



# WHEELABRATOR NORTH ANDOVER A WIN-WASTE INNOVATIONS COMPANY COMPLIANCE SUMMARY REPORT



Date 11/22/23

Wheel Plant Wheelabrator North Andover  
Unit 1 Unit Unit 1  
Outlet Source Outlet

| Date       | Hour | On-Line Minutes | O2            |        | NOx             |        | SO2             |        |                |        |         | CO     |                 |        | Carbon Feed |        | FF Temp (deg F) |            | Steam KLbs/Hr |            |           |
|------------|------|-----------------|---------------|--------|-----------------|--------|-----------------|--------|----------------|--------|---------|--------|-----------------|--------|-------------|--------|-----------------|------------|---------------|------------|-----------|
|            |      |                 | Out Vol % Dry | Status | Outlet ppm 7%O2 | Status | Outlet ppm 7%O2 | Status | Inlet ppm 7%O2 | Status | Removal | Status | Outlet ppm 7%O2 | Status | 4 Hr Block  | Status | Lbs/Hr Avg.     | 8 Hr Block | 1 Hr Avg.     | 4 Hr Block | 1 Hr Avg. |
| 11/22/2023 | 0    | 60              | 10.9          |        | 141             |        | 13              |        | 67             |        | 81      |        | 0               |        |             | 13     |                 | 309        |               | 168.4      |           |
| 11/22/2023 | 1    | 60              | 11.0          |        | 141             |        | 10              |        | 60             |        | 83      |        | 0               |        |             | 13     |                 | 309        |               | 166.3      |           |
| 11/22/2023 | 2    | 60              | 10.9          |        | 141             |        | 14              |        | 73             |        | 81      |        | 0               |        |             | 13     |                 | 310        |               | 166.6      |           |
| 11/22/2023 | 3    | 60              | 10.9          |        | 141             |        | 14              |        | 76             |        | 82      |        | 0               | 0      |             | 14     |                 | 309        | 309           | 168.4      | 167.4     |
| 11/22/2023 | 4    | 60              | 10.9          |        | 141             |        | 11              |        | 72             |        | 84      |        | 0               |        |             | 14     |                 | 309        |               | 167.4      |           |
| 11/22/2023 | 5    | 60              | 10.9          |        | 141             |        | 14              |        | 77             |        | 81      |        | 0               |        |             | 14     |                 | 309        |               | 166.8      |           |
| 11/22/2023 | 6    | 60              | 10.9          |        | 142             |        | 7               |        | 50             |        | 86      |        | 0               |        |             | 14     |                 | 310        |               | 166.5      |           |
| 11/22/2023 | 7    | 60              | 11.2          |        | 137             |        | 34              |        | 131            |        | 74      |        | 63              | 16     |             | 13     | 13              | 309        | 309           | 162.2      | 165.7     |
| 11/22/2023 | 8    | 60              | 10.9          |        | 141             |        | 20              |        | 92             |        | 79      |        | 0               |        |             | 14     |                 | 310        |               | 165.6      |           |
| 11/22/2023 | 9    | 60              | 11.0          |        | 141             |        | 13              |        | 73             |        | 82      |        | 0               |        |             | 14     |                 | 309        |               | 166.2      |           |
| 11/22/2023 | 10   | 60              | 10.9          |        | 142             |        | 9               |        | 55             |        | 83      |        | 0               |        |             | 13     |                 | 310        |               | 165.9      |           |
| 11/22/2023 | 11   | 60              | 10.7          |        | 140             |        | 17              |        | 73             |        | 77      |        | 0               | 0      |             | 14     |                 | 310        | 310           | 168.9      | 166.6     |
| 11/22/2023 | 12   | 60              | 10.9          |        | 141             |        | 15              |        | 68             |        | 77      |        | 0               |        |             | 14     |                 | 309        |               | 168.1      |           |
| 11/22/2023 | 13   | 60              | 10.7          |        | 142             |        | 22              |        | 104            |        | 79      |        | 0               |        |             | 14     |                 | 309        |               | 165.7      |           |
| 11/22/2023 | 14   | 60              | 10.6          |        | 139             |        | 6               |        | 45             |        | 87      |        | 0               |        |             | 15     |                 | 309        |               | 166.3      |           |
| 11/22/2023 | 15   | 60              | 10.5          |        | 144             |        | 1               |        | 37             |        | 98      |        | 0               | 0      |             | 14     | 14              | 310        | 309           | 165.6      | 166.4     |
| 11/22/2023 | 16   | 60              | 10.4          |        | 139             |        | 6               |        | 49             |        | 88      |        | 0               |        |             | 14     |                 | 309        |               | 167.1      |           |
| 11/22/2023 | 17   | 60              | 10.7          |        | 139             |        | 6               |        | 53             |        | 89      |        | 0               |        |             | 14     |                 | 309        |               | 166.9      |           |
| 11/22/2023 | 18   | 60              | 10.8          |        | 142             |        | 18              |        | 96             |        | 81      |        | 0               |        |             | 14     |                 | 309        |               | 164.7      |           |
| 11/22/2023 | 19   | 60              | 10.6          |        | 140             |        | 5               |        | 48             |        | 88      |        | 0               | 0      |             | 13     |                 | 309        | 309           | 167.8      | 166.6     |
| 11/22/2023 | 20   | 60              | 10.4          |        | 141             |        | 4               |        | 45             |        | 92      |        | 0               |        |             | 13     |                 | 310        |               | 167.9      |           |
| 11/22/2023 | 21   | 60              | 10.4          |        | 142             |        | 4               |        | 46             |        | 91      |        | 0               |        |             | 14     |                 | 310        |               | 165.8      |           |
| 11/22/2023 | 22   | 60              | 10.5          |        | 140             |        | 6               |        | 45             |        | 87      |        | 0               |        |             | 13     |                 | 309        |               | 166.5      |           |
| 11/22/2023 | 23   | 60              | 10.4          |        | 143             |        | 6               |        | 45             |        | 86      |        | 0               | 0      |             | 13     | 14              | 310        | 309           | 166.7      | 166.7     |

