



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

April 24, 2023

Mr. William D. Maness
General Manager
Uwharrie Environmental Landfill
1137 Albemarle Road
Troy, North Carolina 27371

Dear Mr. Maness:

This is in response to your January 10, 2022, letter to the North Carolina Division of Air Quality (NC DAQ), requesting approval of proposed landfill gas (LFG) higher operating temperature values (HOTVs) for two LFG extraction wells (U-EW066C and U-EW503A) located at the Uwharrie Environmental Landfill (the Landfill) - Title V Permit #08826T12, in Mt Gilead, North Carolina. This request was forwarded by the NC DAQ to the U.S. Environmental Protection Agency (EPA) Region 4 on September 21, 2022. We requested additional information from your consultant, SCS Engineers P.C., on September 29, 2022, October 27, 2022, November 9, 2022, November 16, 2022, and December 15, 2022, and received information on October 11, 2022, November 2, 2022, November 16, 2022, December 1, 2022, and December 15, 2022.

The Landfill is subject to Title 40, Code of Federal Regulations (C.F.R.), Part 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste (MSW) Landfills. On June 21, 2021, the EPA promulgated the Federal Plan, Title 40 C.F.R. Part 62, Subpart OOO - Federal Plan Requirements for Municipal Solid Waste Landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014. In the absence of an approved state plan implementing Title 40 C.F.R. Part 60, Subpart Cf, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills, or an approval transferring delegation of authority to a state to administer the Federal Plan, the EPA is required to act as the Administrator of the Federal Plan.

Based on the information you provided, and other information available to the EPA, well specific landfill gas HOTVs are conditionally approved for the two wells identified in your request for the purposes of Subpart OOO: 152 degrees Fahrenheit (°F) for U-EW066C and 150 °F for U-EW503A. Details regarding the basis for our determination are provided in the remainder of this letter.

Background Information Supporting the HOTV Request Submitted by the Landfill

The Landfill installed and commissioned the two LFG extraction wells four months before submitting the request. Based on the information from September 2021 to November 2022 submitted by the Landfill, the wells have produced higher operating values than the 40 C.F.R. Part 62 requirement (greater than 131 °F). These temperatures have ranged from 132.4 °F to 147.3 °F for U-EW066C and 137.8 °F to 149.0 °F for U-EW503A. Adjusting the vacuum and operational tuning of the wellheads

have proven to be ineffective in reducing the temperatures. Oxygen content during this period was less than 5 percent (%) when the wells were opened and relieved to the control device. The carbon monoxide (CO) readings observed were between 15 parts-per-million by volume (ppmv) to 20 ppmv, well below the 1,000 ppmv threshold which is indicative of a subsurface fire in the Landfill. Low methane concentrations and high carbon dioxide (CO₂) concentrations were observed in the data that the EPA received. During a conference call with the EPA on November 16, 2022, the Landfill's consultant, SCS Engineers P.C., explained that the wellhead valves have been closed incrementally over time to reduce the gas temperature to below 131 °F, which tends to reduce the gas quality by reducing the methane concentrations and increasing CO₂ concentrations. Methane concentrations are expected to increase after valves are opened. Quarterly Surface Emission Monitoring (SEM) reports showed no concerns of methane exceedance near the two wells. The ground surface was noted to be in fair condition. Visual observations indicated that a fire was not occurring. The Landfill will continue to conduct visual observations and collect wellhead pressure data, temperature data, and methane contents during monthly well monitoring to determine if the higher well temperatures inhibit anaerobic decomposition. Based on the observed results, the Landfill, as part of the requirement to implement corrective action, is requesting to establish a HOTV of 165 °F for both wells.

EPA's Review of the Relevant 40 C.F.R. Part 62 Subpart OOO Standards

Under 40 C.F.R. § 62.16716(b), owners/operators are required to operate the collection system with negative pressure at each wellhead except during a subsurface fire or increased well temperature. The owner or operator must record instances when positive pressure occurs in efforts to avoid a fire. These records must be submitted with the annual reports as provided in 40 C.F.R. § 62.16724(h)(1).

