



**PUBLIC WORKS**

PO Box 1110 Tampa, FL 33601-1110  
(813) 272-5912 | Fax: (813) 272-5811

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Lucia E. Garsys

**MEMORANDUM**

**DATE**            October 18, 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: September 2017

Biosolids Received (wet tons):	229.06 tons received 9/1 through 9/8
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. 2 windrows were formed and in active composting as of 9/30/17. Windrow temperatures were monitored daily. 8 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP). 10 windrows have been turned. The previous 8 windrows have been moved to the curing section and combined for a total of 10 curing windrows. Sampling was performed on September 27, 2017. No compost was picked up by Life Soils.
Attachments:	A-J: 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

<b>MSAP Process Temperature Chart Windrow# 17-8-1</b>																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/2/17	101	95	94	93	132	126	100	94	107	102	98	96	122	121	118	116	115.5	111	102.5	99.75	
2	8/3/17	130	131	130	130	132	132	133	132	115	101	98	98	128	128	120	117	126.25	123	120.25	119.25	
3	8/4/17	136	132	135	132	133	134	135	132	133	135	118	115	142	150	148	143	136	137.75	134	130.5	
4	8/5/17	136	135	136	132	138	140	136	133	140	141	138	132	141	140	146	144	138.75	139	139	135.25	
5	8/6/17																					
6	8/7/17	136	138	140	134	139	142	140	135	142	145	140	136	142	144	148	146	139.75	142.25	142	137.75	
7	8/8/17	138	140	142	135	140	142	141	136	144	148	144	140	144	145	150	146	141.5	143.75	144.25	139.25	
8	8/9/17	140	142	144	136	140	144	145	138	146	150	148	144	145	148	150	152	142.75	146	146.75	142.5	
9	8/10/17	141	144	145	137	141	144	146	140	146	151	152	150	146	148	150	156	143.5	146.75	148.25	145.75	
10	8/11/17	142	144	146	138	141	142	145	140	148	153	158	160	151	148	150	160	145.5	146.75	149.75	149.5	
11	8/12/17	140	145	146	140	141	142	141	140	142	148	150	151	141	140	138	132	141	143.75	143.75	140.75	
12	8/13/17																					
13	8/14/17	138	140	145	140	136	138	140	142	145	150	160	161	144	142	140	136	140.75	142.5	146.25	144.75	
14	8/15/17	136	138	144	140	136	138	140	142	150	155	161	162	145	148	146	142	141.75	144.75	147.75	146.5	
15	8/16/17	143	150	142	140	148	152	150	142	143	148	151	150	148	151	153	148	145.5	150.25	149	145	
16	8/17/17	138	146	144	142	145	150	152	148	141	146	152	152	146	150	154	152	142.5	148	150.5	148.5	
17	8/18/17	135	145	146	145	144	148	154	153	140	145	154	153	145	151	155	154	141	147.25	152.25	151.25	
18	8/19/17	134	140	145	145	142	144	156	154	138	146	155	154	144	152	156	156	139.5	145.5	153	152.25	
19	8/20/17																					
20	8/21/17	160	161	154	150	156	157	155	152	158	161	172	174	165	165	153	152	159.75	161	158.5	157	Turn
21	8/22/17	148	150	155	160	153	152	156	158	148	150	157	160	158	160	160	160	151.75	153	157	159.5	
22	8/23/17	150	151	155	160	150	152	151	158	138	141	142	150	134	140	141	142	143	146	147.25	152.5	
23	8/24/17	164	166	166	158	166	165	163	158	152	160	163	166	156	164	166	164	159.5	163.75	164.5	161.5	
24	8/25/17	138	147	160	160	141	141	150	151	144	135	141	150	145	145	160	165	142	142	152.75	156.5	
25	8/26/17	137	148	157	160	142	143	150	152	144	136	141	151	147	147	163	165	142.5	143.5	152.75	157	
26	8/27/17																					
27	8/28/17	151	152	160	161	154	158	155	150	150	156	156	152	151	154	154	162	151.5	155	156.25	156.25	Turn
28	8/29/17	148	150	158	160	150	152	156	152	148	154	156	154	151	155	156	160	149.25	152.75	156.5	156.5	
29	8/30/17	140	145	147	150	146	145	150	152	148	153	153	154	152	156	157	157	146.5	149.75	151.75	153.25	
30	8/31/17	140	150	152	152	145	148	152	154	146	152	154	156	150	152	156	158	145.25	150.5	153.5	155	
31	9/1/17	136	148	152	154	144	148	154	156	145	150	155	156	149	154	156	158	143.5	150	154.25	156	
32	9/2/17	134	145	154	156	142	145	156	157	144	150	156	158	145	152	156	157	141.25	148	155.5	157	
33	9/3/17																					

