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Title 40: Protection of Environment
PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart Cf—Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

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§60.30f Scope and delegated authorities.

This subpart establishes Emission Guidelines and compliance times for the control of designated pollutants from certain designated municipal solid waste (MSW) landfills in accordance with section 111(d) of the Clean Air Act and subpart B of this part.

(a) If you are the Administrator of an air quality program in a state or United States protectorate with one or more existing MSW landfills that commenced construction, modification, or reconstruction on or before July 17, 2014, you must submit a state plan to the U.S. Environmental Protection Agency (EPA) that implements the Emission Guidelines contained in this subpart. The requirements for state and federal plans are specified in subpart B of this part with the exception that §§60.23 and 60.27 will not apply. Notwithstanding the provisions of §60.20a(a) in subpart Ba of this part, the requirements of §§60.23a and 60.27a will apply for state plans submitted after September 6, 2019, and federal plans, except that the requirements of §60.23a(a)(1) will apply to a notice of availability of a final guideline document that was published under §60.22(a). Likewise, the requirements of §60.27a(e)(1) will refer to a final guideline document that was published under §60.22(a).

(b) You must submit a state plan to the EPA by August 29, 2019.

(c) The following authorities will not be delegated to state, local, or tribal agencies:

(1) Approval of alternative methods to determine the NMOC concentration or a site-specific methane generation rate constant (k).

(2) [Reserved]

[81 FR 59313, Aug. 29, 2016, as amended at 84 FR 44555, Aug. 26, 2019]

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§60.31f Designated facilities.

(a) The designated facility to which these Emission Guidelines apply is each existing MSW landfill for which construction, reconstruction, or modification was commenced on or before July 17, 2014.

(b) Physical or operational changes made to an existing MSW landfill solely to comply with an emission guideline are not considered a modification or reconstruction and would not subject an existing MSW landfill to the requirements of a standard of performance for new MSW landfills.

(c) For purposes of obtaining an operating permit under title V of the Clean Air Act, the owner or operator of an MSW landfill subject to this subpart with a design capacity less than 2.5 million megagrams or 2.5 million cubic meters is not subject to the requirement to obtain an operating permit for the landfill under part 70 or 71 of this chapter, unless the landfill is otherwise subject to either part 70 or 71. For purposes of submitting a timely application for an operating permit under part 70 or 71, the owner or operator of an MSW landfill subject to this subpart with a design capacity greater than or equal to 2.5 million megagrams and 2.5 million cubic meters on the effective date of EPA approval of the state's program under section 111(d) of the Clean Air Act, and not otherwise subject to either part 70 or 71, becomes subject to the requirements of §70.5(a)(1)(i) or §71.5(a)(1)(i) of this chapter 90 days after the effective date of such section 111(d) program approval, even if the design capacity report is submitted earlier.

(d) When an MSW landfill subject to this subpart is closed as defined in this subpart, the owner or operator is no longer subject to the requirement to maintain an operating permit under part 70 or 71 of this chapter for the landfill if the landfill is not otherwise subject to the requirements of either part 70 or 71 and if either of the following conditions are met:

(1) The landfill was never subject to the requirement to install and operate a gas collection and control system under §60.33f; or

(2) The landfill meets the conditions for control system removal specified in §60.33f(f).

(e) When an MSW landfill subject to this subpart is in the closed landfill subcategory, the owner or operator is not subject to the following reports of this subpart, provided the owner or operator submitted these reports under the provisions of subpart WWW of this part; 40 CFR part 62, subpart GGG; or a state plan implementing subpart Cc of this part on or before July 17, 2014:

(1) Initial design capacity report specified in §60.38f(a).

(2) Initial or subsequent NMOC emission rate report specified in §60.38f(c), provided that the most recent NMOC emission rate report indicated the NMOC emissions were below 50 Mg/yr.

(3) Collection and control system design plan specified in §60.38f(d).

(4) Closure report specified in §60.38f(f).

(5) Equipment removal report specified in §60.38f(g).

(6) Initial annual report specified in §60.38f(h).

(7) Initial performance test report in §60.38f(i).

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§60.32f Compliance times.

Planning, awarding of contracts, installing, and starting up MSW landfill air emission collection and control equipment that is capable of meeting the Emission Guidelines under §60.33f must be completed within 30 months after the date an NMOC emission rate report shows NMOC emissions equal or exceed 34 megagrams per year (50 megagrams per year for the closed landfill subcategory); or within 30 months after the date of the most recent NMOC emission rate report that shows NMOC emissions equal or exceed 34 megagrams per year (50 megagrams per year for the closed landfill subcategory), if Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

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§60.33f Emission Guidelines for municipal solid waste landfill emissions.

(a) *Landfills.* For approval, a state plan must require each owner or operator of an MSW landfill having a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume to collect and control MSW landfill emissions at each MSW landfill that meets the following conditions:

(1) The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition.

(2) The landfill commenced construction, reconstruction, or modification on or before July 17, 2014.

(3) The landfill has an NMOC emission rate greater than or equal to 34 megagrams per year or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

(4) The landfill in the closed landfill subcategory and has an NMOC emission rate greater than or equal to 50 megagrams per year or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

(b) *Collection system.* For approval, a state plan must include provisions for the installation of a gas collection and control system meeting the requirements in paragraphs (b)(1) through (3) and (c) of this section at each MSW landfill meeting the conditions in paragraph (a) of this section.

(1) *Collection system.* Install and start up a collection and control system that captures the gas generated within the landfill within 30 months after:

(i) The first annual report in which the NMOC emission rate equals or exceeds 34 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 34 megagrams per year, as specified in §60.38f(d)(4); or

(ii) The first annual NMOC emission rate report for a landfill in the closed landfill subcategory in which the NMOC emission rate equals or exceeds 50 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 megagrams per year, as specified in §60.38f(d)(4); or

(iii) The most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2, if the Tier 4 surface emissions monitoring shows a surface methane emission concentration of 500 parts per million methane or greater as specified in §60.38f(d)(4)(iii).

(2) *Active.* An active collection system must:

(i) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment.

(ii) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade.

(iii) Collect gas at a sufficient extraction rate.

(iv) Be designed to minimize off-site migration of subsurface gas.

(3) *Passive.* A passive collection system must:

(i) Comply with the provisions specified in paragraphs (b)(2)(i), (ii), and (iv) of this section.

(ii) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners must be installed as required under §258.40 of this chapter.

(c) *Control system.* For approval, a state plan must include provisions for the control of the gas collected from within the landfill through the use of control devices meeting the following requirements, except as provided in §60.24.

(1) A non-enclosed flare designed and operated in accordance with the parameters established in §60.18 except as noted in §60.37f(d); or

(2) A control system designed and operated to reduce NMOC by 98 weight percent; or when an enclosed combustion device is used for control, to either reduce NMOC by 98

weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen or less. The reduction efficiency or concentration in parts per million by volume must be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in §60.35f(d). The performance test is not required for boilers and process heaters with design heat input capacities equal to or greater than 44 megawatts that burn landfill gas for compliance with this subpart.

(i) If a boiler or process heater is used as the control device, the landfill gas stream must be introduced into the flame zone.

(ii) The control device must be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in §60.37f.

(iii) For the closed landfill subcategory, the initial or most recent performance test conducted to comply with subpart WWW of this part; 40 CFR part 62, subpart GGG; or a state plan implementing subpart Cc of this part on or before July 17, 2014 is sufficient for compliance with this subpart.

(3) 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 of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either paragraph (c)(1) or (2) of this section.

(4) All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of paragraph (b) or (c) of this section. For purposes of this subpart, atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of paragraph (b) or (c) of this section.

(d) *Design capacity.* For approval, a state plan must require each owner or operator of an MSW landfill having a design capacity less than 2.5 million megagrams by mass or 2.5 million cubic meters by volume to submit an initial design capacity report to the Administrator as provided in §60.38f(a). The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions must be documented and submitted with the report. Submittal of the initial design capacity report fulfills the requirements of this subpart except as provided in paragraphs (d)(1) and (2) of this section.

(1) The owner or operator must submit an amended design capacity report as provided in §60.38f(b).

NOTE TO PARAGRAPH (d)(1): Note that if the design capacity increase is the result of a modification, as defined in this subpart, that was commenced after July 17, 2014, then the landfill becomes subject to subpart XXX of this part instead of this subpart. If the design capacity increase is the result of a change in operating practices, density, or some other change that is not a modification as defined in this subpart, then the landfill remains subject to this subpart.

(2) When an increase in the maximum design capacity of a landfill with an initial design capacity less than 2.5 million megagrams or 2.5 million cubic meters results in a revised

maximum design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, the owner or operator must comply with paragraph (e) of this section.

(e) *Emissions.* For approval, a state plan must require each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters to either install a collection and control system as provided in paragraphs (b) and (c) of this section or calculate an initial NMOC emission rate for the landfill using the procedures specified in §60.35f(a). The NMOC emission rate must be recalculated annually, except as provided in §60.38f(c)(3).

(1) If the calculated NMOC emission rate is less than 34 megagrams per year, the owner or operator must:

(i) Submit an annual NMOC emission rate report according to §60.38f(c), except as provided in §60.38f(c)(3); and

(ii) Recalculate the NMOC emission rate annually using the procedures specified in §60.35f(a) until such time as the calculated NMOC emission rate is equal to or greater than 34 megagrams per year, or the landfill is closed.

(A) If the calculated NMOC emission rate, upon initial calculation or annual recalculation required in paragraph (e)(1)(ii) of this section, is equal to or greater than 34 megagrams per year, the owner or operator must either: Comply with paragraphs (b) and (c) of this section; calculate NMOC emissions using the next higher tier in §60.35f; or conduct a surface emission monitoring demonstration using the procedures specified in §60.35f(a)(6).

(B) If the landfill is permanently closed, a closure report must be submitted to the Administrator as provided in §60.38f(f), except for exemption allowed under §60.31f(e)(4).

(C) For the closed landfill subcategory, if the most recently calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner or operator must either: Submit a gas collection and control system design plan as specified in §60.38f(d), except for exemptions allowed under §60.31f(e)(3), and install a collection and control system as provided in paragraphs (b) and (c) of this section; calculate NMOC emissions using the next higher tier in §60.35f; or conduct a surface emission monitoring demonstration using the procedures specified in §60.35f(a)(6).

(2) If the calculated NMOC emission rate is equal to or greater than 34 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator must either: submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year as specified in §60.38f(d), except for exemptions allowed under §60.31f(e)(3); calculate NMOC emissions using a higher tier in §60.35f; or conduct a surface emission monitoring demonstration using the procedures specified in §60.35f(a)(6).

(3) For the closed landfill subcategory, if the calculated NMOC emission rate is equal to or greater than 50 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator must either: Submit a collection and control system design plan as specified in §60.38f(d), except for exemptions allowed under §60.31f(e)(3); calculate NMOC emissions using a higher tier in §60.35f; or conduct a surface emission monitoring demonstration using the procedures specified in §60.35f(a)(6).

(f) *Removal criteria.* The collection and control system may be capped, removed, or decommissioned if the following criteria are met:

(1) The landfill is a closed landfill (as defined in §60.41f). A closure report must be submitted to the Administrator as provided in §60.38f(f).

(2) The collection and control system has been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flow.

(3) Following the procedures specified in §60.35f(b), the calculated NMOC emission rate at the landfill is less than 34 megagrams per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

(4) For the closed landfill subcategory (as defined in §60.41), following the procedures specified in §60.35f(b), the calculated NMOC emission rate at the landfill is less than 50 megagrams per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

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§60.34f Operational standards for collection and control systems.

For approval, a state plan must include provisions for the operational standards in this section (as well as the provisions in §§60.36f and 60.37f), or the operational standards in §63.1958 of this chapter (as well as the provisions in §§63.1960 of this chapter and 63.1961 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of §60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of §63.1958 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section. Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of §60.33f(b) and (c) must:

(a) Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:

(1) Five (5) years or more if active; or

(2) Two (2) years or more if closed or at final grade.

(b) Operate the collection system with negative pressure at each wellhead except under the following conditions:

(1) A 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 §60.38f(h)(1).

(2) Use of a geomembrane or synthetic cover. The owner or operator must develop acceptable pressure limits in the design plan.

(3) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes must be approved by the

Administrator as specified in §60.38f(d).

(c) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator may establish a higher operating temperature value at a particular well. A higher operating value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria in order to be approved (*i.e.,* neither causing fires nor killing methanogens is acceptable).

(d) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator must conduct surface testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in §60.36(d). The owner or operator must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations. Thus, the owner or operator must monitor any openings that are within an area of the landfill where waste has been placed and a gas collection system is required. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

(e) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with §60.33f(c). In the event the collection or control system is not operating, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating.

(f) Operate the control system at all times when the collected gas is routed to the system.

(g) If monitoring demonstrates that the operational requirements in paragraph (b), (c), or (d) of this section are not met, corrective action must be taken as specified in §60.36f(a)(3) and (5) or (c). If corrective actions are taken as specified in §60.36f, the monitored exceedance is not a violation of the operational requirements in this section.

[81 FR 59313, Aug. 29, 2016, as amended at 85 FR 17259, Mar. 26, 2020]

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§60.35f Test methods and procedures.

For approval, a state plan must include provisions in this section to calculate the landfill NMOC emission rate or to conduct a surface emission monitoring demonstration.

(a)(1) *NMOC Emission Rate.* The landfill owner or operator must calculate the NMOC emission rate using either Equation 1 provided in paragraph (a)(1)(i) of this section or

Equation 2 provided in paragraph (a)(1)(ii) of this section. Both Equation 1 and Equation 2 may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (a)(1)(i) of this section, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (a)(1)(ii) of this section, for part of the life of the landfill. The values to be used in both Equation 1 and Equation 2 are 0.05 per year for k, 170 cubic meters per megagram for Lo, and 4,000 parts per million by volume as hexane for the C_{NMOC}. For landfills located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year.

