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July 20, 2021

Randy Mosier
Air Management Program
Maryland Department of the Environment
1800 Washington Ave
Baltimore MD 21230

Re: Potential Maryland Landfill Gas Requirements Presentation, June 23, 2021.

Dear Mr. Mosier,

We understand your Program is in the process of drafting regulations regarding the emission of methane from landfills in Maryland to comply with the Environmental Protection Agency's (EPA) New Source Performance Standards (NSPS) and Emissions Guidelines (EG) regulations. Our technical staff has been very active in conversations regarding these new air regulations by attending all Maryland Department of the Environment (MDE) stakeholder meetings and submitting comments and questions on previous proposed versions.

We would like to submit the attached comments/questions for your consideration. These comments are intended to ensure that the proposed regulations are practical, actionable and enforceable.

In Howard County we have three landfills: two closed landfills at Carrs Mill Road and New Cut Road, and one active landfill at Alpha Ridge Landfill. Carrs Mill Landfill has a passive landfill gas system. At both New Cut Landfill and Alpha Ridge Landfill, Howard County voluntarily installed active Gas Collection and Control Systems (GCCS). Based on our review and understanding, only Alpha Ridge Landfill will be covered by MDE's conceptual regulations.

While we have attached an extensive list of technical comments, the challenge with these proposed regulations is not that it goes too far beyond EPA's EG regulations, but the cost associated with the annual implementation. As proposed, MDE estimates annual costs to be between $2.0M and $7.5M per landfill per year. This would more than double our annual disposal costs. The high end of MDE's estimated annual cost is more than we spend per year in waste disposal.

Howard County has an outstanding record of commitment to the environment and the reduction of GHG which includes the voluntary installation of our GCCS at New Cut Landfill and Alpha Ridge Landfill, the expansion of the GCCS system at Alpha Ridge Landfill into our active cell when we identified that we could significantly reduce fugitive emissions at our facility, and our municipally run food scrap composting facility, one of the few in the state. These forward-looking investments in diversion are put at risk if we must commit so many resources to meet a regulation that may make sense in California but not so much in the very different climate of Maryland. In general, a more moderate and practical approach should be considered.

As a matter of practicality, we do not recommend duplicating the California model, but rather that MDE consider a hybrid of EPA's EG regulations and MDE's conceptual regulation. We recommend that MDE follow the procedures and monitoring requirements stipulated in the EG regulations, but use MDE's more stringent eligibility criteria as proposed. This would ensure that most of the Maryland's landfills must meet the EG standards for operation, surface monitoring, remedial action and reporting without being burdened by the extreme standards for destruction rate or for meeting the very challenging monitoring parameters. This hybrid regulation would be much more restrictive than EPA's EG regulation in scope and give MDE data to make a later determination if its conceptual regulations are feasible and the best use of jurisdictions' resources.