Average:  
Geometric Mean Average:

Limit:

|                              |                                    |
|------------------------------|------------------------------------|
| 141                          | 9                                  |
| ≤ 150<br>24-HR<br>Block Avg. | ≤ 29<br>24-HR<br>Geometric<br>Mean |

OR

|                                |
|--------------------------------|
| 85                             |
| ≥ 80%<br>Removal<br>Efficiency |

|                                  |
|----------------------------------|
| see<br>above                     |
| ≤ 69<br>4-HR<br>Block<br>Average |

ppmc

|                                   |
|-----------------------------------|
| see<br>above                      |
| ≥ 12<br>8-HR.<br>Block<br>Average |

lb/hr

|                                      |
|--------------------------------------|
| see<br>above                         |
| ≤ 345 °F<br>4-HR<br>Block<br>Average |

°F

|                                   |
|-----------------------------------|
| see<br>above                      |
| ≤ 173<br>4-HR<br>Block<br>Average |

klb/hr

**Status Flags**

- I - Invalid
- B - Bad
- C - Calibration
- M - Maintenance
- F - Offline
- P - Purge
- T - Out of Control
- E - Excluded
- ^ - Startup
- \* - Shutdown



# WHEELABRATOR NORTH ANDOVER A WIN-WASTE INNOVATIONS COMPANY COMPLIANCE SUMMARY REPORT



Date 11/22/23

Wheel Plant Wheelabrator North Andover  
Unit 2 Unit Unit 1  
Outlet Source Outlet