(i)(A) Equation 1 must be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^{n} 2kL_o M_i (e^{-kt_i})(C_{NMOC})(3.6 \times 10^{-9}) \quad \text{(Eq. 1)}$$

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Where:

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year.

k = Methane generation rate constant, $year^{-1}$.

L_o = Methane generation potential, cubic meters per megagram solid waste.

M_i = Mass of solid waste in the i^{th} section, megagrams.

t_i = Age of the i^{th} section, years.

C_{NMOC} = Concentration of NMOC, parts per million by volume as hexane.

3.6×10^{-9} = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

(ii)(A) Equation 2 must be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC} = 2kL_o R (e^{-kt})(C_{NMOC})(3.6 \times 10^{-9}) \quad \text{(Eq. 2)}$$

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Where:

M_{NMOC} = Mass emission rate of NMOC, megagrams per year.

L_o = Methane generation potential, cubic meters per megagram solid waste.

R = Average annual acceptance rate, megagrams per year.

k = Methane generation rate constant, $year^{-1}$.

t = Age of landfill, years.

C_{NMOC} = Concentration of NMOC, parts per million by volume as hexane.

c = Time since closure, years; for an active landfill c = 0 and $e^{-kc} = 1$

t = Time since closure, years; for an active landfill $t = c$ and $c = 1$.

3.6×10^{-9} = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

(2) *Tier 1.* The owner or operator must compare the calculated NMOC mass emission rate to the standard of 34 megagrams per year.

(i) If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 34 megagrams per year, then the owner or operator must submit an NMOC emission rate report according to §60.38f(c), and must recalculate the NMOC mass emission rate annually as required under §60.33f(e).

(ii) If the NMOC emission rate calculated in paragraph (a)(1) of this section is equal to or greater than 34 megagrams per year, then the landfill owner or operator must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in §60.38f(d) and install and operate a gas collection and control system within 30 months according to §60.33f(b) and (c);

(B) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures provided in paragraph (a)(3) of this section; or

(C) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures provided in paragraph (a)(4) of this section.

(3) *Tier 2.* The landfill owner or operator must determine the site-specific NMOC concentration using the following sampling procedure. The landfill owner or operator must install at least two sample probes per hectare, evenly distributed over the landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The probes should be evenly distributed across the sample area. The sample probes should be located to avoid known areas of nondegradable solid waste. The owner or operator must collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of appendix A of this part. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If more than the required number of samples is taken, all samples must be used in the analysis. The landfill owner or operator must divide the NMOC concentration from Method 25 or 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe. The sample location on the common header pipe must be before any gas moving, condensate removal, or treatment system equipment. For active collection systems, a minimum of three samples must be collected from the header pipe.

must be collected from the header pipe.

(i) Within 60 days after the date of determining the NMOC concentration and corresponding NMOC emission rate, the owner or operator must submit the results according to §60.38f(j)(2).

(ii) The landfill owner or operator must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 provided in paragraph (a)(1)(i) or (ii) of this section using the average site-specific NMOC concentration from the collected samples instead of the default value provided in paragraph (a)(1) of this section.

(iii) If the resulting NMOC mass emission rate is less than 34 megagrams per year, then the owner or operator must submit a periodic estimate of NMOC emissions in an NMOC emission rate report according to §60.38f(c), and must recalculate the NMOC mass emission rate annually as required under §60.33f(e). The site-specific NMOC concentration must be retested every 5 years using the methods specified in this section.

(iv) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration is equal to or greater than 34 megagrams per year, the owner or operator must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in §60.38f(d) and install and operate a gas collection and control system within 30 months according to §60.33f(b) and (c);

(B) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the Tier 3 procedures specified in paragraph (a)(4) of this section; or

(C) Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in paragraph (a)(6) of this section.

(4) *Tier 3.* The site-specific methane generation rate constant must be determined using the procedures provided in Method 2E of appendix A of this part. The landfill owner or operator must estimate the NMOC mass emission rate using Equation 1 or Equation 2 in paragraph (a)(1)(i) or (ii) of this section and using a site-specific methane generation rate constant, and the site-specific NMOC concentration as determined in paragraph (a)(3) of this section instead of the default values provided in paragraph (a)(1) of this section. The landfill owner or operator must compare the resulting NMOC mass emission rate to the standard of 34 megagrams per year.

(i) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration and Tier 3 site-specific methane generation rate is equal to or greater than 34 megagrams per year, the owner or operator must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in §60.38f(d) and install and operate a gas collection and control system within 30 months according to §60.33f(b) and (c); or

(B) Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in paragraph (a)(6) of this section.

(ii) If the NMOC mass emission rate is less than 34 megagrams per year, then the owner or operator must recalculate the NMOC mass emission rate annually using Equation 1 or

Equation 2 in paragraph (a)(1) of this section and using the site-specific Tier 2 NMOC concentration and Tier 3 methane generation rate constant and submit a periodic NMOC emission rate report as provided in §60.38f(c). The calculation of the methane generation rate constant is performed only once, and the value obtained from this test must be used in all subsequent annual NMOC emission rate calculations.

(5) *Other methods.* The owner or operator may use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to the methods required in paragraphs (a)(3) and (4) of this section if the method has been approved by the Administrator.

(6) *Tier 4.* The landfill owner or operator must demonstrate that surface methane emissions are below 500 parts per million. Surface emission monitoring must be conducted on a quarterly basis using the following procedures. Tier 4 is allowed only if the landfill owner or operator can demonstrate that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 or Tier 2. If both Tier 1 and Tier 2 indicate NMOC emissions are 50 Mg/yr or greater, then Tier 4 cannot be used. In addition, the landfill must meet the criteria in paragraph (a)(6)(viii) of this section.

(i) The owner or operator must measure surface concentrations of methane along the entire perimeter of the landfill and along a pattern that traverses the landfill at no more than 30-meter intervals using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in §60.36f(d).

(ii) The background concentration must be determined by moving the probe inlet upwind and downwind at least 30 meters from the waste mass boundary of the landfill.

(iii) Surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of appendix A of this part, except that the probe inlet must be placed no more than 5 centimeters above the landfill surface; the constant measurement of distance above the surface should be based on a mechanical device such as with a wheel on a pole.

(A) The owner or operator must use a wind barrier, similar to a funnel, when onsite average wind speed exceeds 4 miles per hour or 2 meters per second or gust exceeding 10 miles per hour. Average on-site wind speed must also be determined in an open area at 5-minute intervals using an on-site anemometer with a continuous recorder and data logger for the entire duration of the monitoring event. The wind barrier must surround the SEM monitor, and must be placed on the ground, to ensure wind turbulence is blocked. SEM cannot be conducted if average wind speed exceeds 25 miles per hour.

(B) Landfill surface areas where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations must also be monitored using a device meeting the specifications provided in §60.36f(d).

(iv) Each owner or operator seeking to comply with the Tier 4 provisions in paragraph (a)(6) of this section must maintain records of surface emission monitoring as provided in §60.39f(g) and submit a Tier 4 surface emissions report as provided in §60.38f(d)(4)(iii).

(v) If there is any measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must submit a gas collection and control system design plan within 1 year of the first measured concentration of methane of

500 parts per million or greater from the surface of the landfill according to §60.38f(d) and install and operate a gas collection and control system according to §60.33f(b) and (c) within 30 months of the most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2.

(vi) If after four consecutive quarterly monitoring periods at a landfill, other than a closed landfill, there is no measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must continue quarterly surface emission monitoring using the methods specified in this section.

(vii) If after four consecutive quarterly monitoring periods at a closed landfill there is no measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must conduct annual surface emission monitoring using the methods specified in this section.

(viii) If a landfill has installed and operates a collection and control system that is not required by this subpart, then the collection and control system must meet the following criteria:

(A) The gas collection and control system must have operated for at least 6,570 out of 8,760 hours preceding the Tier 4 surface emissions monitoring demonstration.

(B) During the Tier 4 surface emissions monitoring demonstration, the gas collection and control system must operate as it normally would to collect and control as much landfill gas as possible.

(b) After the installation and startup of a collection and control system in compliance with this subpart, the owner or operator must calculate the NMOC emission rate for purposes of determining when the system can be capped, removed, or decommissioned as provided in §60.33f(f), using Equation 3:

$$M_{NMOC} = 1.89 \times 10^{-3} Q_{LFG} C_{NMOC} \qquad \text{(Eq. 3)}$$

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Where:

M_{NMOC} = Mass emission rate of NMOC, megagrams per year.

Q_{LFG} = Flow rate of landfill gas, cubic meters per minute.

C_{NMOC} = NMOC concentration, parts per million by volume as hexane.

(1) The flow rate of landfill gas, Q_{LFG}, must be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control system using a gas flow measuring device calibrated according to the provisions of section 10 of Method 2E of appendix A of this part.

(2) The average NMOC concentration, C_{NMOC}, must be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in Method 25 or Method 25C of appendix A of this part. The sample location on the common header pipe must be before any condensate removal or other gas refining units. The landfill owner or operator must divide the

NMOC concentration from Method 25 or Method 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

(3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

(i) Within 60 days after the date of calculating the NMOC emission rate for purposes of determining when the system can be capped or removed, the owner or operator must submit the results according to §60.38f(j)(2).

(ii) [Reserved]

(c) When calculating emissions for Prevention of Significant Deterioration purposes, the owner or operator of each MSW landfill subject to the provisions of this subpart must estimate the NMOC emission rate for comparison to the Prevention of Significant Deterioration major source and significance levels in §51.166 or §52.21 of this chapter using Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42) or other approved measurement procedures.

(d) For the performance test required in §60.33f(c)(1), the net heating value of the combusted landfill gas as determined in §60.18(f)(3) is calculated from the concentration of methane in the landfill gas as measured by Method 3C. A minimum of three 30-minute Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under §60.18(f)(4).

(1) Within 60 days after the date of completing each performance test (as defined in §60.8), the owner or operator must submit the results of the performance tests required by paragraph (b) or (d) of this section, including any associated fuel analyses, according to §60.38f(j)(1).

(2) [Reserved]

(e) For the performance test required in §60.33f(c)(2), Method 25 or 25C (Method 25C may be used at the inlet only) of appendix A of this part must be used to determine compliance with the 98 weight-percent efficiency or the 20 parts per million by volume outlet NMOC concentration level, unless another method to demonstrate compliance has been approved by the Administrator as provided by §60.38f(d)(2). Method 3, 3A, or 3C must be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), Method 25A should be used in place of Method 25. Method 18 may be used in conjunction with Method 25A on a limited basis (compound specific, *e.g.*, methane) or Method 3C may be used to determine methane. The methane as carbon should be subtracted from the Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The landfill owner or operator must divide the NMOC concentration as carbon by 6 to convert the C_{NMOC} as carbon to C_{NMOC} as hexane. Equation 4 must be used to calculate efficiency:

$$\text{Control efficiency} = (NMOC_{in} - NMOC_{out})/(NMOC_{in}) \qquad \text{(Eq. 4)}$$

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Where:

$NMOC_{in}$ = Mass of NMOC entering control device.

$NMOC_{out}$ = Mass of NMOC exiting control device.

(1) Within 60 days after the date of completing each performance test (as defined in §60.8), the owner or operator must submit the results of the performance tests, including any associated fuel analyses, according to §60.38f(j)(1).

(2) [Reserved]

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§60.36f Compliance provisions.

For approval, a state plan must include the compliance provisions in this section (as well as the provisions in §§60.34f and 60.37f), or the compliance provisions in §63.1960 of this chapter (as well as the provisions in §§63.1958 of this chapter and 63.1961 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of §60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of §63.1960 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section.

(a) Except as provided in §60.38f(d)(2), the specified methods in paragraphs (a)(1) through (6) of this section must be used to determine whether the gas collection system is in compliance with §60.33f(b)(2).

(1) For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with §60.33f(b)(2)(i), either Equation 5 or Equation 6 in paragraph (a)(1)(i) or (ii) of this section must be used. The methane generation rate constant (k) and methane generation potential (L_o) kinetic factors should be those published in the most recent AP-42 or other site-specific values demonstrated to be appropriate and approved by the Administrator. If k has been determined as specified in §60.35f(a)(4), the value of k determined from the test must be used. A value of no more than 15 years must be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

(i) For sites with unknown year-to-year solid waste acceptance rate:

$$Q_m = 2kL_oR(e^{-kc} - e^{-kt}) \qquad \text{(Eq. 5)}$$

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Where:

Q_m = Maximum expected gas generation flow rate, cubic meters per year.

L_o = Methane generation potential, cubic meters per megagram solid waste.

R = Average annual acceptance rate, megagrams per year.

k = Methane generation rate constant, $year^{-1}$.

t = Age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years.

c = Time since closure, years (for an active landfill c = 0 and $e^{-kc} = 1$).

(ii) For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^{n} 2k L_o M_i (e^{-kt_i}) \qquad \text{(Eq. 6)}$$

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Where:

Q_M = Maximum expected gas generation flow rate, cubic meters per year.

k = Methane generation rate constant, $year^{-1}$.

L_o = Methane generation potential, cubic meters per megagram solid waste.

M_i = Mass of solid waste in the i^{th} section, megagrams.

t_i = Age of the i^{th} section, years.

(iii) If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, Equation 5 or Equation 6 in paragraph (a)(1)(i) or (ii) of this section. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using Equation 5 or Equation 6 or other methods must be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

(2) For the purposes of determining sufficient density of gas collectors for compliance with §60.33f(b)(2)(ii), the owner or operator must design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

(3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with §60.33f(b)(2)(iii), the owner or operator must measure gauge pressure in the gas collection header applied to each individual well monthly. If a positive pressure exists, action must be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under §60.34f(b). Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(i) If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but not later than 60 days after positive pressure was first measured. The owner or operator must keep records according to §60.39f(e)(3).

(ii) If corrective actions cannot be fully implemented within 60 days following the positive pressure or elevated temperature measurement 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 greater than 55 degrees Celsius (131 degrees Fahrenheit) or positive pressure. The owner or operator must submit the items listed in §60.38f(h)(7) as part of the next annual report. The owner or operator must keep records according to §60.39f(e)(4).