## Attachment B

<b>MSAP Process Temperature Chart Windrow# 17-8-5</b>																						
<b>Temperature: Shading equals temperature 131 or greater for PFRP.</b>																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/6/17																					
2	8/7/17	125	123	121	119	138	135	131	123	128	122	120	112	133	131	125	115	131	127.75	124.25	117.25	
3	8/8/17	134	133	132	124	138	136	132	129	136	135	138	128	140	136	130	128	137	135	133	127.25	
4	8/9/17	138	135	132	126	138	141	135	131	142	139	145	135	140	138	136	135	139.5	138.25	137	131.75	
5	8/10/17	140	136	135	129	140	145	144	136	149	145	147	145	140	144	142	140	142.25	142.5	142	137.5	
6	8/11/17	140	138	136	136	141	156	158	151	152	154	148	146	150	153	152	149	145.75	150.25	148.5	145.5	
7	8/12/17	138	138	136	136	141	156	158	151	152	154	148	146	150	153	152	149	145.25	150.25	148.5	145.5	
8	8/13/17																					
9	8/14/17	138	140	142	145	137	131	132	132	132	133	136	140	132	134	134	136	134.75	134.5	136	138.25	
10	8/15/17	141	143	144	150	132	132	133	133	132	134	138	141	132	136	136	134	134.25	136.25	137.75	139.5	
11	8/16/17	140	141	140	138	133	140	140	142	133	138	141	141	140	142	140	140	136.5	140.25	140.25	140.25	
12	8/17/17	142	144	141	140	134	140	140	142	138	140	142	141	141	145	144	142	138.75	142.25	141.75	141.25	
13	8/18/17	144	146	142	140	136	141	140	144	142	144	142	142	146	148	150	146	142	144.75	143.5	143	
14	8/19/17	145	148	144	142	135	142	140	146	146	148	144	142	148	152	156	150	143.5	147.5	146	145	
15	8/20/17																					
16	8/21/17	146	149	145	143	135	142	140	146	150	150	143	141	148	159	159	154	144.75	150	146.75	146	
17	8/22/17	142	146	148	150	138	141	142	148	151	151	151	151	148	150	151	152	144.75	147	148	150.25	
18	8/23/17	138	141	141	142	140	143	143	142	148	148	150	151	150	151	150	153	144	145.75	146	147	
19	8/24/17	150	154	157	159	146	150	150	148	139	144	146	146	143	146	146	150	144.5	148.5	149.75	150.75	
20	8/25/17	141	143	143	141	150	148	147	146	155	155	154	154	131	135	147	150	144.25	145.25	147.75	147.75	
21	8/26/17	144	143	143	145	153	149	147	148	157	155	154	155	132	136	145	152	146.5	145.75	147.25	150	
22	8/27/17																					
23	8/28/17	150	161	164	160	141	160	160	159	140	160	164	160	140	158	162	156	142.75	159.75	162.5	158.75	Turn
24	8/29/17	150	158	160	162	143	160	161	159	132	159	161	161	147	159	160	152	143	159	160.5	158.5	
25	8/30/17	147	152	157	160	152	156	158	158	147	150	152	158	145	151	153	153	147.75	152.25	155	157.25	
26	8/31/17	145	150	158	160	151	154	158	160	145	150	154	158	146	152	154	155	146.75	151.5	156	158.25	
27	9/1/17	142	148	155	158	150	152	156	159	144	148	154	158	145	150	154	156	145.25	149.5	154.75	157.75	
28	9/2/17	142	148	154	158	148	152	155	160	142	148	156	159	144	148	154	157	144	149	154.75	158.5	
29	9/3/17																					
30	9/4/17	156	160	162	162	148	158	164	164	140	152	164	164	154	166	164	162	149.5	159	163.5	163	Turn
31	9/5/17	166	162	156	152	160	164	160	156	156	164	161	156	156	158	154	152	159.5	162	157.75	154	
32	9/6/17	161	172	173	169	162	168	174	166	160	162	165	168	166	162	166	162	162.25	166	169.5	166.25	
33	9/7/17	158	172	173	169	160	170	174	168	155	160	172	172	166	161	162	165	159.75	165.75	170.25	168.5	