| Date       | Hour | On-Line Minutes | O2            |        | NOx             |        | SO2             |        |                |        |         | CO     |                 |        | Carbon Feed |        | FF Temp (deg F) |            | Steam KLbs/Hr |            |           |
|------------|------|-----------------|---------------|--------|-----------------|--------|-----------------|--------|----------------|--------|---------|--------|-----------------|--------|-------------|--------|-----------------|------------|---------------|------------|-----------|
|            |      |                 | Out Vol % Dry | Status | Outlet ppm 7%O2 | Status | Outlet ppm 7%O2 | Status | Inlet ppm 7%O2 | Status | Removal | Status | Outlet ppm 7%O2 | Status | 4 Hr Block  | Status | Lbs/Hr Avg.     | 8 Hr Block | 1 Hr Avg.     | 4 Hr Block | 1 Hr Avg. |
| 11/22/2023 | 0    | 60              | 10.4          |        | 139             |        | 13              |        | 61             |        | 79      |        | 5               |        |             | 13     |                 | 310        |               | 167.2      |           |
| 11/22/2023 | 1    | 60              | 10.3          |        | 141             |        | 17              |        | 78             |        | 78      |        | 5               |        |             | 14     |                 | 310        |               | 168.4      |           |
| 11/22/2023 | 2    | 60              | 10.1          |        | 139             |        | 13              |        | 68             |        | 81      |        | 5               |        |             | 13     |                 | 310        |               | 167.5      |           |
| 11/22/2023 | 3    | 60              | 10.1          |        | 140             |        | 8               |        | 57             |        | 86      |        | 5               | 5      |             | 13     |                 | 310        | 310           | 167.7      | 167.7     |
| 11/22/2023 | 4    | 60              | 10.0          |        | 141             |        | 5               |        | 59             |        | 92      |        | 4               |        |             | 13     |                 | 310        |               | 167.7      |           |
| 11/22/2023 | 5    | 60              | 10.1          |        | 141             |        | 13              |        | 68             |        | 81      |        | 4               |        |             | 13     |                 | 310        |               | 168.0      |           |
| 11/22/2023 | 6    | 60              | 10.1          |        | 138             |        | 2               |        | 50             |        | 95      |        | 5               |        |             | 13     |                 | 310        |               | 167.1      |           |
| 11/22/2023 | 7    | 60              | 10.2          |        | 136             |        | 22              |        | 122            |        | 82      |        | 5               | 4      |             | 13     | 13              | 310        | 310           | 167.6      | 167.6     |
| 11/22/2023 | 8    | 60              | 10.4          |        | 140             |        | 14              |        | 100            |        | 86      |        | 4               |        |             | 13     |                 | 310        |               | 167.3      |           |
| 11/22/2023 | 9    | 60              | 10.4          |        | 140             |        | 6               |        | 68             |        | 90      |        | 4               |        |             | 15     |                 | 310        |               | 167.5      |           |
| 11/22/2023 | 10   | 60              | 10.4          |        | 134             |        | 5               | IBM    | 56             | IBM    | 92      | IBM    | 3               |        |             | 18     |                 | 309        |               | 164.7      |           |
| 11/22/2023 | 11   | 60              | 9.9           |        | 141             |        | 1               |        | 43             |        | 99      |        | 5               | 4      |             | 20     |                 | 310        | 310           | 167.4      | 166.7     |
| 11/22/2023 | 12   | 60              | 10.1          |        | 138             |        | 4               |        | 58             |        | 93      |        | 5               |        |             | 20     |                 | 310        |               | 166.8      |           |
| 11/22/2023 | 13   | 60              | 9.8           |        | 142             |        | 7               |        | 75             |        | 91      |        | 4               |        |             | 20     |                 | 310        |               | 166.9      |           |
| 11/22/2023 | 14   | 60              | 10.3          |        | 138             |        | 3               |        | 50             |        | 94      |        | 4               |        |             | 16     |                 | 310        |               | 168.6      |           |
| 11/22/2023 | 15   | 60              | 9.7           |        | 140             |        | 2               |        | 62             |        | 96      |        | 4               | 4      |             | 14     | 17              | 310        | 310           | 168.3      | 167.7     |
| 11/22/2023 | 16   | 60              | 9.7           |        | 138             |        | 2               |        | 52             |        | 96      |        | 5               |        |             | 13     |                 | 310        |               | 167.5      |           |
| 11/22/2023 | 17   | 60              | 10.1          |        | 140             |        | 1               |        | 43             |        | 97      |        | 5               |        |             | 13     |                 | 310        |               | 164.3      |           |
| 11/22/2023 | 18   | 60              | 9.9           |        | 140             |        | 5               |        | 65             |        | 92      |        | 5               |        |             | 14     |                 | 310        |               | 167.7      |           |
| 11/22/2023 | 19   | 60              | 9.7           |        | 137             |        | 1               |        | 46             |        | 99      |        | 5               | 5      |             | 13     |                 | 310        | 310           | 167.9      | 166.9     |
| 11/22/2023 | 20   | 60              | 9.6           |        | 139             |        | 0               |        | 39             |        | 100     |        | 5               |        |             | 14     |                 | 310        |               | 167.9      |           |
| 11/22/2023 | 21   | 60              | 9.6           |        | 141             |        | 0               |        | 45             |        | 100     |        | 4               |        |             | 14     |                 | 310        |               | 166.9      |           |
| 11/22/2023 | 22   | 60              | 9.5           |        | 140             |        | 1               |        | 45             |        | 99      |        | 4               |        |             | 14     |                 | 310        |               | 166.4      |           |
| 11/22/2023 | 23   | 60              | 9.6           |        | 141             |        | 2               |        | 48             |        | 95      |        | 5               | 4      |             | 14     | 13              | 310        | 310           | 167.8      | 167.3     |

