

# Air Monitoring Summary Tables

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

**Project Name: Doral Florida Facility Fire**

**From: 2/14/23  
9:00 AM**

**To: 2/15/23  
9:00 AM**



| Station 1 - South Fenceline |                  |                              |                    |                      |                     |                |                              |
|-----------------------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument                  | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 1                   | VOC              | Yes                          | 1181               | 289                  | 0 - 2022 ppb        | 146.4 ppb      | 1000 ppb                     |
|                             | CO               | No                           | 1181               | 31                   | 0 - 5 ppm           | 0.1 ppm        | 83 ppm                       |
|                             | H <sub>2</sub> S | No                           | 1181               | 0                    | 0 - 0 ppm           | 0 ppm          | 0.51 ppm                     |
|                             | LEL              | No                           | 1181               | 903                  | 0 - 4 %             | 1.9 %          | 10 %                         |
|                             | Cl <sub>2</sub>  | No                           | 1181               | 1                    | 0 - 0.4 ppm         | 0 ppm          | 0.5 ppm                      |
| DustTrak 1                  | PM-2.5           | See PM2.5 Action Level Sheet | 1131               | 570                  | -6 - 933 µg/m3      | 22.3 µg/m3     | See PM2.5 Action Level Sheet |

| Station 2 - Southeast Corner of Stack |                  |                              |                    |                      |                     |                |                              |
|---------------------------------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument                            | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 2                             | VOC              | No                           | 1204               | 5                    | 0 - 49 ppb          | 0.1 ppb        | 1000 ppb                     |
|                                       | CO               | No                           | 1204               | 0                    | 0 - 0 ppm           | 0 ppm          | 83 ppm                       |
|                                       | H <sub>2</sub> S | No                           | 1204               | 0                    | 0 - 0 ppm           | 0 ppm          | 0.51 ppm                     |
|                                       | LEL              | No                           | 1204               | 890                  | 0 - 5 %             | 2.2 %          | 10 %                         |
|                                       | Cl <sub>2</sub>  | No                           | 1204               | 2                    | 0 - 0.1 ppm         | 0 ppm          | 0.5 ppm                      |
| DustTrak 2                            | PM-2.5           | See PM2.5 Action Level Sheet | 11556              | 11552                | 0 - 1620 µg/m3      | 43.7 µg/m3     | See PM2.5 Action Level Sheet |

| Station 3 - West Fenceline |                  |                              |                    |                      |                     |                |                              |
|----------------------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument                 | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 3                  | VOC              | No                           | 1205               | 430                  | 0 - 740 ppb         | 63.1 ppb       | 1000 ppb                     |
|                            | CO               | No                           | 1205               | 88                   | 0 - 7 ppm           | 0.3 ppm        | 83 ppm                       |
|                            | H <sub>2</sub> S | No                           | 1205               | 0                    | 0 - 0 ppm           | 0 ppm          | 0.51 ppm                     |
|                            | LEL              | No                           | 1205               | 0                    | 0 - 0 %             | 0 %            | 10 %                         |
|                            | Cl <sub>2</sub>  | Yes                          | 1205               | 658                  | 0 - 1.1 ppm         | 0.2 ppm        | 0.5 ppm                      |
| DustTrak 3                 | PM-2.5           | See PM2.5 Action Level Sheet | 2537               | 2536                 | 0 - 1620 µg/m3      | 116.5 µg/m3    | See PM2.5 Action Level Sheet |

