



July 31, 2024

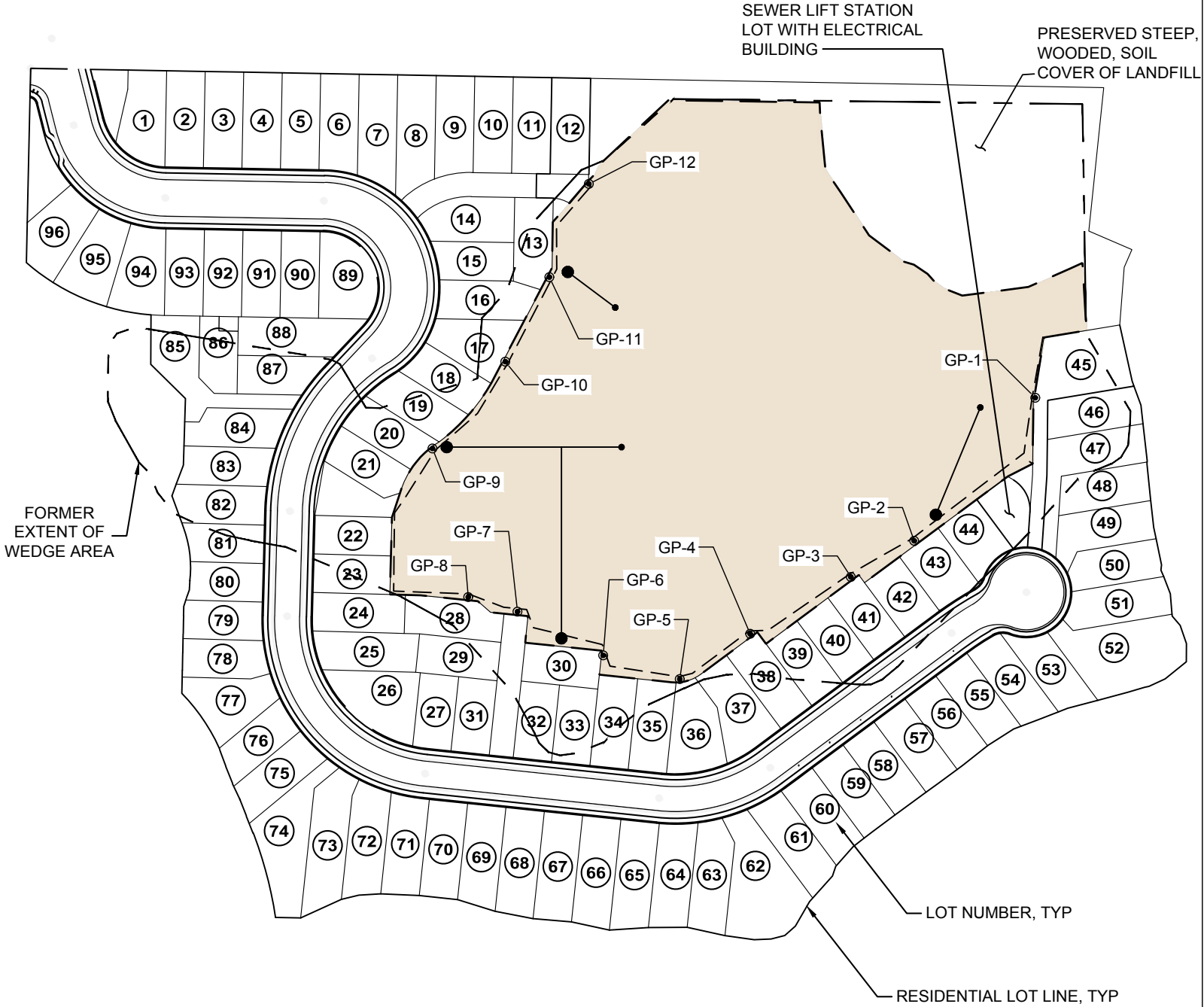
Alan Noell
Washington State Department of Ecology
15700 Dayton Avenue North
Shoreline, Washington 98133

Subject: Go East Landfill/Alpine Estates Landfill Gas Monitoring Data Update

Dear Mr. Noell:

As discussed in the Go East Landfill/Alpine Estate Landfill Gas Monitoring Data Update, dated June 14, 2024 (June 14 Letter), we have observed recent upward trends in methane levels at the landfill perimeter soil gas probes since we removed the soil vapor extraction unit from the landfill perimeter collection trench and individual probes in November 2023. This most recent upward trend led us towards additional action to better control methane presence. In the June 14 Letter, 5 steps were outlined to investigate the source and extent of methane on the Go East Landfill/Alpine Estates property and to attempt to bring methane levels down in the soil gas surrounding the landfill boundary. This letter presents results of monitoring since step 1 was implemented on June 19, 2024.

