

## Johnson, Sabrina O

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**From:** Wiesman, Ronald <WiesmanR@hillsboroughcounty.org>  
**Sent:** Tuesday, April 16, 2019 3:56 PM  
**To:** Morgan, Steve; Barker, Maurice; Kautz, Lance; SWD\_Waste  
**Cc:** Byer, Kimberly; Schinella, Beth; O'Neill, Joseph; Ruiz, Larry  
**Subject:** Hillsborough County March Composting Report  
**Attachments:** March2019 Rpt.docx

Mr. Morgan,

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

Thank you,

### Ron Wiesman II

#### Manager

Solid Waste Management Division  
Transportation & Utilities Services

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### Hillsborough County

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ADMINISTRATOR**

John Lyons

**SOLID WASTE MANAGEMENT**

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

**MEMORANDUM**

DATE April 16, 2019

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

FROM: Ron Wiesman, Senior Supervisor, Solid Waste  
Management Division

SUBJECT: Hillsborough County Biosolids Composting Monthly Report: February 2019

|                                    |   |
|------------------------------------|---|
| Biosolids Received (wet tons):     | 996.92 tons of biosolids received for the month.  |
| Source of Biosolids:               | Hillsborough County Falkenburg AWWTP  |
| Source of Bulking Agent:           | Consolidated Resource Recovery  |
| General Description of Activities: | <ul style="list-style-type: none"> <li>• All incoming biosolids were mixed with bulking agent and formed into windrows on the same day as received.</li> <li>• 5 windrows were formed and in active composting as of 3/31/19.</li> <li>• Windrow temperatures were monitored daily.</li> <li>• 8 windrows has met temperature and time requirements of the Process to Further Reduce Pathogens (PFRP).</li> <li>• 8 windrow has been turned.</li> <li>• Sampling was performed on March 20,, 2019.</li> <li>• 632.27 tons of finished compost was picked up by Life Soils.</li> </ul> |
| Attachments:                       | A-K: Windrow construction and temperature records.  |

RWW/ya  
Attachments

CC: Beth Schinella, Division Director, Utility Operations, PUD  
Kim Byer, Division Director, Solid Waste Management Division  
Joseph O'Neill, Professional Engineer II, Solid Waste Management Division  
Larry Ruiz, Section Manager, Solid Waste Management Division

## Attachment A

| <b>MSAP Process Temperature Chart Windrow# 19-2-4</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   | 2/5/19  | 160     | 150 | 146 | 131 | 160     | 150 | 138 | 130 | 154     | 140 | 120 | 118 | 152     | 148 | 132 | 134 | 156.5   | 147    | 134    | 128.25 |      |
| 2   | 2/6/19  | 161     | 158 | 152 | 142 | 158     | 148 | 146 | 136 | 150     | 144 | 134 | 126 | 156     | 152 | 140 | 142 | 156.25  | 150.5  | 143    | 136.5  |      |
| 3   | 2/7/19  | 156     | 152 | 157 | 140 | 145     | 147 | 147 | 142 | 145     | 149 | 154 | 144 | 142     | 147 | 152 | 150 | 147     | 148.75 | 152.5  | 144    |      |
| 4   | 2/8/19  | 148     | 156 | 157 | 148 | 146     | 148 | 148 | 146 | 148     | 150 | 152 | 156 | 142     | 147 | 154 | 154 | 146     | 150.25 | 152.75 | 151    |      |
| 5   | 2/9/19  | 152     | 155 | 157 | 157 | 152     | 148 | 150 | 155 | 151     | 146 | 151 | 156 | 140     | 147 | 158 | 154 | 148.75  | 149    | 154    | 155.5  |      |
| 6   | 2/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 7   | 2/11/19 | 160     | 162 | 160 | 166 | 160     | 162 | 159 | 158 | 158     | 165 | 166 | 159 | 143     | 155 | 160 | 163 | 155.25  | 161    | 161.25 | 161.5  |      |
| 8   | 2/12/19 | 162     | 164 | 158 | 153 | 166     | 168 | 166 | 158 | 147     | 156 | 161 | 163 | 166     | 165 | 165 | 164 | 160.25  | 163.25 | 162.5  | 159.5  |      |
| 9   | 2/13/19 | 163     | 167 | 164 | 163 | 162     | 162 | 167 | 165 | 149     | 155 | 160 | 160 | 161     | 161 | 160 | 160 | 158.75  | 161.25 | 162.75 | 162    |      |
| 10  | 2/14/19 | 167     | 171 | 171 | 169 | 156     | 158 | 158 | 155 | 152     | 158 | 160 | 157 | 157     | 162 | 164 | 162 | 158     | 162.25 | 163.25 | 160.75 |      |
| 11  | 2/15/19 | 140     | 155 | 158 | 161 | 148     | 155 | 161 | 162 | 147     | 152 | 160 | 160 | 140     | 148 | 151 | 163 | 143.75  | 152.5  | 157.5  | 161.5  |      |
| 12  | 2/16/19 | 143     | 152 | 160 | 168 | 152     | 158 | 164 | 163 | 150     | 156 | 161 | 167 | 145     | 158 | 163 | 167 | 147.5   | 156    | 162    | 166.25 |      |
| 13  | 2/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 14  | 2/18/19 | 146     | 153 | 157 | 163 | 156     | 162 | 164 | 163 | 156     | 162 | 166 | 165 | 163     | 166 | 169 | 169 | 155.25  | 160.75 | 164    | 165    |      |
| 15  | 2/19/19 | 148     | 155 | 159 | 164 | 155     | 163 | 165 | 165 | 155     | 164 | 167 | 169 | 167     | 167 | 170 | 172 | 156.25  | 162.25 | 165.25 | 167.5  |      |
| 16  | 2/20/19 | 150     | 154 | 158 | 161 | 150     | 159 | 163 | 160 | 150     | 157 | 162 | 168 | 165     | 167 | 169 | 172 | 153.75  | 159.25 | 163    | 165.25 |      |
| 17  | 2/21/19 | 153     | 155 | 159 | 162 | 154     | 158 | 162 | 162 | 153     | 157 | 160 | 166 | 158     | 161 | 165 | 171 | 154.5   | 157.75 | 161.5  | 165.25 | Turn |
| 18  | 2/22/19 | 158     | 162 | 164 | 169 | 162     | 165 | 169 | 173 | 158     | 164 | 169 | 174 | 160     | 165 | 169 | 173 | 159.5   | 164    | 167.75 | 172.25 |      |
| 19  | 2/23/19 | 160     | 164 | 167 | 172 | 160     | 166 | 170 | 175 | 155     | 163 | 168 | 176 | 155     | 159 | 162 | 163 | 157.5   | 163    | 166.75 | 171.5  |      |
| 20  | 2/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 21  | 2/25/19 | 137     | 140 | 146 | 149 | 140     | 145 | 151 | 162 | 136     | 140 | 144 | 152 | 139     | 145 | 146 | 150 | 138     | 142.5  | 146.75 | 153.25 |      |
| 22  | 2/26/19 | 134     | 138 | 143 | 148 | 142     | 148 | 155 | 169 | 135     | 139 | 149 | 155 | 137     | 141 | 147 | 157 | 137     | 141.5  | 148.5  | 157.25 |      |
| 23  | 2/27/19 | 142     | 147 | 152 | 159 | 144     | 154 | 159 | 166 | 141     | 145 | 150 | 151 | 148     | 152 | 155 | 158 | 143.75  | 149.5  | 154    | 158.5  | Turn |
| 24  | 2/28/19 | 149     | 155 | 160 | 163 | 147     | 153 | 156 | 164 | 152     | 156 | 158 | 155 | 158     | 163 | 167 | 169 | 151.5   | 156.75 | 160.25 | 162.75 |      |
| 25  | 3/1/19  | 134     | 141 | 146 | 153 | 141     | 146 | 150 | 159 | 136     | 147 | 151 | 158 | 135     | 143 | 155 | 167 | 136.5   | 144.25 | 150.5  | 159.25 |      |
| 26  | 3/2/19  | 132     | 142 | 145 | 152 | 138     | 145 | 150 | 156 | 135     | 146 | 148 | 156 | 136     | 145 | 154 | 160 | 135.25  | 144.5  | 149.25 | 156    |      |
| 27  | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 28  | 3/4/19  | 131     | 138 | 148 | 150 | 131     | 146 | 151 | 154 | 134     | 140 | 146 | 150 | 138     | 148 | 152 | 154 | 133.5   | 143    | 149.25 | 152    | Turn |
| 29  | 3/5/19  | 165     | 175 | 177 | 176 | 135     | 148 | 160 | 170 | 138     | 154 | 168 | 171 | 139     | 160 | 171 | 174 | 144.25  | 159.25 | 169    | 172.75 |      |
| 30  | 3/6/19  | 166     | 174 | 177 | 177 | 138     | 148 | 162 | 171 | 140     | 157 | 170 | 171 | 140     | 159 | 169 | 175 | 146     | 159.5  | 169.5  | 173.5  |      |
| 31  | 3/7/19  | 165     | 172 | 173 | 175 | 141     | 150 | 159 | 169 | 143     | 159 | 169 | 172 | 142     | 160 | 168 | 174 | 147.75  | 160.25 | 167.25 | 172.5  |      |