Sincerely,

Mark DeLuca
Deputy Director of Public Works
Howard County

CC: Eddie Durant, MDE

Attachment: Conceptual Regulation comments from Howard County

MD/jed

Howard County DPW Bureau of Environmental Services

Analysis of

Potential Maryland Landfill Gas Requirements presentation, June 23, 2021

	Comment
Definitions	Define Closed Landfill -is it a) closed per 40 CFR 258 **OR** stopped taking waste before 11/8/87?
Definitions	Define Inactive Landfill. MDE Land program doesn't use this term. Permitted landfills not taking waste for 12 months must enter Closure according to 258.61 (f).
Defintions	Define and Specify details of a "Surface Methane Demonstration Test" .
Definitions	Define a "Landfill Gas Heat Capacity Report" and what it entails.
Definitions	Define "Annual Source Test for GCCS"
Applicability	When EPA proposed 40 CFR 258 in 1991 it gave 24 months for jurisdictions to close landfills in order to avoid costly improvements and set up funding streams to cover closure/post closure costs. The closure date of 11/8/1987 in the MDE proposal, retroactively obligates jurisdictions to unplanned costs.
Applicability - Size	Make sure that smaller size is only applicable to date eligible facilities. There are lots of small landfills that do not meet date.
Exemptions	Medium and Large closed or inactive landfills must comply. This is date limited right?
Implementation and Compliance - Design Capacity Report	The EG Design capacity report included not just waste amount but details on the design of the GCCS. MDE's report is not equivalent. Heat capacity report was not previously required. Confirm that not equivalent is correct.
Implementation and Compliance - Design Plan	If 3.0 MMBtu/hr is about 100 scfm of landfill gas. No enclosed flare technology is available for such low flows. If still insist on flaring these flows, then different technology with lower percent destruction rate will be required.
	If one >200 ppm surface measurement drives into design plan, will there be methods to retest, fix problem and potentially avoid design plan?
Installation of a Gas Collection and Control System (GCCS)	Many municipal landfills in Maryland have volunarily designed,built and operate GCCS. MDE Land has reviewed these GCCS, MDE Air has issued Permit to Construct for these systems and regulate them through Title V permits. MDE Land reviewed before they were constructed. Does that consistute "approval"?
Gas Collection and Control Systems – Efficiency	EG standard 62.16714 (c)(2) calls for 98% destruction efficiency of equipment for direct burning of gas. In 62.16714 (c)(3), EG standards allow to "Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production for high BTU gas for pipeline injection...." EG standard give no efficiency standard for engines or users of the gas. MDE is proposing standards for engines and requires these to be 99% efficient. Please confirm that MDE is proposing destruction efficiencies on LGtE generators, but on no other alternative uses of the gas.
	Is there a difference between "Methane Reduction efficiency" and "Methane Destruction efficiency"?
	Confirm goal for outlet methane concentration to < 3,000 ppmv, dry basis, corrected to 15 percent oxygen. It seems quite different than EG standard.

	The standard "any area where waste is buried" is unreasonable if one understands landfilling operations, because this includes landill areas being actively filled. Collection well holes are drilled into buried waste, the collection pipe is centered and the remaining void is filled with gas transmissive media such as stone. Traditionally wells are drilled into waste at or about final grade and do not include perforations near the surface so as to not draw air/oxygen into the waste and create landfill fires. One cannot go back in and drill holes into buried pipe. As one has solid pipe near the surface of a cell, then the solid pipe will be buried as the next lift is built. Solid pipe cannot be used to collect gas from that lift . MDE must explain how wells are to be built in areas actively receiving waste that will be able to capture gas as the cell is built.
	The standard "any area where waste is buried" is unreasonable if one understands landfilling operations. Landfill gas is collected from wells and transferred through horizontal collection piping to the destruction device. Landfill operations include dumping waste, spreading it and compacting the waste, repeatedly until a full lift is completed (typically 8 feet tall). Running heavy equipment and compaction equipment over collection piping will damage and destroy the collection piping. In short, this requirement would require operators to build, repair, then abandon GCCS, repeatedly over the same area as additional lifts are added to the landfill cell. MDE must clarify that this is their expectation.
Types of GCCS Allowed	MDE must be clear that facilities not covered by these rules and those facilities unable to maintain operation of their destruction device given their best efforts, including efforts such as downsizing or on/off timers may use lesser efficient destruction techniques instead of closing their GCCS. At HoCo's closed New Cut Landfill, the waste is between 40 and 80 years old. The GCCS system was installed in 2000, and in 2009 an on/off timer was added. Currently, the gas quality has deteriorated to levels where appropriate destruction cannot be maintained for even 3 hours at a twice daily cycle. MDE Land is supportive of the use of a biofilter system (passive device) in this instance in lieu of complete shutdown.
Annual Source Testing for GCCS	Is source testing required for the entire GCCS? Or specific components? What testing methods?
Wellheads	Clarify that negative pressure must be available at each wellhead, not that each well must maintain negative pressure.
Component Leak Testing - GCCS	Will 500 ppmv standard be for methane or landfill gas (containing approx 50% methane)?
	ppmv as a unit works well at the landfill surface where there is constant mixing with air. However, how do you measure leaks in ppmv at pressured components, as the closer you get to the leak, the closer you get to 50% CH4?
	10 day compliance may not be feasible in some instances. Please identify a landfill's approach to avoil a violation.
Component Leak Testing (Landfill Gas-to-Energy Facilities)	What is the intent of the use of "may" instead of "must"?
Surface Emissions Monitoring (SEM) - Integrated Emission Standard	Check wording on "No location on the MSW landfill surface may exceed an average methane concentration limit of 25 ppmv as determined by integrated surface emissions monitoring." Instead of "location" did MDE mean "grid"?
	Describe the selection of a grid.
	MDE proposes that any grid that exceeds an average of 25 ppmv must be identified and remediated. Earlier they specified that all areas containing waste must be monitored, unlike the EPA EG standard that required monitoring of areas closed for a period of time. As peak methane production is modelled as 1 year after closure (or last placement of waste) there will be significant generation of landfill gas in areas not yet closed or capped. How does MDE propose that operators remediate current landfill operating areas? Would these areas require remediation of the entire grid area that includes the active area?