Per step 1 of the June 14 Letter, the portable soil vapor extraction unit (blower) was reinstalled (as it was previously near landfill perimeter soil gas probe number 7 (GP-7)) to provide vacuum on the perimeter gravel trench through the landfill gas sump by GP-7. Discharge was routed through the landfill gas vent connected to the landfill gas sumps by GP-7 and GP-9. Figure 1 shows a map of the site and the locations of the probes, sumps, and vents. Methane concentrations at the blower and probes were collected weekly when the barometric pressure was declining. Tables 1 through 12 in Attachment A are continuations of Table 3 in the February 8, 2024 Landfill Gas Monitoring Readiness at Go East Landfill/Alpine Estates Development technical memorandum, with updated data through July 26, 2024. To perform step 1, the blower unit was installed again on June 19, 2024. Table 13 in Attachment A shows the reads collected at the blower. These reads represent some mixture with atmospheric air so methane content in the trench is likely higher than what is observed at the blower.



LEGEND

- GP-# LANDFILL PERIMETER SOIL GAS PROBE
- LANDFILL GAS SUMP
- LANDFILL GAS VENT
- GRAVEL TRENCH WITH 2 IN PERF PIPE
- GRAVEL TRENCH WITH 2 IN PIPE
- CAPPED AND CLOSED LANDFILL AREA

Since the blower unit was installed again on June 19, 2024, monitoring results have shown reduced methane concentrations at the probes; however, the WAC 173-350-400 lower explosive limit of 5 percent methane is still not being met for all probes at the landfill boundary. Monitoring of surface emissions and house ventilation trench monitoring stations in the past month continues to show that the methane observed in the probes is not migrating to the surface or underneath houses.

To address the probe methane exceedances of 5 percent, we are going to proceed with step 2 of the June 14 Letter. Step 2 keeps the blower installed, and caps will be added to the other two vent pipe connections at the other sumps. This will prevent atmospheric air from being pulled into the trench and will increase vacuum influence on the landfill perimeter trench. Methane concentrations at the probes and blower will be monitored for another month. Reads will be collected weekly when the barometric pressure is declining, and data and next steps will be reported once again at the end of August 2024.

Sincerely,

Herrera Environmental Consultants, Inc.



Tyson Wright, P.E.
Senior Engineer

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Attachment A

Monitoring Results

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Table 1. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 1.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	3.9	27.0	0.0	69.2	
11/23/2022	8.5	30.5	0.0	61	
1/13/2023	10.9	24.1	0.1	64.9	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	6.3	21.8	0.1	71.8	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	0.4	3.5	11.8	84.3	
3/10/2023	0.0	0.3	21.2	78.4	
3/22/2023	0.0	0.8	19.6	79.6	- Probe valves closed (3/22/2023 – present)
4/1/2023	1.1	15.6	1.3	82	
5/9/2023	0.0	0	19.9	80.1	
6/15/2023	0.0	0.2	19.6	80.1	
6/27/2023	0.5	13.4	0.1	86	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	0.6	14.4	0.1	84.9	
8/21/2023	0.0	8.3	9.8	81.9	- Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023)
9/5/2023	0.0	7.3	11.6	81.1	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023)
9/22/2023	0.0	1.2	17.5	81.3	
10/21/2023	0.9	20.5	0.1	78.5	
11/1/2023	1.1	20.1	0.1	78.7	
11/10/2023	1.3	12.1	0.1	86.5	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	1.4	16.9	0.1	81.6	
11/30/2023	1.7	11.8	0.2	86.3	
12/8/2023	1.8	11.1	0.1	87.0	
1/3/2024	1.9	18.7	0.0	79.4	
3/15/2024	Not read due to construction blockage				
4/3/2024	Not read due to construction blockage				
5/1/2024	Not read due to construction blockage				
5/7/2024	Not read due to construction blockage				
5/15/2024	Not read due to construction blockage				
5/21/2024	Not read due to construction blockage				
5/31/2024	Not read due to construction blockage				
6/7/2024	Not read due to construction blockage				
6/25/2024	Not read due to construction blockage				- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	Not read due to construction blockage				
7/12/2024	Not read due to construction blockage				
7/16/2024	Not read due to construction blockage				
7/26/2024	Not read due to construction blockage				

Notes:

GP-1 was accidentally buried when construction on Lot 45 began. GP-1 will be uncovered and monitored again prior to Lot 45 occupancy.