## Attachment B

| <b>MSAP Process Temperature Chart Windrow# 19-2-8</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   | 2/9/19  | 148     | 150 | 144 | 138 | 152     | 149 | 144 | 132 | 149     | 139 | 130 | 129 | 143     | 130 | 126 | 124 | 148     | 142    | 136    | 130.75 |      |
| 2   | 2/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 3   | 2/11/19 | 155     | 152 | 152 | 150 | 153     | 144 | 148 | 138 | 145     | 156 | 152 | 143 | 148     | 152 | 150 | 140 | 150.25  | 151    | 150.5  | 142.75 |      |
| 4   | 2/12/19 | 162     | 162 | 161 | 160 | 150     | 151 | 148 | 145 | 154     | 156 | 155 | 146 | 156     | 158 | 158 | 158 | 155.5   | 156.75 | 155.5  | 152.25 |      |
| 5   | 2/13/19 | 158     | 161 | 163 | 160 | 149     | 152 | 150 | 146 | 152     | 155 | 151 | 149 | 155     | 157 | 158 | 157 | 153.5   | 156.25 | 155.5  | 153    |      |
| 6   | 2/14/19 | 147     | 158 | 158 | 151 | 152     | 155 | 151 | 143 | 153     | 155 | 148 | 144 | 155     | 163 | 166 | 162 | 151.75  | 157.75 | 155.75 | 150    |      |
| 7   | 2/15/19 | 150     | 155 | 160 | 162 | 150     | 155 | 160 | 163 | 160     | 160 | 163 | 165 | 140     | 145 | 147 | 151 | 150     | 153.75 | 157.5  | 160.25 |      |
| 8   | 2/16/19 | 158     | 164 | 169 | 172 | 148     | 153 | 159 | 165 | 155     | 160 | 164 | 169 | 135     | 142 | 148 | 156 | 149     | 154.75 | 160    | 165.5  |      |
| 9   | 2/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 10  | 2/18/19 | 159     | 166 | 168 | 168 | 152     | 163 | 168 | 168 | 143     | 156 | 160 | 163 | 142     | 153 | 163 | 169 | 149     | 159.5  | 164.75 | 167    |      |
| 11  | 2/19/19 | 157     | 166 | 170 | 173 | 153     | 165 | 168 | 170 | 152     | 158 | 164 | 170 | 146     | 155 | 163 | 171 | 152     | 161    | 166.25 | 171    |      |
| 12  | 2/20/19 | 155     | 163 | 168 | 171 | 155     | 166 | 170 | 170 | 155     | 155 | 161 | 168 | 141     | 148 | 152 | 158 | 151.5   | 158    | 162.75 | 166.75 |      |
| 13  | 2/21/19 | 143     | 158 | 160 | 163 | 145     | 148 | 159 | 163 | 147     | 151 | 158 | 165 | 144     | 147 | 150 | 157 | 144.75  | 151    | 156.75 | 162    |      |
| 14  | 2/22/19 | 141     | 149 | 152 | 162 | 142     | 148 | 157 | 163 | 146     | 153 | 158 | 163 | 140     | 145 | 149 | 154 | 142.25  | 148.75 | 154    | 160.5  |      |
| 15  | 2/23/19 | 143     | 148 | 154 | 162 | 144     | 149 | 161 | 164 | 149     | 155 | 162 | 166 | 143     | 147 | 152 | 157 | 144.75  | 149.75 | 157.25 | 162.25 |      |
| 16  | 2/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 17  | 2/25/19 | 136     | 147 | 152 | 158 | 140     | 148 | 151 | 155 | 142     | 146 | 147 | 149 | 142     | 148 | 154 | 158 | 140     | 147.25 | 151    | 155    |      |
| 18  | 2/26/19 | 136     | 146 | 153 | 161 | 139     | 147 | 153 | 158 | 139     | 140 | 142 | 142 | 142     | 147 | 153 | 160 | 139     | 145    | 150.25 | 155.25 |      |
| 19  | 2/27/19 | 138     | 142 | 146 | 154 | 148     | 154 | 160 | 168 | 134     | 145 | 154 | 161 | 138     | 147 | 158 | 164 | 139.5   | 147    | 154.5  | 161.75 |      |
| 20  | 2/28/19 | 139     | 143 | 150 | 162 | 152     | 158 | 164 | 171 | 150     | 153 | 159 | 169 | 132     | 135 | 142 | 149 | 143.25  | 147.25 | 153.75 | 162.75 |      |
| 21  | 3/1/19  | 145     | 148 | 151 | 155 | 143     | 148 | 152 | 154 | 138     | 142 | 144 | 144 | 141     | 153 | 159 | 165 | 141.75  | 147.75 | 151.5  | 154.5  | Turn |
| 22  | 3/2/19  | 144     | 150 | 152 | 158 | 140     | 148 | 152 | 155 | 146     | 150 | 158 | 156 | 140     | 152 | 158 | 160 | 142.5   | 150    | 155    | 157.25 |      |
| 23  | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 24  | 3/4/19  | 141     | 149 | 157 | 164 | 138     | 147 | 150 | 151 | 155     | 158 | 158 | 156 | 139     | 150 | 156 | 163 | 143.25  | 151    | 155.25 | 158.5  |      |
| 25  | 3/5/19  | 156     | 166 | 173 | 176 | 172     | 174 | 168 | 159 | 166     | 170 | 173 | 173 | 168     | 172 | 164 | 141 | 165.5   | 170.5  | 169.5  | 162.25 | Turn |
| 26  | 3/6/19  | 165     | 170 | 174 | 175 | 160     | 164 | 166 | 166 | 158     | 164 | 167 | 167 | 135     | 149 | 161 | 164 | 154.5   | 161.75 | 167    | 168    |      |
| 27  | 3/7/19  | 163     | 168 | 173 | 175 | 159     | 165 | 167 | 168 | 156     | 164 | 168 | 167 | 141     | 147 | 159 | 165 | 154.75  | 161    | 166.75 | 168.75 |      |