	EPA's EG standard specifies actions to be taken when detection is 500 ppmv above background. MDE's standard for their Integrated Emissions do not account for background methane levels such as from adjacent WWTP, commercial gas operations or dairy farms. Please confirm.
	EPA's EG standard includes opportunities for retesting before remedial activities are required. Will MDE's standard mimic that retesting and action schedule?
	Barametric pressure plays a key role in how much gas is produced from a landfill especially those with older waste mass. Will changing weather conditions and changing barametric pressure be ignored, noted or used to restrict timeframe for measurements?
	Integrated surface monitoring is proposed to be done quarterly. Perimeter gas probes are done quarterly, but reported to Land Program on a semi-annual basis as part of Semi-Annual Groundwater monitoring report. What is Air Program's reporting intent?
	Will landfills be required to write and have approved operating procedures on how to conduct Surface Emission Monitoring? Who at MDE will be reviewing these plans for completeness, and what experience do they have?
Surface Emissions Monitoring - Instantaneous Emission Standard	Current EG regulations understand that many condensate systems need to burp in order to function properly and pump condensate. How is MDE planning to regulate emissions from condensate sumps and pumping stations?
	There is interface between leachate collection, storage, transport and treatment and the atmosphere at leachate manholes, pumping station and tanks. Which if any of these will be required to included in the CH4 monitoring/remediation program?
	MDE makes it very clear that No location on the surface may exceed the 500 ppmv concentration limits. However 500 ppmv is later described as the action limit. Is the 500 ppmv a firm ceiling or an action limit?
	The conceptual regulation requires operators to record any instanteous readings of 200 ppmv. That would indicate that operators do not need to record lower readings. Please explain conditions whereby readings would be taken but not recorded. How then do operators document that they took the readings if there is no record?
	Wind speed only? See comment above about barametric pressure.
Surface Emission Monitoring - Frequency	EPA has standards regarding weather conditions during monitoring and prior to monitoring. What will be those limitations? What will operators need to do if weather conditions interrupt monitoring? How/Can the data be salvaged?
Surface Emissions Monitoring - Exceedances	EPA EG standards have a complicated scheme to allow retesting, notification, permissions, and remediation. Is MDE planning on adopting a similar timeframe or radically different schedule?
Surface Emissions Monitoring - Surface Area Testing	Define the hydrocarbon detector equipment. what it is detecting, what minimum accuracy, acceptable technologies and weaknesses. For instance, wood waste operations often generate Alkanes, Aromatic hydrocarbons and Terpenes. These may create background levels of hydrocarbons as many landfills have associated wood waste or composting operations.
	Can jurisdictions schedule these for regular inspection. I.e. can they avoid purchase of "hydrocarbon detector" and just regularly rent one?
	Hydrocarbon detector used at all cover penetrations. Does MDE's definition of "cover penetrations" include "cap penetrations"? Will we need to sniff each and every well as they penetrate the cap?
	So MDE is requriing operators to visually inspect and use hydrocarbon detector in areas that have steep slopes or other dangerous areas? This is exempt in EPA's EG rules.

