COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Hazardous Sites Cleanup Program, Southwest Region
Mazzaro McKees Rocks Landfill
Kennedy Township, Allegheny County
Prompt Interim Response for Landfill Gas Management

STATEMENT OF DECISION

The Commonwealth of Pennsylvania, Department of Environmental Protection ("Department or DEP") files this statement of the basis and purpose of its decision in accordance with Section 506(e) of the Pennsylvania Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756 No. 108 ("HSCA"), 35 P.S. Section 6020.506(e).

The Department completed a Prompt Interim Response at the Mazzaro McKees Rocks Landfill (Site) to help control the offsite migration of landfill gas (LFG) including methane to reduce potential risks, including combustion, at nearby properties.

Work by DEP and its contractors has demonstrated that LFG exists within the Site and beyond its boundaries at levels that exceed those established in Pennsylvania's Title 25, Chapter 273 standards for combustible gas at permitted municipal waste landfill sites. The Department has completed a remedy at portions of the Site to help prevent the potential for offsite LFG migration, using the Chapter 273 standards as objectives for the work.

I. SITE INFORMATION

A. Site Location and Description

The Mazzaro-McKees Rocks Landfill is located at 1953 McKees Rocks Rd in Kennedy Township, Allegheny County Pennsylvania. It consists of 242 acres, of which, waste disposal areas comprise 70 acres. The site is occupied by the Vietmeier Golf Center, which operates both a driving range and miniature golf course on the northern portion of the Site. The northern portion of the property, where most of the landfill waste is located, is gently sloping to the southeast and is mostly open fields and grassy areas. The southern portion of the property is relatively steep, heavily vegetated, with drainages that flow into Chartiers Creek. Site areas beyond the golf operation are undeveloped. The property is bounded to the north by the Kennedy Highlands Apartment development, to the south by woods above Chartiers Creek, and to the west by private residences along Longview Drive. Eastward there is a relatively large area of undeveloped land, which includes utility rights-of-way and a tributary that discharges to Chartiers Creek.

B. Site History

Prior to 1940, both underground and surface coal mining activities occurred at the site, targeting the Pittsburgh Coal seam. From the late 1940’s until about 1972, portions of the Site were used for municipal, industrial and medical waste disposal. Disposal occurred prior to the implementation of the Solid Waste Management Act. Consequently, the subsequent engineering

design criteria related to liners, leachate collection, gas management, capping and closure were not applicable. DEP and other parties performed a series of environmental studies at the Site between the 1980's and mid-2000's. In 2006, the Department conducted an interim response action involving the removal of exposed drums and impacted surface soils for offsite disposal.

Between 2012 to 2014 DEP identified the presence of potentially combustible gas and volatile organic compounds (VOCs) including methane at some on- and off-site locations. Methane was indicated at levels above its lower explosive limit (LEL)-related criteria, indicating a potential risk for receptors. To address this, the Department installed a passive gas venting system along the northern and western property lines, following industry standards. In addition, the Department installed vents and a combustible gas monitor at the golf center building. Subsequent investigations included the means to further address offsite gas migration, including a pilot study in 2017 that utilized the existing vents under an active recovery mode.

These evaluations concluded that enhancements to the vertical passive vent system were recommended to better intercept LFG to address subsurface conditions. In 2018, DEP produced an Analysis of Alternatives and Proposed Response (AOA), followed by a 2019-2020 pre-design investigation and detailed engineering design (2020 Final Design) for gas collection trenches. The Allegheny County Health Department (ACHD) reviewed and approved the design along with prior plans for the initial perimeter vent system. Installation of the new lateral trench system along the northern and western property lines was completed in early 2021. Post-construction performance monitoring is currently underway. In April 2021, the Department held a Public Hearing to describe the HSCA response work.