## Attachment C

| <b>MSAP Process Temperature Chart Windrow# 19-2-13</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   | 2/14/19 | 156     | 155 | 155 | 156 | 158     | 160 | 156 | 156 | 156     | 158 | 158 | 158 | 150     | 156 | 152 | 148 | 136     | 36     | 156.25 | 154.25 | 149.5 |  |
| 2   | 2/15/19 | 155     | 161 | 161 | 163 | 155     | 161 | 162 | 163 | 150     | 158 | 161 | 158 | 160     | 153 | 147 | 140 | 155     | 158.25 | 157.75 | 156    |       |  |
| 3   | 2/16/19 | 155     | 162 | 165 | 165 | 156     | 159 | 164 | 170 | 156     | 160 | 167 | 162 | 160     | 153 | 150 | 146 | 156.75  | 158.5  | 161.5  | 160.75 |       |  |
| 4   | 2/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |       |  |
| 5   | 2/18/19 | 154     | 163 | 168 | 170 | 164     | 168 | 171 | 171 | 160     | 168 | 172 | 174 | 168     | 168 | 167 | 166 | 161.5   | 166.75 | 169.5  | 170.25 |       |  |
| 6   | 2/19/19 | 155     | 165 | 169 | 172 | 163     | 166 | 170 | 173 | 158     | 167 | 173 | 173 | 166     | 168 | 171 | 172 | 160.5   | 166.5  | 170.75 | 172.5  |       |  |
| 7   | 2/20/19 | 150     | 155 | 157 | 162 | 160     | 163 | 168 | 171 | 153     | 157 | 166 | 168 | 160     | 165 | 168 | 171 | 155.75  | 160    | 164.75 | 168    |       |  |
| 8   | 2/21/19 | 144     | 151 | 156 | 159 | 153     | 160 | 165 | 169 | 149     | 155 | 158 | 163 | 158     | 160 | 161 | 165 | 151     | 156.5  | 160    | 164    |       |  |
| 9   | 2/22/19 | 147     | 150 | 155 | 158 | 154     | 158 | 163 | 166 | 148     | 156 | 159 | 162 | 154     | 158 | 160 | 167 | 150.75  | 155.5  | 159.25 | 163.25 |       |  |
| 10  | 2/23/19 | 150     | 153 | 156 | 160 | 157     | 161 | 165 | 168 | 152     | 159 | 164 | 166 | 157     | 159 | 163 | 169 | 154     | 158    | 162    | 165.75 |       |  |
| 11  | 2/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |       |  |
| 12  | 2/25/19 | 140     | 145 | 151 | 159 | 149     | 154 | 157 | 163 | 141     | 147 | 150 | 152 | 138     | 141 | 148 | 151 | 142     | 146.75 | 151.5  | 156.25 |       |  |
| 13  | 2/26/19 | 138     | 143 | 148 | 159 | 147     | 153 | 158 | 163 | 139     | 142 | 146 | 153 | 133     | 136 | 142 | 154 | 139.25  | 143.5  | 148.5  | 157.25 |       |  |
| 14  | 2/27/19 | 155     | 158 | 162 | 167 | 145     | 149 | 156 | 164 | 142     | 146 | 148 | 153 | 140     | 145 | 149 | 155 | 145.5   | 149.5  | 153.75 | 159.75 |       |  |
| 15  | 2/28/19 | 150     | 153 | 159 | 169 | 152     | 158 | 162 | 164 | 152     | 158 | 164 | 168 | 147     | 151 | 155 | 161 | 150.25  | 155    | 160    | 165.5  |       |  |
| 16  | 3/1/19  | 134     | 142 | 145 | 156 | 142     | 152 | 157 | 164 | 139     | 145 | 149 | 159 | 142     | 147 | 155 | 160 | 139.25  | 146.5  | 151.5  | 159.75 | Turn  |  |
| 17  | 3/2/19  | 148     | 150 | 146 | 144 | 152     | 156 | 158 | 154 | 151     | 153 | 152 | 150 | 140     | 148 | 156 | 158 | 147.75  | 151.75 | 153    | 151.5  |       |  |
| 18  | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |       |  |
| 19  | 3/4/19  | 133     | 138 | 146 | 154 | 132     | 142 | 153 | 160 | 146     | 135 | 141 | 146 | 138     | 144 | 151 | 158 | 137.25  | 139.75 | 147.75 | 154.5  |       |  |
| 20  | 3/5/19  | 158     | 166 | 173 | 174 | 164     | 169 | 173 | 173 | 154     | 162 | 168 | 168 | 141     | 156 | 164 | 171 | 154.25  | 163.25 | 169.5  | 171.5  |       |  |
| 21  | 3/6/19  | 158     | 164 | 169 | 175 | 137     | 140 | 148 | 150 | 138     | 140 | 143 | 157 | 138     | 146 | 150 | 152 | 142.75  | 147.5  | 152.5  | 158.5  |       |  |
| 22  | 3/7/19  | 157     | 165 | 170 | 175 | 140     | 146 | 149 | 152 | 141     | 147 | 150 | 156 | 140     | 149 | 153 | 156 | 144.5   | 151.75 | 155.5  | 159.75 |       |  |
| 23  | 3/8/19  | 156     | 158 | 151 | 148 | 146     | 162 | 160 | 155 | 152     | 160 | 156 | 151 | 157     | 162 | 156 | 152 | 152.75  | 160.5  | 155.75 | 151.5  |       |  |
| 24  | 3/9/19  | 155     | 159 | 160 | 161 | 152     | 160 | 161 | 157 | 154     | 160 | 157 | 160 | 157     | 160 | 159 | 156 | 154.5   | 159.75 | 159.25 | 158.5  |       |  |
| 25  | 3/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |       |  |
| 26  | 3/11/19 | 143     | 150 | 157 | 163 | 138     | 147 | 156 | 162 | 146     | 154 | 162 | 166 | 144     | 153 | 158 | 162 | 142.75  | 151    | 158.25 | 163.25 |       |  |
| 27  | 3/12/19 | 139     | 146 | 154 | 171 | 143     | 147 | 151 | 156 | 148     | 157 | 165 | 171 | 157     | 161 | 165 | 173 | 146.75  | 152.75 | 158.75 | 167.75 | Turn  |  |
| 28  | 3/13/19 | 140     | 148 | 155 | 170 | 151     | 153 | 156 | 159 | 150     | 159 | 165 | 170 | 156     | 160 | 166 | 171 | 149.25  | 155    | 160.5  | 167.5  |       |  |
| 29  | 3/14/19 | 142     | 156 | 162 | 170 | 156     | 162 | 169 | 172 | 158     | 166 | 171 | 171 | 146     | 158 | 166 | 170 | 150.5   | 160.5  | 167    | 170.75 |       |  |
| 30  | 3/15/19 | 139     | 146 | 157 | 164 | 155     | 159 | 166 | 178 | 156     | 162 | 169 | 174 | 159     | 164 | 166 | 177 | 152.25  | 157.75 | 164.5  | 173.25 |       |  |