(iii) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to §60.38f(h)(7) and (k). The owner or operator must keep records according to §60.39f(e)(5).

(4) [Reserved]

(5) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator must monitor each well monthly for temperature as provided in §60.34f(c). If a well exceeds the operating parameter for temperature, action must be initiated to correct the exceedance within 5 calendar days. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(i) If a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit) cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit), 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 greater than 55 degrees Celsius (131 degrees Fahrenheit) was first measured. The owner or operator must keep records according to §60.39f(e)(3).

(ii) If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement 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 greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator must submit the items listed in §60.38f(h)(7) as part of the next annual report. The owner or operator must keep records according to §60.39f(e)(4).

(iii) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to §60.38f(h)(7) and (k). The owner or operator must keep records according to §60.39f(e)(5).

(6) An owner or operator seeking to demonstrate compliance with §60.33f(b)(2)(iv) through the use of a collection system not conforming to the specifications provided in §60.40f must provide information satisfactory to the Administrator as specified in §60.38f(d)(3) demonstrating that off-site migration is being controlled.

(b) For purposes of compliance with §60.34f(a), each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in §60.38f(d). Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:

(1) Five (5) years or more if active; or

(2) Two (2) years or more if closed or at final grade.

(c) The following procedures must be used for compliance with the surface methane operational standard as provided in §60.34f(d):

(1) After installation and startup of the gas collection system, the owner or operator must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.

(2) The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.

(3) Surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of appendix A of this part, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions.

(4) Any reading of 500 parts per million or more above background at any location must be recorded as a monitored exceedance and the actions specified in paragraphs (c)(4)(i) through (v) of this section must be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of §60.34f(d).

(i) The location of each monitored exceedance must be marked and the location and concentration recorded. For location, you must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(ii) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 calendar days of detecting the exceedance.

(iii) If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in paragraph (c)(4)(v) of this section must be taken, and no further monitoring of that location is required until the action specified in paragraph (c)(4)(v) of this section has been taken.

(iv) Any location that initially showed an exceedance but has a methane concentration less than 500 parts per million methane above background at the 10-day re-monitoring specified in paragraph (c)(4)(ii) or (iii) of this section must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in paragraph (c)(4)(iii) or (v) of this section must be taken.

(v) For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other

collection device must be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Administrator for approval.

(5) The owner or operator must implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

(d) Each owner or operator seeking to comply with the provisions in paragraph (c) of this section or §60.35f(a)(6) must comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

(1) The portable analyzer must meet the instrument specifications provided in section 6 of Method 21 of appendix A of this part, except that "methane" replaces all references to "VOC".

(2) The calibration gas must be methane, diluted to a nominal concentration of 500 parts per million in air.

(3) To meet the performance evaluation requirements in section 8.1 of Method 21 of appendix A of this part, the instrument evaluation procedures of section 8.1 of Method 21 must be used.

(4) The calibration procedures provided in sections 8 and 10 of Method 21 of appendix A of this part must be followed immediately before commencing a surface monitoring survey.

(e) The provisions of this subpart apply at all times, including periods of startup, shutdown, or malfunction. During periods of startup, shutdown, and malfunction, you must comply with the work practice specified in §60.34f(e) in lieu of the compliance provisions in §60.36f.

[81 FR 59313, Aug. 29, 2016, as amended at 85 FR 17259, Mar. 26, 2020]

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§60.37f Monitoring of operations.

For approval, a state plan must include the monitoring provisions in this section, (as well as the provisions in §§60.34f and 60.36f) except as provided in §60.38f(d)(2), or the monitoring provisions in §63.1961 of this chapter (as well as the provisions in §§63.1958 of this chapter and 63.1960 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of §60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of §63.1961 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section.

(a) Each owner or operator seeking to comply with §60.33f(b)(2) for an active gas collection system must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:

(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in §60.36f(a)(3); and

provided in §60.38f(d)(2); and

(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as follows:

(i) The nitrogen level must be determined using Method 3C, unless an alternative test method is established as allowed by §60.38f(d)(2).

(ii) Unless an alternative test method is established as allowed by §60.38f(d)(2), the oxygen level must be determined by an oxygen meter using Method 3A, 3C, or ASTM D6522-11 (incorporated by reference, see §60.17). Determine the oxygen level by an oxygen meter using Method 3A, 3C, or ASTM D6522-11 (if sample location is prior to combustion) except that:

(A) The span must be set between 10 and 12 percent oxygen;

(B) A data recorder is not required;

(C) Only two calibration gases are required, a zero and span;

(D) A calibration error check is not required; and

(E) The allowable sample bias, zero drift, and calibration drift are ±10 percent.

(iii) A portable gas composition analyzer may be used to monitor the oxygen levels provided:

(A) The analyzer is calibrated; and

(B) The analyzer meets all quality assurance and quality control requirements for Method 3A or ASTM D6522-11 (incorporated by reference, see §60.17).

(3) Monitor temperature of the landfill gas on a monthly basis as provided in §60.36f(a)(5). The temperature measuring device must be calibrated annually using the procedure in this part 60, appendix A-1, Method 2, Section 10.3.

(b) Each owner or operator seeking to comply with §60.33f(c) using an enclosed combustor must calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:

(1) A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 degrees Celsius, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts.

(2) A device that records flow to the control device and bypass of the control device (if applicable). The owner or operator must:

(i) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; and

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed

at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(c) Each owner or operator seeking to comply with §60.33f(c) using a non-enclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.

(2) A device that records flow to the flare and bypass of the flare (if applicable). The owner or operator must:

(i) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(d) Each owner or operator seeking to demonstrate compliance with §60.33f(c) using a device other than a non-enclosed flare or an enclosed combustor or a treatment system must provide information satisfactory to the Administrator as provided in §60.38f(d)(2) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator must review the information and either approve it, or request that additional information be submitted. The Administrator may specify additional appropriate monitoring procedures.

(e) Each owner or operator seeking to install a collection system that does not meet the specifications in §60.40f or seeking to monitor alternative parameters to those required by §§60.34f through 60.37f must provide information satisfactory to the Administrator as provided in §60.38f(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.

(f) Each owner or operator seeking to demonstrate compliance with the 500 parts per million surface methane operational standard in §60.34f(d) must monitor surface concentrations of methane according to the procedures provided in §60.36f(c) and the instrument specifications in §60.36f(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 parts per million or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

(g) Each owner or operator seeking to demonstrate compliance with the control system requirements in §60.33f(c) using a landfill gas treatment system must maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan required in §60.39f(b)(5)(ii) and must calibrate, maintain, and operate according to the manufacturer's specifications a device that records

flow to the treatment system and bypass of the treatment system (if applicable). The owner or operator must:

(1) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and

(2) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(h) The monitoring requirements of paragraphs (b), (c) (d) and (g) of this section apply at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable.

[81 FR 59313, Aug. 29, 2016, as amended at 85 FR 17260, Mar. 26, 2020]

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§60.38f Reporting guidelines.

For approval, a state plan must include the reporting provisions listed in this section, as applicable, except as provided under §§60.24 and 60.38f(d)(2).

(a) *Design capacity report.* For existing MSW landfills subject to this subpart, the initial design capacity report must be submitted no later than 90 days after the effective date of EPA approval of the state's plan under section 111(d) of the Clean Air Act. The initial design capacity report must contain the following information:

(1) A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the permit issued by the state, local, or tribal agency responsible for regulating the landfill.

(2) The maximum design capacity of the landfill. Where the maximum design capacity is specified in the permit issued by the state, local, or tribal agency responsible for regulating the landfill, a copy of the permit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity must be calculated using good engineering practices. The calculations must be provided, along with the relevant parameters as part of the report. The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, the calculation must include a site-specific density, which must be recalculated annually. Any density conversions must be documented and submitted with the design capacity report. The state, local, or tribal

agency or the Administrator may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.

(b) *Amended design capacity report.* An amended design capacity report must be submitted providing notification of an increase in the design capacity of the landfill, within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million megagrams and 2.5 million cubic meters. This increase in design capacity may result from an increase in the permitted volume of the landfill or an increase in the density as documented in the annual recalculation required in §60.39f(f).

(c) *NMOC emission rate report.* For existing MSW landfills covered by this subpart with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, the NMOC emission rate report must be submitted following the procedure specified in paragraph (j)(2) of this section no later than 90 days after the effective date of EPA approval of the state's plan under section 111(d) of the Clean Air Act. The NMOC emission rate report must be submitted to the Administrator annually following the procedure specified in paragraph (j)(2) of this section, except as provided for in paragraph (c)(3) of this section. The Administrator may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report must contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in §60.35f(a) or (b), as applicable.

(2) The NMOC emission rate report must include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(3) If the estimated NMOC emission rate as reported in the annual report to the Administrator is less than 34 megagrams per year in each of the next 5 consecutive years, the owner or operator may elect to submit, following the procedure specified in paragraph (j)(2) of this section, an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate must include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based must be provided to the Administrator. This estimate must be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate must be submitted to the Administrator. The revised estimate must cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(4) Each owner or operator subject to the requirements of this subpart is exempted from the requirements to submit an NMOC emission rate report, after installing a collection and control system that complies with §60.33f(b) and (c), during such time as the collection and control system is in operation and in compliance with §§60.34f and 60.36f.

(d) *Collection and control system design plan.* The state plan must include a process for state review and approval of the site-specific design plan for each gas collection and control system. The collection and control system design plan must be prepared and approved by a professional engineer and must meet the following requirements:

(1) The collection and control system as described in the design plan must meet the design requirements in §60.33f(b) and (c)

design requirements in §60.33f(b) and (c).

(2) The collection and control system design plan must include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions of §§60.34f through 60.39f proposed by the owner or operator.

(3) The collection and control system design plan must either conform to specifications for active collection systems in §60.40f or include a demonstration to the Administrator's satisfaction of the sufficiency of the alternative provisions to §60.40f.

(4) Each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must submit a copy of the collection and control system design plan cover page that contains the engineer's seal to the Administrator within 1 year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year, except as follows:

(i) If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in §60.35f(a)(3) and the resulting rate is less than 34 megagrams per year, annual periodic reporting must be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 34 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated NMOC emission rate based on NMOC sampling and analysis, must be submitted, following the procedures in paragraph (j)(2) of this section, within 180 days of the first calculated exceedance of 34 megagrams per year.

(ii) If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 in §60.35f(a)(4), and the resulting NMOC emission rate is less than 34 megagrams per year, annual periodic reporting must be resumed. The resulting site-specific methane generation rate constant k must be used in the NMOC emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of §60.35f(a)(4) and the resulting site-specific methane generation rate constant k must be submitted, following the procedure specified in paragraph (j)(2) of this section, to the Administrator within 1 year of the first calculated NMOC emission rate equaling or exceeding 34 megagrams per year.

(iii) If the owner or operator elects to demonstrate that site-specific surface methane emissions are below 500 parts per million methane, based on the provisions of §60.35f(a)(6), then the owner or operator must submit annually a Tier 4 surface emissions report as specified in this paragraph (d)(4)(iii) following the procedure specified in paragraph (j)(2) of this section until a surface emissions readings of 500 parts per million methane or greater is found. If the Tier 4 surface emissions report shows no surface emissions readings of 500 parts per million methane or greater for four consecutive quarters at a closed landfill, then the landfill owner or operator may reduce Tier 4 monitoring from a quarterly to an annual frequency. The Administrator may request such additional information as may be necessary to verify the reported instantaneous surface emission readings. The Tier 4 surface emissions report must clearly identify the location, date and time (to the nearest second), average wind speeds including wind gusts, and reading (in parts per million) of any value 500 parts per million methane or greater, other than non-repeatable, momentary readings. For location, you must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal

places. The Tier 4 surface emission report should also include the results of the most recent Tier 1 and Tier 2 results in order to verify that the landfill does not exceed 50 Mg/yr of NMOC.

(A) The initial Tier 4 surface emissions report must be submitted annually, starting within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site-specific surface methane emissions are below 500 parts per million methane, and following the procedure specified in paragraph (j)(2) of this section.

(B) The Tier 4 surface emissions rate report must be submitted within 1 year of the first measured surface exceedance of 500 parts per million methane, following the procedure specified in paragraph (j)(2) of this section.

(iv) If the landfill is in the closed landfill subcategory, the owner or operator must submit a collection and control system design plan to the Administrator within 1 year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 megagrams per year, except as follows:

(A) If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in §60.35f(a)(3) and the resulting rate is less than 50 megagrams per year, annual periodic reporting must be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 50 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated NMOC emission rate based on NMOC sampling and analysis, must be submitted, following the procedure specified in paragraph (j)(2) of this section, within 180 days of the first calculated exceedance of 50 megagrams per year.

(B) If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 in §60.35f(a)(4), and the resulting NMOC emission rate is less than 50 megagrams per year, annual periodic reporting must be resumed. The resulting site-specific methane generation rate constant k must be used in the NMOC emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of §60.35f(a)(4) and the resulting site-specific methane generation rate constant k must be submitted, following the procedure specified in paragraph (j)(2) of this section, to the Administrator within 1 year of the first calculated NMOC emission rate equaling or exceeding 50 megagrams per year.

(C) The landfill owner or operator elects to demonstrate surface emissions are low, consistent with the provisions in paragraph (d)(4)(iii) of this section.

(D) The landfill has already submitted a gas collection and control system design plan consistent with the provisions of subpart WWW of this part; 40 CFR part 62, subpart GGG; or a state plan implementing subpart Cc of this part.

(5) The landfill owner or operator must notify the Administrator that the design plan is completed and submit a copy of the plan's signature page. The Administrator has 90 days to decide whether the design plan should be submitted for review. If the Administrator chooses to review the plan, the approval process continues as described in paragraph (c)(6) of this section. However, if the Administrator indicates that submission is not required or does not respond within 90 days, the landfill owner or operator can continue to implement the plan with the recognition that the owner or operator is proceeding at their own risk. In the event that the design plan is required to be modified to obtain approval, the owner or operator must

that the design plan is required to be modified to obtain approval, the owner or operator must take any steps necessary to conform any prior actions to the approved design plan and any failure to do so could result in an enforcement action.