### Attachment C

<b>MSAP Process Temperature Chart Windrow# 17-8-10</b>																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/11/17	122	123	121	121	132	141	130	122	120	120	118	115	115	116	110	115	122.25	125	119.75	118.25	
2	8/12/17	133	133	132	123	138	141	140	140	138	140	138	132	132	132	130	128	135.25	136.5	135	130.75	
3	8/13/17																					
4	8/14/17	132	131	134	126	138	142	125	118	150	148	145	145	140	138	136	138	140	139.75	135	131.75	
5	8/15/17	132	131	135	129	140	146	125	136	149	147	147	145	140	141	141	140	140.25	141.25	137	137.5	
6	8/16/17	136	138	135	136	141	156	138	151	152	154	148	146	150	153	152	149	144.75	150.25	143.25	145.5	
7	8/17/17	138	141	138	138	141	158	146	153	154	156	152	148	152	154	152	150	146.25	152.25	147	147.25	
8	8/18/17	136	142	142	145	144	156	155	153	158	159	155	152	152	155	154	150	147.5	153	151.5	150	
9	8/19/17	134	140	148	152	148	158	155	154	158	160	156	155	154	155	154	151	148.5	153.25	153.25	153	
10	8/20/17																					
11	8/21/17	132	145	154	156	155	156	154	154	161	162	156	156	155	156	154	152	150.75	154.75	154.5	154.5	
12	8/22/17	148	150	151	152	140	148	151	151	152	155	157	158	148	150	155	162	147	150.75	153.5	155.75	
13	8/23/17	150	150	151	152	148	150	151	150	150	160	161	162	150	161	161	160	149.5	155.25	156	156	
14	8/24/17	161	163	163	156	160	164	166	160	147	156	157	159	154	156	157	158	155.5	159.75	160.75	158.25	
15	8/25/17	145	148	151	156	144	150	155	160	160	160	162	161	150	155	155	158	149.75	153.25	155.75	158.75	
16	8/26/17	147	148	151	156	148	150	158	160	161	161	162	165	155	156	156	154	152.75	153.75	156.75	158.75	
17	8/27/17																					
18	8/28/17	155	161	162	163	157	160	162	158	151	162	162	161	150	160	162	163	153.25	160.75	162	161.25	Turn
19	8/29/17	150	160	166	162	156	158	160	162	148	162	162	160	150	158	164	16+	151	159.5	163	161.33	
20	8/30/17	146	152	161	161	150	152	158	160	144	162	162	160	146	152	162	162	146.5	154.5	160.75	160.75	
21	8/31/17	138	150	160	160	148	150	156	160	140	160	161	159	142	148	161	162	142	152	159.5	160.25	
22	9/1/17	138	148	158	160	148	149	157	160	141	158	160	162	141	148	160	162	142	150.75	158.75	161	
23	9/2/17	136	146	158	161	148	150	158	161	140	156	160	162	140	148	161	162	141	150	159.25	161.5	
24	9/3/17																					
25	9/4/17	152	161	162	161	162	165	172	170	158	163	163	164	160	165	164	163	158	163.5	165.25	164.5	Turn
26	9/5/17	158	160	161	160	156	166	170	170	160	164	165	164	158	161	163	161	158	162.75	164.75	163.75	
27	9/6/17	156	160	162	160	154	163	170	169	160	164	166	166	158	161	164	163	157	162	165.5	164.5	
28	9/7/17	156	159	161	161	154	162	170	169	159	163	166	166	156	161	164	163	156.25	161.25	165.25	164.75	
29	9/8/17	160	160	154	152	154	161	163	163	163	162	160	158	154	160	154	150	157.75	160.75	157.75	155.75	
30	9/9/17																	#####	#####	#####	#####	
31	9/10/17									**	Hurricane	Irma	**					#####	#####	#####	#####	
32	9/11/17																	#####	#####	#####	#####	
33	9/12/17	128	136	140	148	130	140	152	156	132	138	150	152	128	131	138	142	129.5	136.25	145	149.5	