Table 2. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 2.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	12.3	29.2	0.0	58.4	
11/23/2022	14.1	26.9	0.0	39.1	
1/13/2023	15.7	25.2	0.1	59.1	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	16.4	24	0.1	59.6	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	0.0	1.8	17.7	80.5	
3/10/2023	0.0	0.2	21.3	78.4	
3/22/2023	0.0	0.2	20	79.9	- Probe valves closed (3/22/2023 – present)
4/1/2023	0.6	9.9	1.5	87.9	
5/9/2023	0.0	0	20.1	79.8	
6/15/2023	0.0	0.5	19.7	79.8	
6/27/2023	0.0	13.5	0.4	86.1	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	0.2	15.6	0.1	84.2	
8/21/2023	0.1	22.7	0.1	77.1	- Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023)
9/5/2023	0.1	22.8	0.1	76.9	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023)
9/22/2023	0.0	21.4	0.1	78.4	
10/21/2023	0.9	22.2	0.1	76.9	
11/1/2023	0.9	21.6	0.1	77.4	
11/10/2023	1.3	21.2	0.1	77.4	- Blower shut off (11/10/2023 – present)
11/17/2023	1.5	20.1	0.1	78.3	
11/30/2023	1.6	20.3	0.1	78.1	
12/8/2023	1.5	19.8	0.0	78.6	
1/3/2024	0.3	18.3	0.0	81.4	
3/15/2024	Not read due to construction blockage				
4/3/2024	2.8	16.2	0.0	81	
5/1/2024	4.7	16.9	0.0	78.5	
5/7/2024	5.4	17.8	0.1	76.7	
5/15/2024	6.0	17.8	0.1	76.1	
5/21/2024	6.4	18	0.1	75.6	
5/31/2024	6.8	17.9	0.1	75.2	
6/7/2024	7.4	17.5	0.1	75.1	
6/25/2024	7.7	18	0.1	74.2	
7/5/2024	5.2	18	0.1	76.6	
7/12/2024	2.2	17.9	0.1	79.8	
7/16/2024	1.5	17.5	0.2	80.9	
7/26/2024	1.4	19.5	0.0	79.1	

Table 3. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 3.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	27.5	29.2	0.0	43.3	
11/23/2022	24.0	24.7	0.0	51.4	
1/13/2023	23.0	22.9	0.1	54	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	16.2	19.9	1.1	62.8	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	0.2	1.6	18.2	79.9	
3/10/2023	0.0	0.1	21.6	78.4	
3/22/2023	0.0	0.0	20.2	79.8	- Probe valves closed (3/22/2023 – present)
4/1/2023	0.0	11.7	7.5	80.8	
5/9/2023	0.0	0.0	20.3	79.7	
6/15/2023	0.0	0.0	20.4	79.6	
6/27/2023	0.0	13.1	4.7	82.3	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	0.1	15.8	0.1	84.1	
8/21/2023	1.7	24	0.1	74.2	- Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023)
9/5/2023	2.7	25.2	0.1	72	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023)
9/22/2023	0.2	21.3	0.1	78.4	
10/21/2023	0.0	18	0.2	81.8	
11/1/2023	0.0	17.3	0.1	82.6	
11/10/2023	0.0	17.5	0.2	82.3	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	0.0	17.0	0.1	82.9	
11/30/2023	0.4	17.4	0.1	82.1	
12/8/2023	0.0	17.9	1.7	80.5	
1/3/2024	5.7	20.2	0.0	74.1	
3/15/2024	Not read due to construction blockage				
4/3/2024	6.2	17.7	0.0	76.1	
5/1/2024	9.3	18.5	0.0	72.1	
5/7/2024	10.1	19.6	0.1	70.2	
5/15/2024	10.9	20.2	0.1	68.8	
5/21/2024	11.4	20.9	0.1	67.6	
5/31/2024	12.5	21.1	0.1	66.3	
6/7/2024	12.3	20.9	0.1	66.7	
6/25/2024	5.0	21	0.1	73.9	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	1.8	20.3	0.1	77.8	
7/12/2024	0.6	19.3	0.1	80	
7/16/2024	0.1	19.1	0.1	80.7	
7/26/2024	0.3	21.5	0.0	78.2	