(6) Upon receipt of an initial or revised design plan, the Administrator must review the information submitted under paragraphs (d)(1) through (3) of this section and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems. If the Administrator does not approve or disapprove the design plan, or does not request that additional information be submitted within 90 days of receipt, then the owner or operator may continue with implementation of the design plan, recognizing they would be proceeding at their own risk.

(7) If the owner or operator chooses to demonstrate compliance with the emission control requirements of this subpart using a treatment system as defined in this subpart, then the owner or operator must prepare a site-specific treatment system monitoring plan as specified in §60.39f(b)(5).

(e) *Revised design plan.* The owner or operator who has already been required to submit a design plan under paragraph (d) of this section, or under subpart WWW of this part; 40 CFR part 62, subpart GGG; or a state plan implementing subpart Cc of this part, must submit a revised design plan to the Administrator for approval as follows:

(1) At least 90 days before expanding operations to an area not covered by the previously approved design plan.

(2) Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Administrator according to paragraph (d) of this section.

(f) *Closure report.* Each owner or operator of a controlled landfill must submit a closure report to the Administrator within 30 days of ceasing waste acceptance. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under §60.7(a)(4).

(g) *Equipment removal report.* Each owner or operator of a controlled landfill must submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.

(1) The equipment removal report must contain the following items:

(i) A copy of the closure report submitted in accordance with paragraph (f) of this section; and

(ii) A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, unless the report of the results of the performance test has been submitted to the EPA via the EPA's CDX, or information that demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance

test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX; and

(iii) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 34 megagrams or greater of NMOC per year, unless the NMOC emission rate reports have been submitted to the EPA via the EPA's CDX. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports; or

(iv) For the closed landfill subcategory, dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year, unless the NMOC emission rate reports have been submitted to the EPA via the EPA's CDX. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports.

(2) The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in §60.33f(f) have been met.

(h) *Annual report.* The owner or operator of a landfill seeking to comply with §60.33f(e)(2) using an active collection system designed in accordance with §60.33f(b) must submit to the Administrator, following the procedures specified in paragraph (j)(2) of this section, an annual report of the recorded information in paragraphs (h)(1) through (7) of this section. The initial annual report must be submitted within 180 days of installation and startup of the collection and control system. The initial annual report must include the initial performance test report required under §60.8, as applicable, unless the report of the results of the performance test has been submitted to the EPA via the EPA's CDX. In the initial annual report, the process unit(s) tested, the pollutant(s) tested and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. The initial performance test report must be submitted, following the procedure specified in paragraph (j)(1) of this section, no later than the date that the initial annual report is submitted. For enclosed combustion devices and flares, reportable exceedances are defined under §60.39f(c)(1). If complying with the operational provisions of §§63.1958, 63.1960, and 63.1961 of this chapter, as allowed at §§60.34f, 60.36f, and 60.37f, the owner or operator must follow the semi-annual reporting requirements in §63.1981(h) of this chapter in lieu of this paragraph.

(1) Value and length of time for exceedance of applicable parameters monitored under §60.37f(a)(1), (b), (c), (d), and (g).

(2) Description and duration of all periods when the gas stream was diverted from the control device or treatment system through a bypass line or the indication of bypass flow as specified under §60.37f.

(3) Description and duration of all periods when the control device or treatment system was not operating and length of time the control device or treatment system was not operating.

(4) All periods when the collection system was not operating

(4) All periods when the collection system was not operating.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in §60.34f(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. For location, you must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(6) The date of installation and the location of each well or collection system expansion added pursuant to §60.36f(a)(3), (a)(5), (b), and (c)(4).

(7) For any corrective action analysis for which corrective actions are required in §60.36f(a)(3) or (5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or elevated temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

(i) *Initial performance test report.* Each owner or operator seeking to comply with §60.33f(c) must include the following information with the initial performance test report required under §60.8:

(1) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

(2) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

(3) The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

(4) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

(5) The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

(6) The provisions for the control of off-site migration.

(j) *Electronic reporting.* The owner or operator must submit reports electronically according to paragraphs (j)(1) and (2) of this section.

(1) Within 60 days after the date of completing each performance test (as defined in §60.8), the owner or operator must submit the results of each performance test according to the following procedures:

(i) For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT Web site (*https://www3.epa.gov/ttn/chief/ert/ert____info.html*) at the time of the test, you must submit

the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI). CEDRI can be accessed through the EPA's Central Data Exchange (CDX) (*https://cdx.epa.gov/*). Performance test data must be submitted in a file format generated through the use of the EPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT Web site, once the XML schema is available. If you claim that some of the performance test information being submitted is confidential business information (CBI), you must submit a complete file generated through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT Web site, including information claimed to be CBI, on a compact disc, flash drive or other commonly used electronic storage media to the EPA. The electronic media must be clearly marked as CBI and mailed to U.S. EPA/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same ERT or alternate file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described earlier in this paragraph (j)(1)(i).

(ii) For data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT Web site at the time of the test, you must submit the results of the performance test to the Administrator at the appropriate address listed in §60.4.

(2) Each owner or operator required to submit reports following the procedure specified in this paragraph must submit reports to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX.) The owner or operator must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI Web site (*https://www3.epa.gov/ttn/chief/cedri/index.html*). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the owner or operator must submit the report to the Administrator at the appropriate address listed in §60.4. Once the form has been available in CEDRI for 90 calendar days, the owner or operator must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted.

(k) *Corrective action and the corresponding timeline.* The owner or operator must submit according to paragraphs (k)(1) and (2) of this section. If complying with the operational provisions of §§63.1958, 63.1960, and 63.1961 of this chapter, as allowed at §§60.34f, 60.36f, and 60.37f, the owner or operator must follow the corrective action and the corresponding timeline reporting requirements in §63.1981(j) of this chapter in lieu of paragraphs (k)(1) and (2) of this section.

(1) For corrective action that is required according to §60.36f(a)(3)(iii) or (a)(5)(iii) and is expected to take longer than 120 days after the initial exceedance to complete, you must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above. The Administrator must approve the plan for corrective action and the corresponding timeline.

(2) For corrective action that is required according to §60.36f(a)(3)(iii) or (a)(5)(iii) and is not completed within 60 days after the initial exceedance, you must submit a notification to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance.

(l) *Liquids addition.* The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters that has employed leachate recirculation or added liquids based on a Research, Development, and Demonstration permit (issued through Resource Conservation and Recovery Act, subtitle D, part 258) within the last 10 years must submit to the Administrator, annually, following the procedure specified in paragraph (j)(2) of this section, the following information:

(1) Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates).

(2) Total volume of all other liquids added (gallons per year) and the reported basis of those estimates (records or engineering estimates).

(3) Surface area (acres) over which the leachate is recirculated (or otherwise applied).

(4) Surface area (acres) over which any other liquids are applied.

(5) The total waste disposed (megagrams) in the areas with recirculated leachate and/or added liquids based on on-site records to the extent data are available, or engineering estimates and the reported basis of those estimates.

(6) The annual waste acceptance rates (megagrams per year) in the areas with recirculated leachate and/or added liquids, based on on-site records to the extent data are available, or engineering estimates.

(7) The initial report must contain items in paragraph (l)(1) through (6) of this section per year for the most recent 365 days as well as for each of the previous 10 years, to the extent historical data are available in on-site records, and the report must be submitted no later than:

(i) September 27, 2017, for landfills that commenced construction, modification, or reconstruction after July 17, 2014 but before August 29, 2016; or

(ii) 365 days after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction after August 29, 2016.

(8) Subsequent annual reports must contain items in paragraph (l)(1) through (6) of this section for the 365-day period following the 365-day period included in the previous annual report, and the report must be submitted no later than 365 days after the date the previous report was submitted.

(9) Landfills in the closed landfill subcategory are exempt from reporting requirements contained in paragraphs (l)(1) through (7) of this section.

(10) Landfills may cease annual reporting of items in paragraphs (l)(1) through (6) of this section once they have submitted the closure report in §60.38f(f).

(m) *Tier 4 notification.* (1) The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must provide a notification of the date(s) upon which it intends to demonstrate site-specific surface methane emissions are below 500 parts per million methane, based on the Tier 4 provisions

of §60.35f(a)(6). The landfill must also include a description of the wind barrier to be used during the SEM in the notification. Notification must be postmarked not less than 30 days prior to such date.

(2) If there is a delay to the scheduled Tier 4 SEM date due to weather conditions, including not meeting the wind requirements in §60.35f (a)(6)(iii)(A), the owner or operator of a landfill shall notify the Administrator by email or telephone no later than 48 hours before any known delay in the original test date, and arrange an updated date with the Administrator by mutual agreement.

(n) Each owner or operator that chooses to comply with the provisions in §§63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§60.34f, 60.36f, and 60.37f, must submit the 24-hour high temperature report according to §63.1981(k) of this chapter.

[81 FR 59313, Aug. 29, 2016, as amended at 85 FR 17260, Mar. 26, 2020]

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§60.39f Recordkeeping guidelines.

For approval, a state plan must include the recordkeeping provisions in this section.

(a) Except as provided in §60.38f(d)(2), each owner or operator of an MSW landfill subject to the provisions of §60.33f(e) must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered §60.33f(e), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Except as provided in §60.38f(d)(2), each owner or operator of a controlled landfill must keep up-to-date, readily accessible records for the life of the control system equipment of the data listed in paragraphs (b)(1) through (5) of this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal.

(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.33f(b):

(i) The maximum expected gas generation flow rate as calculated in §60.36f(a)(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator.

(ii) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in §60.40f(a)(1).

(2) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.33f(c) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts:

(i) The average temperature measured at least every 15 minutes and averaged over the same time period of the performance test.

same time period of the performance test.

(ii) The percent reduction of NMOC determined as specified in §60.33f(c)(2) achieved by the control device.

(3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.33f(c)(2)(i) through use of a boiler or process heater of any size: A description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.33f(c)(1) through use of a non-enclosed flare, the flare type (*i.e.*, steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in §60.18; and continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

(5) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.33f(c)(3) through use of a landfill gas treatment system:

(i) *Bypass records.* Records of the flow of landfill gas to, and bypass of, the treatment system.

(ii) *Site-specific treatment monitoring plan,* to include:

(A) Monitoring records of parameters that are identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas.

(B) Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas.

(C) Documentation of the monitoring methods and ranges, along with justification for their use.

(D) Identify who is responsible (by job title) for data collection.

(E) Processes and methods used to collect the necessary data.

(F) Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems.

(c) Except as provided in §60.38f(d)(2), each owner or operator of a controlled landfill subject to the provisions of this subpart must keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in §60.37f as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

(1) The following constitute exceedances that must be recorded and reported under §60.38f:

(i) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3-hour periods of operation during which the average temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature during the most recent performance test at which compliance with §60.33f(c) was determined.

(ii) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (b)(3) of this section.

(2) Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible continuous records of the indication of flow to the control system and the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under §60.37f.

(3) Each owner or operator subject to the provisions of this subpart who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with §60.33f(c) must keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other state, local, tribal, or federal regulatory requirements.)

(4) Each owner or operator seeking to comply with the provisions of this subpart by use of a non-enclosed flare must keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under §60.37f(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

(5) Each owner or operator of a landfill seeking to comply with §60.33f(e) using an active collection system designed in accordance with §60.33f(b) must keep records of periods when the collection system or control device is not operating.

(d) Except as provided in §60.38f(d)(2), each owner or operator subject to the provisions of this subpart must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label on each collector that matches the labeling on the plot map.

(1) Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under §60.36f(b).

(2) Each owner or operator subject to the provisions of this subpart must keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in §60.40f(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in §60.40f(a)(3)(ii).

(e) Except as provided in §60.38f(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of the items in paragraphs (e)(1) through (5) of this section. Each owner or operator that chooses to

comply with the provisions in §§63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§60.34f, 60.36f, and 60.37f, must keep the records in paragraph (e)(6) of this section and must keep records according to §63.1983(e)(1) through (5) of this chapter in lieu of paragraphs (e)(1) through (5) of this section.

(1) All collection and control system exceedances of the operational standards in §60.34f, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

(2) Each owner or operator subject to the provisions of this subpart must also keep records of each wellhead temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above, each wellhead nitrogen level at or above 20 percent, and each wellhead oxygen level at or above 5 percent.

(3) For any root cause analysis for which corrective actions are required in §60.36f(a)(3) or (5), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed.

(4) For any root cause analysis for which corrective actions are required in §60.36f(a)(3)(ii) or (a)(5)(ii), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

(5) For any root cause analysis for which corrective actions are required in §60.36f(a)(3)(iii) or (a)(5)(iii), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the regulatory agency.

(6) Each owner or operator that chooses to comply with the provisions in §§63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§60.34f, 60.36f, and 60.37f, must keep records of the date upon which the owner or operator started complying with the provisions in §§63.1958, 63.1960, and 63.1961.

(f) Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity", must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(g) Landfill owners or operators seeking to demonstrate that site-specific surface methane emissions are below 500 parts per million by conducting surface emission monitoring under the Tier 4 procedures specified in §60.35f(a)(6) must keep for at least 5 years up-to-date, readily accessible records of all surface emissions monitoring and information related to monitoring instrument calibrations conducted according to sections 8 and 10 of Method 21 of appendix A of this part, including all of the following items:

and 18 of Method 21 of appendix A-7 of this part, including all of the following items:

(1) Calibration records:

(i) Date of calibration and initials of operator performing the calibration.

(ii) Calibration gas cylinder identification, certification date, and certified concentration.

(iii) Instrument scale(s) used.

(iv) A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value.

(v) If an owner or operator makes their own calibration gas, a description of the procedure used.

(2) Digital photographs of the instrument setup. The photographs must be time and date-stamped and taken at the first sampling location prior to sampling and at the last sampling location after sampling at the end of each sampling day, for the duration of the Tier 4 monitoring demonstration.

(3) Timestamp of each surface scan reading:

(i) Timestamp should be detailed to the nearest second, based on when the sample collection begins.