## Attachment D

<b>MSAP Process Temperature Chart Windrow# 17-8-14</b>																											
Temperature: Shading equals temperature 131 or greater for PFRP.																											
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn					
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"						
1	8/15/17	130	128	120	119	134	130	118	116	128	126	121	112	138	132	130	128	132.5	129	122.25	118.75						
2	8/16/17	138	132	128	125	140	136	128	126	130	131	125	124	145	138	133	131	138.25	134.25	128.5	126.5						
3	8/17/17	145	138	133	130	146	141	132	131	137	132	130	129	150	144	138	136	144.5	138.75	133.25	131.5						
4	8/18/17	148	144	139	136	148	146	136	134	140	137	134	131	152	156	146	140	147	145.75	138.75	135.25						
5	8/19/17	156	156	148	140	154	148	148	142	144	146	144	138	150	155	148	146	151	151.25	147	141.5						
6	8/20/17																										
7	8/21/17	158	164	150	157	156	150	152	150	148	149	148	145	147	155	153	150	152.25	154.5	150.75	150.5						
8	8/22/17	148	150	151	152	138	141	151	151	132	146	136	140	132	144	134	138	137.5	145.25	143	145.25						
9	8/23/17	138	140	141	143	140	141	140	140	145	148	150	150	141	141	150	150	141	142.5	145.25	145.75						
10	8/24/17	136	158	160	159	140	160	161	158	144	150	147	146	144	158	155	150	141	156.5	155.75	153.25						
11	8/25/17	131	142	147	150	141	150	155	150	140	145	147	146	150	149	150	151	140.5	146.5	149.75	149.25						
12	8/26/17	132	145	147	150	142	152	154	153	146	148	147	146	153	149	149	151	143.25	148.5	149.25	150						
13	8/27/17																										
14	8/28/17	134	148	148	151	144	154	155	156	146	150	152	153	152	150	150	151	144	150.5	151.25	152.75						
15	8/29/17	136	150	151	152	148	154	156	158	148	152	153	155	150	150	151	150	145.5	151.5	152.75	153.75						
16	8/30/17	140	151	153	155	150	156	158	160	150	153	156	157	148	151	151	150	147	152.75	154.5	155.5						
17	8/31/17	139	150	154	155	148	154	157	159	147	152	156	156	145	150	151	151	144.75	151.5	154.5	155.25						
18	9/1/17	138	146	156	158	148	152	158	161	146	150	158	158	142	149	154	156	143.5	149.25	156.5	158.25						
19	9/2/17	137	145	156	160	145	151	160	161	145	148	160	161	141	148	156	159	142	148	158	160.25						
20	9/3/17																										
21	9/4/17	158	162	164	164	158	164	166	162	150	158	164	165	158	160	162	160	156	161	164	162.75	Turn					
22	9/5/17	158	162	164	166	156	163	165	162	156	161	163	165	156	157	160	158	156.5	160.75	163	162.75						
23	9/6/17	158	162	166	165	154	162	163	162	158	161	164	165	156	158	160	158	156.5	160.75	163.25	162.5						
24	9/7/17	159	162	165	164	152	160	162	162	157	160	163	165	157	160	158	158	156.25	160.5	162	162.25						
25	9/8/17	158	162	166	164	156	162	164	162	157	162	163	158	157	161	158	158	157	161.75	162.75	160.5						
26	9/9/17																	#####	#####	#####	#####						
27	9/10/17					** Hurricane Irma **																					
28	9/11/17																	#####	#####	#####	#####						
29	9/12/17	131	140	144	152	136	138	148	152	135	137	140	142	140	144	150	155	135.5	139.75	145.5	150.25						
30	9/13/17	133	143	148	156	138	140	153	160	139	141	143	145	143	150	156	160	138.25	143.5	150	155.25	Turn					
31	9/14/17	150	158	163	166	156	163	167	172	158	159	159	161	159	161	162	164	155.75	160.25	162.75	165.75						
32	9/15/17	139	145	150	155	138	147	152	156	132	140	150	155	141	145	155	156	137.5	144.25	151.75	155.5						
33	9/16/17	140	146	150	160	140	147	150	152	136	141	152	158	145	148	150	151	140.25	145.5	150.5	155.25						
34	9/17/17																										
35	9/18/17	150	156	161	162	144	150	154	156	144	149	160	163	145	157	162	164	145.75	153	159.25	161.25	Turn					
36	9/19/17	148	159	164	164	148	151	152	154	155	161	164	160	146	150	158	165	149.25	155.25	159.5	160.75						

## Attachment E

<b>MSAP Process Temperature Chart Windrow# 17-8-17</b>																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/18/17	140	134	114	108	138	122	110	106	133	104	100	102	140	123	110	112	137.75	120.75	108.5	107	
2	8/19/17	144	138	129	119	140	135	127	115	136	128	125	122	140	135	126	127	140	134	126.75	120.75	
3	8/20/17																					
4	8/21/17	162	158	141	137	160	160	158	157	148	146	138	135	160	156	145	142	157.5	155	145.5	142.75	
5	8/22/17	148	151	150	150	136	144	150	150	136	138	148	151	149	150	151	151	142.25	145.75	149.75	150.5	
6	8/23/17	136	141	145	150	148	150	148	148	136	141	150	150	138	140	141	143	139.5	143	146	147.75	
7	8/24/17	145	142	146	151	148	150	154	152	140	146	151	150	138	146	143	148	142.75	146	148.5	150.25	
8	8/25/17	143	145	148	150	147	150	157	160	145	150	152	152	138	150	150	155	143.25	148.75	151.75	154.25	
9	8/26/17	146	146	148	149	149	154	157	158	146	152	154	153	137	149	152	154	144.5	150.25	152.75	153.5	
10	8/27/17																					
11	8/28/17	142	145	146	146	148	152	156	156	145	151	154	154	135	148	151	152	142.5	149	151.75	152	
12	8/29/17	137	144	145	146	142	148	151	146	135	144	148	150	134	138	148	148	137	143.5	148	147.5	
13	8/30/17	134	140	145	145	132	132	146	139	132	137	139	142	132	134	135	141	132.5	135.75	141.25	141.75	
14	8/31/17	134	141	146	146	134	135	134	134	133	138	139	139	132	135	135	135	133.25	137.25	138.5	138.5	
15	9/1/17	135	140	145	145	133	134	135	135	132	136	138	139	134	136	136	135	133.5	136.5	138.5	138.5	
16	9/2/17	136	142	148	146	135	136	139	138	134	136	140	141	133	135	138	137	134.5	137.25	141.25	140.5	
17	9/3/17																					
18	9/4/17	164	168	164	162	162	163	156	150	160	162	164	162	158	160	162	160	161	163.25	161.5	158.5	Turn
19	9/5/17	162	164	164	162	158	160	156	150	158	162	165	160	156	157	160	158	158.5	160.75	161.25	157.5	
20	9/6/17	164	166	164	162	160	162	156	151	152	158	165	164	156	158	160	158	158	161	161.25	158.75	
21	9/7/17	158	161	165	164	158	160	157	152	152	158	164	162	157	160	158	158	156.25	159.75	161	159	
22	9/8/17	157	160	163	162	157	161	159	157	156	158	162	162	157	161	158	158	156.75	160	160.5	159.75	
23	9/9/17																	#####	#####	#####	#####	
24	9/10/17																					
25	9/11/17																	#####	#####	#####	#####	
26	9/12/17	132	142	144	150	135	141	148	152	140	145	148	152	142	144	150	152	137.25	143	147.5	151.5	
27	9/13/17	158	160	161	158	144	156	158	158	156	162	166	161	154	161	165	162	153	159.75	162.5	159.75	Turn
28	9/14/17	150	154	158	160	142	155	158	158	155	161	162	162	151	160	162	162	149.5	157.5	160	160.5	
29	9/15/17	146	151	156	156	140	146	156	156	150	158	160	161	147	156	161	162	145.75	152.75	158.25	158.75	
30	9/16/17	136	140	140	155	138	138	140	141	146	156	158	159	142	154	160	161	140.5	147	149.5	154	
31	9/17/17																					
32	9/18/17	152	160	166	162	152	164	162	160	158	162	164	165	159	164	166	164	155.25	162.5	164.5	162.75	
33	9/19/17	150	158	162	160	151	160	160	160	158	160	162	164	158	161	162	163	154.25	159.75	161.5	161.75	Turn
34	9/20/17	160	166	164	162	156	166	166	165	157	166	166	164	151	162	168	166	156	165	166	164.25	