II. RESPONSE CATEGORY

A Prompt Interim Response was conducted to expedite the design and construction of an enhanced gas management system to better protect occupied offsite properties from the potential safety effects associated with landfill gas including methane. The Prompt Interim Response category permitted the remedy to be implemented without the delay associated with the time it would take to develop and close an administrative record (3-6 months) preparatory to other HSCA response categories. The response was completed for less than the $2-million budget limit and one-year time threshold specified for a Prompt Interim Response.

III. CLEANUP STANDARDS

This response is not a final remedial response pursuant to Section 504 of HSCA and therefore is not required to meet the cleanup standards which apply to final remedial responses. Additional response action may be needed to achieve a complete and final cleanup for the site.

IV. APPLICABLE, RELEVANT and APPROPRIATE REQUIREMENTS (ARARs)

The Prompt Interim Response related to LFG emanating from the Mazzaro-McKees Rocks Landfill includes the application of PA Title 25, Chapter 273 standards for combustible gas monitoring, off-site migration, and mitigation at permitted municipal waste landfill sites. Under this Applicable or Relevant and Appropriate Requirement (ARAR), combustible gas levels may not equal or exceed 100% of the lower explosive limit (LEL) or 5% methane by volume at the

boundaries of the Site. This objective applies as the target compliance criteria for portions of the northern and western Site boundaries as defined in the 2020 Final Design.

V. ANALYSIS OF ALTERNATIVES

Work by DEP and its contractors demonstrated that landfill gas, including methane, exists within the Site and potentially beyond its boundaries at levels that exceed standards established in Pennsylvania's Title 25, Chapter 273 standards for combustible gas. The Department considered six alternatives to address the potential for LFG migration from the Site: 1) Take no action; 2) Installation of an enhanced gas venting system; 3) Installation of a passive trench venting system; 4) Installation of a semi-active trench venting system; 5) Installation of an active trench system; and 6) Installation of impermeable barriers.

Alternative 1. No Action

This alternative involves taking no new measures to address the offsite migration of landfill gas, beyond the exiting passive vertical vent system that would continue to operate.

Compliance with ARARs

ARARs would not be fully complied with since potentially combustible gas would be able to migrate beyond the property boundary above standards, to some degree. The existing vent system was installed by qualified experts following industry standards, however subsurface conditions preclude the complete interception of gas in all target areas.

Cost Effectiveness

There is no new capital cost associated with this alternative. Minimal O&M costs could occur with periodic monitoring and maintenance.

Alternative 2. Enhanced Gas Venting System

This option involves modifying and possibly expanding the existing passive vent system while adding mechanically powered methods to increase gas recovery.

Compliance with ARARs

A pilot study determined that this option would only be partly effective at controlling gas migration beyond the northern property line. DEP's engineering contractor concluded that the effective radius of influence for an enhanced vertical vent system would not uniformly control offsite LFG movement to ensure that ARARs would be consistently met.

Cost Effectiveness

Based on the Department's 2016 *Landfill Gas Migration Prevention System Remedial Alternatives Analysis Report* (RAA), this option would cost approximately $520,000 excluding continencies and operating costs.

Alternative 3. Passive Trench Venting System

This approach involves the installation of gravel-filled linear trenches sealed with compacted clay and/or synthetic material at the surface, with piping to direct the flow of gas. The trenches were estimated to be approximately 500 linear feet each along the northern and western property boundaries, with installation depths corresponding with the base of waste/fill and/or the depth of to the base of the Pittsburgh Coal seam. Waste excavation and offsite disposal are necessary to install the trenches. The system relies on gas pressure and concentration gradients to drive migrating gas into a passive piping network. No electric power service is needed. If needed, the system can be incrementally modified from passive operation to semi-active or active to increase effectiveness in migration prevention.

Compliance with ARARs

At this site, horizontal trenching is anticipated to be a more effective method for intercepting gas than vertical vents (passive or active) due to the limited and variable nature of the radial influence of the vertical vents, versus the broader coverage provided by trenches. Heterogeneous subsurface conditions are a primary factor for this. The attainment of ARARs is expected to be significantly improved within the target attainment areas using the trench-based approach.

