	160	156	151	160	165	166	161	162.75	162.5	160	155	
19	12/16/17	163	167	164	160	163	160	158	150	160	163	152	150	160	159	160	160	161.5	162.25	158.5	155	
20	12/17/17																					
21	12/18/17	146	144	143	143	151	150	150	149	147	147	147	147	144	142	142	142	147	145.75	145.5	145.25	
22	12/19/17	135	143	152	157	148	151	156	158	144	153	160	162	140	146	156	161	141.75	148.25	156	159.5	
23	12/20/17	156	163	162	159	153	163	165	160	158	163	164	161	156	164	165	162	155.75	163.25	164	160.5	Turn
24	12/21/17	155	160	160	159	165	169	170	162	166	166	166	164	160	162	162	166	161.5	164.25	164.5	162.75	
25	12/22/17	158	160	163	165	160	161	165	167	159	162	164	165	156	160	160	163	158.25	160.75	163	165	
26	12/23/17	159	162	165	167	163	165	167	169	162	162	166	168	156	160	162	165	160	162.25	165	167.25	
27	12/24/17																					
28	12/25/17	156	160	163	164	156	160	163	162	155	161	164	165	158	162	164	164	156.25	160.75	163.5	163.75	
29	12/26/17	158	165	163	165	154	162	165	164	153	162	166	166	152	161	164	165	154.25	162.5	164.5	165	
30	12/27/17	154	160	164	163	158	164	166	164	157	160	163	165	155	162	165	164	156	161.5	164.5	164	
31	12/28/17	160	164	166	162	158	162	164	160	157	162	163	158	158	164	162	156	158.25	163	163.75	159	
32	12/29/17	159	161	163	161	157	161	164	163	157	162	163	163	158	164	163	161	157.75	162	163.25	162	

Attachment H

MSAP Process Temperature Chart Windrow# 17-11-29																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	11/30/17	134	139	136	132	120	116	114	110	112	113	111	109	106	108	108	107	118	119	117.25	114.5	
2	12/1/17	136	134	132	134	138	132	120	114	136	132	131	126	128	125	120	118	134.5	130.75	125.75	123	
3	12/2/17	144	148	148	140	141	132	124	119	145	134	132	130	138	136	132	132	142	137.5	134	130.25	
4	12/3/17																					
5	12/4/17	159	160	157	154	152	149	145	140	153	151	146	143	144	149	146	143	152	152.25	148.5	145	
6	12/5/17	150	155	158	158	151	156	152	148	150	150	146	141	152	152	149	142	150.75	153.25	151.25	147.25	
7	12/6/17	151	158	161	154	150	158	163	152	150	160	165	162	152	158	162	158	150.75	158.5	162.75	156.5	
8	12/7/17	146	156	162	156	146	157	164	156	146	159	165	163	148	156	162	159	146.5	157	163.25	158.5	
9	12/8/17	140	154	162	158	140	156	165	160	142	158	166	165	146	156	161	158	142	156	163.5	160.25	
10	12/9/17	144	156	161	160	148	157	163	160	148	162	168	166	148	160	163	160	147	158.75	163.75	161.5	
11	12/10/17																					
12	12/11/17	146	156	159	160	146	156	160	160	146	158	162	164	148	154	160	160	146.5	156	160.25	161	
13	12/12/17	156	162	161	155	155	160	159	155	146	155	156	156	147	155	156	158	151	158	158	156	
14	12/13/17	138	144	152	157	150	156	156	154	150	154	154	152	145	152	156	157	145.75	151.5	154.5	155	
15	12/14/17	134	145	148	157	136	147	151	153	144	150	153	155	140	151	155	157	138.5	148.25	151.75	155.5	
16	12/15/17	158	162	161	155	158	160	158	150	160	159	154	150	153	158	159	157	157.25	159.75	158	153	
17	12/16/17	158	161	162	160	160	162	160	155	158	159	158	152	150	159	160	160	156.5	160.25	160	156.75	
18	12/17/17																					
19	12/18/17	148	160	165	164	150	157	164	164	147	158	161	161	151	156	156	155	149	157.75	161.5	161	
20	12/19/17	141	156	159	162	150	157	160	161	149	152	156	158	145	150	155	157	146.25	153.75	157.5	159.5	
21	12/20/17	154	158	161	160	158	160	163	164	159	162	163	162	157	160	161	160	157	160	162	161.5	Turn
22	12/21/17	149	157	162	165	139	146	154	158	136	143	153	158	133	141	148	154	139.25	146.75	154.25	158.75	
23	12/22/17	145	150	152	158	150	155	156	160	140	145	152	159	150	155	160	163	146.25	151.25	155	160	
24	12/23/17	145	154	155	159	152	155	156	158	140	149	156	158	153	157	159	161	147.5	153.75	156.5	159	
25	12/24/17																					
26	12/25/17																					
27	12/26/17	149	161	166	166	142	151	160	162	144	157	162	162	138	150	158	160	143.25	154.75	161.5	162.5	
28	12/27/17	135	150	160	163	151	163	165	168	136	152	156	163	145	151	160	164	141.75	154	160.25	164.5	
29	12/28/17	135	148	158	160	146	156	163	163	135	152	156	161	142	150	162	162	139.5	151.5	159.75	161.5	
30	12/29/17	135	145	148	156	141	151	158	160	134	151	159	162	140	148	160	161	137.5	148.75	156.25	159.75	
31	12/30/17	134	141	147	156	139	150	158	160	133	150	156	160	138	145	158	160	136	146.5	154.75	159	
32	12/31/17																					

Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-2		
Windrow Construction:			Date Commenced: 11-30-17	Date Completed: 12-2-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
11/30/17	Mike Bayne	22.83	29.68	44	16	
11/30/17	Mike Bayne	21.36	27.77	44	16	
11/30/17	Mike Bayne	17.17	22.32	44	16	44
12/1/17	Jerry Devoe	20.27	26.35	44	16	
12/1/17	Jerry Devoe	18.15	23.60	44	16	
12/1/17	Jerry Devoe	20.53	26.69	44	16	44
12/1/17	Oscar Ochoa	19.40	25.22	44	16	
12/2/17	Oscar Ochoa	22.24	28.91	44	16	
12/2/17	Oscar Ochoa	22.29	28.98	44	16	44
Totals		184.24	239.51	396.00	144.00	132.00
Windrow Construction ratio:		2.81 /1				

MSAP Process Temperature Chart Windrow# 17-12-2																						
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	12/3/17																					
2	12/4/17	152	144	137	134	155	155	146	130	148	146	140	130	148	137	110	104	150.75	145.5	133.25	124.5	
3	12/5/17	157	154	145	142	152	154	156	152	147	146	144	140	150	151	140	132	151.5	151.25	146.25	141.5	
4	12/6/17	157	157	150	146	154	156	156	152	148	148	146	142	152	152	146	138	152.75	153.25	149.5	144.5	
5	12/7/17	156	160	155	150	156	158	157	151	150	150	148	143	156	154	149	145	154.5	155.5	152.25	147.25	
6	12/8/17	158	162	154	150	160	158	158	154	154	156	152	144	156	158	152	148	157	158.5	154	149	
7	12/9/17	158	161	153	152	160	158	160	158	150	152	156	150	154	158	156	154	155.5	157.25	156.25	153.5	
8	12/10/17																					
9	12/11/17	156	160	154	154	156	158	161	160	148	150	154	148	152	158	158	155	153	156.5	156.75	154.25	
10	12/12/17	156	157	154	156	152	160	163	162	147	147	154	145	152	158	158	156	151.75	155.5	157.25	154.75	
11	12/13/17	151	155	157	157	151	158	162	163	150	153	153	151	150	158	162	161	150.5	156	158.5	158	
12	12/14/17	154	156	156	155	149	152	154	156	150	150	149	148	156	158	159	154	152.25	154	154.5	153.25	
13	12/15/17	153	152	147	140	150	155	155	151	145	144	142	138	154	152	148	137	150.5	150.75	148	141.5	
14	12/16/17	150	150	148	145	149	152	155	150	148	146	141	140	150	155	150	145	149.25	150.75	148.5	145	
15	12/17/17																					
16	12/18/17	151	156	158	158	148	158	164	164	154	154	154	152	157	161	163	162	152.5	157.25	159.75	159	
17	12/19/17	158	160	160	157	156	159	161	161	150	152	151	150	159	162	162	160	155.75	158.25	158.5	157	Turn
18	12/20/17	156	160	158	156	154	156	161	158	152	156	154	152	156	160	160	160	154.5	158	158.25	156.5	
19	12/21/17	151	160	162	163	152	156	159	161	155	157	157	158	156	160	162	160	153.5	158.25	160	160.5	
20	12/22/17	152	150	153	160	152	155	155	160	152	155	154	156	160	162	159	161	154	155.5	155.25	159.25	
21	12/23/17	150	153	153	158	154	154	156	157	155	155	154	154	158	161	163	163	154.25	155.75	156.5	158	
22	12/24/17																					
23	12/25/17																					
24	12/26/17	144	153	160	160	142	142	146	152	152	154	154	152	143	154	160	163	145.25	150.75	155	156.75	Turn
25	12/27/17	167	170	171	168	164	158	155	154	165	169	167	166	163	162	157	155	164.75	164.75	162.5	160.75	
26	12/28/17	156	163	165	162	160	158	156	158	164	166	168	168	160	162	159	162	160	162.25	162	162.5	
27	12/29/17	150	150	149	147	148	145	143	144	163	164	169	170	159	162	164	166	155	155.25	156.25	156.75	
28	12/30/17	148	152	156	156	146	148	150	154	158	160	166	167	156	158	162	164	152	154.5	158.5	160.25	
29	12/31/17																					

Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-12-7	
Windrow Construction:			Date Commenced: 12-4-17		Date Completed: 12-7-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/4/17	Mike Bayne	18.16	23.61	44	16	
12/4/17	Mike Bayne	20.74	26.96	44	16	32
12/5/17	Mike Bayne	23.49	30.54	44	16	
12/5/17	Jerry Devoe	19.71	25.62	44	16	
12/5/17	Jerry Devoe	19.70	25.61	44	16	44
12/6/17	Jerry Devoe	23.55	30.62	44	16	
12/6/17	Oscar Ochoa	18.94	24.62	44	16	
12/6/17	Oscar Ochoa	22.24	28.91	44	16	44
12/7/17	Oscar Ochoa	23.46	30.50	44	16	24
Totals		189.99	246.99	396.00	144.00	144.00
Windrow Construction ratio:		2.77 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-7																						
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	12/8/17	141	138	131	118	138	136	128	122	136	132	130	114	134	131	128	110	137.25	134.25	129.25	116	
2	12/9/17	148	144	136	124	142	140	132	128	140	136	132	125	138	134	128	126	142	138.5	132	125.75	
3	12/10/17																					
4	12/11/17	148	148	136	134	148	150	146	144	146	140	138	132	144	150	140	141	146.5	147	140	137.75	
5	12/12/17	150	150	138	140	152	156	154	151	146	144	144	140	146	159	156	152	148.5	152.25	148	145.75	
6	12/13/17	134	140	142	145	152	155	155	156	145	145	142	141	153	156	159	159	146	149	149.5	150.25	
7	12/14/17	140	145	148	149	148	151	152	151	149	147	146	144	152	156	159	160	147.25	149.75	151.25	151	
8	12/15/17	149	151	150	144	150	150	147	145	147	145	140	135	155	158	160	161	150.25	151	149.25	146.25	
9	12/16/17	150	153	150	146	152	148	144	152	150	145	140	138	155	160	162	165	151.75	151.5	149	150.25	
10	12/17/17																					
11	12/18/17	142	141	141	142	151	156	159	156	153	157	154	150	148	153	156	158	148.5	151.75	152.5	151.5	
12	12/19/17	148	144	142	142	146	149	152	158	154	156	154	150	148	150	156	160	149	149.75	151	152.5	
13	12/20/17	152	144	144	142	145	150	152	158	154	156	154	150	146	151	156	158	149.25	150.25	151.5	152	
14	12/21/17	156	145	145	143	144	150	152	156	154	156	154	150	142	151	158	162	149	150.5	152.25	152.75	
15	12/22/17	150	145	143	145	140	150	152	158	150	154	155	155	148	156	160	162	147	151.25	152.5	155	
16	12/23/17	147	145	144	145	144	148	154	156	149	151	154	155	144	155	157	160	146	149.75	152.25	154	
17	12/24/17																					
18	12/25/17																					
19	12/26/17	132	150	160	163	140	152	155	161	143	153	158	160	142	148	154	158	139.25	150.75	156.75	160.5	
20	12/27/17	132	140	145	151	144	147	154	157	151	155	159	161	148	152	155	162	143.75	148.5	153.25	157.75	
21	12/28/17	151	148	152	150	148	152	154	148	152	156	158	157	156	154	156	156	151.75	152.5	155	152.75	Turn
22	12/29/17	145	143	146	154	148	151	155	157	148	151	153	155	160	161	157	162	150.25	151.5	152.75	157	
23	12/30/17	148	150	152	156	146	150	158	160	148	152	154	157	158	160	160	162	150	153	156	158.75	
24	12/31/17																					

