



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



Date 6/15/23

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. | 4 Hr Block |
| 6/15/2023 | 0 | 0 | 12.6 | IF | 175 | IF | 2 | IF | 0 | IBF | 0 | IBF | 0 | IF | | 13 | | 243 | | 60.4 | | |
| 6/15/2023 | 1 | 0 | 12.0 | IF | 155 | IF | 6 | IF | 3 | IBF | 0 | IBF | 0 | IF | | 13 | | 247 | | 71.8 | | |
| 6/15/2023 | 2 | 57 | 13.9 | | 189 | | 35 | | 47 | | 26 | | 588 | IFE | | 13 | | 281 | | 105.5 | | |
| 6/15/2023 | 3 | 60 | 12.0 | | 121 | | 14 | | 27 | | 48 | | 77 | ICFE | 166 | ICFE | 13 | | 319 | 300 | 109.6 | 107.6 |
| 6/15/2023 | 4 | 60 | 11.7 | | 135 | | 2 | | 44 | | 95 | | 51 | | | 13 | | 310 | | 133.5 | | |
| 6/15/2023 | 5 | 60 | 11.3 | | 114 | | 32 | | 75 | | 58 | | 220 | IFE | | 13 | | 309 | | 140.4 | | |
| 6/15/2023 | 6 | 60 | 10.9 | | 130 | | 9 | | 30 | | 70 | | 11 | | | 14 | | 310 | | 158.1 | | |
| 6/15/2023 | 7 | 60 | 10.2 | | 151 | | 20 | | 41 | | 52 | | 22 | | 28 | | 14 | 13 | 308 | 309 | 165.8 | 149.5 |
| 6/15/2023 | 8 | 60 | 10.0 | | 138 | | 32 | | 41 | | 22 | | 7 | | | 14 | | 310 | | 162.5 | | |
| 6/15/2023 | 9 | 60 | 9.9 | | 140 | | 16 | | 39 | | 58 | | 8 | | | 13 | | 309 | | 166.7 | | |
| 6/15/2023 | 10 | 60 | 10.0 | | 137 | | 5 | | 46 | | 90 | | 11 | | | 14 | | 310 | | 163.7 | | |
| 6/15/2023 | 11 | 60 | 10.0 | | 137 | | 1 | | 29 | | 98 | | 8 | | 8 | 13 | | 309 | 310 | 167.3 | 165.0 | |
| 6/15/2023 | 12 | 60 | 10.2 | | 141 | | 9 | | 43 | | 78 | | 10 | | | 14 | | 309 | | 165.4 | | |
| 6/15/2023 | 13 | 60 | 10.1 | | 144 | | 1 | | 31 | | 97 | | 7 | | | 13 | | 310 | | 164.7 | | |
| 6/15/2023 | 14 | 60 | 9.9 | | 134 | | 1 | | 25 | | 94 | | 8 | | | 14 | | 310 | | 166.5 | | |
| 6/15/2023 | 15 | 60 | 8.9 | | 121 | | 0 | | 35 | | 100 | | 59 | | 21 | 14 | 14 | 310 | 310 | 164.2 | 165.2 | |
| 6/15/2023 | 16 | 60 | 9.2 | | 134 | | 0 | | 28 | | 100 | | 8 | | | 14 | | 310 | | 164.5 | | |
| 6/15/2023 | 17 | 60 | 9.5 | | 137 | | 0 | | 15 | | 100 | | 8 | | | 14 | | 310 | | 164.2 | | |
| 6/15/2023 | 18 | 60 | 9.8 | | 139 | | 0 | | 22 | | 100 | | 6 | | | 14 | | 309 | | 164.7 | | |
| 6/15/2023 | 19 | 60 | 9.8 | | 139 | | 0 | | 29 | | 100 | | 7 | | 7 | 14 | | 310 | 310 | 165.2 | 164.6 | |
| 6/15/2023 | 20 | 60 | 9.7 | | 138 | | 0 | | 17 | | 100 | | 7 | | | 13 | | 310 | | 164.5 | | |
| 6/15/2023 | 21 | 60 | 9.7 | | 138 | | 0 | | 21 | | 100 | | 7 | | | 13 | | 328 | | 162.9 | | |
| 6/15/2023 | 22 | 60 | 9.5 | | 132 | | 1 | | 24 | | 95 | | 7 | | | 13 | | 332 | | 165.2 | | |
| 6/15/2023 | 23 | 60 | 9.9 | | 140 | | 0 | | 14 | | 100 | | 6 | | 7 | 14 | 14 | 309 | 320 | 163.8 | 164.1 | |