Cost Effectiveness

The Department's 2018 AOA indicated an estimated budget of $1,650,000 for the full trench system (northern and western) excluding contingencies and pre-design testing. *The AOA planning estimate is in line with the actual costs incurred with the work through mid-2021*.

Alternative 4. Semi-Active Trench System

This represents an incremental modification of Alternative 3 with the addition of solar or wind-propelled semi-active micro blowers mounted on vertical vents to create a vacuum within the trenches. Solar-powered vent flares can also be added to help control odors and destroy combustible gas emissions.

Compliance with ARARs

The addition of micro blowers would be more effective than a purely passive system and the attainment of ARARs would likely meet or exceed that of Alternative 3. The retrofit/upgrade to Alternative 4 would not be needed if Alternative 3 effectively achieves ARARs.

Cost Effectiveness

This option was estimated at $2,068,000 for capital costs excluding a contingency. No electric power service is needed. While the design is intended to extract/dissipate gas better than Alternative 3, solar and wind energy are variable and intermittent. Battery backups could be used for more uniform power delivery at a greater cost.

Alternative 5. Active Trench System

This represents the use of active vacuum extraction from trenches proposed in Alternative 3, using blowers under continuous electric power.

Compliance with ARARs

Alternative 5 represents the most effective system using trenching, since utility-based electric power is generally continuous and reliable, other than during outages or maintenance events. LFG capture and the attainment of ARARs in target areas would be predictable.

Cost Effectiveness

This option was estimated to cost $2,400,000 for installation and one year of operation, excluding a contingency and vent flares, if conditions warrant. Electric supply costs and equipment maintenance represent long-term costs not associated with some of the other alternatives.

Alternative 6. Impermeable Barriers

This approach involves the placement of laterally continuous low permeability barriers (inc. bentonite clay slurry) along the western and northern property lines, potentially involving different approaches in different areas due to subsurface conditions. Numerous variables and uncertainties exist related to the implementation and efficacy of this approach; the method was further described and screened out in the AOA and other documents. The presence of mine voids, fractured bedrock, porous backfill and wastes make the method infeasible in most areas. Access issues, geotechnical concerns, potential odors, and public impacts also detract from this option compared to the other alternatives.

Compliance with ARARs

Not considered feasible along the northern area and uncertain along the western side due to subsurface and engineering limitations, as described further in the AOA and other documents.

Cost Effectiveness

A very preliminary estimate of $1,335,000 was indicated for this method, excluding numerous contingent and unknown costs along with the potential for the approach to not perform as needed in the target areas. Further budget development is not warranted as a result.

VI. SELECTED RESPONSE

The Department chose Alternative 3, installation of a passive trench venting system, because it complies with the ARARs and is the most cost-effective. The horizontal trench design is a more effective means to intercept LFG at the property boundaries compared to vertical vent methods, where the effective radius of influence and capture areas is variable. There is a reasonable likelihood that a passive trench system will effectively mitigate elevated gas levels from within

the target response areas, leading to compliance with ARARs to addresses potential threats. Post-remedial construction monitoring will assess LFG levels with respect to gas capture and the lower explosive limit attainment levels of 5% methane or lower.

Two (2) LFG collection trenches were installed, along the northern and western property boundaries. As intended, the trenches are operating as passive system that are designed to be retrofitted in the future to active systems if necessary, based on monitoring results.

VII. MAJOR CHANGES FROM PROPOSED RESPONSE

There were no major changes to the selected response from the proposed response.

VIII. RESPONSE TO PUBLIC COMMENTS

The public comment period for the selection of this Prompt Interim Response action opened on February 20, 2021 and closed on May 21, 2021. Notices were provided on February 18, 2021 In the Pittsburgh Post-Gazette newspaper, and on March 5 and March 31, 2021 from the Commonwealth's Press Office using releases on the official Department website. The Department received no written comments and received no requests to present oral testimony at the Public Hearing which was held on April 6, 2021.

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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