## Attachment D

| <b>MSAP Process Temperature Chart Windrow# 19-2-19</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  | 2/20/19 | 132     | 129 | 127 | 126 | 132     | 131 | 128 | 126 | 130     | 129 | 126 | 123 | 133     | 132 | 129 | 127 | 131.75  | 130.25 | 127.5  | 125.5  |      |
| 2  | 2/21/19 | 135     | 137 | 137 | 132 | 140     | 139 | 136 | 134 | 144     | 140 | 138 | 137 | 147     | 142 | 140 | 140 | 141.5   | 139.5  | 137.75 | 135.75 |      |
| 3  | 2/22/19 | 140     | 143 | 148 | 154 | 142     | 147 | 154 | 163 | 145     | 152 | 160 | 162 | 145     | 149 | 153 | 161 | 143     | 147.75 | 153.75 | 160    |      |
| 4  | 2/23/19 | 143     | 147 | 149 | 158 | 144     | 150 | 157 | 166 | 148     | 156 | 163 | 167 | 147     | 152 | 157 | 163 | 145.5   | 151.25 | 156.5  | 163.5  |      |
| 5  | 2/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 6  | 2/25/19 | 140     | 144 | 149 | 156 | 144     | 151 | 156 | 162 | 150     | 154 | 159 | 162 | 146     | 151 | 157 | 161 | 145     | 150    | 155.25 | 160.25 |      |
| 7  | 2/26/19 | 137     | 143 | 149 | 159 | 139     | 146 | 150 | 161 | 149     | 152 | 159 | 163 | 144     | 151 | 155 | 160 | 142.25  | 148    | 153.25 | 160.75 |      |
| 8  | 2/27/19 | 137     | 142 | 147 | 157 | 148     | 153 | 159 | 163 | 152     | 157 | 165 | 167 | 139     | 143 | 146 | 151 | 144     | 148.75 | 154.25 | 159.5  |      |
| 9  | 2/28/19 | 133     | 145 | 148 | 159 | 153     | 155 | 158 | 165 | 150     | 156 | 163 | 170 | 152     | 158 | 166 | 172 | 147     | 153.5  | 158.75 | 166.5  |      |
| 10   | 3/1/19  | 146     | 153 | 158 | 161 | 147     | 156 | 163 | 172 | 149     | 156 | 164 | 171 | 142     | 145 | 157 | 166 | 146     | 152.5  | 160.5  | 167.5  |      |
| 11   | 3/2/19  | 146     | 151 | 155 | 157 | 150     | 155 | 163 | 166 | 155     | 159 | 164 | 168 | 144     | 152 | 157 | 161 | 148.75  | 154.25 | 159.75 | 163    |      |
| 12   | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 13   | 3/4/19  | 148     | 145 | 143 | 141 | 150     | 150 | 149 | 146 | 150     | 156 | 164 | 166 | 158     | 164 | 170 | 169 | 151.5   | 153.75 | 156.5  | 155.5  |      |
| 14   | 3/5/19  | 152     | 152 | 149 | 147 | 148     | 159 | 164 | 164 | 140     | 149 | 161 | 165 | 159     | 165 | 168 | 168 | 149.75  | 156.25 | 160.5  | 161    |      |
| 15   | 3/6/19  | 153     | 154 | 154 | 151 | 156     | 162 | 164 | 166 | 148     | 156 | 165 | 168 | 152     | 158 | 163 | 166 | 152.25  | 157.5  | 161.5  | 162.75 |      |
| 16   | 3/7/19  | 155     | 156 | 154 | 152 | 152     | 161 | 167 | 165 | 150     | 156 | 164 | 170 | 151     | 159 | 165 | 166 | 152     | 158    | 162.5  | 163.25 |      |
| 17   | 3/8/19  | 150     | 157 | 155 | 153 | 152     | 162 | 166 | 164 | 153     | 155 | 166 | 171 | 150     | 155 | 166 | 166 | 151.25  | 157.25 | 163.25 | 163.5  |      |
| 18   | 3/9/19  | 154     | 158 | 156 | 154 | 154     | 160 | 165 | 165 | 152     | 156 | 165 | 168 | 152     | 158 | 165 | 166 | 153     | 158    | 162.75 | 163.25 | Turn |
| 19   | 3/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 20   | 3/11/19 | 167     | 172 | 171 | 164 | 166     | 174 | 176 | 177 | 148     | 159 | 164 | 166 | 158     | 163 | 168 | 174 | 159.75  | 167    | 169.75 | 170.25 |      |
| 21   | 3/12/19 | 150     | 153 | 159 | 170 | 156     | 159 | 164 | 174 | 159     | 166 | 170 | 175 | 160     | 166 | 169 | 172 | 156.25  | 161    | 165.5  | 172.75 |      |
| 22   | 3/13/19 | 152     | 155 | 161 | 169 | 157     | 161 | 166 | 171 | 158     | 165 | 170 | 173 | 158     | 166 | 170 | 171 | 156.25  | 161.75 | 166.75 | 171    |      |
| 23   | 3/14/19 | 157     | 166 | 172 | 176 | 148     | 156 | 162 | 170 | 141     | 157 | 171 | 176 | 144     | 146 | 149 | 152 | 147.5   | 156.25 | 163.5  | 168.5  |      |
| 24   | 3/15/19 | 154     | 161 | 168 | 175 | 158     | 164 | 171 | 177 | 158     | 164 | 170 | 179 | 161     | 165 | 169 | 169 | 157.75  | 163.5  | 169.5  | 175    |      |
| 25   | 3/16/19 | 155     | 166 | 169 | 171 | 158     | 166 | 164 | 169 | 160     | 165 | 169 | 173 | 166     | 168 | 171 | 175 | 159.75  | 166.25 | 168.25 | 172    |      |
| 26   | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 27   | 3/18/19 | 135     | 152 | 164 | 148 | 138     | 148 | 160 | 167 | 157     | 165 | 169 | 174 | 151     | 160 | 168 | 172 | 145.25  | 156.25 | 165.25 | 165.25 | Turn |
| 28   | 3/19/19 | 148     | 164 | 170 | 175 | 146     | 160 | 164 | 170 | 140     | 144 | 152 | 162 | 140     | 152 | 168 | 172 | 143.5   | 155    | 163.5  | 169.75 |      |
| 29   | 3/20/19 | 138     | 147 | 156 | 159 | 143     | 151 | 157 | 167 | 133     | 135 | 139 | 141 | 136     | 140 | 144 | 144 | 137.5   | 143.25 | 149    | 152.75 |      |
| 30   | 3/21/19 | 154     | 163 | 168 | 171 | 168     | 171 | 168 | 163 | 152     | 160 | 166 | 167 | 160     | 168 | 169 | 166 | 158.5   | 165.5  | 167.75 | 166.75 |      |

## Attachment E

| <b>MSAP Process Temperature Chart Windrow# 19-2-23</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  | 2/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 2  | 2/25/19 | 140     | 144 | 150 | 150 | 150     | 155 | 159 | 160 | 150     | 157 | 161 | 161 | 149     | 155 | 161 | 161 | 147.25  | 152.75 | 157.75 | 158    |      |
| 3  | 2/26/19 | 139     | 144 | 152 | 163 | 150     | 156 | 160 | 162 | 152     | 157 | 160 | 162 | 150     | 154 | 160 | 162 | 147.75  | 152.75 | 158    | 162.25 |      |
| 4  | 2/27/19 | 147     | 156 | 164 | 165 | 145     | 150 | 164 | 170 | 155     | 159 | 164 | 168 | 146     | 157 | 162 | 168 | 148.25  | 155.5  | 163.5  | 167.75 |      |
| 5  | 2/28/19 | 155     | 165 | 169 | 171 | 160     | 165 | 168 | 172 | 158     | 164 | 169 | 173 | 148     | 155 | 162 | 164 | 155.25  | 162.25 | 167    | 170    |      |
| 6  | 3/1/19  | 142     | 151 | 164 | 172 | 134     | 141 | 152 | 158 | 139     | 146 | 156 | 166 | 133     | 136 | 141 | 146 | 137     | 143.5  | 153.25 | 160.5  |      |
| 7  | 3/2/19  | 138     | 147 | 153 | 161 | 134     | 144 | 159 | 163 | 141     | 148 | 155 | 164 | 139     | 142 | 144 | 148 | 138     | 145.25 | 152.75 | 159    |      |
| 8  | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 9  | 3/4/19  | 144     | 156 | 162 | 167 | 138     | 151 | 163 | 166 | 134     | 140 | 154 | 163 | 151     | 162 | 166 | 164 | 141.75  | 152.25 | 161.25 | 165    |      |
| 10   | 3/5/19  | 155     | 160 | 160 | 158 | 148     | 156 | 161 | 162 | 162     | 167 | 167 | 159 | 140     | 159 | 168 | 169 | 151.25  | 160.5  | 164    | 162    |      |
| 11   | 3/6/19  | 136     | 142 | 150 | 156 | 144     | 144 | 142 | 140 | 161     | 163 | 162 | 156 | 131     | 138 | 144 | 150 | 143     | 146.75 | 149.5  | 150.5  |      |
| 12   | 3/7/19  | 139     | 146 | 153 | 160 | 149     | 152 | 153 | 151 | 157     | 164 | 162 | 160 | 140     | 145 | 149 | 153 | 146.25  | 151.75 | 154.25 | 156    |      |
| 13   | 3/8/19  | 144     | 150 | 154 | 161 | 148     | 153 | 155 | 156 | 155     | 163 | 163 | 161 | 144     | 148 | 150 | 154 | 147.75  | 153.5  | 155.5  | 158    |      |
| 14   | 3/9/19  | 150     | 156 | 162 | 166 | 150     | 152 | 155 | 158 | 154     | 162 | 164 | 162 | 149     | 156 | 154 | 158 | 150.75  | 156.5  | 158.75 | 161    |      |
| 15   | 3/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 16   | 3/11/19 | 158     | 161 | 161 | 158 | 164     | 165 | 164 | 162 | 156     | 162 | 167 | 165 | 158     | 162 | 166 | 170 | 159     | 162.5  | 164.5  | 163.75 |      |
| 17   | 3/12/19 | 134     | 136 | 136 | 139 | 145     | 149 | 155 | 160 | 136     | 140 | 145 | 150 | 145     | 150 | 157 | 162 | 140     | 143.75 | 148.25 | 152.75 | Turn |
| 18   | 3/13/19 | 146     | 150 | 156 | 160 | 150     | 158 | 161 | 164 | 146     | 150 | 154 | 159 | 147     | 153 | 158 | 162 | 147.25  | 152.75 | 157.25 | 161.25 |      |
| 19   | 3/14/19 | 162     | 164 | 151 | 144 | 161     | 165 | 168 | 166 | 168     | 170 | 168 | 162 | 168     | 170 | 170 | 164 | 164.75  | 167.25 | 164.25 | 159    |      |
| 20   | 3/15/19 | 150     | 153 | 158 | 162 | 146     | 158 | 169 | 176 | 151     | 157 | 167 | 174 | 154     | 166 | 170 | 176 | 150.25  | 158.5  | 166    | 172    |      |
| 21   | 3/16/19 | 148     | 155 | 161 | 166 | 152     | 159 | 166 | 167 | 154     | 165 | 164 | 166 | 150     | 155 | 159 | 161 | 151     | 158.5  | 162.5  | 165    |      |
| 22   | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 23   | 3/18/19 | 150     | 161 | 168 | 170 | 156     | 162 | 168 | 174 | 148     | 157 | 164 | 167 | 136     | 141 | 148 | 151 | 147.5   | 155.25 | 162    | 165.5  |      |
| 24   | 3/19/19 | 145     | 149 | 158 | 165 | 156     | 164 | 170 | 174 | 146     | 158 | 164 | 166 | 142     | 145 | 152 | 158 | 147.25  | 154    | 161    | 165.75 |      |
| 25   | 3/20/19 | 132     | 134 | 142 | 144 | 133     | 135 | 139 | 142 | 134     | 136 | 140 | 140 | 133     | 136 | 139 | 141 | 133     | 135.25 | 140    | 141.75 | Turn |
| 26   | 3/21/19 | 160     | 164 | 165 | 158 | 161     | 166 | 168 | 165 | 146     | 158 | 166 | 170 | 142     | 146 | 152 | 156 | 152.25  | 158.5  | 162.75 | 162.25 |      |
| 27   | 3/22/19 | 135     | 142 | 148 | 157 | 143     | 145 | 156 | 165 | 139     | 145 | 155 | 169 | 132     | 135 | 141 | 157 | 137.25  | 141.75 | 150    | 162    |      |
| 28   | 3/23/19 | 137     | 146 | 153 | 163 | 148     | 149 | 161 | 168 | 143     | 148 | 158 | 172 | 135     | 138 | 146 | 160 | 140.75  | 145.25 | 154.5  | 165.75 |      |
| 29   | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 30   | 3/25/19 | 136     | 141 | 146 | 154 | 140     | 145 | 151 | 162 | 141     | 148 | 157 | 170 | 136     | 141 | 145 | 155 | 138.25  | 143.75 | 149.75 | 160.25 |      |