Average:  
Geometric Mean Average:

Limit:

|                              |                                    |
|------------------------------|------------------------------------|
| 139                          | 3                                  |
| ≤ 150<br>24-HR<br>Block Avg. | ≤ 29<br>24-HR<br>Geometric<br>Mean |

OR

|                                |
|--------------------------------|
| 95                             |
| ≥ 80%<br>Removal<br>Efficiency |

|                                  |
|----------------------------------|
| see<br>above                     |
| ≤ 69<br>4-HR<br>Block<br>Average |

|                                   |
|-----------------------------------|
| see<br>above                      |
| ≥ 12<br>8-HR.<br>Block<br>Average |

|                                      |
|--------------------------------------|
| see<br>above                         |
| ≤ 345 °F<br>4-HR<br>Block<br>Average |

|                                   |
|-----------------------------------|
| see<br>above                      |
| ≤ 173<br>4-HR<br>Block<br>Average |

**Status Flags**

- I - Invalid
- B - Bad
- C - Calibration
- M - Maintenance
- F - Offline
- P - Purge
- T - Out of Control
- E - Excluded
- ^ - Startup
- \* - Shutdown



# WHEELABRATOR NORTH ANDOVER A WIN-WASTE INNOVATIONS COMPANY OPACITY REPORT



Date 22-Nov-2023

Plant Wheelabrator North Andover  
Unit Unit 1  
Source Outlet

Opacity is a measure of how much soot or smoke may be contained in stack emissions. The more smoke that is contained in the emissions the higher the level of opacity. Continuous opacity monitors located after all of the air pollution control equipment measure the opacity of the emissions from each boiler. Typically the human eye can not detect or see smoke that is less than 5% opacity. You won't see smoke from a modern trash-to-energy plant although in colder weather you will see water vapor condensation, similar to seeing your breath on a cold day. This is not considered opacity. We have a permit limit established by the Massachusetts Department of Environmental Protection of 10% opacity averaged every six (6) minutes.