Table 4. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 4.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	28.4	31.7	0.1	39.8	
11/23/2022	32.9	27.7	0.0	39.3	
1/13/2023	32.5	26.5	0.0	41	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	31.6	25.6	0.1	42.7	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	0.0	0.2	20.9	79	
3/10/2023	0.0	0.1	21.6	78.3	
3/22/2023	0.0	0.0	20.4	79.6	- Perimeter probe valves closed (3/22/2023 – present)
4/1/2023	11.1	10.5	0.0	78.3	
5/9/2023	0.6	14.3	3.2	81.9	- Vacuum extraction from soil gas probes (4/17/2023 – 6/16/2023)
6/15/2023	3.6	21.1	0.2	75.1	
6/27/2023	4.0	23.4	0.0	72.6	- Blower shut off (6/16/2023 – 6/17/2023) - Perimeter probe valve closed (6/16/2023 -6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Vacuum extraction from soil gas probes (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023) - Perimeter probe valve closed (6/26/2023 -7/24/2023)
7/5/2023	4.6	23.2	0.1	72.2	
8/21/2023	4.6	21.9	0.1	73.4	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	4.2	21.1	0.4	74.4	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 11/10/2023)
9/22/2023	3.8	20.3	0.5	75.3	
10/21/2023	2.4	19.8	0.1	77.8	
11/1/2023	2.1	19.3	0.1	78.5	
11/10/2023	2.7	19.9	0.1	77.4	- Blower shut off (11/10/2023 – 6/19/2024) - Perimeter probe valve closed (11/10/2023 – present)
11/17/2023	3.0	19.6	0.1	77.4	
11/30/2023	3.7	20.5	0.1	75.7	
12/8/2023	4.0	20.7	0.0	75.2	
1/3/2024	1.8	15.7	0.0	82.5	
3/15/2024	10.6	24.0	0.0	65.4	
4/3/2024	11.6	17.4	0.0	71	
5/1/2024	14.1	17.9	0.0	68	
5/7/2024	15.4	19.2	0.1	65.3	
5/15/2024	15.0	19.1	0.1	65.9	
5/21/2024	15.4	19.3	0.0	65.2	
5/31/2024	15.4	19.2	0.1	65.3	
6/7/2024	15.1	18.6	0.1	66.2	
6/25/2024	14.4	18.6	0.1	66.8	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	11.4	18.1	0.1	70.3	
7/12/2024	7.4	18.4	0.1	74.1	
7/16/2024	6.0	19.9	0.1	76	
7/26/2024	5.7	21.0	0.0	73.4	

Table 5. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 5.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	0.0	0.7	21.7	77.6	
11/23/2022	28.8	18.3	0.0	52.9	
1/13/2023	29.0	18.2	0.1	52.7	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	25.4	14.8	1.5	58.3	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	0.9	0.6	18.8	79.8	
3/10/2023	0.0	0.1	21.7	78.2	
3/22/2023	0.0	0.0	20.5	79.4	- Perimeter probe valves closed (3/22/2023 – present)
4/1/2023	9.2	11.8	0.0	79	
5/9/2023	0.4	3.0	15.4	81.2	- Vacuum extraction from soil gas probes (4/17/2023 – 6/16/2023)
6/15/2023	1.7	13.2	3.2	81.9	
6/27/2023	0.0	13.9	0.5	85.6	- Blower shut off (6/16/2023 – 6/17/2023) - Perimeter probe valve closed (6/16/2023 -6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Vacuum extraction from soil gas probes (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023) - Perimeter probe valve closed (6/26/2023 -7/24/2023)
7/5/2023	0.4	14	0.0	85.5	
8/21/2023	2.6	17.6	0.1	79.7	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	3.0	17.3	0.4	79.4	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 11/10/2023)
9/22/2023	2.0	15.8	1.6	80.6	
10/21/2023	1.3	15.6	2.8	80.3	
11/1/2023	0.3	11.5	5.8	82.4	
11/10/2023	0.3	13.3	3.7	82.7	- Blower shut off (11/10/2023 – 6/19/2024) - Perimeter probe valve closed (11/10/2023 – present)
11/17/2023	0.0	10.3	4.9	84.8	
11/30/2023	0.0	12.9	2.1	85.0	
12/8/2023	0.2	15.4	0.0	84.3	
1/3/2024	9.1	17.4	0.0	73.5	
3/15/2024	8.4	22	0.0	69.6	
4/3/2024	10.4	15.4	0.0	74.2	
5/1/2024	12.8	16	0.0	71.2	
5/7/2024	14.7	17.3	0.1	67.9	
5/15/2024	13.5	16.5	0.0	70	
5/21/2024	13.6	16.5	0.0	69.9	
5/31/2024	14	16.1	0.1	69.9	
6/7/2024	13.3	15.3	0.1	71.4	
6/25/2024	9.6	13.8	0.1	76.5	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	5.7	12.8	0.1	81.4	
7/12/2024	2.9	12.8	0.1	84.3	
7/16/2024	0.0	9.6	0.1	90.3	
7/26/2024	1.7	13.3	0.0	85	