Average:
Geometric Mean Average:

Limit:

| | |
|------------------------------|------------------------------------|
| 138 | 1 |
| ≤ 150 24-HR Block Avg. | ≤ 29 24-HR Geometric Mean |

OR

| |
|--------------------------------|
| 98 |
| ≥ 80% Removal Efficiency |

| |
|----------------------------------|
| see above |
| ≤ 69 4-HR Block Average |

ppmc

| |
|-----------------------------------|
| see above |
| ≥ 12 8-HR. Block Average |

lb/hr

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

°F

| |
|-----------------------------------|
| see above |
| ≤ 173 4-HR Block 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 6/15/23

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. | 4 Hr Block |
| 6/15/2023 | 0 | 0 | 20.9 | IF | 7 | IF | 3 | IF | -207 | IBF | 0 | IBF | 0 | IF | | | 0 | | 80 | | 5.9 | |
| 6/15/2023 | 1 | 0 | 20.9 | IF | 8 | IF | 4 | IF | -201 | IBF | 0 | IBF | 1 | IF | | | 0 | | 79 | | 0.0 | |
| 6/15/2023 | 2 | 0 | 20.9 | IF | 7 | IF | 4 | IF | -203 | IBF | 0 | IBF | 1 | IF | | | 0 | | 79 | | 0.1 | |
| 6/15/2023 | 3 | 5 | 20.1 | ICF | 8 | ICF | 3 | ICF | -204 | IBF | 0 | IBCF | 1 | ICF | 1 | ICF | 0 | | 78 | 79 | 0.0 | 1.5 |
| 6/15/2023 | 4 | 14 | 16.7 | IBCF | 118 | IBCF | 63 | IBCF | -205 | IBF | 0 | IBCF | 474 | IBCF | | | 0 | | 78 | | 0.6 | |
| 6/15/2023 | 5 | 0 | 20.9 | IF | 17 | IF | 5 | IF | 190 | IBCF | 97 | IBCF | 0 | IF | | | 0 | | 79 | | 0.0 | |
| 6/15/2023 | 6 | 0 | 20.9 | IF | 16 | IF | 5 | IF | -206 | IBF | 0 | IBF | 0 | IF | | | 0 | | 78 | | 0.3 | |
| 6/15/2023 | 7 | 0 | 20.9 | IF | 15 | IF | 5 | IF | -209 | IBF | 0 | IBF | 0 | IF | 119 | IBCF | 0 | 0 | 77 | 78 | 1.8 | 0.7 |
| 6/15/2023 | 8 | 0 | 20.9 | IF | 16 | IF | 5 | IF | -211 | IBF | 0 | IBF | 0 | IF | | | 0 | | 77 | | 2.2 | |
| 6/15/2023 | 9 | 0 | 20.9 | IF | 16 | IF | 5 | IF | -218 | IBF | 0 | IBF | 0 | IF | | | 0 | | 77 | | 2.4 | |
| 6/15/2023 | 10 | 0 | 20.9 | IF | 15 | IF | 5 | IF | -217 | IBF | 0 | IBF | 0 | IF | | | 0 | | 78 | | 2.4 | |
| 6/15/2023 | 11 | 0 | 20.9 | IF | 14 | IF | 5 | IF | -221 | IBF | 0 | IBF | 0 | IF | 0 | IF | 0 | | 79 | 78 | 2.5 | 2.4 |
| 6/15/2023 | 12 | 0 | 20.9 | IF | 15 | IF | 5 | IF | -225 | IBF | 0 | IBF | 0 | IF | | | 0 | | 80 | | 3.1 | |
| 6/15/2023 | 13 | 0 | 20.9 | IF | 17 | IF | 5 | IF | -231 | IBF | 0 | IBF | 0 | IF | | | 0 | | 90 | | 2.6 | |
| 6/15/2023 | 14 | 46 | 17.5 | | 178 | | 10 | | 15 | | 32 | | 21 | | | | 0 | | 139 | | 2.8 | |
| 6/15/2023 | 15 | 60 | 17.4 | | 156 | | 9 | | 14 | | 31 | | 14 | | 18 | | 11 | 5 | 155 | 147 | 6.1 | 4.5 |
| 6/15/2023 | 16 | 60 | 17.3 | | 173 | | 10 | | 13 | | 27 | | 13 | | | | 8 | | 174 | | 12.8 | |
| 6/15/2023 | 17 | 60 | 16.3 | | 168 | | 7 | | 10 | | 28 | | 50 | | | | 9 | | 198 | | 22.2 | |
| 6/15/2023 | 18 | 60 | 14.1 | | 133 | | 5 | | 6 | | 18 | | 0 | | | | 10 | | 221 | | 41.3 | |
| 6/15/2023 | 19 | 60 | 13.2 | | 106 | | 4 | | 5 | | 28 | | 1 | | 16 | | 10 | | 230 | 206 | 59.9 | 34.0 |
| 6/15/2023 | 20 | 60 | 13.8 | | 147 | | 12 | | 14 | | 16 | | 53 | | | | 10 | | 232 | | 59.8 | |
| 6/15/2023 | 21 | 60 | 12.6 | | 145 | | 25 | | 28 | | 13 | | 83 | | | | 9 | | 317 | | 134.5 | |
| 6/15/2023 | 22 | 60 | 12.9 | | 140 | | 6 | | 20 | | 72 | | 4 | | | | 10 | | 310 | | 138.3 | |
| 6/15/2023 | 23 | 60 | 13.6 | | 140 | | 6 | | 19 | | 71 | | 5 | | 36 | | 10 | 9 | 310 | 292 | 129.0 | 115.4 |