## Attachment F

| <b>MSAP Process Temperature Chart Windrow# 19-2-28</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| Temperature: Shading equals temperature 131 or greater for PFRP. |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| Days   | Date    | Point 1 |     |     |     | Point 2 |     |     |     | Point 3 |     |     |     | Point 4 |     |     |     | Average |        |        |        | Turn |
|  |         | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10"     | 20"    | 30"    | 40"    |      |
| 1  | 3/1/19  | 133     | 136 | 136 | 133 | 132     | 136 | 138 | 135 | 132     | 138 | 136 | 133 | 136     | 143 | 138 | 132 | 133.25  | 138.25 | 137    | 133.25 |      |
| 2  | 3/2/19  | 142     | 146 | 140 | 136 | 148     | 151 | 144 | 140 | 138     | 144 | 144 | 138 | 144     | 146 | 140 | 136 | 143     | 146.75 | 142    | 137.5  |      |
| 3  | 3/3/19  |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 3/4/19  | 158     | 164 | 146 | 140 | 160     | 162 | 158 | 146 | 148     | 158 | 154 | 150 | 151     | 148 | 142 | 139 | 154.25  | 158    | 150    | 143.75 |      |
| 5  | 3/5/19  | 160     | 163 | 152 | 142 | 158     | 163 | 163 | 160 | 159     | 160 | 152 | 148 | 165     | 166 | 163 | 158 | 160.5   | 163    | 157.5  | 152    |      |
| 6  | 3/6/19  | 152     | 152 | 150 | 142 | 146     | 151 | 156 | 156 | 162     | 163 | 160 | 156 | 163     | 168 | 165 | 160 | 155.75  | 158.5  | 157.75 | 153.5  |      |
| 7  | 3/7/19  | 153     | 155 | 158 | 156 | 146     | 153 | 159 | 161 | 158     | 165 | 162 | 160 | 163     | 169 | 166 | 162 | 155     | 160.5  | 161.25 | 159.75 |      |
| 8  | 3/8/19  | 155     | 163 | 166 | 166 | 144     | 149 | 155 | 160 | 154     | 166 | 164 | 162 | 160     | 166 | 168 | 162 | 153.25  | 161    | 163.25 | 162.5  |      |
| 9  | 3/9/19  | 153     | 159 | 161 | 165 | 150     | 155 | 161 | 158 | 147     | 149 | 150 | 160 | 158     | 162 | 166 | 164 | 152     | 156.25 | 159.5  | 161.75 |      |
| 10   | 3/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 11   | 3/11/19 | 158     | 163 | 166 | 165 | 151     | 152 | 151 | 154 | 148     | 158 | 158 | 159 | 158     | 164 | 166 | 166 | 153.75  | 159.25 | 160.25 | 161    |      |
| 12   | 3/12/19 | 139     | 149 | 156 | 166 | 156     | 159 | 162 | 162 | 144     | 149 | 153 | 155 | 158     | 163 | 166 | 169 | 149.25  | 155    | 159.25 | 163    |      |
| 13   | 3/13/19 | 142     | 150 | 157 | 165 | 156     | 161 | 164 | 165 | 145     | 149 | 154 | 154 | 158     | 164 | 166 | 171 | 150.25  | 156    | 160.25 | 163.75 |      |
| 14   | 3/14/19 | 156     | 159 | 164 | 166 | 156     | 162 | 166 | 166 | 148     | 152 | 158 | 160 | 160     | 165 | 169 | 172 | 155     | 159.5  | 164.25 | 166    |      |
| 15   | 3/15/19 | 149     | 156 | 163 | 169 | 147     | 155 | 163 | 168 | 155     | 163 | 168 | 171 | 149     | 154 | 164 | 171 | 150     | 157    | 164.5  | 169.75 |      |
| 16   | 3/16/19 | 150     | 155 | 161 | 166 | 150     | 155 | 159 | 166 | 159     | 160 | 158 | 162 | 150     | 155 | 161 | 166 | 152.25  | 156.25 | 159.75 | 165    |      |
| 17   | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 18   | 3/18/19 | 158     | 164 | 168 | 171 | 139     | 151 | 156 | 161 | 155     | 157 | 158 | 158 | 152     | 161 | 168 | 170 | 151     | 158.25 | 162.5  | 165    |      |
| 19   | 3/19/19 | 154     | 163 | 166 | 166 | 142     | 152 | 159 | 161 | 144     | 158 | 164 | 165 | 156     | 166 | 171 | 174 | 149     | 159.75 | 165    | 166.5  | Turn |
| 20   | 3/20/19 | 139     | 146 | 152 | 164 | 140     | 149 | 148 | 142 | 158     | 146 | 149 | 155 | 146     | 152 | 158 | 165 | 145.75  | 148.25 | 151.75 | 156.5  |      |
| 21   | 3/21/19 | 154     | 162 | 162 | 159 | 170     | 172 | 166 | 153 | 165     | 165 | 159 | 154 | 150     | 148 | 142 | 140 | 159.75  | 161.75 | 157.25 | 151.5  |      |
| 22   | 3/22/19 | 156     | 160 | 166 | 168 | 160     | 163 | 166 | 171 | 161     | 164 | 167 | 172 | 156     | 159 | 166 | 171 | 158.25  | 161.5  | 166.25 | 170.5  |      |
| 23   | 3/23/19 | 161     | 163 | 168 | 171 | 164     | 167 | 170 | 173 | 164     | 167 | 170 | 174 | 159     | 163 | 169 | 173 | 162     | 165    | 169.25 | 172.75 |      |
| 24   | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 25   | 3/25/19 | 150     | 162 | 170 | 173 | 156     | 164 | 169 | 175 | 150     | 155 | 161 | 167 | 167     | 170 | 171 | 170 | 155.75  | 162.75 | 167.75 | 171.25 |      |
| 26   | 3/26/19 | 152     | 161 | 168 | 174 | 156     | 165 | 171 | 175 | 151     | 158 | 164 | 169 | 168     | 172 | 172 | 170 | 156.75  | 164    | 168.75 | 172    | Turn |
| 27   | 3/27/19 | 163     | 165 | 166 | 165 | 166     | 171 | 171 | 168 | 152     | 161 | 165 | 168 | 165     | 168 | 168 | 167 | 161.5   | 166.25 | 167.5  | 167    |      |
| 28   | 3/28/19 | 151     | 154 | 158 | 159 | 150     | 150 | 148 | 146 | 158     | 161 | 160 | 166 | 153     | 158 | 160 | 159 | 153     | 155.75 | 156.5  | 157.5  |      |
| 29   | 3/29/19 | 154     | 159 | 160 | 156 | 151     | 157 | 159 | 161 | 150     | 159 | 162 | 160 | 151     | 153 | 150 | 146 | 151.5   | 157    | 157.75 | 155.75 |      |