(ii) A log for the length of time each sample was taken using a stopwatch (*e.g.,* the time the probe was held over the area).

(4) Location of each surface scan reading. The owner or operator must determine the coordinates using an instrument with an accuracy of at least 4 meters. Coordinates must be in decimal degrees with at least five decimal places.

(5) Monitored methane concentration (parts per million) of each reading.

(6) Background methane concentration (parts per million) after each instrument calibration test.

(7) Adjusted methane concentration using most recent calibration (parts per million).

(8) For readings taken at each surface penetration, the unique identification location label matching the label specified in paragraph (d) of this section.

(9) Records of the operating hours of the gas collection system for each destruction device.

(h) Except as provided in §60.38f(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of all collection and control system monitoring data for parameters measured in §60.37f(a)(1), (2), and (3).

(i) Any records required to be maintained by this subpart that are submitted electronically via the EPA's CDX may be maintained in electronic format.

(j) For each owner or operator reporting leachate or other liquids addition under §60.38f(l), keep records of any engineering calculations or company records used to estimate the quantities of leachate or liquids added, the surface areas for which the leachate or liquids were applied, and the estimates of annual waste acceptance or total waste in place in the areas where leachate or liquids were applied.

[81 FR 59313, Aug. 29, 2016, as amended at 85 FR 17260, Mar. 26, 2020]

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§60.40f Specifications for active collection systems.

For approval, a state plan must include the specifications for active collection systems in this section.

(a) Each owner or operator seeking to comply with §60.33f(b) must site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Administrator.

(1) The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in paragraph (a)(1) of this section must control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (ii) of this section.

(i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under §60.39f(d). The documentation must provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and must be provided to the Administrator upon request.

(ii) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

(A) The NMOC emissions from each section proposed for exclusion must be computed using Equation 7:

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Where:

Q_i = NMOC emission rate from the i^{th} section, megagrams per year.

k = Methane generation rate constant, $year^{-1}$.

L_o = Methane generation potential, cubic meters per megagram solid waste.

M_i = Mass of the degradable solid waste in the i^{th} section, megagram.

t_i = Age of the solid waste in the i^{th} section, years.

C_{NMOC} = Concentration of NMOC, parts per million by volume.

3.6×10^{-9} = Conversion factor.

(B) If the owner or operator is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (*e.g.,* separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in §60.35f or Equation 7 in paragraph (a)(3)(ii)(A) of this section.

(iii) The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_o, and C_{NMOC} provided in §60.35f or the alternative values from §60.35f must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in paragraph (a)(3)(i) of this section.

(b) Each owner or operator seeking to comply with §60.33f(b) must construct the gas collection devices using the following equipment or procedures:

(1) The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: Convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

(2) Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any

gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices must be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(c) Each owner or operator seeking to comply with §60.33f(c) must convey the landfill gas to a control system in compliance with §60.33f(c) through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

(1) For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exist, the procedures in paragraph (c)(2) of this section must be used.

(2) For new collection systems, the maximum flow rate must be in accordance with §60.36f(a)(1).

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§60.41f Definitions.

Terms used but not defined in this subpart have the meaning given them in the Clean Air Act and in subparts A and B of this part.

Active collection system means a gas collection system that uses gas mover equipment.

Active landfill means a landfill in which solid waste is being placed or a landfill that is planned to accept waste in the future.

Administrator means the Administrator of the U.S. Environmental Protection Agency or his/her authorized representative or the Administrator of a state air pollution control agency.

Closed area means a separately lined area of an MSW landfill in which solid waste is no longer being placed. If additional solid waste is placed in that area of the landfill, that landfill area is no longer closed. The area must be separately lined to ensure that the landfill gas does not migrate between open and closed areas.

Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under §60.7(a)(4). Once a notification of modification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.

Closed landfill subcategory means a closed landfill that has submitted a closure report as specified in §60.38f(f) on or before September 27, 2017.

Closure means that point in time when a landfill becomes a closed landfill.

Commercial solid waste means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

Controlled landfill means any landfill at which collection and control systems are required under this subpart as a result of the NMOC emission rate. The landfill is considered controlled at the time a collection and control system design plan is prepared in compliance with §60.33f(e)(2).

Corrective action analysis means a description of all reasonable interim and long-term measures, if any, that are available, and an explanation of why the selected corrective action(s) is/are the best alternative(s), including, but not limited to, considerations of cost effectiveness, technical feasibility, safety, and secondary impacts.

Design capacity means the maximum amount of solid waste a landfill can accept, as indicated in terms of volume or mass in the most recent permit issued by the state, local, or tribal agency responsible for regulating the landfill, plus any in-place waste not accounted for in the most recent permit. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, the calculation must include a site-specific density, which must be recalculated annually.

Disposal facility means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of solid waste.

Emission rate cutoff means the threshold annual emission rate to which a landfill compares its estimated emission rate to determine if control under the regulation is required.

Enclosed combustor means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

Flare means an open combustor without enclosure or shroud.

Gas mover equipment means the equipment (*i.e.,* fan, blower, compressor) used to transport landfill gas through the header system.

Gust means the highest instantaneous wind speed that occurs over a 3-second running average.

Household waste means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). Household waste does not include fully segregated yard waste. Segregated yard waste means vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities. Household waste does not include construction, renovation, or demolition wastes, even if originating from a household.

Industrial solid waste means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under Subtitle C of the Resource

Conservation and Recovery Act, parts 264 and 265 of this chapter. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

Interior well means any well or similar collection component located inside the perimeter of the landfill waste. A perimeter well located outside the landfilled waste is not an interior well.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile as those terms are defined under §257.2 of this title.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing MSW landfill. A lateral expansion is not a modification unless it results in an increase in the design capacity of the landfill.

Leachate recirculation means the practice of taking the leachate collected from the landfill and reapplying it to the landfill by any of one of a variety of methods, including pre-wetting of the waste, direct discharge into the working face, spraying, infiltration ponds, vertical injection wells, horizontal gravity distribution systems, and pressure distribution systems.

Modification means an increase in the permitted volume design capacity of the landfill by either lateral or vertical expansion based on its permitted design capacity as of July 17, 2014. Modification does not occur until the owner or operator commences construction on the lateral or vertical expansion.

Municipal solid waste landfill or *MSW landfill* means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. An MSW landfill may also receive other types of Resource Conservation and Recovery Act (RCRA) Subtitle D wastes (§257.2 of this title) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.

Municipal solid waste landfill emissions or *MSW landfill emissions* means gas generated by the decomposition of organic waste deposited in an MSW landfill or derived from the evolution of organic compounds in the waste.

NMOC means nonmethane organic compounds, as measured according to the provisions of §60.35f.

Nondegradable waste means any waste that does not decompose through chemical breakdown or microbiological activity. Examples are, but are not limited to, concrete, municipal waste combustor ash, and metals.

Passive collection system means a gas collection system that solely uses positive pressure within the landfill to move the gas rather than using gas mover equipment.

Protectorate means American Samoa, the Commonwealth of Puerto Rico, the District of Columbia, Guam, the Northern Mariana Islands, and the Virgin Islands.

Root cause analysis means an assessment conducted through a process of investigation to determine the primary cause, and any other contributing causes, of positive pressure at a wellhead.

Sludge means the term sludge as defined in 40 CFR 258.2.

Solid waste means the term solid waste as defined in 40 CFR 258.2.

State means any of the 50 United States and the protectorates of the United States.

State plan means a plan submitted pursuant to section 111(d) of the Clean Air Act and subpart B of this part that implements and enforces this subpart.

Sufficient density means any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this part.

Sufficient extraction rate means a rate sufficient to maintain a negative pressure at all wellheads in the collection system without causing air infiltration, including any wellheads connected to the system as a result of expansion or excess surface emissions, for the life of the blower.

Treated landfill gas means landfill gas processed in a treatment system as defined in this subpart.

Treatment system means a system that filters, de-waters, and compresses landfill gas for sale or beneficial use.

Untreated landfill gas means any landfill gas that is not treated landfill gas.

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 63

[EPA–HQ–OAR–2002–0047; FRL–10006–05–OAR]

RIN 2060–AU18

National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills Residual Risk and Technology Review

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action finalizes the residual risk and technology review (RTR) conducted for the Municipal Solid Waste (MSW) Landfills source category regulated under national emission standards for hazardous air pollutants (NESHAP). In addition, we are taking final action to correct and clarify regulatory provisions related to emissions during periods of startup, shutdown, and malfunction (SSM); revise wellhead operational standards and corrective action to improve effectiveness and provide compliance flexibility; reorganize rule text to incorporate provisions from the new source performance standards (NSPS) within this subpart; and add requirements for electronic reporting of performance test results. The EPA is also finalizing minor changes to the MSW Landfills NSPS and Emission Guidelines (EG) and Compliance Times for MSW Landfills. Specifically, the EPA is finalizing provisions to the most recent MSW Landfills NSPS and EG that would allow affected sources to demonstrate compliance with landfill gas control, operating, monitoring, recordkeeping, and reporting requirements by following the corresponding requirements in the MSW Landfills NESHAP. These final amendments will result in improved compliance and implementation of the rule.

DATES: This final rule is effective on March 26, 2020. The incorporation by reference (IBR) of certain publications listed in the rule is approved by the Director of the Federal Register as of March 26, 2020.

ADDRESSES: The U.S. Environmental Protection Agency (EPA) has established a docket for this action under Docket ID No. EPA–HQ–OAR–2002–0047. All documents in the docket are listed on the *https://www.regulations.gov/* website. Although listed, some information is not publicly available, *e.g.,* Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through *https://www.regulations.gov/,* or in hard copy at the EPA Docket Center, WJC West Building, Room Number 3334, 1301 Constitution Ave. NW, Washington, DC. The Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m. Eastern Standard Time (EST), Monday through Friday. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the EPA Docket Center is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: For questions about this final action, contact Andrew Sheppard, Natural Resources Group, Sector Policies and Programs Division (E143–03), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541–4161; fax number: (919) 541–0516; and email address: *Sheppard.Andrew@epa.gov.* For specific information regarding the risk modeling methodology, contact James Hirtz, Health and Environmental Impacts Division (C539–02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541–0881; fax number: (919) 541–0840; and email address: *Hirtz.James@epa.gov.* For information about the applicability of the NESHAP to a particular entity, contact Maria Malave, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, WJC South Building (Mail Code 2227A), 1200 Pennsylvania Ave. NW, Washington DC 20460; telephone number: (202) 564–7027; and email address: *Malave.Maria@epa.gov.*

SUPPLEMENTARY INFORMATION:

Preamble acronyms and abbreviations. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

CAA Clean Air Act
CBI Confidential Business Information
CDX Central Data Exchange
CEDRI Compliance and Emissions Data Reporting Interface
CFR Code of Federal Regulations
CO carbon monoxide
EG emission guidelines
ERT Electronic Reporting Tool
FEMA Federal Emergency Management Agency
GCCS gas collection and control system
HAP hazardous air pollutant(s)
HOV higher operating value
HQ hazard quotient
IBR incorporation by reference km kilometer
LFG landfill gas
MACT maximum achievable control technology
Mg/yr megagrams per year
MSW municipal solid waste
NAICS North American Industry Classification System
NARA National Archives and Records Administration
NESHAP national emission standards for hazardous air pollutants
NMOC non-methane organic compounds
NSPS new source performance standards
NTTAA National Technology Transfer and Advancement Act
OMB Office of Management and Budget
ppmv parts per million by volume
PRA Paperwork Reduction Act
REL reference exposure level
RFA Regulatory Flexibility Act
RTR residual risk and technology review
SOE subsurface oxidation event
SSM startup, shutdown, and malfunction
TOSHI target organ-specific hazard index
tpy tons per year
UMRA Unfunded Mandates Reform Act

Background information. On July 29, 2019, the EPA proposed revisions to the MSW Landfills NESHAP based on our RTR. In this action, we are finalizing decisions and revisions for the rule. We summarize some of the more significant comments we timely received regarding the proposed rule and provide our responses in this preamble. A summary of all other public comments on the proposal and the EPA's responses to those comments is available in the *Summary of Public Comments and the EPA's Responses for the Proposed Risk and Technology Review and Amendments for the Municipal Solid Waste Landfills NESHAP,* available in Docket ID No. EPA–HQ–OAR–2002–0047. A "track changes" version of the regulatory language that incorporates the changes in this action is available in the docket.

Organization of this document. The information in this preamble is organized as follows:

I. General Information
A. Does this action apply to me?
B. Where can I get a copy of this document and other related information?
C. Judicial Review and Administrative Reconsideration
II. Background
A. What is the statutory authority for this action?
B. What is the MSW Landfills source category and how does the NESHAP regulate HAP emissions from the source category?

C. What changes did we propose for the MSW Landfills source category in our July 29, 2019, RTR proposal?
III. What is included in this final rule?
A. What are the final rule amendments based on the risk review for the MSW Landfills source category?
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IV. What is the rationale for our final decisions and amendments for the MSW Landfills source category?
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C. SSM for the MSW Landfills Source Category
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A. What are the affected facilities?
B. What are the air quality impacts?
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VI. Incorporation by Reference
VII. Statutory and Executive Order Reviews
A. Executive Orders 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review
B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs
C. Paperwork Reduction Act (PRA)
D. Regulatory Flexibility Act (RFA)
E. Unfunded Mandates Reform Act (UMRA)
F. Executive Order 13132: Federalism
G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks
I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use
J. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51
K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
L. Congressional Review Act (CRA)

I. General Information

A. Does this action apply to me?

Regulated entities. Categories and entities potentially regulated by this action are shown in Table 1 of this preamble.

TABLE 1—NESHAP AND INDUSTRIAL SOURCE CATEGORIES AFFECTED BY THIS FINAL ACTION

NESHAP and source category	NAICS[1] code
Municipal Solid Waste Landfills	562212
Air and Water Resource and Solid Waste Management	924110
State, Local, and Tribal Government Agencies	924110

[1] North American Industry Classification System.