| Station 4 - North Fenceline |                  |                              |  |                      |                     |                |                              |
|-----------------------------|------------------|------------------------------|--|----------------------|---------------------|----------------|------------------------------|
| Instrument                  | Analyte          | Action Level Exceedance?     | Number of Readings                                       | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 4                   | VOC              | No                           | 1205   | 173                  | 0 - 866 ppb         | 7.9 ppb        | 1000 ppb                     |
|                             | CO               | No                           | 1205   | 76                   | 0 - 26 ppm          | 0.4 ppm        | 83 ppm                       |
|                             | H <sub>2</sub> S | No                           | 1205   | 0                    | 0 - 0 ppm           | 0 ppm          | 0.51 ppm                     |
|                             | LEL              | No                           | 1205   | 0                    | 0 - 0 %             | 0 %            | 10 %                         |
|                             | Cl <sub>2</sub>  | No                           | 1205   | 466                  | 0 - 0.3 ppm         | 0 ppm          | 0.5 ppm                      |
| DustTrak 4                  | PM-2.5           | See PM2.5 Action Level Sheet | Error: Data Not Recoverable from Instrument at this time |                      |                     |                | See PM2.5 Action Level Sheet |

Notes:

|                   |  |
|-------------------|--|
| %                 | Percent  |
| <                 | Less than  |
| >                 | Greater than   |
| AEGL              | Acute Exposure Guideline Levels for Airborne Chemicals                     |
| C/m               | Counts (ionization events) per minute                                      |
| mg/m <sup>3</sup> | milligrams per cubic meter   |
| min               | Minute   |
| PAC               | Protective Action Criteria   |
| PEL               | Permissible exposure limit   |
| ppb               | Parts per billion  |
| ppm               | Parts per million  |
| PM                | Particulate matter   |
| SOG               | Standard Operating Guidelines  |
| SPM               | Single Point Monitor   |
| TEEL              | Temporary Emergency Exposure Limit   |
| TLV               | Threshold limit value  |
| µg/m <sup>3</sup> | Micrograms per cubic meter   |
| µrem/h            | Microrem per hour  |
| α                 | Alpha radiation (Ludlum 2241-2 can measure α under specific configuration) |
| β                 | Beta radiation (Ludlum 2241-2 can measure β under specific configuration)  |
| γ                 | Gamma-wave radiation   |

| Analyte          | Definition                      | Action Level Reference   |
|------------------|---------------------------------|--|
| VOC              | Volatile Organic Compounds      | TEEL-0,15 minute TWA for Benzene                                     |
| CO               | Carbon Monoxide                 | AEGL-2 1hr   |
| H <sub>2</sub> S | Hydrogen Sulfide                | AEGL-1 1hr   |
| O <sub>2</sub>   | Oxygen                          | 29 CFR 1910.146, Confined Spaces                                     |
| LEL              | Lower Explosive Limit           | 29 CFR 1910.146, Confined Spaces                                     |
| NH <sub>3</sub>  | Ammonia                         | AEGL-1 1hr   |
| SO <sub>2</sub>  | Sulfur Dioxide                  | AEGL-1 1hr   |
| Cl <sub>2</sub>  | Chlorine                        | AEGL-1 1hr   |
| HCN              | Hydrogen Cyanide                | AEGL-1 1hr   |
| NO               | Nitric Oxide                    | PAC-1 (compare Cl <sub>2</sub> and H <sub>2</sub> S PAC-1 to AEGL-1) |
| γ                | Gamma-wave Radiation            | Lowest 3x median (background) for RAEs in period                     |
| PM-2.5           | Particulate Matter <2.5 microns |  |
| α/β/γ            | Alpha, Beta and Gamma Radiation | Lowest 3x median (background) for Ludlums in period                  |

#### DATA REVIEW

##### Station 1 – South Fenceline

PM<sub>2.5</sub> elevated concentration from 9am to 11am. during this period there were few instantaneous measurements above 500 µg/m<sup>3</sup>. The 24-hour average for this location was 22.3 µg/m<sup>3</sup> which corresponds to a “Moderate” level of health concern for PM<sub>2.5</sub> (see Community Action Threshold Levels table, attached)

H<sub>2</sub>S and Cl<sub>2</sub> remained at zero. CO had come brief (not sustained) detections from 3 to 5 ppm, three of these measurements occurred during the period of elevated PM<sub>2.5</sub>. A sustained rise and fall of VOC occurred from 1130am to 5pm with maximum concentrations of 2ppm; multiple CO measurements of 3-4ppm occurred during this time. There were not elevated PM<sub>2.5</sub> readings at the same time, suggesting these measurements were from a localized source such as a vehicle or generator.