Surface Emissions Monitoring - Landfill Area	Grids are now proposed as 50,000 sf. Acres are 43,560 sf. So a grid is 1.14 acres. Currently Alpha Ridge, a medium sized landfill, has a closed cell of 86 acres and an active cell of 38 acres, making 124 acres in total. Thus currently they will have 109 grids. Permitted landfill space is another 75 acres; so ultimately there will be 174 grids. The Integrated Emission Standard requires tracking, identifying and separately remediating each grid. On what basis does MDE believe that this grid size is size best?
Surface Emissions Monitoring – Spacing and Patterns	Given Alpha Ridge is 124 acres with gas system, that is 5,401,440 sf. This creates a 25' wide path 41 miles long. Normal walking speed through lawn is 3 mph, but through taller grass, carrying an an instrument is more likely 2 mph. Given 7 hours of walking per day, that means 14 miles can be met. So for Alpha Ridge, walking will take 3 days. Howard County has one landfill - other jurisdictions have more. Is the 25-foot spacing interval so critical that requires one jurisdiction to walk 41 miles quarterly?
Surface Emissions Monitoring – Meteorological Conditions	MDE suggests that monitoring cannot be performed when wind speed >5 mph or gusts >10 mph. The average wind speed at BWI from 2010 to the present is 7.5 mph. Howard County's Alpha Ridge Landfill has a weather station on site, its average winds speed is 5.5 mph. In the last 3-1/2 years, only 24% of days had wind speed below 5.0 mph. Please confirm that monitoring should be halted when wind speed exceeds 5.0 mph.
	If it will take 3 days of walking to complete the field surface monitoring, what will happen to the data that is collected before it begins to rain and there is measurable preciptitation? Measurements will be on hold for at least 72 hours.
	Was the 72-hour rule pulled from California (average precipitation 21.4")? How feasible will it be to implement in Maryland (average precipitation 44")? Los Angeles gets 33.7 precipitation days per year, Maryland 114 days per year.
	If one imagines the landfill as a giant sponge that generates landfill gas, changes in barametric pressure will either push down on the sponge, pushing out additional gas, or encouraging it to hold onto gas. What remedies will MDE provide for changes in barametric pressure that will encourage or discourage fugitive gas migration through the cap during monitoring?
	Given each quarter [91 days], that there are 26 weekend days and 2 holidays per quarter, and that there is 31.3% average chance of precipitation on any day. That leaves a 32% chance on any weekday, that if there is no rain, that the next two days will also be without rain. As this does not take into account wind conditions, what will be the requirments for "Unable to conduct monitoring" documentation? What will be the consequences?
Cost	Howard County purchased and installed a Landfill Gas to Energy Generator in 2012 at a cost of $4.0 M. This generator has a rating of 97.2% destruction of NMOC. This unit was bought with 30 year bonds. Resale of the removalble portion is estimated at about $400,000 because of the limited market and used condition. Does MDE has visions for compensating jurisdictions for equipment rendered obsolete by these regulations?
	Howard County voluntarily installed and enclosed flare in 2000. It is rated for 98% destruction of NMOC. It has not been evaluted for methane destruction. We would need to conduct testing before we could determine if the proposed methane destruction standard could be met or whether the unit can be upgraded to meet 99% methane reduction. Will the regulation provide adquate time to evaluate existing equipment and design modification/replacement? Estimated replacement cost is $1.5M.
General	When compared against EPA's EG regulations, these regulations not only require more landfills to comply, but in addition create tougher emission standards and add onerous monitoring requirements. An alternative is to apply the EG standards as written to more facilities without changing the monitoring, maintenance, reporting or reduction standards of EPA's EG program. What would be lost utilizing such a hybrid approach, if flexibility was provided for MDE to tighten rules once data from the hybrid approach's reductions were available?
	Comments submitted to MDE on 7/20/21