## Attachment F

<b>MSAP Process Temperature Chart Windrow# 17-8-21</b>																												
Temperature: Shading equals temperature 131 or greater for PFRP.																												
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn						
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"							
1	8/22/17	142	138	136	135	145	140	140	128	138	140	135	133	141	137	133	129	141.5	138.75	136	131.25							
2	8/23/17	138	140	148	150	148	151	150	150	138	136	136	132	135	138	134	132	139.75	141.25	142	141							
3	8/24/17	133	132	146	144	140	138	139	142	149	146	134	133	152	150	140	133	143.5	141.5	139.75	138							
4	8/25/17	148	152	155	155	138	148	150	152	140	148	154	156	131	141	141	140	139.25	147.25	150	150.75							
5	8/26/17	149	154	156	156	143	150	151	152	145	152	154	156	132	141	141	137	142.25	149.25	150.5	150.25							
6	8/27/17																											
7	8/28/17	144	150	152	154	142	148	150	150	144	151	154	155	134	140	140	138	141	147.25	149	149.25							
8	8/29/17	140	148	148	150	141	146	148	148	142	150	154	155	135	142	140	138	139.5	146.5	147.5	147.75							
9	8/30/17	132	133	133	134	136	141	142	146	135	146	150	152	133	140	141	136	134	140	141.5	142							
10	8/31/17	133	133	134	134	135	140	142	146	134	144	148	151	133	140	142	140	133.75	139.25	141.5	142.75	Turn						
11	9/1/17	140	142	150	136	152	148	154	158	141	146	156	158	142	138	150	149	143.75	143.5	152.5	150.25							
12	9/2/17	144	144	158	148	158	155	159	159	152	156	161	160	159	158	158	157	153.25	153.25	159	156							
13	9/3/17																											
14	9/4/17	156	161	166	166	156	161	161	162	156	158	165	162	158	160	162	160	156.5	160	163.5	162.5							
15	9/5/17	156	162	164	164	154	160	162	164	154	158	165	163	156	157	160	158	155	159.25	162.75	162.25							
16	9/6/17	158	162	163	164	150	158	162	164	154	158	165	163	156	158	160	158	154.5	159	162.5	162.25							
17	9/7/17	158	162	164	165	150	157	163	164	154	158	164	163	157	160	158	158	154.75	159.25	162.25	162.5							
18	9/8/17	158	163	166	165	154	159	166	166	154	159	166	164	157	161	158	158	155.75	160.5	164	163.25							
19	9/9/17																	#####	#####	#####	#####							
20	9/10/17					* * Hurricane Irma * *																						
21	9/11/17																	#####	#####	#####	#####							
22	9/12/17	132	136	140	148	138	140	150	152	136	150	158	160	140	150	154	156	136.5	144	150.5	154	Turn						
23	9/13/17	134	138	146	151	140	146	153	159	140	157	162	162	148	153	159	161	140.5	148.5	155	158.25							
24	9/14/17	148	148	150	154	147	151	153	156	154	161	167	161	152	162	166	160	150.25	155.5	159	157.75							
25	9/15/17	132	138	145	145	132	138	141	145	131	136	136	156	141	132	136	160	134	136	139.5	151.5							
26	9/16/17	133	140	146	150	138	140	143	148	139	140	141	158	139	140	143	162	137.25	140	143.25	154.5							
27	9/17/17																											
28	9/18/17	148	156	162	161	138	150	158	166	144	154	158	160	144	150	153	154	143.5	152.5	157.75	160.25	Turn						
29	9/19/17	148	156	153	165	150	153	160	166	148	154	158	160	146	151	156	158	148	153.5	156.75	162.25							
30	9/20/17	148	158	163	166	158	160	162	166	150	156	158	160	150	152	158	160	151.5	156.5	160.25	163							
31	9/21/17	146	150	147	161	145	152	154	160	149	153	161	157	149	158	160	160	147.25	153.25	155.5	159.5							
32	9/22/17	140	146	149	155	140	151	156	158	147	152	160	161	148	156	160	160	143.75	151.25	156.25	158.5							
33	9/23/17	140	145	152	158	139	150	158	160	145	150	161	162	145	154	160	161	142.25	149.75	157.75	160.25							