Table 6. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 6.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	0.0	0.3	21.8	77.8	
11/23/2022	82.0	18	0.0	0.0	
1/13/2023	35.0	18.5	0.0	46.5	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	35.4	15.4	0.2	49	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	17.6	13.4	3.3	65.8	
3/10/2023	22.2	22.2	0.2	55.5	- Vacuum extraction from soil gas probes (3/10/2023 – 6/16/2023)
3/22/2023	11.6	21.8	0.1	66.5	
4/1/2023	8.7	22.3	0.1	68.9	
5/9/2023	0.0	0.0	21	79	
6/15/2023	1.0	3.2	16	79.8	
6/27/2023	5.5	16.7	0.0	77.8	- Blower shut off (6/16/2023 – 6/17/2023) - Perimeter probe valve closed (6/16/2023 -6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Vacuum extraction from soil gas probes (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023) - Perimeter probe valve closed (6/26/2023 -7/24/2023)
7/5/2023	4.8	14.4	0.0	80.8	
8/21/2023	7.1	15.8	0.6	76.6	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	8.1	16.5	0.9	74.5	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 11/10/2023)
9/22/2023	6.8	17.5	0.8	74.9	
10/21/2023	5.0	19.5	0.1	75.5	
11/1/2023	4.3	19.2	0.1	76.4	
11/10/2023	0.0	0.1	20.9	79	- Blower shut off (11/10/2023 – 6/19/2024) - Perimeter probe valve closed (11/10/2023 – present)
11/17/2023	3.7	17.7	0.1	78.5	
11/30/2023	2.9	17.1	0.0	80.0	
12/8/2023	3.2	14.6	0.0	82.2	
1/3/2024	3.5	15.6	0.0	80.9	
3/15/2024	13.8	22.7	0.0	63.5	
4/3/2024	17.9	16.5	0.0	65.6	
5/1/2024	19.7	16.7	0.0	63.6	
5/7/2024	21.7	17.6	0.1	60.7	
5/15/2024	20.3	17	0.0	62.8	
5/21/2024	18.1	16.4	0.0	65.5	
5/31/2024	18.8	15.9	0.0	65.3	
6/7/2024	17.9	14.9	0.0	67.2	
6/25/2024	18.3	14.7	0.0	67	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	15.6	15.6	0.1	68.7	
7/12/2024	10.7	16.7	0.1	72.5	
7/16/2024	9.4	15.4	0.1	75.1	
7/26/2024	10.4	16.7	0.0	72.9	

Table 7. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 7.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	35.5	20.7	0.0	43.4	
11/23/2022	38	20.0	0.0	42.6	
1/13/2023	36.4	20.6	0.1	43	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	37.9	19.6	0.1	42.4	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	13.1	6.1	12.7	68.2	
3/10/2023	26.7	18.3	3.1	51.9	- Vacuum extraction from soil gas probes (3/10/2023 – 6/16/2023)
3/22/2023	17.2	18.4	1.4	63	
4/1/2023	12.8	20.5	1.2	65.5	
5/9/2023	4.6	15.8	4.0	75.6	
6/15/2023	4.2	18.6	0.2	77	
6/27/2023	0.2	18.8	0.2	80.7	- Blower shut off (6/16/2023 – 6/17/2023) - Perimeter probe valve closed (6/16/2023 -6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Vacuum extraction from soil gas probes (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023) - Perimeter probe valve closed (6/26/2023 -7/24/2023)
7/5/2023	2.3	16.2	0.0	81.5	
8/21/2023	0.7	14.9	0.3	84	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	8.1	17.9	0.1	73.9	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 8/25/2023) - Perimeter probe valve closed and removed from vacuum extraction system (8/25/2023 – present)
9/22/2023	8.5	17.9	0.1	73.5	
10/21/2023	7.4	19.1	0.1	73.4	
11/1/2023	6.6	19.2	0.0	74.1	
11/10/2023	7.3	20.3	0.1	72.4	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	6.8	18.7	0.1	74.5	
11/30/2023	6.7	20.5	0.0	72.7	
12/8/2023	6.8	19.2	0.0	74.0	
1/3/2024	8.5	18.2	0.0	73.3	
3/15/2024	14.5	21.7	0.0	63.8	
4/3/2024	16.5	14.3	0.0	69.2	
5/1/2024	18.6	16.7	0.0	64.7	
5/7/2024	16.8	17.5	0.1	65.5	
5/15/2024	18.3	18.7	0.0	63	
5/21/2024	20	19.5	0.1	60.4	
5/31/2024	19.8	20.7	0.1	59.5	
6/7/2024	20.2	19.9	0.1	59.8	
6/25/2024	22.5	17.7	0.3	59.5	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	19.6	17.1	0.2	63.1	
7/12/2024	13.2	16.2	0.1	70.4	
7/16/2024	11.0	15.5	0.1	73.4	
7/26/2024	11.7	17.2	0.0	71.1	