Under 40 C.F.R. § 62.16716(c), the owner/operator must operate each interior wellhead in the collection system with a landfill gas temperature less than 131 °F. Under 40 C.F.R. § 62.16720(a)(4), the owner or operator must monitor each well monthly for temperature as provided in 40 C.F.R. § 62.16716(c). If a well exceeds the operating parameter for temperature, action must be initiated to correct the exceedance within 5 calendar days. Under 40 C.F.R. § 62.16720(a)(4)(i), if a landfill gas temperature of less than 131 °F cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature of greater than 131 °F, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature of greater than 131 °F was first measured. The owner or operator must keep records according to 40 C.F.R. § 62.16726(e)(3). Under 40 C.F.R. § 62.16720(a)(4)(ii), if corrective actions cannot be fully implemented within 60 days following the measurement of landfill gas temperature of greater than 131 °F for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature of greater than 131 °F.

Under 40 C.F.R. § 62.16716(c), an owner/operator may establish a HOTV for an LFG extraction well. A HOTV demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated temperature neither causes fires nor destroys anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria to be approved. For the purposes of Subpart OOO, and until a 111(d) municipal solid waste landfill state plan is approved for the state of North Carolina, the EPA is the Administrator of the Federal Plan in North Carolina.

EPA's Determination

Subpart OOO specifies standards which determine when an owner/operator may request a HOTV for an interior well. The Landfill has requested a HOTV of 165 °F for well U-EW066C and well U-EW503A, but the EPA is unable to approve the HOTV as requested. Based on a statistical analysis of the data presented in the request, however, the EPA approves a well-specific HOTV of 152 °F for U-WE066C and 150 °F for U-EW503A. The HOTV for each well is determined by the 99.9th percentile of a normal distribution created with the mean and standard deviation from the temperature data submitted by the Landfill.

If future monthly monitoring event(s) data suggest that these HOTVs may be exceeded using a well specific 99.9th percentile of the well's monitoring data, the Landfill may apply for revised HOTVs based on the data available at that time if the Landfill demonstrates that subsurface fires are not occurring at the Landfill and the proposed HOTVs will not destroy the methanogens. All efforts to correct the exceedance should be made before requesting a HOTV. Please refer to the EPA Landfill Gas Energy Project Development Handbook (<https://www.epa.gov/lmop/landfill-gas-energy-project-development-handbook>) for more information on the best practices for landfill gas collection system operation and maintenance.

Additionally, the period for this approval is limited to two years from the date of this letter, but the Landfill may submit a revised request for the EPA's review before the expiration date of the approval if data suggest that HOTV(s) continuation/revisions are necessary, and the standards of 40 C.F.R. § 62.16716(c) are met.

The EPA's conditional approval of the HOTVs for well U-EW066C and well U-EW503A is based upon the following factors:

- (1) The Landfill has submitted the request under the provisions of 40 C.F.R. § 62.16716(c), which allows owners/operators to request a HOTV for an interior well.
- (2) The Landfill has included monitoring event well-specific temperature and methane, CO₂ and balance gas concentration data for each well.
- (3) The Landfill has included the results of the root cause analyses for each well which were conducted within 60 days of the initial LFG extraction well landfill gas temperature exceedance. The results of the analyses indicated that neither subsurface fires nor destruction of the methanogen bacteria were occurring at the wells.
- (4) Methane concentration levels indicated the higher temperatures were not affecting the methane-producing bacteria and that anerobic activity was uninhibited. Methane concentration is expected to increase after gas valves are turned on, per communication with the Landfill.
- (5) CO concentrations in the wells were less than 20 ppmv, much less than a concentration of 1,000 ppmv which would be indicative of the presence of a subsurface fire at the landfill.
- (6) Quarterly SEM reports showed no concerns for methane exceedance and no signs of fire hazard, and the ground surface appeared to be in fair condition.

The review of this HOTV's request was coordinated with the EPA Region 4 Enforcement and Compliance Assurance Division and is based upon prior consultation with the Office of Air Quality Planning and Standards and the Office of Enforcement and Compliance Assurance and is consistent with similar approvals issued by our office. If you have any questions about the response provided in this letter, please contact Ms. Henian Zhang of my staff at (404) 562-8123 or by email at zhang.henian@epa.gov.

Sincerely,

CAROLINE FREEMAN
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Caroline Y. Freeman
Director
Air and Radiation Division

cc: Steve Hall (NC DAQ)