## Attachment G

<b>MSAP Process Temperature Chart Windrow# 17-8-24</b>																						
Temperature: Shading equals temperature 131 or greater for PFRP.																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/25/17	131	140	145	150	131	132	132	132	131	130	128	129	135	139	139	131	132	135.25	136	135.5	
2	8/26/17	132	141	145	150	131	132	131	128	131	130	128	130	137	139	139	131	132.75	135.5	135.75	134.75	
3	8/27/17																					
4	8/28/17	136	142	145	150	132	134	138	132	135	137	136	133	140	144	148	136	135.75	139.25	141.75	137.75	
5	8/29/17	138	145	146	151	134	136	138	138	136	138	140	139	142	147	150	141	137.5	141.5	143.5	142.25	
6	8/30/17	143	147	149	151	138	140	142	144	140	142	144	146	150	152	153	148	142.75	145.25	147	147.25	
7	8/31/17	144	148	150	152	137	141	144	145	140	144	146	146	149	153	154	150	142.5	146.5	148.5	148.25	
8	9/1/17	140	146	152	153	136	142	146	147	139	145	147	148	148	152	155	156	140.75	146.25	150	151	
9	9/2/17	140	145	154	155	136	142	148	150	138	145	150	151	146	152	156	156	140	146	152	153	
10	9/3/17																					
11	9/4/17	158	162	164	160	154	157	158	158	158	162	164	162	152	156	156	154	155.5	159.25	160.5	158.5	
12	9/5/17	160	162	164	160	152	157	158	158	157	162	164	164	158	159	158	156	156.75	160	161	159.5	
13	9/6/17	158	162	165	162	150	156	159	160	152	156	162	164	163	164	158	158	155.75	159.5	161	161	
14	9/7/17	162	165	164	161	158	160	160	159	158	160	162	162	160	161	158	160	159.5	161.5	161	160.5	
15	9/8/17	156	161	164	161	157	161	162	164	160	161	162	163	158	160	159	160	157.75	160.75	161.75	162	
16	9/9/17																	#####	#####	#####	#####	
17	9/10/17																					
18	9/11/17																	#####	#####	#####	#####	
19	9/12/17	138	151	156	156	139	136	134	136	152	154	146	145	145	148	145	140	143.5	147.25	145.25	144.25	
20	9/13/17	146	155	157	158	145	138	135	146	162	155	149	145	150	151	146	142	150.75	149.75	146.75	147.75	Turn
21	9/14/17	163	162	160	158	166	169	168	162	159	157	154	149	168	167	164	162	164	163.75	161.5	157.75	
22	9/15/17	140	145	148	150	142	144	145	148	135	141	145	148	135	138	138	144	138	142	144	147.5	
23	9/16/17	141	146	150	151	144	148	148	150	138	138	145	146	136	138	142	140	139.75	142.5	146.25	146.75	
24	9/17/17																					
25	9/18/17	142	158	161	160	144	156	148	150	155	156	153	150	142	148	159	152	145.75	154.5	155.25	153	Turn
26	9/19/17	154	160	160	158	156	159	158	157	160	158	158	156	157	159	162	161	156.75	159	159.5	158	
27	9/20/17	150	159	160	158	153	156	150	152	152	154	155	150	146	156	160	158	150.25	156.25	156.25	154.5	
28	9/21/17	151	156	158	158	145	142	138	135	153	155	155	154	145	156	161	160	148.5	152.25	153	151.75	