Table 1 of this preamble is not intended to be exhaustive, but rather to provide a guide for readers regarding entities likely to be affected by the final action for the source category listed. To determine whether your facility is affected, you should examine the applicability criteria in the appropriate NESHAP. If you have any questions regarding the applicability of any aspect of this NESHAP, please contact the appropriate person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section of this preamble.

B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this final action will also be available on the internet. Following signature by the EPA Administrator, the EPA will post a copy of this final action at *https://www.epa.gov/stationary-sources-air-pollution/municipal-solid-waste-landfills-national-emission-standards.* Following publication in the **Federal Register**, the EPA will post the **Federal Register** version and key technical documents at this same website.

Additional information is available on the RTR website at *https://www.epa.gov/stationary-sources-air-pollution/risk-and-technology-review-national-emissions-standards-hazardous.* This information includes an overview of the RTR program and links to project websites for the RTR source categories.

C. Judicial Review and Administrative Reconsideration

Under Clean Air Act (CAA) section 307(b)(1), judicial review of this final action is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit (the court) by May 25, 2020. Under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce the requirements.

Section 307(d)(7)(B) of the CAA further provides that only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review. This section also provides a mechanism for the EPA to reconsider the rule if the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within the period for public comment or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule. Any person seeking to make such a demonstration should submit a Petition for Reconsideration to the Office of the Administrator, U.S. EPA, Room 3000, WJC South Building, 1200 Pennsylvania Ave. NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), U.S. EPA, 1200 Pennsylvania Ave. NW, Washington, DC 20460.

II. Background

A. What is the statutory authority for this action?

Section 112 of the CAA establishes a two-stage regulatory process to address emissions of hazardous air pollutants (HAP) from stationary sources. In the first stage, we must identify categories of sources emitting one or more of the HAP listed in CAA section 112(b) and then promulgate technology-based NESHAP for those sources. ''Major sources'' are those that emit, or have the potential to emit, any single HAP at a rate of 10 tons per year (tpy) or more, or 25 tpy or more of any combination of HAP. For major sources, these standards are commonly referred to as maximum achievable control technology (MACT) standards and must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts). In developing MACT standards, CAA section 112(d)(2) directs the EPA to consider the application of measures, processes, methods, systems, or techniques, including, but not limited to, those that reduce the volume of or eliminate HAP emissions through process changes, substitution of

materials, or other modifications; enclose systems or processes to eliminate emissions; collect, capture, or treat HAP when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards; or any combination of the above.

For these MACT standards, the statute specifies certain minimum stringency requirements, which are referred to as MACT floor requirements, and which may not be based on cost considerations. See CAA section 112(d)(3). For new sources, the MACT floor cannot be less stringent than the emission control achieved in practice by the best-controlled similar source. The MACT standards for existing sources can be less stringent than floors for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing five sources for categories or subcategories with fewer than 30 sources). In developing MACT standards, we must also consider control options that are more stringent than the floor under CAA section 112(d)(2). We may establish standards more stringent than the floor, based on the consideration of the cost of achieving the emissions reductions, any non-air quality health and environmental impacts, and energy requirements.

In the second stage of the regulatory process, the CAA requires the EPA to undertake two different analyses, which we refer to as the technology review and the residual risk review. Under the technology review, we must review the technology-based standards and revise them "as necessary (taking into account developments in practices, processes, and control technologies)" no less frequently than every 8 years, pursuant to CAA section 112(d)(6). Under the residual risk review, we must evaluate the risk to public health remaining after application of the technology-based standards and revise the standards, if necessary, to provide an ample margin of safety to protect public health or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. The residual risk review is required within 8 years after promulgation of the technology-based standards, pursuant to CAA section 112(f). In conducting the residual risk review, if the EPA determines that the current standards provide an ample margin of safety to protect public health, it is not necessary to revise the MACT standards pursuant to CAA section 112(f).[1] For more information on the statutory authority for this rule, see 84 FR 36670 (July 29, 2019).

B. What is the MSW Landfills source category and how does the NESHAP regulate HAP emissions from the source category?

The EPA promulgated the MSW Landfills NESHAP on January 16, 2003 (68 FR 2227). The standards are codified at 40 CFR part 63, subpart AAAA. As promulgated in 2003 and further amended on April 20, 2006 (71 FR 20462), the NESHAP regulates HAP emissions from MSW landfills that are either major or area sources.

The NESHAP applies to MSW landfills that have accepted waste since November 8, 1987, or have additional capacity for waste deposition and are major sources, are collocated with major sources, or are area source landfills with a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3) and have estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) of non-methane organic compounds (NMOC). The NESHAP also applies to MSW landfills that have accepted waste since November 8, 1987, or have additional capacity for waste deposition and include a bioreactor and are major sources, are collocated with major sources, or are area source landfills with a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3 that were not permanently closed as of January 16, 2003.

The majority of HAP emissions at MSW landfills come from the continuous biodegradation of the MSW in the landfill and the formation of landfill gas (LFG) emissions. LFG emissions contain methane, carbon dioxide, and more than 100 different NMOC. The HAP emitted by MSW landfills include, but are not limited to, vinyl chloride, ethyl benzene, toluene, and benzene (61 FR 9906, March 12, 1996). The owner or operator of a landfill may control the gas by routing it to a non-enclosed flare, an enclosed combustion device, or a treatment system that processes the collected gas for subsequent sale or beneficial use.

The NESHAP regulates HAP emissions by requiring MSW landfills that exceed the size and emission thresholds to install and operate a landfill gas collection and control system (GCCS). The NESHAP achieves emission reductions through a well-designed and well-operated landfill GCCS with a control device (*i.e.,* non-enclosed flare, enclosed combustion device, or treatment system) capable of reducing NMOC by 98 percent by weight. NMOC is a surrogate for LFG. The GCCS must be installed within 30 months after an MSW landfill that equals or exceeds the design capacity threshold (2.5 million Mg and 2.5 million m^3) reaches or exceeds an NMOC emissions level of 50 Mg/yr. The landfill must expand the system to collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for 5 years or more if active; or 2 years or more if closed or at final grade. The collection and control system may be capped or removed when the landfill is closed, the system has operated 15 years, and NMOC emissions are below 50 Mg/yr.

In addition, the NESHAP requires timely control of bioreactors. A bioreactor is an MSW landfill or portion of the landfill where any liquid other than leachate is added to the waste mass to reach a minimum average moisture content of at least 40 percent by weight to accelerate or enhance the biodegradation of the waste. New bioreactors must install the GCCS in the bioreactor prior to initiating liquids addition, regardless of whether the landfill emissions rate equals or exceeds the estimated uncontrolled emissions rate; existing bioreactors must install the GCCS before initiating liquids addition and must begin operating the GCCS within 180 days after initiating liquids addition or within 180 days after achieving a moisture content of 40 percent by weight, whichever is later.

Based on modeled emission estimates in the 2016 NSPS/EG datasets, and supplementary searching of the Greenhouse Gas Reporting Program data (located in 40 CFR part 98, subpart HH), the EPA Landfill Methane Outreach Program, Landfill and LFG Energy Project Database, and selected permits, as of 2014, there were between 664 and 709 MSW landfills subject to the LFG collection and control requirements of the NESHAP. The exact list of facilities subject to the NESHAP is unknown because many landfills collect site-specific data for NMOC concentrations using the Tier 2 provisions allowed under the regulation to compute the NMOC annual emission rates. A list of facilities expected to be subject to the NESHAP based on modeled emissions and a default NMOC concentration of 595 parts per million by volume (ppmv)

[1] The court has affirmed this approach of implementing CAA section 112(f)(2)(A): *NRDC* v. *EPA,* 529 F.3d 1077, 1083 (D.C. Cir. 2008) ("If EPA determines that the existing technology-based standards provide an 'ample margin of safety,' then the Agency is free to readopt those standards during the residual risk rulemaking.").

is available in the RTR dataset.[2] It is estimated that these landfills emit between 2,242 and 4,586 Mg/yr of HAP, after considering current control requirements. Most of these emissions are fugitive emissions.

C. What changes did we propose for the MSW Landfills source category in our July 29, 2019, RTR proposal?

On July 29, 2019, the EPA published a proposed rule in the **Federal Register** for the MSW Landfills NESHAP (40 CFR part 63, subpart AAAA), that took into consideration the RTR analyses (84 FR 36670). Based on the risk analysis, we proposed to find that the risks from the MSW Landfills source category are acceptable. The risk analysis estimated that the cancer risk to the individual most exposed is below 10-in-1 million from both actual and allowable emissions (estimated cancer incidence is 0.04 excess cancer cases per year, or 1 case every 20 years). The risk analysis also estimated a maximum chronic noncancer target organ-specific hazard index (TOSHI) value below 1.

Our risk analysis indicated the risks from this source category are low for both cancer and noncancer health effects, and, therefore, we proposed that any risk reductions to further control fugitive landfill emissions would result in minimal health benefits (84 FR 36686, July 29, 2019). We also proposed that the current NESHAP provides an ample margin of safety to protect public health (84 FR 36686, July 29, 2019). In addition, pursuant to the technology review for the MSW Landfills source category, we proposed that no revisions to the current standards are necessary because, after analyzing the available options, we determined that each is either not technically feasible or the cost is not justified for the level of emission reduction achievable (84 FR 36689, July 29, 2019).

In addition to the proposed decisions resulting from the RTR described above, we proposed revisions to the NESHAP to promote consistency between MSW landfills regulations under CAA sections 111 and 112. We also proposed changes to the wellhead temperature operating standards and associated monitoring, corrective action, and reporting and recordkeeping requirements for temperature. We proposed to adjust provisions for GCCS removal to provide additional flexibility for landfill owners and operators. In addition, we proposed updates to SSM and electronic reporting requirements.

III. What is included in this final rule?

This action finalizes the EPA's determinations pursuant to the RTR provisions of CAA section 112 for the MSW Landfills source category. This action also finalizes other changes to the MSW Landfills NESHAP (40 CFR part 63, subpart AAAA), including changes to promote consistency between MSW landfills regulations under CAA sections 111 and 112 and changes to the wellhead temperature operating standards, including associated monitoring, corrective action, and reporting and recordkeeping requirements for temperature. This final rule also provides additional flexibility for landfill owners and operators by adjusting the provisions for GCCS removal. In addition, SSM and electronic reporting requirements have been updated. This action also reflects several changes to the July 2019 RTR proposal in consideration of comments received during the public comment period described in section IV of this preamble.

A. What are the final rule amendments based on the risk review for the MSW Landfills source category?

This section introduces the final amendments to the NESHAP being promulgated pursuant to CAA section 112(f). The risks from this source category are low for both cancer and noncancer health effects and we proposed that the risks are acceptable. We received only comments in support of the proposed determination. We are finalizing our determination that risks from this source category are acceptable and that the standards provide an ample margin of safety to protect public health and prevent an adverse environmental effect. Therefore, we are not finalizing any revisions to the NESHAP based on our analyses conducted under CAA section 112(f). Section IV.A.3 of this preamble provides a summary of key comments we received regarding risk review and our responses.

B. What are the final rule amendments based on the technology review for the MSW Landfills source category?

The technology review identified three types of developments that could lead to additional control of HAP from MSW landfills. The three potential developments are practices to reduce HAP formation within a landfill, to collect more LFG for control or treatment, and to achieve a greater level of HAP destruction in the collected LFG. As stated in the proposal preamble (84 FR 36686–36689, July 29, 2019) none of these developments were deemed to be cost effective. We are finalizing our determination, as proposed, that there are no developments in practices, processes, and control technologies that warrant revisions to the MACT standards for this source category. Therefore, we are not finalizing revisions to the MACT standards under CAA section 112(d)(6).

C. What are the final rule amendments addressing emissions during periods of SSM?

We are finalizing the proposed amendments to the MSW landfills standards to remove and revise provisions related to SSM. Within its 2008 decision in *Sierra Club* v. *EPA* 551 F.3d 1019 (D.C. Cir. 2008), the court vacated portions of two provisions in the EPA's CAA section 112 regulations governing the emissions of HAP during periods of SSM. Specifically, the court vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under section 302(k) of the CAA, emissions standards or limitations must be continuous in nature and that the SSM exemption violates the CAA's requirement that some CAA section 112 standards apply continuously. As detailed in section IV.D.8 of the proposal preamble (84 FR 36693–36697, July 29, 2019), we proposed that the NESHAP standards apply at all times (see 40 CFR 63.1930(b)), consistent with the court's decision in *Sierra Club* v. *EPA,* 551 F. 3d 1019 (D.C. Cir. 2008). The EPA is finalizing the SSM provisions as proposed with minimal changes.

We are finalizing a work practice requirement that applies whenever the GCCS is not operating. The work practice requirement appears at 40 CFR 63.1958(e) and is explained in the proposal preamble (84 FR 36695, July 29, 2019).

Further, the EPA is not setting separate standards for malfunction events. As discussed in the proposal preamble (84 FR 36694, July 29, 2019), the EPA interprets CAA section 112 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 112 standards, although the EPA has the discretion to set standards for malfunctions where feasible. Although we are not setting separate standards for malfunction events, we are setting a work practice standard for when the GCCS is not operating, which could include periods of malfunction. Whenever a landfill operator is complying with the work practice for periods when the GCCS is not operating,

[2] MSW Landfills NESHAP RTR Draft Emissions Modeling File. May 2018. Available at: *https://www.epa.gov/stationary-sources-air-pollution/municipal-solid-waste-landfills-national-emission-standards.*

it is unlikely that a malfunction would result in a violation of the standards, and no comments were submitted that would suggest otherwise. Refer to 84 FR 36694 of the proposal preamble for further discussion of the EPA's rationale for the decision not to set separate standards for malfunctions, as well as a discussion of the actions a source could take in the unlikely event that a source fails to comply with the applicable CAA section 112(d) standards as a result of a malfunction event. The administrative and judicial procedures for addressing exceedances of the standards fully recognize that violations may occur despite good faith efforts to comply and can accommodate those situations, including malfunction events.