Table 8. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 8.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	35.6	23.7	0.0	40.7	
11/23/2022	37.4	21	0.0	41.6	
1/13/2023	37.1	21.3	0.0	41.6	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	30.7	22.7	0.2	46.4	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	9.8	2.5	16	71.8	
3/10/2023	0.3	0.2	16.2	83.3	- Vacuum extraction from soil gas probes (3/10/2023 – 6/16/2023)
3/22/2023	3.0	6.3	13.9	76.8	
4/1/2023	1.4	5.3	16.2	77.2	
5/9/2023	0.0	5.4	14.6	80	
6/15/2023	0.0	2.5	17.4	80.1	
6/27/2023	0.0	4.1	13.6	82.3	- Blower shut off (6/16/2023 – 6/17/2023) - Perimeter probe valve closed (6/16/2023 -6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Vacuum extraction from soil gas probes (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023) - Perimeter probe valve closed (6/26/2023 -7/24/2023)
7/5/2023	0.0	8.1	4.0	87.9	
8/21/2023	0.0	6.3	8.4	85.3	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	0.0	4.1	14.8	81.1	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 8/25/2023) - Perimeter probe valve closed and removed from vacuum extraction system (8/25/2023 – present)
9/22/2023	0.0	5.5	13.7	80.8	
10/21/2023	0.0	5.5	15.1	79.4	
11/1/2023	0.0	4.5	16.6	78.9	
11/10/2023	3.1	12.9	2.9	81	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	0.0	10.6	8.1	81.3	
11/30/2023	2.4	14.0	0.0	83.5	
12/8/2023	0.0	11.2	3.0	85.8	
1/3/2024	3	11.1	0.0	85.9	
3/15/2024	8.2	14.9	0.0	76.9	
4/3/2024	9.3	9.9	0.0	80.8	
5/1/2024	16.2	13.6	0.0	70.2	
5/7/2024	14.8	14.0	0.1	71.2	
5/15/2024	13.9	14.5	0.0	71.5	
5/21/2024	18	16.0	0.1	66	
5/31/2024	16	16.6	0.1	67.3	
6/7/2024	16.3	16.4	0.1	67.1	
6/25/2024	0.0	5.1	15.8	79.1	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	0.0	3.6	17.4	79	
7/12/2024	0.0	2.4	18.1	66.5	
7/16/2024	0.0	2.0	16.5	70.5	
7/26/2024	0.1	1.6	16.7	81.7	

Table 9. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 9.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	NR	NR	NR	NR	
11/23/2022	4.2	0.1	14	81.7	
1/13/2023	5.8	0.1	3.2	90.9	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	NR	NR	NR	NR	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023)
3/3/2023	NR	NR	NR	NR	
3/10/2023	0.1	0.1	21.4	78.5	
3/22/2023	0.1	0.0	21.2	78.7	
4/1/2023	2.4	0.1	2.2	95.3	
5/9/2023	3.1	0.1	0.2	96.6	
6/15/2023	0.0	3.1	13.6	83.3	
					- Blower shut off (6/16/2023 – 6/17/2023)
					- Vacuum extraction from methane trench (6/17/2023 – 6/26/2023)
6/27/2023	0.0	6.2	5	88.8	- Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	0.1	8.8	4.7	86.4	
					- Vacuum extraction from methane trench (7/24/2023 – 8/18/2023)
8/21/2023	NR	NR	NR	NR	- Blower shut off (8/18/2023 – 8/23/2023)
9/5/2023	NR	NR	NR	NR	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023)
9/22/2023	NR	NR	NR	NR	
10/21/2023	NR	NR	NR	NR	
11/1/2023	NR	NR	NR	NR	
11/10/2023	0.0	6.5	4.9	88.6	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	0.0	6.5	4.9	88.6	
11/30/2023	0.0	6.5	4.9	88.6	
12/8/2023	0.0	6.5	4.9	88.6	
1/3/2024	0.0	4.7	8.4	86.9	
3/15/2024	0.0	5.5	5.9	88.6	
4/3/2024	0.2	7.8	6.1	86.1	
5/1/2024	0.1	5.6	6.7	87.7	
5/7/2024	0.0	7.2	6.3	86.5	
5/15/2024	0.4	6.3	7.6	86.1	
5/21/2024	0.2	7.9	6.8	85.3	
5/31/2024	0.1	8.6	5.3	86.1	
6/7/2024	0.2	8.2	6.5	85.3	
6/25/2024	0.0	8.5	5.2	86.3	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	0.0	7.9	6.7	85.4	
7/12/2024	0.0	8.1	6.2	85.7	
7/16/2024	0.1	7.6	6.6	85.8	
7/26/2024	0.1	7.7	6.5	85.8	