## Attachment G

| <b>Hillsborough County Composting - Monitoring Sheet (MSAP Method)</b> |               |                  |                         | <b>Windrow # 19-3-5</b> |                        |               |
|--|---------------|------------------|-------------------------|-------------------------|------------------------|---------------|
| Windrow Construction:  |               |                  | Date Commenced: 2-28-19 |                         | Date Completed: 3-5-19 |               |
| Date   | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards)      | Overs (yards)          | Cover (yards) |
| 2/28/19  | Mike Bayne    | 21.81            | 28.35                   | 44                      | 22                     | 40            |
| 3/1/19   | Jerry Devoe   | 17.80            | 23.14                   | 44                      | 22                     |               |
| 3/1/19   | Jerry Devoe   | 20.07            | 26.09                   | 44                      | 22                     | 60            |
| 3/2/19   | Jerry Devoe   | 21.78            | 28.31                   | 44                      | 22                     |               |
| 3/2/19   | Jerry Devoe   | 21.45            | 27.89                   | 44                      | 22                     | 60            |
| 3/4/19   | Oscar Ochoa   | 21.61            | 28.09                   | 44                      | 22                     |               |
| 3/4/19   | Oscar Ochoa   | 21.54            | 28.00                   | 44                      | 22                     | 60            |
| 3/5/19   | Oscar Ochoa   | 19.61            | 25.49                   | 44                      | 22                     |               |
| 3/5/19   | Mike Bayne    | 21.70            | 28.21                   | 44                      | 22                     | 60            |
| Totals   |               | 187.37           | 243.58                  | 396.00                  | 198.00                 | 280.00        |
| Windrow Construction ratio:  |               | 3.59 /1          |                         |                         |                        |               |

| <b>MSAP Process Temperature Chart Windrow# 19-3-5</b>            |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| Temperature: Shading equals temperature 131 or greater for PFRP. |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| Days   | Date    | Point 1 |     |     |     | Point 2 |     |     |     | Point 3 |     |     |     | Point 4 |     |     |     | Average |        |        |        | Turn |
|  |         | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10"     | 20"    | 30"    | 40"    |      |
| 1  | 3/6/19  | 140     | 151 | 160 | 151 | 140     | 158 | 162 | 165 | 132     | 154 | 150 | 149 | 138     | 136 | 132 | 119 | 137.5   | 149.75 | 151    | 146    |      |
| 2  | 3/7/19  | 146     | 154 | 159 | 152 | 145     | 158 | 166 | 170 | 141     | 150 | 152 | 157 | 141     | 138 | 135 | 130 | 143.25  | 150    | 153    | 152.25 |      |
| 3  | 3/8/19  | 150     | 157 | 161 | 154 | 150     | 155 | 159 | 161 | 144     | 154 | 154 | 159 | 146     | 144 | 137 | 134 | 147.5   | 152.5  | 152.75 | 152    |      |
| 4  | 3/9/19  | 148     | 156 | 160 | 156 | 149     | 151 | 155 | 166 | 148     | 155 | 154 | 160 | 152     | 154 | 148 | 141 | 149.25  | 154    | 154.25 | 155.75 |      |
| 5  | 3/10/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 6  | 3/11/19 | 148     | 169 | 158 | 158 | 153     | 160 | 164 | 164 | 142     | 156 | 154 | 160 | 148     | 154 | 152 | 148 | 147.75  | 159.75 | 157    | 157.5  |      |
| 7  | 3/12/19 | 146     | 150 | 157 | 163 | 140     | 143 | 149 | 161 | 140     | 148 | 154 | 163 | 140     | 151 | 156 | 164 | 141.5   | 148    | 154    | 162.75 |      |
| 8  | 3/13/19 | 147     | 152 | 158 | 164 | 145     | 147 | 151 | 159 | 144     | 150 | 155 | 163 | 141     | 150 | 158 | 163 | 144.25  | 149.75 | 155.5  | 162.25 |      |
| 9  | 3/14/19 | 148     | 156 | 161 | 161 | 158     | 166 | 172 | 173 | 148     | 161 | 164 | 164 | 142     | 156 | 162 | 162 | 149     | 159.75 | 164.75 | 165    |      |
| 10   | 3/15/19 | 135     | 139 | 146 | 155 | 140     | 152 | 157 | 165 | 147     | 156 | 160 | 164 | 148     | 155 | 160 | 163 | 142.5   | 150.5  | 155.75 | 161.75 |      |
| 11   | 3/16/19 | 136     | 140 | 144 | 149 | 141     | 148 | 152 | 159 | 143     | 149 | 153 | 161 | 151     | 159 | 162 | 166 | 142.75  | 149    | 152.75 | 158.75 |      |
| 12   | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 13   | 3/18/19 | 150     | 150 | 154 | 158 | 138     | 150 | 163 | 168 | 158     | 163 | 158 | 163 | 147     | 149 | 155 | 158 | 148.25  | 153    | 157.5  | 161.75 |      |
| 14   | 3/19/19 | 148     | 156 | 161 | 164 | 151     | 158 | 161 | 162 | 151     | 163 | 162 | 164 | 142     | 146 | 157 | 161 | 148     | 155.75 | 160.25 | 162.75 |      |
| 15   | 3/20/19 | 131     | 133 | 132 | 136 | 133     | 138 | 142 | 152 | 139     | 143 | 147 | 162 | 136     | 140 | 143 | 148 | 134.75  | 138.5  | 141    | 149.5  |      |
| 16   | 3/21/19 | 133     | 135 | 135 | 138 | 135     | 140 | 145 | 152 | 142     | 146 | 151 | 163 | 139     | 144 | 148 | 149 | 137.25  | 141.25 | 144.75 | 150.5  |      |
| 17   | 3/22/19 | 135     | 141 | 154 | 165 | 133     | 145 | 155 | 166 | 141     | 151 | 164 | 162 | 138     | 142 | 153 | 163 | 136.75  | 144.75 | 156.5  | 164    |      |
| 18   | 3/23/19 | 137     | 145 | 157 | 169 | 136     | 150 | 157 | 169 | 144     | 156 | 167 | 163 | 140     | 144 | 157 | 168 | 139.25  | 148.75 | 159.5  | 167.25 |      |
| 19   | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 20   | 3/25/19 | 146     | 153 | 160 | 166 | 154     | 161 | 165 | 169 | 140     | 148 | 157 | 163 | 142     | 149 | 156 | 161 | 145.5   | 152.75 | 159.5  | 164.75 |      |
| 21   | 3/26/19 | 149     | 156 | 162 | 168 | 153     | 163 | 167 | 173 | 143     | 150 | 159 | 165 | 145     | 152 | 160 | 163 | 147.5   | 155.25 | 162    | 167.25 | Turn |
| 22   | 3/27/19 | 141     | 138 | 136 | 135 | 139     | 137 | 137 | 134 | 135     | 141 | 137 | 133 | 140     | 141 | 137 | 132 | 138.75  | 139.25 | 136.75 | 133.5  |      |
| 23   | 3/28/19 | 144     | 141 | 140 | 140 | 156     | 159 | 157 | 152 | 144     | 146 | 145 | 141 | 143     | 147 | 145 | 138 | 146.75  | 148.25 | 146.75 | 142.75 |      |
| 24   | 3/29/19 | 140     | 149 | 152 | 159 | 150     | 155 | 155 | 153 | 141     | 144 | 151 | 159 | 141     | 151 | 159 | 161 | 143     | 149.75 | 154.25 | 158    |      |
| 25   | 3/30/19 | 147     | 152 | 158 | 157 | 149     | 151 | 153 | 158 | 142     | 148 | 158 | 160 | 147     | 153 | 160 | 163 | 146.25  | 151    | 157.25 | 159.5  |      |