We are also finalizing revisions to Table 1 of subpart AAAA, part 63, titled *Applicability of NESHAP General Provisions to Subpart AAAA,* as explained in more detail in the SSM section of the proposal preamble (84 FR 36693, July 29, 2019), to eliminate requirements that include rule language providing an exemption for periods of SSM. Additionally, we are finalizing our proposal to eliminate language related to SSM that treats periods of startup and shutdown the same as periods of malfunction.

The legal rationale and detailed changes for SSM periods that we are finalizing are set forth in the proposed rule (84 FR 36693, July 29, 2019). As discussed in section IV.C of this preamble, the EPA is making it clear that the semi-annual report must describe the date, time, and duration of periods during which an operating standard was exceeded, as well as when the GCCS was not operating. For more information, see the response to comments document, titled *Summary of Public Comments and the EPA's Responses for the Proposed Risk and Technology Review and Amendments for the Municipal Solid Waste Landfills NESHAP,* which is available in the docket for this action.

D. What other changes have been made to the MSW Landfills NESHAP?

This rule finalizes, as proposed, revisions to several NESHAP requirements that promote consistency among MSW landfills regulations developed under CAA sections 111 and 112. This rule also finalizes revisions to the 2016 NSPS (40 CFR part 60, subpart XXX) and EG (40 CFR part 60, subpart Cf) to promote consistency among MSW landfills regulations under the CAA. Most of these changes are the same as those proposed at 84 FR 36670 on July 29, 2019.

This rule also finalizes minor changes to other provisions of the NESHAP since proposal. Specific changes made since proposal are discussed in section IV.C of this preamble. Revisions to the NESHAP, NSPS, and EG include:

1. Reorganization of the NESHAP

We are finalizing the reorganization of the NESHAP to incorporate the major compliance provisions from the MSW Landfills NSPS program directly into the NESHAP, thus, minimizing cross-referencing to other subparts and consolidating requirements between the NSPS program and the NESHAP. With the incorporation of the major compliance provisions from the 2016 NSPS (subpart XXX), we, thus, incorporated revisions to subpart XXX that were finalized in 2016. In addition, we clarified which of the reorganized provisions apply no later than 18 months after publication of the final rule.

2. Revisions to the 1996 NSPS (40 CFR Part 60, Subparts WWW) and the 2016 NSPS and EG (40 CFR Part 60, Subparts XXX and Cf)

The EPA is clarifying that subpart Cf (once implemented via a state or federal plan) supersedes subparts WWW and Cc. The final rule revises the title and applicability of subpart WWW (at 40 CFR 60.750(a)) to distinguish the applicability dates from other landfills subparts. We clarify that after the effective date of an EPA-approved state or tribal plan implementing subpart Cf, or after the effective date of a federal plan implementing subpart Cf, owners and operators of MSW landfills must comply with the approved and effective state, tribal, or federal plan implementing subpart Cf instead of subpart WWW or the state or federal plan implementing subpart Cc.

3. NSPS and EG (Subparts XXX and Cf) Opt-In Provisions for NESHAP

We are finalizing minor edits to the 2016 NSPS and EG regulations allowing MSW landfills affected by the NSPS and EG to demonstrate compliance with the "major compliance provisions" of the NESHAP in lieu of complying with the analogous provisions in the NSPS and EG. This change allows landfills to follow one set of operational, compliance, monitoring, and reporting provisions for pressure and temperature. The differences between the landfills subparts are identified in the memorandum titled *Comparison of Municipal Solid Waste (MSW) Landfills Regulations,* which is available in the docket for this action.

4. Operational Standards for Wellheads

a. Nitrogen and Oxygen Concentrations

The EPA is finalizing the elimination of the operational standards and the corresponding corrective action for nitrogen and oxygen concentrations in the NESHAP for consistency with the 2016 NSPS and EG (subparts XXX and Cf). The EPA concluded that nitrogen and oxygen concentrations are not, by themselves, effective indicators of proper operation of the LFG collection system (see 81 FR 59346, August 29, 2016).

b. Increased Wellhead Temperature Operating Standard

The EPA is finalizing an increase of temperature standard to 145 degrees Fahrenheit (°F). The EPA is finalizing the increased wellhead temperature operating standard in the NESHAP to reduce the burden on regulated entities and delegated state, local, and tribal agencies. This change is expected to reduce the number of requests and burden associated with submitting and reviewing the requests for higher operating values (HOVs) for temperature, as well as reduce the frequency of corrective actions for exceeding the temperature limit. This change provides landfill owners and operators greater flexibility and autonomy with regards to wellhead monitoring and operations.

5. Corrective Action for Wellhead Operating Standards

The EPA is finalizing the elimination of the requirements for corrective action for nitrogen and oxygen concentrations in the NESHAP to maintain consistency with the requirements in the 2016 NSPS and EG (subparts XXX and Cf). The operating standard for nitrogen and oxygen has already been eliminated in those rules. In the NESHAP, the EPA is finalizing changes to the corrective action procedures to address positive pressure and elevated temperature to provide flexibility to owners or operators in determining the appropriate remedy, as well as the timeline for implementing the remedy. The changes to the timeline and the process for correcting for positive pressure and elevated temperature make the NESHAP requirements consistent with the current requirements of the NSPS and EG, except that the requirements for corrective action procedures being proposed in the NESHAP are tied to the exceedance of the 145 °F standard, instead of the 131 °F standard that still applies in the NSPS and EG.

6. Enhanced Monitoring, Recordkeeping, and Reporting for High Wellhead Temperatures

The EPA is finalizing the addition of enhanced wellhead monitoring and visual inspection requirements for any landfill with wellhead temperature exceeding 145 °F. Enhanced monitoring in the final rule involves weekly observations for subsurface oxidation events (SOE), as well as weekly monitoring of wellhead temperature, carbon monoxide (CO), oxygen, and methane using an analyzer that meets all quality assurance and quality control requirements for EPA Methods 10, 3C, or 18. Enhanced monitoring begins 7 days after the first reading exceeding 145 °F is recorded and continues until the measured wellhead operating temperature is 145 °F or less, or an HOV is approved. The proposed rule required a landfill to continue weekly enhanced monitoring until an HOV was approved or until the LFG temperature at the wellhead reached less than or equal to 62.8 degrees Celsius (°C) (145 °F). In the final rule, the EPA is allowing monthly CO monitoring if the wellhead has CO readings below 100 ppmv for four consecutive weeks. If the CO level exceeds 100 ppmv again, the landfill must return to weekly monitoring (see section IV.D of this preamble). Consistent with our proposal, the final rule requires enhanced monitoring data to be submitted in the semi-annual report and maintained as records. The EPA is finalizing the enhanced monitoring requirements as proposed except for the following changes:

- The EPA is removing the proposed requirement for an independent laboratory analysis of each CO measurement (see section IV.D of this preamble).
- The EPA is finalizing the proposed 24-hour electronic report for any well with highly elevated temperature (76.7 °C or 170 °F) and CO readings (40 CFR 63.1981(k)). In the final rule, the EPA reduced the CO threshold for the 24-hour electronic report from 1,500 ppmv to 1,000 ppmv (see section IV.D of this preamble). The EPA adjusted the corresponding corrective action for wells that have any wellhead temperature reading of 170 °F or above and CO reading of 1,000 ppmv. The report is not required for landfills that have an HOV approved by the Administrator.
- The EPA is finalizing the proposed downwell monitoring. However, in the final rule, downwell monitoring is conducted annually, instead of weekly. Additionally, the annual downwell monitoring is only required for wellheads that have any temperature reading of 165 °F or above (see section IV.D of this preamble).

7. Criteria for Removing GCCS

The EPA is finalizing as proposed the added flexibility to the NESHAP for determining when it is appropriate to cap, remove, or decommission a portion of the GCCS (40 CFR 63.1957(b)). The NESHAP requires three criteria to be met to remove controls: (1) The landfill is closed, (2) the calculated NMOC emission rate at the landfill is less than 50 Mg/yr on three successive test dates, and (3) the GCCS has operated for at least 15 years. In this final rule, we updated the third criterion to allow the landfill owner or operator to choose between the 15 years of GCCS operation or demonstrate that the GCCS will be unable to operate for 15 years due to declining gas flows.

8. Definition of Cover Penetration

To clarify the implementation concerns, the EPA is finalizing as proposed the phrase, ". . . at all cover penetrations" to the regulatory text of the NESHAP (40 CFR 63.1958(d)), consistent with this phrase in the 2016 NSPS and EG (subparts XXX and Cf). We are also adding a definition of cover penetration as proposed. At 40 CFR 63.1958(d), we are clarifying the surface monitoring provisions by requiring monitoring at any "cover penetrations" rather than at "any openings." And we are clarifying that the landfill owner or operator must determine the latitude and longitude coordinates "of each exceedance."

9. Electronic Reporting

The EPA is requiring owners and operators of new or modified MSW landfills to electronically submit required performance test reports, NMOC Emission Rate Reports, Bioreactor 40-percent moisture reports, and semi-annual reports through the EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI) (40 CFR 63.1981(l)). The final rule requires that performance test results be submitted using the Electronic Reporting Tool (ERT). Alternatively, MSW landfills may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website. For more details, see the Electronic Reporting section of the proposal preamble (84 FR 36693, July 29, 2019). For NMOC Emission Rate Reports, Bioreactor 40-percent moisture reports, and semi-annual reports, the final rule requires that owners and operators use the appropriate spreadsheet template/forms to submit information to CEDRI when it becomes available on the CEDRI website (*https://www.epa.gov/electronic-reporting-air-emissions/cedri*). The electronic submittal of the reports addressed in this rulemaking will increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability and transparency, will further assist in the protection of public health and the environment, will improve compliance by facilitating the ability of regulated facilities to demonstrate compliance with requirements and by facilitating the ability of delegated state, local, tribal, and territorial air agencies and the EPA to assess and determine compliance, and will ultimately reduce burden on regulated facilities, delegated air agencies, and the EPA. Electronic reporting also eliminates paper-based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors, and providing data quickly and accurately to the affected facilities, air agencies, the EPA, and the public. For a more thorough discussion of electronic reporting, see the memorandum, *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules,* available in Docket ID No. EPA–HQ–OAR–2002–0047.

10. Other Clarifications and Changes To Conform With the NSPS

In 2016, the EPA finalized its review of the 1996 NSPS (40 CFR part 60, subpart WWW) and made revisions (40 CFR part 60, subpart XXX) to simplify and streamline implementation of the rule. Note that some of the revisions were proposed as early as 2002 and 2006. With the incorporation of compliance provisions from the NSPS into the NESHAP as part of this rulemaking, we are likewise finalizing the following provisions from the NSPS:

- Allowing the use of portable gas composition analyzers to monitor the oxygen level at a wellhead (40 CFR 63.1961(a)).
- Requiring owners and operators to report more precise locational data for each surface emissions exceedance to provide a more robust and long-term record of GCCS performance and more easily locate and correct breaches in the landfill cover (40 CFR 63.1961(f)).
- Refining the criteria for updating a design plan by requiring landfill owners or operators to submit an updated design plan for approval based on the following criteria: (1) Within 90 days of

expanding operations to an area not covered by the previously approved design plan; and (2) before installing or expanding the gas collection system in a way that is not consistent to the previous design plan (40 CFR 63.1981(e)).

- Clarifying that in addition to use as a fuel for stationary combustion devices, use of treated LFG also includes other uses such as the production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process (40 CFR 63.1959(b)).
- Standardizing the terms "control system" and "collection and control system" in the NESHAP in order to use consistent terminology throughout the regulatory text.
- Exempting owners/operators of boilers and process heaters with design capacities of 44 megawatts or greater from the requirement to conduct an initial performance test since large boilers and process heaters consistently achieve the required level of control (67 FR 36478, May 23, 2002).
- Removing the term "combustion" from the requirement to monitor temperature of enclosed combustors to clarify that temperature could be monitored at another location, as long as the monitored temperature relates to proper operation of the enclosed combustor (71 FR 53276, September 8, 2006).
- Refining definitions to ensure consistent use across federal landfills regulations (40 CFR 63.1990) of the terms: Treated landfill gas, Treatment system, Modification, Household waste, and Segregated yard waste.

11. Closed Areas

The EPA is maintaining the current approach to closed areas so that landfills subject to both the 2016 NSPS and EG and the NESHAP have a streamlined set of requirements to follow. The 2016 NSPS and EG allow landfill owners or operators to model NMOC emissions or take actual measurements of NMOC emissions at physically separated, closed areas of open landfills. The EPA has not expanded the term "closed area" to include areas that are not physically separated (*e.g.,* separately lined).

12. Changes to Definitions

The EPA expanded the list of definitions in the NESHAP to create a list that improves consistency between the 2016 NSPS, 1996 NSPS, and the NESHAP. The changes fall into the following categories:

- The 2003 MSW Landfills NESHAP included eight definitions. Five of these definitions remain the same. The EPA made changes to two of the original defined phrases. One of these phrases also has had a definition change. The original definition for "deviation" has been refined to reflect the updated SSM requirements.
- The EPA added a new definition for "cover penetration" based on public comments.
- To address public comments about definition consistency, the EPA included an additional 32 definitions that correspond to definitions in NSPS subparts XXX, WWW, or both. The EPA made minor updates to reflect current regulation references.

E. What are the effective and compliance dates of the standards?

The revisions to the MACT standards being promulgated in this action are effective on March 26, 2020.

The compliance date for existing sources is January 16, 2004.

New sources must comply by January 16, 2003, or upon startup, whichever is later.

The compliance dates remain the same as proposed. The EPA is allowing facilities up to 18 months after March 26, 2020, to begin complying with the final rule. Affected MSW landfills must continue to comply with the existing requirements until they meet the new requirements.

IV. What is the rationale for our final decisions and amendments for the MSW Landfills source category?

For each issue, this section provides a description of what we proposed and what we are finalizing for the issue, the EPA's rationale for the final decisions and amendments, and a summary of key comments and responses. For all comments not discussed in this preamble, please see the comment summaries and the EPA's Response to Comments document, which are available in the docket.