Attachment K

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-11		
Windrow Construction:		Date Commenced: 12-7-17		Date Completed: 12-11-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/7/17	Mike Bayne	21.34	27.74	44	16	
12/7/17	Mike Bayne	17.89	23.26	44	16	32
12/8/17	Mike Bayne	22.39	29.11	44	16	
12/8/17	Jerry Devoe	19.12	24.86	44	16	
12/8/17	Jerry Devoe	20.05	26.07	44	16	
12/8/17	Jerry Devoe	22.26	28.94	44	16	48
12/9/17	Oscar Ochoa	21.33	27.73	44	16	20
12/11/17	Oscar Ochoa	22.47	29.21	44	16	
12/11/17	Oscar Ochoa	20.86	27.12	44	16	32
Totals		187.71	244.02	396.00	144.00	132.00
Windrow Construction ratio:		2.75 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-11																						
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	12/12/17	151	153	153	152	155	155	153	154	150	152	153	153	153	153	146	142	152.25	153.25	151.25	150.25	
2	12/13/17	152	154	156	155	150	158	158	160	138	148	155	157	166	168	170	160	151.5	157	159.75	158	
3	12/14/17	140	145	148	149	133	144	148	150	143	147	149	151	132	140	148	152	137	144	148.25	150.5	
4	12/15/17	151	152	150	147	151	155	153	150	152	153	150	148	159	158	153	148	153.25	154.5	151.5	148.25	
5	12/16/17	150	151	152	148	152	160	162	160	150	148	145	140	155	150	148	145	151.75	152.25	151.75	148.25	
6	12/17/17																					
7	12/18/17	153	157	156	154	159	162	162	159	148	152	156	158	160	165	168	162	155	159	160.5	158.25	
8	12/19/17	151	156	160	162	156	160	161	158	146	151	156	158	150	153	155	158	150.75	155	158	159	
9	12/20/17	150	155	158	160	152	160	160	156	148	154	158	159	150	156	158	160	150	156.25	158.5	158.75	
10	12/21/17	150	154	156	156	156	157	155	152	150	156	160	159	151	158	163	164	151.75	156.25	158.5	157.75	
11	12/22/17	144	150	152	155	155	159	155	160	150	155	154	158	160	161	162	158	152.25	156.25	155.75	157.75	
12	12/23/17	144	149	152	153	154	156	156	158	151	152	154	156	160	159	158	158	152.25	154	155	156.25	
13	12/24/17																					
14	12/25/17																					
15	12/26/17	152	160	162	163	143	150	152	158	152	158	161	161	154	158	163	165	150.25	156.5	159.5	161.75	Turn
16	12/27/17	152	155	159	161	155	157	160	163	156	156	158	160	150	155	157	161	153.25	155.75	158.5	161.25	
17	12/28/17	148	152	156	158	150	154	156	158	151	153	156	160	148	152	156	161	149.25	152.75	156	159.25	
18	12/29/17	137	148	151	153	139	142	144	150	137	138	141	146	144	147	156	162	139.25	143.75	148	152.75	
19	12/30/17	140	146	156	155	138	140	148	151	136	138	142	148	142	146	156	161	139	142.5	150.5	153.75	
20	12/31/17																					