Average:
Geometric Mean Average:

Limit:

| | |
|------------------------------|------------------------------------|
| 149 | 8 |
| ≤ 150 24-HR Block Avg. | ≤ 29 24-HR Geometric Mean |

OR

| |
|--------------------------------|
| 38 |
| ≥ 80% Removal Efficiency |

| |
|----------------------------------|
| see above |
| ≤ 69 4-HR Block Average |

| |
|-----------------------------------|
| see above |
| ≥ 12 8-HR. Block Average |

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

| |
|-----------------------------------|
| see above |
| ≤ 173 4-HR Block 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 15-Jun-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 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 |
| 1 | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 | IF | 0 |
| 2 | 0 | IF | 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 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 5 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 6 | 3 | IC | 4 | IC | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 |
| 7 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 8 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 9 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 10 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 11 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 12 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 13 | 0 | | 0 | | 0 | | 0 | | 0 | | 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 15-Jun-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 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 1 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 2 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 3 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 4 | 2 | | 2 | | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 5 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 6 | 3 | BCF | 23 | BCF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 5 |
| 7 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 8 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 9 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 10 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 11 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 12 | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 13 | 3 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 | IF | 2 |
| 14 | 2 | IF | 2 | IF | 2 | IF | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 15 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 16 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 17 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 18 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 19 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 20 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 3 | | 2 | | 2 |
| 21 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 22 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| 23 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |

Status Flags

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