##### Station 2 – Southeast Corner of Stack

PM<sub>2.5</sub> elevated concentrations from 11am-1pm, 7pm-10pm, and midnight-2am. During these periods there were multiple instantaneous measurements above 1000 µg/m<sup>3</sup>. The 24-hour average for this location was 43.7 µg/m<sup>3</sup> which corresponds to an “Unhealthy for Sensitive Groups” level of health concern.

AreaRAE was down from 8pm to 11pm. CO and H<sub>2</sub>S remained at zero. VOC and Cl<sub>2</sub> remained at zero with brief (not sustained) detections that did not correspond to any elevated particulate concentrations.

##### Station 3 – West Fenceline

PM<sub>2.5</sub> elevated concentrations from 11am-2pm, 730pm-11pm, and 1am-6am. During the night and early morning there were multiple sustained measurements above 1000 µg/m<sup>3</sup>: three events lasting 10 minutes and two events lasting 30 minutes. The 24-hour average for this location was 116.5 µg/m<sup>3</sup> which corresponds to a “Unhealthy” level of health concern

AreaRAE was down from 8pm to 11pm. H<sub>2</sub>S remained at zero. A persistent Cl<sub>2</sub> reading around 0.5ppm occurred 9am-11am and 11pm-9am. This is possibly due to sensor drift; it does correspond to increases in relative humidity. CO was measured with a sustained concentration from 2.5-5ppm for 1 hour 1am-2am. A sustained rise and fall of VOC was measured 3pm-7pm with a maximum concentration of only 0.75ppm and did not correspond to elevated concentrations of PM<sub>2.5</sub>.

##### Station 4 – North Fenceline

PM<sub>2.5</sub> sensor was functional but could not be connected to remote data network and data is currently unrecoverable from the instrument. Further action will be taken to recover data.

AreaRAE was down from 8pm to 11pm. H<sub>2</sub>S remained at zero. A persistent Cl<sub>2</sub> reading of 0.1-0.3ppm occurred 1am-9am. An inconsistent rise and fall of CO occurred 330pm-5pm with a maximum detection at 19ppm, several detections between 5-10ppm, but most at 0 ppm; this corresponded with a sustained rise and fall of VOCs with a max concentration of 0.75ppm. Isolated (unsustained) detections of CO occurred midnight-9am.

## PM<sub>2.5</sub> (Particulate Matter ≤ 2.5 microns) Community Action Threshold Levels

| 1-Hour Average (µg/m <sup>3</sup> ) | 24-Hour Average (µg/m <sup>3</sup> ) | Level of Health Concern               | Meaning  | Action   |
|-------------------------------------|--------------------------------------|---------------------------------------|--|--|
| 0.0 - 40.0                          | 0.0-12.0                             | <b>Good</b>                           | Air Quality is considered satisfactory, and air pollution poses little or no risk.   | Implement communication plan.  |
| 40.1 - 80.0                         | 12.1 - 35.4                          | <b>Moderate</b>                       | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. | Issue public announcement about health effects. Stay out of areas with visible smoke.  |
| 80.1 - 175.0                        | 35.5 - 55.4                          | <b>Unhealthy for Sensitive Groups</b> | Members of sensitive groups may experience health effects. The general public is not likely to be affected.  | Recommend evacuation or shelter-in-place for sensitive populations.  |
| 175.1 - 300.0                       | 55.5 - 150.4                         | <b>Unhealthy</b>                      | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.   | Consider closing schools and cancelling outdoor events. Recommend shelter-in-place for affected neighborhoods.                   |
| 300.1 - 500.0                       | 150.5 - 250.4                        | <b>Very Unhealthy</b>                 | Health warnings of emergency conditions. The entire population is more likely to be affected.  | Consider closing schools and cancel all outdoor events. Recommend shelter-in-place and/or evacuation for affected neighborhoods. |
| > 500.0                             | > 250.5                              | <b>Hazardous</b>                      | Health alert: everyone may experience more serious health effects.   | Recommend closing schools & cancel outdoor events. Recommend closing workplaces and evacuating affected neighborhoods.           |