Limit 10 %

| Time (hr) | 1-6 min | 7-12 min | 13-18 min | 19-24 min | 25-30 min | 31-36 min | 37-42 min | 43-48 min | 49-54 min | 55-60 min | Average |
|-----------|---------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| 0         | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 1         | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 2         | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 3         | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 4         | 0       | 0        | 0         | 1         | 1         | 0         | 0         | 0         | 0         | 0         | 0       |
| 5         | 0       | 1        | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 0         | 0       |
| 6         | 0       | IC       | 5         | IC        | 1         | 1         | 0         | 1         | 1         | 0         | 1       |
| 7         | 1       | 1        | 1         | 1         | 1         | 1         | 0         | 1         | 1         | 0         | 0       |
| 8         | 0       | 1        | 0         | 1         | 1         | 1         | 1         | 1         | 0         | 1         | 0       |
| 9         | 1       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 0         | 0       |
| 10        | 0       | 1        | 0         | 0         | 0         | 1         | 0         | 0         | 0         | 1         | 0       |
| 11        | 0       | 0        | 0         | 0         | 0         | 1         | 0         | 1         | 0         | 1         | 0       |
| 12        | 1       | 1        | 1         | 0         | 1         | 1         | 1         | 1         | 1         | 1         | 0       |
| 13        | 0       | 0        | 1         | 0         | 1         | 0         | 0         | 0         | 0         | 0         | 0       |
| 14        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 15        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 16        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 17        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 18        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 19        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 20        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 21        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 22        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |
| 23        | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0       |

**Status Flags**

I - Invalid                      C - Calibration                      F - Offline                      T - Out of Control                      ^ - Startup  
 B - Bad                            M - Maintenance                      P - Purge                      E - Excluded                      \* - Shutdown



# WHEELABRATOR NORTH ANDOVER A WIN-WASTE INNOVATIONS COMPANY OPACITY REPORT



Date 22-Nov-2023

Plant Wheelabrator North Andover  
Unit Unit 2  
Source Outlet

Opacity is a measure of how much soot or smoke may be contained in stack emissions. The more smoke that is contained in the emissions the higher the level of opacity. Continuous opacity monitors located after all of the air pollution control equipment measure the opacity of the emissions from each boiler. Typically the human eye can not detect or see smoke that is less than 5% opacity. You won't see smoke from a modern trash-to-energy plant although in colder weather you will see water vapor condensation, similar to seeing your breath on a cold day. This is not considered opacity. We have a permit limit established by the Massachusetts Department of Environmental Protection of 10% opacity averaged every six (6) minutes.

Limit 10 %

| Time (hr) | 1-6 min | 7-12 min | 13-18 min | 19-24 min | 25-30 min | 31-36 min | 37-42 min | 43-48 min | 49-54 min | 55-60 min | Average |
|-----------|---------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| 0         | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 1         | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 2         | 2       | 1        | 2         | 2         | 2         | 1         | 1         | 1         | 1         | 1         | 1       |
| 3         | 1       | 1        | 1         | 1         | 2         | 2         | 1         | 2         | 2         | 2         | 1       |
| 4         | 1       | 1        | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 1       |
| 5         | 2       | 2        | 1         | 2         | 1         | 1         | 2         | 2         | 2         | 1         | 1       |
| 6         | 0       | IBC      | 6         | IBC       | 2         | 2         | 2         | 2         | 2         | 2         | 2       |
| 7         | 2       | 2        | 2         | 2         | 2         | 1         | 2         | 2         | 1         | 1         | 1       |
| 8         | 1       | 1        | 1         | 1         | 2         | 2         | 2         | 2         | 2         | 2         | 1       |
| 9         | 2       | 1        | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 1       |
| 10        | 2       | 2        | 1         | 1         | 2         | 1         | 1         | 1         | 1         | 1         | 1       |
| 11        | 1       | 1        | 1         | 1         | 1         | 1         | 2         | 2         | 1         | 1         | 1       |
| 12        | 2       | 2        | 2         | 2         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 13        | 1       | 2        | 2         | 1         | 2         | 2         | 1         | 1         | 1         | 2         | 1       |
| 14        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 15        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 16        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 17        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 18        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 19        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 20        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 21        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 22        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |
| 23        | 1       | 1        | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1       |

**Status Flags**

I - Invalid                      C - Calibration                      F - Offline                      T - Out of Control                      ^ - Startup  
 B - Bad                            M - Maintenance                      P - Purge                      E - Excluded                      \* - Shutdown