Attachment L

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-14		
Windrow Construction:			Date Commenced: 12-11-17	Date Completed: 12-14-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/11/17	Mike Bayne	21.29	27.68	44	16	
12/11/17	Mike Bayne	22.24	28.91	44	16	32.00
12/12/17	Mike Bayne	21.45	27.89	44	16	
12/12/17	Mike Bayne	22.49	29.24	44	16	32
12/13/17	Jerry Devoe	21.51	27.96	44	16	
12/13/17	Jerry Devoe	20.44	26.57	44	16	
12/13/17	Jerry Devoe	22.54	29.30	44	16	44
12/14/17	Jerry Devoe	18.77	24.40	44	16	
12/14/17	Jerry Devoe	17.15	22.30	44	16	32
Totals		187.88	244.24	396.00	144.00	140.00
Windrow Construction ratio:		2.78 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-14																						
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	12/15/17	140	138	136	124	142	145	140	138	135	127	122	120	145	148	140	138	140.5	139.5	134.5	130	
2	12/16/17	145	140	138	132	140	146	140	139	137	132	129	126	145	149	142	136	141.75	141.75	137.25	133.25	
3	12/17/17																					
4	12/18/17	145	152	152	140	153	155	153	150	152	155	156	158	162	164	161	153	153	156.5	155.5	150.25	
5	12/19/17	145	154	152	143	150	154	154	150	150	154	157	159	159	162	162	159	151	156	156.25	152.75	
6	12/20/17	144	156	154	146	148	155	156	154	148	154	158	160	154	158	162	160	148.5	155.75	157.5	155	
7	12/21/17	156	160	156	152	146	155	158	158	144	144	158	160	151	156	159	161	149.25	153.75	157.75	157.75	
8	12/22/17	145	150	152	149	143	152	155	150	141	145	156	156	147	150	160	162	144	149.25	155.75	154.25	
9	12/23/17	144	149	150	147	145	151	153	153	142	145	152	153	145	153	156	157	144	149.5	152.75	152.5	
10	12/24/17																					
11	12/25/17																					
12	12/26/17	140	152	153	155	152	160	161	163	143	151	155	155	150	160	162	163	146.25	155.75	157.75	159	
13	12/27/17	141	157	160	163	149	150	153	155	143	147	154	159	151	155	159	161	146	152.25	156.5	159.5	
14	12/28/17	138	154	159	161	148	152	154	156	144	148	156	160	150	152	156	158	145	151.5	156.25	158.75	
15	12/29/17	132	143	146	152	145	153	156	156	145	152	158	160	147	151	150	154	142.25	149.75	152.5	155.5	
16	12/30/17	132	140	151	156	140	152	154	156	139	151	158	161	142	150	152	155	138.25	148.25	153.75	157	
17	12/31/17																					

Attachment M

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-19		
Windrow Construction:		Date Commenced: 12-15-17		Date Completed: 12-14-19		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/14/17	Mike Bayne	19.71	25.62	44	16	20
12/15/17	Mike Bayne	21.93	28.51	44	16	
12/15/17	Mike Bayne	21.64	28.13	44	16	
12/15/17	Jerry Devoe	19.71	25.62	44	16	
12/15/17	Oscar Ochoa	20.06	26.08	44	16	52
12/16/17	Oscar Ochoa	19.48	25.32	44	16	
12/16/17	Mike Bayne	22.08	28.70	44	16	32
12/18/17	Mike Bayne	21.98	28.57	44	16	
12/18/17	Mike Bayne	22.16	28.81	44	16	32
12/19/17	Mike Bayne	22.13	28.77	44	16	20
Totals		210.88	274.14	440.00	160.00	156.00
Windrow Construction ratio:		2.76 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-19																						
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	12/20/17	140	138	136	132	142	140	132	130	141	140	135	134	134	132	130	130	139.25	137.5	133.25	131.5	
2	12/21/17	150	152	151	147	153	153	146	142	158	158	155	153	151	146	132	130	153	152.25	146	143	
3	12/22/17	150	152	148	143	145	149	148	146	150	152	160	161	154	152	148	145	149.75	151.25	151	148.75	
4	12/23/17	144	152	148	145	148	150	148	147	152	154	158	158	155	153	146	144	149.75	152.25	150	148.5	
5	12/24/17																					
6	12/25/17																					
7	12/26/17	143	151	156	152	153	155	151	150	152	158	156	156	158	161	155	153	151.5	156.25	154.5	152.75	
8	12/27/17	144	152	156	158	143	145	150	152	151	154	157	162	158	157	153	152	149	152	154	156	
9	12/28/17	148	154	156	158	146	148	152	154	150	152	154	158	152	154	150	152	149	152	153	155.5	
10	12/29/17	153	156	158	161	146	156	159	158	145	148	154	156	141	145	149	152	146.25	151.25	155	156.75	
11	12/30/17	148	152	158	160	144	152	158	158	141	146	156	156	139	144	152	152	143	148.5	156	156.5	
12	12/31/17																					