# Air Monitoring Summary Tables

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

**Project Name: Covanta Energy Landfill Fire - 2/13/23 to 2/14/23**

**From: 1/0/00  
12:00 AM**

**To: 2/14/23  
8:59 AM**



| Location 1 |                  |                              |                    |                      |                     |                |                              |
|------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 1  | VOC              | No                           | 691                | 2                    | 0 - 978 ppb         | 2.3 ppb        | 9000 ppb                     |
|            | CO               | No                           | 691                | 53                   | 0 - 21 ppm          | 0.7 ppm        | 27 ppm                       |
|            | H <sub>2</sub> S | No                           | 691                | 0                    | 0 - 0 ppm           | 0 ppm          | 0.33 ppm                     |
|            | O <sub>2</sub>   | No                           | 691                | 691                  | 20.9 - 20.9 %       | 20.9 %         | <19.5 or >23 %               |
|            | LEL              | No                           | 691                | 0                    | 0 - 0 %             | 0 %            | 10 %                         |
| DustTrak 1 | PM-2.5           | See PM2.5 Action Level Sheet | 651                | 565                  | -6 - 1030 µg/m3     | 31.8 µg/m3     | See PM2.5 Action Level Sheet |

| Location 2 |                  |                              |                    |                      |                     |                |                              |
|------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 2  | VOC              | No                           | 692                | 10                   | 0 - 621 ppb         | 4.2 ppb        | 9000 ppb                     |
|            | CO               | Yes                          | 692                | 30                   | 0 - 28 ppm          | 0.5 ppm        | 27 ppm                       |
|            | H <sub>2</sub> S | No                           | 692                | 0                    | 0 - 0 ppm           | 0 ppm          | 0.33 ppm                     |
|            | O <sub>2</sub>   | Yes                          | 692                | 692                  | 2.7 - 21.9 %        | 20.9 %         | <19.5 or >23 %               |
|            | LEL              | No                           | 692                | 577                  | 0 - 5 %             | 2.5 %          | 10 %                         |
| DustTrak 2 | PM-2.5           | See PM2.5 Action Level Sheet | 1161               | 1161                 | 3 - 189 µg/m3       | 28 µg/m3       | See PM2.5 Action Level Sheet |

| Location 3 |                  |                              |                    |                      |                     |                |                              |
|------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 3  | VOC              | No                           | 681                | 183                  | 0 - 346 ppb         | 5.5 ppb        | 9000 ppb                     |
|            | CO               | No                           | 681                | 29                   | 0 - 18 ppm          | 0.3 ppm        | 27 ppm                       |
|            | H <sub>2</sub> S | No                           | 681                | 0                    | 0 - 0 ppm           | 0 ppm          | 0.33 ppm                     |
|            | O <sub>2</sub>   | Yes                          | 681                | 681                  | 2.1 - 23.3 %        | 21.4 %         | <19.5 or >23 %               |
|            | LEL              | No                           | 681                | 0                    | 0 - 0 %             | 0 %            | 10 %                         |
| DustTrak 3 | PM-2.5           | See PM2.5 Action Level Sheet | 416                | 415                  | 0 - 50 µg/m3        | 19.6 µg/m3     | See PM2.5 Action Level Sheet |