Notes:

NR = Not Read

Table 10. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 10.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	35.9	56.4	0.0	7.7	
11/23/2022	39.3	53.6	0.0	6.9	
1/13/2023	41.9	55.3	0.1	2.7	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	30.4	40.5	0.0	29	- Blower installed and turned on (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	32.5	31.1	0.1	36.3	
3/10/2023	0.0	0.1	21.9	78	
3/22/2023	0.0	0.1	21.1	78.8	- Perimeter probe valves closed (3/22/2023 – 7/21/2023)
4/1/2023	12.6	15.1	0.0	72.3	
5/9/2023	0.0	0.1	20.4	79.5	
6/15/2023	0.0	0.0	21.1	78.9	
6/27/2023	3.3	15.3	0.0	81.4	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	6.4	19.1	0.0	74.5	
8/21/2023	9.4	31.3	0.1	59.2	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 -8/23/2023)
9/5/2023	10.1	30.6	0.1	59.2	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 11/10/2023)
9/22/2023	9.3	28.8	0.1	61.8	
10/21/2023	9.7	28.3	0.1	61.9	
11/1/2023	10.3	27.7	0.0	62	
11/10/2023	10.0	27.5	0.1	62.4	- Blower shut off (11/10/2023 – 6/19/2024) - Perimeter probe valve closed (11/10/2023 – present)
11/17/2023	10.7	27.6	0.0	61.7	
11/30/2023	15.5	31.3	0.0	53.1	
12/8/2023	16.3	32.2	0.0	51.5	
1/3/2024	21.4	35.3	0.0	43.3	
3/15/2024	27.5	37.3	0.0	35.2	
4/3/2024	30.7	38.5	0.0	30.7	
5/1/2024	30.6	35	0.0	34.4	
5/7/2024	31.8	38.9	0.1	29.2	
5/15/2024	30.4	38.5	0.0	31.1	
5/21/2024	31.8	39	0.1	29.1	
5/31/2024	30.9	38.6	0.0	30.5	
6/7/2024	31.4	38.5	0.1	30.0	
6/25/2024	29.1	37.8	0.2	32.9	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	25.4	36	0.1	38.4	
7/12/2024	19.2	32.9	0.1	47.9	
7/16/2024	17.4	32.1	0.1	50.4	
7/26/2024	18.8	35	0.0	46.2	

Table 11. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 11.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	0.0	16.2	8.2	75.7	
11/23/2022	0.6	22.9	2.8	73.7	
1/13/2023	38.4	48	0.1	13.5	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	33.3	36.3	0.0	30.4	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Perimeter probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	30.9	27	0.1	42	
3/10/2023	0.0	0.3	21.8	77.9	
3/22/2023	0.0	0.2	21.3	78.5	- Perimeter probe valves closed (3/22/2023 – 7/21/2023)
4/1/2023	19.1	25	0.5	55.4	
5/9/2023	0.0	0.7	20	79.3	
6/15/2023	1.5	20.8	0.9	76.8	
6/27/2023	9.9	27.2	0.4	62.5	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	17.2	33.6	0.1	49	
8/21/2023	7.6	26.3	0.4	65.7	- Vacuum extraction from soil gas probes (7/21/2023 – 8/18/2023) - Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023) - Perimeter probe valve closed (8/18/2023 – 8/23/2023)
9/5/2023	3.1	24	0.5	72.5	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023) - Vacuum extraction from soil gas probes (8/23/2023 – 11/10/2023)
9/22/2023	1.6	21.9	1.8	74.7	
10/21/2023	3.0	25.2	1.6	70.2	
11/1/2023	4.2	27	0.6	68.2	
11/10/2023	3.9	26.1	1.2	68.8	- Blower shut off (11/10/2023 – 6/19/2024) - Perimeter probe valve closed (11/10/2023 – present)
11/17/2023	2.6	21.4	0.1	75.9	
11/30/2023	17.3	33.4	0.1	49.2	
12/8/2023	21.7	25.8	0.0	52.4	
1/3/2024	18.0	29.8	0.4	51.7	
3/15/2024	18.2	32.5	0.0	49.3	
4/3/2024	20.5	30.3	0.0	49.2	
5/1/2024	17.7	28	0.1	54.2	
5/7/2024	10.2	27.4	0.6	61.7	
5/15/2024	19.5	30.6	0.4	49.5	
5/21/2024	22.1	32.6	0.2	45.1	
5/31/2024	20.9	32.2	0.2	46.7	
6/7/2024	18.1	31	0.2	50.7	
6/25/2024	6.7	26.3	0.9	66.1	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	3.0	22.7	1.0	73.3	
7/12/2024	1.9	22.2	1.0	74.9	
7/16/2024	4.1	22.8	1.0	72.1	
7/26/2024	7.7	27.3	0.6	64.5	