## Attachment H

<b>MSAP Process Temperature Chart Windrow# 17-8-28</b>																						
<b>Temperature: Shading equals temperature 131 or greater for PFRP.</b>																						
Days	Date	Point 1				Point 2				Point 3				Point 4				Average				Turn
		10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10"	20"	30"	40"	
1	8/29/17	141	136	134	129	135	132	131	120	142	135	130	117	132	128	125	114	137.5	132.75	130	120	
2	8/30/17	150	142	138	131	143	136	134	128	148	142	151	132	143	133	130	121	146	138.25	138.25	128	
3	8/31/17	151	151	146	142	158	138	142	132	152	162	155	138	151	140	142	134	153	147.75	146.25	136.5	
4	9/1/17	154	155	150	144	158	146	144	136	157	162	156	148	156	147	148	142	156.25	152.5	149.5	142.5	
5	9/2/17	160	158	152	150	157	151	160	146	158	164	158	156	157	152	152	149	158	156.25	155.5	150.25	
6	9/3/17																					
7	9/4/17	160	162	158	156	156	160	160	158	158	162	164	162	160	162	162	160	158.5	161.5	161	159	
8	9/5/17	158	162	162	160	154	158	160	158	157	162	164	164	161	164	163	162	157.5	161.5	162.25	161	
9	9/6/17	156	162	162	162	152	158	160	158	152	156	162	164	162	164	164	162	155.5	160	162	161.5	
10	9/7/17	156	161	168	166	151	158	161	159	158	160	162	162	161	164	164	162	156.5	160.75	163.75	162.25	
11	9/8/17	157	160	166	166	152	162	160	158	160	161	162	163	158	165	163	162	156.75	162	162.75	162.25	
12	9/9/17																	#####	#####	#####	#####	
13	9/10/17																					
14	9/11/17																	#####	#####	#####	#####	
15	9/12/17	132	138	141	145	134	145	150	152	140	148	148	148	131	136	140	145	134.25	141.75	144.75	147.5	
16	9/13/17	136	142	145	147	138	146	150	153	146	150	148	148	135	140	143	148	138.75	144.5	146.5	149	Turn
17	9/14/17	151	156	157	157	152	152	153	154	142	142	143	144	150	151	153	156	148.75	150.25	151.5	152.75	
18	9/15/17	136	141	142	145	145	150	152	155	140	141	145	148	132	140	150	151	138.25	143	147.25	149.75	
19	9/16/17	139	140	144	145	145	150	155	155	142	145	145	150	136	141	155	155	140.5	144	149.75	151.25	
20	9/17/17																					
21	9/18/17	143	142	145	148	144	148	150	150	142	145	145	149	140	142	150	148	142.25	144.25	147.5	148.75	
22	9/19/17	143	145	148	150	142	150	150	148	142	146	147	148	142	146	150	150	142.25	146.75	148.75	149	
23	9/20/17	143	148	152	152	140	150	148	146	142	146	147	146	146	150	150	151	142.75	148.5	149.25	148.75	
24	9/21/17	145	152	158	155	141	144	145	148	142	145	145	145	150	153	153	152	144.5	148.5	150.25	150	
25	9/22/17	149	157	159	156	151	152	151	149	143	149	153	152	142	151	157	158	146.25	152.25	155	153.75	
26	9/23/17	150	160	160	156	150	152	152	150	144	150	155	155	142	153	160	161	146.5	153.75	156.75	155.5	
27	9/24/17																					
28	9/25/17	148	156	158	156	150	151	148	145	145	152	155	155	158	160	158	156	150.25	154.75	154.75	153	Turn
29	9/26/17	151	154	152	150	153	153	150	146	154	156	154	156	153	152	147	145	152.75	153.75	150.75	149.25	
30	9/27/17	151	157	158	156	150	151	152	152	156	159	154	153	147	152	153	150	151	154.75	154.25	152.75	
31	9/28/17	151	160	160	159	150	151	156	155	150	156	154	153	145	154	156	154	149	155.25	156.5	155.25	
32	9/29/17	150	158	161	160	150	150	160	158	148	155	157	156	145	155	158	156	148.25	154.5	159	157.5	
33	9/30/17	147	156	161	162	150	152	160	160	148	156	159	158	145	154	160	167	147.5	154.5	160	161.75	

## Attachment I

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-9-6	
Windrow Construction:			Date Commenced: 8-24-17		Date Completed: 8-28-17	
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
8/28/17	Mike Bayne	22.05	28.67	56.00		
8/28/17	Mike Bayne	21.08	27.40	56.00		32
8/29/17	Jerry Devoe	22.30	28.99	56.00		20
9/5/17	Jerry Devoe	20.57	26.74	56.00		
9/5/17	Jerry Devoe	21.94	28.52	56.00		
9/5/17	Jerry Devoe	20.60	26.78	56.00		
9/5/17	Jerry Devoe	20.27	26.35	56.00		52
9/6/17	Jerry Devoe	21.18	27.53	56.00		
9/6/17	Oscar Ochoa	21.92	28.50	56.00		
9/6/17	Oscar Ochoa	22.72	29.54	56.00		44
<b>Totals</b>		214.63	279.02	560.00	0.00	148.00
<b>Windrow Construction ratio:</b>		2.54 /1				