## Attachment H

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                        | Windrow # 19-3-11  |                         |               |
|---|---------------|------------------|------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 3-6-19 |                    | Date Completed: 3-11-19 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)      | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 3/6/19  | Mike Bayne    | 16.46            | 21.40                  | 44                 | 22                      |               |
| 3/6/19  | Mike Bayne    | 19.18            | 24.93                  | 44                 | 22                      | 60            |
| 3/7/19  | Mike Bayne    | 21.90            | 28.47                  | 44                 | 22                      |               |
| 3/7/19  | Mike Bayne    | 16.00            | 20.80                  | 44                 | 22                      | 60            |
| 3/8/19  | Jerry Devoe   | 19.30            | 25.09                  | 44                 | 22                      | 40            |
| 3/9/19  | Jerry Devoe   | 20.91            | 27.18                  | 44                 | 22                      |               |
| 3/9/19  | Jerry Devoe   | 18.05            | 23.47                  | 44                 | 22                      | 60            |
| 3/11/19   | Jerry Devoe   | 15.77            | 20.50                  | 44                 | 22                      | 50            |
| <b>Totals</b>   |               | 147.57           | 191.84                 | 352.00             | 176.00                  | 270.00        |
| Windrow Construction ratio:                                     |               |                  | 4.16 /1                |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 19-3-11</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|
| Temperature: Shading equals temperature 131 or greater for PFRP. |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| Days   | Date    | Point 1 |     |     |     | Point 2 |     |     |     | Point 3 |     |     |     | Point 4 |     |     |     | Average |        |        |        | Turn |
|  |         | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10"     | 20"    | 30"    | 40"    |      |
| 1  | 3/12/19 | 149     | 152 | 156 | 159 | 155     | 158 | 158 | 155 | 148     | 156 | 161 | 161 | 151     | 156 | 157 | 155 | 150.75  | 155.5  | 158    | 157.5  |      |
| 2  | 3/13/19 | 151     | 157 | 161 | 165 | 154     | 159 | 162 | 165 | 150     | 154 | 160 | 162 | 150     | 157 | 156 | 155 | 151.25  | 156.75 | 159.75 | 161.75 |      |
| 3  | 3/14/19 | 156     | 154 | 151 | 140 | 161     | 162 | 160 | 157 | 150     | 154 | 160 | 164 | 154     | 154 | 153 | 150 | 155.25  | 156    | 156    | 152.75 |      |
| 4  | 3/15/19 | 139     | 142 | 147 | 153 | 151     | 157 | 163 | 160 | 152     | 158 | 164 | 162 | 149     | 154 | 159 | 155 | 147.75  | 152.75 | 158.25 | 157.5  |      |
| 5  | 3/16/19 | 140     | 144 | 151 | 155 | 149     | 154 | 159 | 159 | 150     | 160 | 166 | 164 | 155     | 159 | 166 | 158 | 148.5   | 154.25 | 160.5  | 159    |      |
| 6  | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 7  | 3/18/19 | 156     | 162 | 166 | 164 | 155     | 160 | 158 | 158 | 150     | 162 | 164 | 164 | 153     | 160 | 160 | 157 | 153.5   | 161    | 162    | 160.75 |      |
| 8  | 3/19/19 | 150     | 163 | 168 | 168 | 161     | 166 | 161 | 160 | 138     | 153 | 156 | 160 | 135     | 146 | 155 | 159 | 146     | 157    | 160    | 161.75 |      |
| 9  | 3/20/19 | 136     | 145 | 150 | 159 | 146     | 154 | 163 | 163 | 133     | 137 | 146 | 154 | 140     | 146 | 154 | 158 | 138.75  | 145.5  | 153.25 | 158.5  |      |
| 10   | 3/21/19 | 154     | 160 | 160 | 158 | 158     | 164 | 160 | 158 | 142     | 151 | 160 | 166 | 156     | 166 | 166 | 160 | 152.5   | 160.25 | 161.5  | 160.5  |      |
| 11   | 3/22/19 | 163     | 167 | 170 | 162 | 154     | 144 | 159 | 159 | 165     | 169 | 171 | 170 | 154     | 158 | 162 | 163 | 159     | 159.5  | 165.5  | 163.5  |      |
| 12   | 3/23/19 | 166     | 169 | 173 | 166 | 157     | 148 | 158 | 160 | 168     | 171 | 173 | 171 | 158     | 161 | 166 | 167 | 162.25  | 162.25 | 167.5  | 166    |      |
| 13   | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 14   | 3/25/19 | 163     | 168 | 170 | 170 | 153     | 158 | 163 | 168 | 158     | 168 | 171 | 171 | 160     | 166 | 170 | 172 | 158.5   | 165    | 168.5  | 170.25 | Turn |
| 15   | 3/26/19 | 161     | 167 | 172 | 173 | 154     | 160 | 164 | 169 | 155     | 164 | 172 | 174 | 160     | 165 | 172 | 174 | 157.5   | 164    | 170    | 172.5  |      |
| 16   | 3/27/19 | 148     | 154 | 157 | 163 | 150     | 160 | 167 | 170 | 156     | 164 | 168 | 173 | 161     | 166 | 170 | 172 | 153.75  | 161    | 165.5  | 169.5  |      |
| 17   | 3/28/19 | 150     | 153 | 152 | 148 | 159     | 165 | 166 | 165 | 153     | 160 | 163 | 161 | 150     | 154 | 159 | 163 | 153     | 158    | 160    | 159.25 |      |
| 18   | 3/29/19 | 145     | 151 | 156 | 163 | 150     | 152 | 157 | 163 | 160     | 163 | 165 | 169 | 140     | 144 | 151 | 161 | 148.75  | 152.5  | 157.25 | 164    |      |
| 19   | 3/30/19 | 148     | 151 | 155 | 167 | 149     | 151 | 155 | 157 | 158     | 160 | 165 | 167 | 138     | 145 | 150 | 165 | 148.25  | 151.75 | 156.25 | 164    |      |
| 20   | 3/31/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |

## Attachment I

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                         |                    | Windrow # 19-3-16       |               |
|---|---------------|------------------|-------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 3-12-19 |                    | Date Completed: 3-16-19 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 3/12/19   | Oscar Ochoa   | 20.31            | 26.40                   | 44                 | 22                      |               |
| 3/12/19   | Oscar Ochoa   | 18.97            | 24.66                   | 44                 | 22                      | 60            |
| 3/13/19   | Mike Bayne    | 21.59            | 28.07                   | 44                 | 22                      |               |
| 3/13/19   | Mike Bayne    | 21.18            | 27.53                   | 44                 | 22                      | 60            |
| 3/14/19   | Mike Bayne    | 22.70            | 29.51                   | 44                 | 22                      |               |
| 3/14/19   | Mike Bayne    | 21.51            | 27.96                   | 44                 | 22                      | 60            |
| 3/15/19   | Jerry Devoe   | 22.47            | 29.21                   | 44                 | 22                      |               |
| 3/15/19   | Jerry Devoe   | 23.73            | 30.85                   | 44                 | 22                      | 60            |
| 3/16/19   | Jerry Devoe   | 22.44            | 29.17                   | 44                 | 22                      |               |
| 3/16/19   | Jerry Devoe   | 20.92            | 27.20                   | 44                 | 22                      | 60            |
| <b>Totals</b>   |               | 215.82           | 280.57                  | 440.00             | 220.00                  | 300.00        |
| <b>Windrow Construction ratio:</b>                              |               | 3.42 /1          |                         |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 19-3-16</b>           |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |  |  |  |  |
|--|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|--------|------|--|--|--|--|
| Temperature: Shading equals temperature 131 or greater for PFRP. |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |  |  |  |  |
| Days   | Date    | Point 1 |     |     |     | Point 2 |     |     |     | Point 3 |     |     |     | Point 4 |     |     |     | Average |        |        |        | Turn |  |  |  |  |
|  |         | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10      | 20  | 30  | 40  | 10"     | 20"    | 30"    | 40"    |      |  |  |  |  |
| 1  | 3/17/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |  |  |  |  |
| 2  | 3/18/19 | 151     | 159 | 163 | 166 | 151     | 158 | 161 | 160 | 152     | 158 | 158 | 151 | 136     | 134 | 132 | 128 | 147.5   | 152.25 | 153.5  | 151.25 |      |  |  |  |  |
| 3  | 3/19/19 | 144     | 148 | 150 | 149 | 139     | 137 | 135 | 132 | 137     | 142 | 146 | 144 | 138     | 140 | 137 | 132 | 139.5   | 141.75 | 142    | 139.25 |      |  |  |  |  |
| 4  | 3/20/19 | 141     | 148 | 153 | 167 | 147     | 154 | 158 | 173 | 138     | 144 | 147 | 154 | 132     | 137 | 141 | 146 | 139.5   | 145.75 | 149.75 | 160    |      |  |  |  |  |
| 5  | 3/21/19 | 143     | 151 | 159 | 168 | 148     | 157 | 160 | 172 | 142     | 150 | 152 | 156 | 135     | 141 | 144 | 149 | 142     | 149.75 | 153.75 | 161.25 |      |  |  |  |  |
| 6  | 3/22/19 | 134     | 146 | 155 | 171 | 147     | 164 | 167 | 166 | 148     | 154 | 159 | 162 | 134     | 156 | 163 | 167 | 140.75  | 155    | 161    | 166.5  |      |  |  |  |  |
| 7  | 3/23/19 | 138     | 149 | 157 | 173 | 153     | 165 | 170 | 168 | 152     | 156 | 161 | 166 | 138     | 160 | 164 | 169 | 145.25  | 157.5  | 163    | 169    |      |  |  |  |  |
| 8  | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |  |  |  |  |
| 9  | 3/25/19 | 162     | 166 | 167 | 168 | 155     | 157 | 156 | 154 | 158     | 161 | 161 | 159 | 148     | 161 | 168 | 172 | 155.75  | 161.25 | 163    | 163.25 |      |  |  |  |  |
| 10   | 3/26/19 | 163     | 168 | 168 | 168 | 156     | 160 | 161 | 158 | 157     | 162 | 163 | 162 | 150     | 161 | 169 | 173 | 156.5   | 162.75 | 165.25 | 165.25 |      |  |  |  |  |
| 11   | 3/27/19 | 156     | 161 | 163 | 166 | 158     | 160 | 159 | 158 | 156     | 161 | 163 | 163 | 154     | 158 | 159 | 158 | 156     | 160    | 161    | 161.25 |      |  |  |  |  |
| 12   | 3/28/19 | 149     | 162 | 168 | 171 | 161     | 166 | 166 | 165 | 158     | 162 | 161 | 157 | 161     | 165 | 166 | 166 | 157.25  | 163.75 | 165.25 | 164.75 |      |  |  |  |  |
| 13   | 3/29/19 | 149     | 151 | 155 | 165 | 149     | 151 | 162 | 166 | 142     | 151 | 159 | 166 | 150     | 160 | 161 | 161 | 147.5   | 153.25 | 159.25 | 164.5  |      |  |  |  |  |
| 14   | 3/30/19 | 150     | 155 | 157 | 163 | 147     | 150 | 157 | 165 | 148     | 155 | 160 | 165 | 152     | 158 | 160 | 165 | 149.25  | 154.5  | 158.5  | 164.5  |      |  |  |  |  |
| 15   | 3/31/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |  |  |  |  |