Table 12. Monitoring Results for Landfill Perimeter Soil Gas Probe Number 12.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance	Actions / Key Dates
11/2/2022	22.8	40.6	0.8	35.1	
11/23/2022	0.0	0.2	21.4	78.4	
1/13/2023	27.9	42.9	0.3	29	- Turbine vents installed on landfill gas vent (12/12/2022 – present)
2/23/2023	27	42.2	0.0	30.8	- Vacuum extraction from methane trench (2/10/2023 – 6/16/2023) - Probe valves left open to vent (2/23/2023 – 3/22/2023)
3/3/2023	12.8	24.9	0.1	62.2	
3/10/2023	0.0	0.1	22	77.9	
3/22/2023	0.0	0.8	20.1	79.1	- Probe valves closed (3/22/2023 – present)
4/1/2023	17.7	36.1	0.0	46.2	
5/9/2023	0.0	0.0	20.4	79.6	
6/15/2023	0.0	2.0	16.7	81.3	
6/27/2023	2.6	26.3	0.4	70.7	- Blower shut off (6/16/2023 – 6/17/2023) - Vacuum extraction from methane trench (6/17/2023 – 6/26/2023) - Blower shut off (6/26/2023 – 7/24/2023)
7/5/2023	3.1	27.9	0.2	68.7	
8/21/2023	4.3	30.4	0.3	65.1	- Vacuum extraction from methane trench (7/24/2023 – 8/18/2023) - Blower shut off (8/18/2023 – 8/23/2023)
9/5/2023	4.3	31.1	0	64.5	- Vacuum extraction from methane trench (8/23/2023 – 11/10/2023)
9/22/2023	4.1	30.4	0.8	64.6	
10/21/2023	3.2	31.6	0.1	65	
11/1/2023	2.8	27.9	1.8	67.5	
11/10/2023	3.4	30.3	0.1	66.2	- Blower shut off (11/10/2023 – 6/19/2024)
11/17/2023	3.4	30.4	0.0	66.2	
11/30/2023	7.2	32.4	0.0	60.4	
12/8/2023	7.2	32.5	0.0	60.4	
1/3/2024	8.5	32.8	0.0	58.7	
3/15/2024	10.7	34.1	0.0	55.2	
4/3/2024	11.7	31.5	0.0	56.8	
5/1/2024	12.4	29.4	0.0	58.2	
5/7/2024	13.6	32	0.1	54.4	
5/15/2024	11.9	30.7	0.0	57.4	
5/21/2024	12.3	31.3	0.0	56.4	
5/31/2024	11.7	30.6	0.1	57.6	
6/7/2024	11.9	30.1	0.1	58	
6/25/2024	9.2	28.5	0.1	62.3	- Vacuum extraction from methane trench (6/19/2024 – present)
7/5/2024	6.8	27	0.1	66.1	
7/12/2024	5.0	25.5	0.1	69.4	
7/16/2024	4.0	24.2	0.2	71.5	
7/26/2024	4.8	26.5	0.0	68.7	

Table 13. Monitoring Results for Soil Vapor Extraction Unit.

Date	% Methane	% Carbon Dioxide	% Oxygen	% Balance
3/3/2023	23.8	19.7	1.6	54.9
3/10/2023	20.7	19.8	4.2	55.3
3/22/2023	11.1	17.8	4.7	66.5
4/1/2023	8.7	19	4.5	67.8
5/9/2023	3.3	13.8	4.9	78
6/15/2023	3.2	11.5	7.9	77.3
9/5/2023	6.0	14.6	6	73.4
10/21/2023	4.8	15.7	6.6	72.9
11/1/2023	4.6	16.5	5.1	73.8
11/10/2023	3.8	13.6	8.3	74.3
6/25/2024	15.4	14.3	5.2	65.1
7/5/2024	11	13.8	5.8	69.4
7/12/2024	7.0	13.4	7.1	72.4
7/16/2024	6.0	12.7	6.6	74.8
7/26/2024	7.1	14.8	6.7	71.4