Note: Yard waste yards = number of buckets \* 4.00

MSAP Process Temperature Chart Windrow# 17-9-6																												
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	9/7/17	134	128	118	112	140	134	120	119	142	130	112	110	138	132	128	121	138.5	131	119.5	115.5							
2	9/8/17	138	132	125	121	145	138	132	124	146	134	128	118	141	136	131	130	142.5	135	129	123.25							
3	9/9/17																	#####	#####	#####	#####							
4	9/10/17					** Hurricane Irma **																						
5	9/11/17																	#####	#####	#####	#####							
6	9/12/17	124	128	128	127	123	138	144	142	123	127	128	125	119	131	134	132	122.25	131	133.5	131.5							
7	9/13/17	125	128	133	136	128	136	145	144	132	135	137	139	126	132	136	134	127.75	132.75	137.75	138.25							
8	9/14/17	131	132	136	141	132	135	144	145	139	141	142	144	135	138	140	146	134.25	136.5	140.5	144							
9	9/15/17	136	140	145	147	136	141	144	145	136	140	144	146	140	141	150	155	137	140.5	145.75	148.25							
10	9/16/17	136	144	145	150	138	144	148	150	140	142	145	148	145	150	150	156	139.75	145	147	151							
11	9/17/17																											
12	9/18/17	132	138	140	146	135	144	148	148	136	138	140	144	140	144	148	152	135.75	141	144	147.5							
13	9/19/17	133	136	140	145	135	142	146	148	135	136	140	144	139	142	146	150	135.5	139	143	146.75							
14	9/20/17	133	136	140	142	134	138	144	146	133	136	140	142	136	140	146	148	134	137.5	142.5	144.5							
15	9/21/17	132	135	141	140	132	138	142	146	138	140	142	142	136	140	144	144	134.5	138.25	142.25	143	Turn						
16	9/22/17	142	144	147	147	141	143	145	147	151	152	149	143	149	148	150	146	145.75	146.75	147.75	145.75							
17	9/23/17	138	140	144	150	140	142	144	144	150	144	148	144	142	144	146	144	142.5	142.5	145.5	145.5							
18	9/24/17																											
19	9/25/17	151	147	144	148	138	146	146	146	154	144	146	146	148	152	148	145	147.75	147.25	146	146.25	Turn						
20	9/26/17	151	148	145	148	136	145	146	147	152	148	148	146	146	151	148	146	146.25	148	146.75	146.75							
21	9/27/17	160	158	152	150	152	150	148	146	156	152	146	146	153	150	148	146	155.25	152.5	148.5	147							
22	9/28/17	160	158	152	145	152	154	150	146	151	154	150	145	160	160	159	157	155.75	156.5	152.75	148.25							
23	9/29/17	158	158	156	150	151	154	156	151	150	156	154	148	158	160	162	160	154.25	157	157	152.25							
24	9/30/17	152	156	160	156	150	153	158	154	150	155	156	153	154	158	161	161	151.5	155.5	158.75	156							

## Attachment J

Hillsborough County Composting - Monitoring Sheet (MSAP Method)					Windrow # 17-9-8	
Windrow Construction:			Date Commenced: 9-7-17	Date Completed: 9-8-17		
Date	Operator Name	Biosolids (tons)	Biosolids (yards)	Yard Waste (yards)	Overs (yards)	Cover (yards)
9/7/17	Mike Bayne	21.08	27.40	56.00		
9/7/17	Jerry Devoe	22.30	28.99	56.00		
9/7/17	Jerry Devoe	20.57	26.74	56.00		44
9/8/17	Jerry Devoe	21.94	28.52	56.00		20
<b>Totals</b>		85.89	111.66	224.00	0.00	64.00
<b>Windrow Construction ratio:</b>			2.58 /1			
Note: Yard waste yards = number of buckets * 4.00						

MSAP Process Temperature Chart Windrow# 17-9-8																						
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	9/9/17	*** Hurricane Irma ***												#####								
2	9/10/17	*** Hurricane Irma ***												#####								
3	9/11/17	*** Hurricane Irma ***												#####								
4	9/12/17	136	137	136	131	132	133	133	130									134	135	134.5	130.5	
5	9/13/17	141	140	136	132	136	135	134	131									138.5	137.5	135	131.5	
6	9/14/17	145	142	136	134	138	136	134	132									141.5	139	135	133	
7	9/15/17	144	146	140	138	141	139	136	134									142.5	142.5	138	136	
8	9/16/17	142	145	141	138	140	138	138	136									141	141.5	139.5	137	
9	9/17/17																					
10	9/18/17	138	142	148	143	139	138	142	137									138.5	140	145	140	
11	9/19/17	138	140	146	144	138	138	144	136									138	139	145	140	
12	9/20/17	136	139	145	145	136	138	145	140									136	138.5	145	142.5	
13	9/21/17	135	138	146	148	136	137	146	144									135.5	137.5	146	146	
14	9/22/17	134	136	145	148	135	138	145	147									134.5	137	145	147.5	
15	9/23/17	132	137	145	150	132	135	146	148									132	136	145.5	149	
16	9/24/17																					
17	9/25/17	134	136	148	150	132	136	148	148									133	136	148	149	Turn
18	9/26/17	148	150	152	148	158	154	148	146									153	152	150	147	
19	9/27/17	148	152	156	152	164	160	154	148									156	156	155	150	
20	9/28/17	148	150	156	154	162	164	158	154									155	157	157	154	
21	9/29/17	146	150	158	158	158	161	162	158									152	155.5	160	158	
22	9/30/17	145	152	161	160	158	159	162	160									151.5	155.5	161.5	160	