Attachment N

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-22		
Windrow Construction:			Date Commenced: 12-19-17	Date Completed: 12-22-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/19/17	Jerry Devoe	15.74	20.46	44	16	
12/19/17	Jerry Devoe	22.17	28.82	44	16	32
12/20/17	Jerry Devoe	22.42	29.15	44	16	
12/20/17	Mike Bayne	20.57	26.74	44	16	
12/20/17	Mike Bayne	20.96	27.25	44	16	
12/20/17	Mike Bayne	22.52	29.28	44	16	52
12/21/17	Jerry Devoe	19.80	25.74	44	16	
12/21/17	Jerry Devoe	22.40	29.12	44	16	32
12/22/17	Jerry Devoe	19.90	25.87	44	16	20
Totals		186.48	242.42	396.00	144.00	136.00
Windrow Construction ratio:		2.79 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-22																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/23/17	126	127	126	124	121	126	127	125	125	124	122	114	131	130	128	125	125.75	125.25	125.75	122	
2	12/24/17																					
3	12/25/17																					
4	12/26/17	132	142	150	153	143	154	152	150	134	140	148	153	140	143	142	140	137.25	144.75	148	149	
5	12/27/17	141	146	154	158	143	145	150	155	148	154	156	154	152	154	152	150	146	149.75	153	154.25	
6	12/28/17	144	144	152	156	142	145	148	150	142	152	154	154	148	150	152	150	144	147.75	151.5	152.5	
7	12/29/17	131	134	147	154	141	145	145	144	139	150	152	153	144	148	151	151	138.75	144.25	148.75	150.5	
8	12/30/17	132	136	148	152	140	146	146	144	138	148	154	154	142	148	154	152	138	144.5	150.5	150.5	
9	12/31/17																					

Attachment O

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-12-27	
Windrow Construction:			Date Commenced: 12-23-17	Date Completed: 12-28-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/22/17	Jerry Devoe	21.87	28.43	44	16	
12/22/17	Jerry Devoe	18.91	24.58	44	16	32
12/23/17	Jerry Devoe	21.02	27.33	44	16	20
12/26/17	Mike Bayne	23.10	30.03	44	16	
12/26/17	Mike Bayne	20.28	26.36	44	16	32
12/27/17	Mike Bayne	20.27	26.35	44	16	20
Totals		125.45	163.09	264.00	96.00	104.00
Windrow Construction ratio:		2.85 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-27																						
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	12/28/17	120	116	114	112	119	122	124	127	110	108	105	104	96	93	91	90	111.25	109.75	108.5	108.25	
2	12/29/17	138	136	128	119	138	132	131	130	131	128	121	116	126	124	110	108	133.25	130	122.5	118.25	
3	12/30/17	144	141	132	128	146	140	136	132	137	133	130	128	135	132	130	128	140.5	136.5	132	129	
4	12/31/17																					

Attachment P

Hillsborough County Composting - Monitoring Sheet (MSAP Method)				Windrow # 17-12-30		
Windrow Construction:			Date Commenced: 12-27-17	Date Completed: 12-30-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
12/27/17	Mike Bayne	20.59	26.77	44	16	
12/27/17	Mike Bayne	19.70	25.61	44	16	32
12/28/17	Mike Bayne	23.32	30.32	44	16	
12/28/17	Mike Bayne	18.41	23.93	44	16	
12/28/17	Jerry Devoe	20.44	26.57	44	16	44
12/29/17	Jerry Devoe	19.37	25.18	44	16	
12/29/17	Jerry Devoe	21.15	27.50	44	16	
12/29/17	Jerry Devoe	22.61	29.39	44	16	44
12/30/17	Jerry Devoe	22.40	29.12	44	16	20
Totals		187.99	244.39	396.00	144.00	140.00
Windrow Construction ratio:		2.78 /1				
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-12-30																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	12/31/17																					