## Attachment J

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                         |                    | Windrow # 19-3-21       |               |
|---|---------------|------------------|-------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 3-18-19 |                    | Date Completed: 3-21-19 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 3/18/19   | Oscar Ochoa   | 21.66            | 28.16                   | 44                 | 22                      |               |
| 3/18/19   | Oscar Ochoa   | 22.57            | 29.34                   | 44                 | 22                      | 60            |
| 3/19/19   | Mike Bayne    | 20.72            | 26.94                   | 44                 | 22                      |               |
| 3/19/19   | Mike Bayne    | 19.70            | 25.61                   | 44                 | 22                      | 60            |
| 3/20/19   | Mike Bayne    | 18.56            | 24.13                   | 44                 | 22                      |               |
| 3/20/19   | Mike Bayne    | 22.55            | 29.32                   | 44                 | 22                      | 60            |
| 3/21/19   | Jerry Devoe   | 21.39            | 27.81                   | 44                 | 22                      |               |
| 3/21/19   | Jerry Devoe   | 21.22            | 27.59                   | 44                 | 22                      | 60            |
| <b>Totals</b>   |               | 168.37           | 218.88                  | 352.00             | 176.00                  | 240.00        |
| <b>Windrow Construction ratio:</b>                              |               | 3.51 / 1         |                         |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 19-3-21</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  | 3/22/19 | 158     | 160 | 163 | 155 | 141     | 148 | 152 | 154 | 133     | 143 | 149 | 155 | 156     | 145 | 141 | 139 | 147     | 149    | 151.25 | 150.75 |      |
| 2  | 3/23/19 | 162     | 164 | 166 | 154 | 144     | 151 | 154 | 160 | 135     | 148 | 152 | 159 | 158     | 152 | 145 | 140 | 149.75  | 153.75 | 154.25 | 153.25 |      |
| 3  | 3/24/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |
| 4  | 3/25/19 | 163     | 163 | 157 | 152 | 158     | 161 | 163 | 163 | 163     | 163 | 158 | 145 | 157     | 154 | 150 | 146 | 160.25  | 160.25 | 157    | 151.5  |      |
| 5  | 3/26/19 | 162     | 165 | 160 | 158 | 156     | 162 | 165 | 166 | 160     | 162 | 160 | 157 | 156     | 158 | 158 | 153 | 158.5   | 161.75 | 160.75 | 158.5  |      |
| 6  | 3/27/19 | 159     | 162 | 161 | 157 | 158     | 164 | 168 | 170 | 145     | 158 | 164 | 165 | 137     | 145 | 152 | 155 | 149.75  | 157.25 | 161.25 | 161.75 |      |
| 7  | 3/28/19 | 156     | 162 | 165 | 163 | 163     | 168 | 168 | 169 | 164     | 168 | 170 | 170 | 151     | 163 | 168 | 170 | 158.5   | 165.25 | 167.75 | 168    |      |
| 8  | 3/29/19 | 155     | 160 | 161 | 161 | 150     | 158 | 160 | 163 | 153     | 159 | 160 | 163 | 158     | 160 | 163 | 161 | 154     | 159.25 | 161    | 162    |      |
| 9  | 3/30/19 | 158     | 161 | 162 | 164 | 156     | 161 | 163 | 168 | 158     | 162 | 163 | 167 | 158     | 160 | 160 | 162 | 157.5   | 161    | 162    | 165.25 |      |
| 10   | 3/31/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |        |      |

## Attachment K

| Hillsborough County Composting - Monitoring Sheet (MSAP Method) |               |                  |                         |                    | Windrow # 19-3-26       |               |
|---|---------------|------------------|-------------------------|--------------------|-------------------------|---------------|
| Windrow Construction:   |               |                  | Date Commenced: 3-22-19 |                    | Date Completed: 3-26-19 |               |
| Date  | Operator Name | Biosolids (tons) | Biosolids (yards)       | Yard Waste (yards) | Overs (yards)           | Cover (yards) |
| 3/22/19   | Jerry Devoe   | 20.53            | 26.69                   | 44                 | 22                      |               |
| 3/22/19   | Jerry Devoe   | 21.87            | 28.43                   | 44                 | 22                      | 60            |
| 3/23/19   | Jerry Devoe   | 22.24            | 28.91                   | 44                 | 22                      | 40            |
| 3/25/19   | Oscar Ochoa   | 23.23            | 30.20                   | 44                 | 22                      |               |
| 3/25/19   | Oscar Ochoa   | 21.45            | 27.89                   | 44                 | 22                      | 60            |
| 3/26/19   | Mike Bayne    | 22.49            | 29.24                   | 44                 | 22                      |               |
| 3/26/19   | Mike Bayne    | 21.49            | 27.94                   | 44                 | 22                      | 60            |
| <b>Totals</b>   |               | 153.30           | 199.29                  | 308.00             | 154.00                  | 220.00        |
| <b>Windrow Construction ratio:</b>                              |               | 3.42 /1          |                         |                    |                         |               |

| <b>MSAP Process Temperature Chart Windrow# 19-3-26</b>                  |         |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |       |      |
|---|---------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|--------|--------|-------|------|
| <b>Temperature:</b> 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   | 3/27/19 | 141     | 140 | 137 | 134 | 159     | 159 | 157 | 154 | 158     | 157 | 155 | 144 | 161     | 163 | 156 | 150 | 154.75  | 154.75 | 151.25 | 145.5 |      |
| 2   | 3/28/19 | 161     | 163 | 163 | 164 | 154     | 161 | 164 | 163 | 162     | 166 | 166 | 158 | 158     | 166 | 171 | 155 | 158.75  | 164    | 166    | 160   |      |
| 3   | 3/29/19 | 140     | 149 | 150 | 157 | 150     | 155 | 158 | 162 | 151     | 153 | 166 | 162 | 151     | 155 | 163 | 163 | 148     | 153    | 159.25 | 161   |      |
| 4   | 3/30/19 | 138     | 140 | 157 | 163 | 147     | 152 | 158 | 157 | 156     | 160 | 165 | 167 | 155     | 160 | 162 | 163 | 149     | 153    | 160.5  | 162.5 |      |
| 5   | 3/31/19 |         |     |     |     |         |     |     |     |         |     |     |     |         |     |     |     |         |        |        |       |      |