| Location 4 |                  |                              |                    |                      |                     |                |                              |
|------------|------------------|------------------------------|--------------------|----------------------|---------------------|----------------|------------------------------|
| Instrument | Analyte          | Action Level Exceedance?     | Number of Readings | Number of Detections | Concentration Range | Period Average | Action Level                 |
| AreaRAE 4  | VOC              | No                           | 688                | 98                   | 0 - 151 ppb         | 2.7 ppb        | 9000 ppb                     |
|            | CO               | No                           | 688                | 68                   | 0 - 21 ppm          | 0.7 ppm        | 27 ppm                       |
|            | H <sub>2</sub> S | No                           | 688                | 0                    | 0 - 0 ppm           | 0 ppm          | 0.33 ppm                     |
|            | O <sub>2</sub>   | No                           | 688                | 688                  | 20.9 - 20.9 %       | 20.9 %         | <19.5 or >23 %               |
|            | LEL              | No                           | 688                | 0                    | 0 - 0 %             | 0 %            | 10 %                         |
| DustTrak 4 | PM-2.5           | See PM2.5 Action Level Sheet | 0                  | 0                    | 0 - 0 µg/m3         | µg/m3          | See PM2.5 Action Level Sheet |

## Notes:

|                   |  |
|-------------------|--|
| %                 | Percent  |
| <                 | Less than  |
| >                 | Greater than   |
| AEGL              | Acute Exposure Guideline Levels for Airborne Chemicals |
| mg/m3             | milligrams per cubic meter                             |
| ppb               | Parts per billion                                      |
| ppm               | Parts per million                                      |
| PM                | Particulate matter                                     |
| µg/m <sup>3</sup> | Micrograms per cubic meter                             |

| Analyte          | Definition                      | Action Level Reference                           |
|------------------|---------------------------------|--|
| VOC              | Volatile Organic Compounds      | AEGL-1, 8-hr for Benzene                         |
| CO               | Carbon Monoxide                 | AEGL-2, 8-hr                                     |
| H <sub>2</sub> S | Hydrogen Sulfide                | AEGL-1, 8-hr                                     |
| O <sub>2</sub>   | Oxygen                          | 29 CFR 1910.146, Confined Spaces                 |
| LEL              | Lower Explosive Limit           | 29 CFR 1910.146, Confined Spaces                 |
| γ                | Gamma-wave Radiation            | Lowest 3x median (background) for RAEs in period |
| PM-2.5           | Particulate Matter <2.5 microns |  |
| HCl              | Hydrogen Chloride               | AEGL-1, 8-hr                                     |

| PM <sub>2.5</sub> (Particulate Matter ≤ 2.5 microns) Community Action Threshold Levels |                                      |                                       |  |  |
|--|--------------------------------------|---------------------------------------|--|--|
| 1-Hour Average (µg/m <sup>3</sup> )  | 24-Hour Average (µg/m <sup>3</sup> ) | Level of Health Concern               | Meaning  | Action   |
| 0.0 - 40.0   | 0.0-12.0                             | <b>Good</b>                           | Air Quality is considered satisfactory, and air pollution poses little or no risk.   | Implement communication plan.  |
| 40.1 - 80.0  | 12.1 - 35.4                          | <b>Moderate</b>                       | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. | Issue public announcement about health effects. Stay out of areas with visible smoke.  |
| 80.1 - 175.0   | 35.5 - 55.4                          | <b>Unhealthy for Sensitive Groups</b> | Members of sensitive groups may experience health effects. The general public is not likely to be affected.  | Recommend evacuation or shelter-in-place for sensitive populations.  |
| 175.1 - 300.0  | 55.5 - 150.4                         | <b>Unhealthy</b>                      | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.   | Consider closing schools and cancelling outdoor events. Recommend shelter-in-place for affected neighborhoods.                   |
| 300.1 - 500.0  | 150.5 - 250.4                        | <b>Very Unhealthy</b>                 | Health warnings of emergency conditions. The entire population is more likely to be affected.  | Consider closing schools and cancel all outdoor events. Recommend shelter-in-place and/or evacuation for affected neighborhoods. |
| > 500.0  | > 250.5                              | <b>Hazardous</b>                      | Health alert: everyone may experience more serious health effects.   | Recommend closing schools & cancel outdoor events. Recommend closing workplaces and evacuating affected neighborhoods.           |