A. Residual Risk Review for the MSW Landfills Source Category

1. What did we propose pursuant to CAA section 112(f) for the MSW Landfills source category?

Pursuant to CAA section 112(f), the EPA conducted a residual risk review and presented the results of this review, along with our proposed decisions regarding risk acceptability and ample margin of safety, in the July 29, 2019, proposed rule for 40 CFR part 63, subpart AAAA (84 FR 36670). The results of the risk assessment are presented briefly in Table 2 of this preamble. More detail is in the residual risk technical support document, *Residual Risk Assessment for the MSW Landfills Source Category in Support of the 2020 Risk and Technology Review Final Rule,* which is available in the docket for this rulemaking.

TABLE 2—MSW LANDFILLS INHALATION RISK ASSESSMENT RESULTS

Number of facilities[1]	Maximum individual lifetime cancer risk (in 1 million)[2]		Based on actual emissions				
	Based on actual emissions[3] . . .	Based on allowable emissions . . .	Estimated population at increased risk of cance ≥1-in-1 million	Estimated population at increased risk of cancer ≥10-in-1 million	Estimated annual cancer incidence (cases per year)	Maximum chronic noncancer TOSHI[4]	Maximum screening acute noncancer hazard quotient (HQ)
706	10 (p-dichlorobenzene, ethyl benzene, benzene).	10 (p-dichlorobenzene, ethyl benzene, benzene).	18,300	11	0.04	0.1 (neuro-logical)	HQ_{REL}[5] = 0.07 (chloroform).

[1] Number of facilities evaluated in the risk analysis.
[2] Maximum individual excess lifetime cancer risk due to HAP emissions from the source category.
[3] Whole facility emissions are equal to actual emissions and have the same risk.
[4] Maximum TOSHI. The target organ systems with the highest TOSHI for the source category are neurological, with risk driven by emissions of trichloroethylene, m-xylene, xylenes (mixed), and tetrachloroethene from fugitive emissions.
[5] Reference Exposure Level (REL).

The results of the chronic baseline inhalation cancer risk assessment indicate that, based on estimates of current actual, allowable, and whole facility emissions under the NESHAP, the maximum individual risk posed by the source category is 10-in-1 million. The total estimated cancer incidence based on actual emission levels is 0.04

excess cancer cases per year, or 1 case every 25 years. The total estimated cancer incidence based on allowable emission levels is 0.05 excess cancer cases per year, or 1 case every 20 years. Fugitive air emissions of benzene-based pollutants contributed approximately 50 percent to the cancer incidence. The population exposed to cancer risks greater than or equal to 1-in-1 million based upon actual emissions is 18,300. The population exposed to cancer risks greater than or equal to 10-in-1 million based upon actual emissions is 11. No individuals or groups are exposed to a chronic noncancer TOSHI greater than 1. The screening analysis for worst-case acute impacts indicates that no pollutants exceed an acute HQ value of 1 based upon the REL. Because none of the screening HQs were greater than 1, further refinement of the estimates was not warranted. A separate assessment of inhalation risk from facility-wide emissions was unnecessary because facility-wide emissions were the same as source category emissions. The multipathway risk screening assessment resulted in a maximum Tier 2 noncancer screening value of less than 1 for mercury. Mercury was the only persistent and bioaccumulative HAP emitted by the source category. Based on these results, we are confident that the human-health noncancer risks are below a level of concern. Mercury was the only environmental HAP identified from the category and the ecological risk screening assessment indicated that all modeled points were below the Tier 1 screening threshold. Therefore, we do not expect an adverse environmental effect as a result of HAP emissions from this source category.

We weighed all human health risk factors in our risk acceptability determination, and we proposed that the residual risks from the MSW Landfills source category are acceptable. We then considered whether the NESHAP provides an ample margin of safety to protect public health, and whether more stringent standards were necessary to prevent an adverse environmental effect, by taking into consideration costs, energy, safety, and other relevant factors. In determining whether the standards provide an ample margin of safety to protect public health, we examined the same risk factors that we investigated for our acceptability determination and also considered the costs, technological feasibility, and other relevant factors related to emissions control options that might reduce risk (or potential risks) associated with emissions from the source category. Our risk analysis indicated the risks from this source category are low for both cancer and noncancer health effects, and, therefore, any additional emissions reductions would result in minimal health benefits or reductions in risk. We note that fugitive landfill emissions result in 84 percent of the cancer incidence for this source category. Based upon results of the risk analysis and our evaluation of the technical feasibility and cost of the option(s) to reduce landfill fugitive emissions, we proposed that the current NESHAP provides an ample margin of safety to protect the public health. We also proposed, based on the results of our environmental screening assessment, that more stringent standards are not necessary to prevent an adverse environmental effect.

2. How did the risk review change for the MSW Landfills source category?

Since proposal, neither the risk assessment nor our determinations regarding risk acceptability, ample margin of safety, or adverse environmental effects have changed.

3. What key comments did we receive on the risk review, and what are our responses?

We received comments that were generally supportive of the proposed residual risk review and our determination that no revisions were warranted under CAA section 112(f)(2) for the MSW Landfills source category. Commenters stated that the EPA's residual risk review approach was sufficiently conservative in its assumptions relating to facility emission profiles and supported the EPA's conclusion that the residual risk is acceptable and provides an ample margin of safety. One commenter stated that the modeling includes conservative features that is consistent with the National Ambient Air Quality Standards and conforms to many state programs and that EPA appropriately considered maximum exposed individuals, multi-pathway assessments, as well as specific populations by census blocks near actual facilities. The commenter also stated the EPA's emission factor data used for the proposed NESHAP is comprehensive considering the number of facilities referenced and the number of analytes assessed. However, another commenter expressed concern regarding the EPA's use of emission factors calculated using 2008 AP–42,[3] Chapter 2.4. The commenter stated that the modeling inputs were based on use of draft emission factors from an AP–42 section that was proposed in 2008 and remains a draft. The commenter stated that the use of a draft section creates confusion regarding the information it contains and sets an unclear precedent.

We disagree with the comment that the use of draft AP–42 emission factors introduces confusion or sets precedent for using these factors in other regulations. In the development of the risk analysis, we documented the rationale for using the emission factors from 2008 AP–42 Chapter 2.4 in the docketed memorandum, *Residual Risk Modeling File Documentation for the Municipal Solid Waste Landfill Source Category.*[4] Specifically, the 2008 AP–42 draft emission factor data, with subsequent adjustments made to reflect comments received on the draft for the risk analysis, represent the best available data for HAP emissions from landfills. The 1998 Final AP–42 chapter had factors for only 23 HAP, whereas the updated factors used in the risk analysis cover 49 HAP derived from a significantly larger dataset. By including a larger number of HAP in the factors used in the risk analysis, the analysis was conservative. The EPA is not suggesting in this preamble or in background documentation that the factors used are appropriate for other permitting or regulatory uses.

After review of these comments, we determined that no changes needed to be made to the underlying risk assessment methodology. The comments and our specific responses can be found in the response to comments document titled *Summary of Public Comments and the EPA's Responses for the Proposed Risk and Technology Review and Amendments for the Municipal Solid Waste Landfills NESHAP,* which is available in the docket for this action.

4. What is the rationale for our final approach and final decisions for the risk review?

We evaluated all of the comments on the EPA's risk review and determined that no changes to the review are needed. For the reasons explained in the proposed rule, we proposed that the risks from the MSW Landfills source category are acceptable, and the current standards provide an ample margin of safety to protect public health and prevent an adverse environmental

[3] U.S. EPA, AP–42, Fifth Edition, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources.* 1995. *http://www.epa.gov/ttnchie1/ap42/.*

[4] See Appendix 1, Section 7 to docket item, *Residual Risk Assessment for the Municipal Solid Waste Landfill Source Category in Support of the 2019 Risk and Technology Review Proposed Rule.* May 2019. Docket ID Item No. EPA–HQ–OAR–2002–0047–0091.

effect. Therefore, pursuant to CAA section 112(f)(2), we are finalizing the risk review as proposed.

B. Technology Review for the MSW Landfills Source Category

1. What did we propose pursuant to CAA section 112(d)(6) for the MSW Landfills source category?

Pursuant to CAA section 112(d)(6), we proposed to conclude that no revisions to the current NESHAP are necessary (section IV.C of the proposal preamble 84 FR 36686). In conducting the review, we identified developments in work practices and technologies to reduce HAP formation, collect additional HAP, and destroy additional HAP from MSW landfills. We ruled out developments in waste diversion programs, which can reduce HAP formation, as technically infeasible, because programs to ban or recycle wastes instead of placing the wastes in the landfill are not typically under the control of landfill owners or operators. We analyzed the costs and emission reductions associated with earlier gas collection strategies, including a lower NMOC threshold and shortening the time in which a GCCS is required to expand into new areas of the landfill. Based on these analyses, we concluded that these options are not cost effective for HAP. We also analyzed the cost and emission reductions associated with destroying additional HAP in higher efficiency flares, and based on these analyses, we concluded that these options are not cost effective for HAP.

2. How did the technology review change for the MSW Landfills source category?

We have not changed any aspect of the technology review since the July 29, 2019, proposal for the MSW Landfills source category.

3. What key comments did we receive on the technology review, and what are our responses?

The comments received by the EPA on the technology review were generally supportive, with only one commenter challenging the EPA's findings regarding GCCS installation lag times. One commenter agreed that the EPA's findings regarding mandated source separation, earlier LFG collection, criteria, and timeframe for removing GCCS, early installation of landfill cover systems, enclosed flares, thermal oxidizers, energy recovery projects, and use of biocovers were infeasible, not cost-effective, or did not result in emissions reductions. Another commenter noted the limited innovation in HAP-reducing technologies and requested increased government funding for research in this area. One commenter challenged the EPA's determination that earlier gas collection, via shorter expansion lag times, is not economically feasible and asked the EPA to reevaluate its determination.

The EPA has not revised the technology review for the NESHAP to analyze the costs of shorter expansion lag times for certain landfills. The EPA agrees with the commenter that shorter lag times are commercially available. However, the installation of well components to achieve these shorter lag times requires site-specific analysis. For example, the timing of well installation is affected by waste placement patterns and annual acceptance rates. The EPA explored shorter lag times as part of the review for the 2016 NSPS and EG and received several comments related to site-specific costs and safety concerns associated with reduced lag times, urging the EPA to retain flexibility in any lag-time adjustments. See 79 FR 41807 (July 17, 2014) and 80 FR 52121 (August 27, 2015) for more details. The EPA has not received any comments suggesting that the cost and safety concerns brought forth as part of the 2016 rulemaking have changed, and as a result, no changes to the lag times are being finalized.

4. What is the rationale for our final approach for the technology review?

As explained in the proposal preamble (84 FR 36686, July 29, 2019), we conducted a technology review to identify developments in practices, processes, and control technologies that may warrant revisions to the current NESHAP. We identified three types of developments that could lead to additional control of HAP from MSW landfills, but we determined that there are no cost-effective developments in practices, processes, or control technologies to warrant revisions to the standards. We also evaluated the public comments on the EPA's technology review and determined that no changes to the review are needed. More information concerning our technology review is in the memorandum titled *CAA section 112(d)(6) Technology Review for the MSW Landfills Source Category,* in the docket for this action, and in the preamble to the proposed rule (84 FR 36686–36689, July 29, 2019). Therefore, pursuant to CAA section 112(d)(6), we are finalizing the results of the technology review as proposed.

C. SSM for the MSW Landfills Source Category

1. What did we propose for the MSW Landfills source category?

We proposed amendments to the NESHAP to remove and revise provisions related to SSM that are not consistent with the requirement that the standards apply at all times. More information concerning the elimination of SSM provisions is in the preamble to the proposed rule (84 FR 36693).

2. How did the SSM provisions change for the MSW Landfills source category?

We are finalizing the SSM provisions as proposed (84 FR 36693, July 29, 2019) with the minor changes described in section IV.C.3 of this preamble.

3. What key comments did we receive on the SSM provisions and what are our responses?

We received two comments related to our proposed revisions to the SSM provisions. The first commenter agreed that the NESHAP must apply at all times and with the approach of applying a work practice standard under CAA section 112(h) during periods of SSM. The second commenter requested that the EPA clarify that SSM events be reported as stated in the proposal preamble (84 FR 36696, July 29, 2019). A summary of the SSM comments on the proposal and the EPA's responses to those comments is available in the response to comments document titled *Summary of Public Comments and the EPA's Responses for the Proposed Risk and Technology Review and Amendments for the Municipal Solid Waste Landfills NESHAP,* which is available in Docket ID No. EPA–HQ–OAR–2002–0047.

The first commenter agreed that the work practice requirements of proposed 40 CFR 63.1958(e) are appropriate and consistent with a well-designed and operated LFG collection system. However, the commenter objected to the EPA's proposed preamble statements and rule revisions that specify that compliance with these provisions during SSM does not necessarily constitute compliance with the NESHAP. The commenter stated that these provisions are inconsistent with prior EPA decisions about appropriate landfill operation and are not compelled by the *Sierra Club* v. *EPA* decision.

Landfill emissions are produced by a continuous biological process that cannot be stopped or restarted. Therefore, the primary concern related to SSM is with malfunction of the landfill GCCS and associated monitoring equipment, not with the

startup or shutdown of the entire source. The SSM periods that are covered by the proposed additional work practice standard of 40 CFR 63.1958(e) are those periods when the landfill GCCS and associated monitoring equipment are not operating for any reason. During such periods, excess emissions to the atmosphere will occur. This additional work practice requires the owner or operator to shut down all valves in the collection and control system contributing to venting of the gas to the atmosphere within 1 hour and to minimize the downtime for making repairs to the collection and control system. Although this additional practice is necessary to reduce emissions associated with a GCCS outage, to minimize emissions also requires actions to prevent the shutdown of the GCCS. Although we agree with the commenter that some unavoidable circumstances may require that the GCCS system be shut down for short periods of time (*e.g.,* for tying in a system expansion, repair, and preventative maintenance), the frequency of shutdowns also can be affected by carelessness, ineffective operation and maintenance procedures, failure to properly train landfill operations staff, and other site-specific factors. Actions to prevent the shutdown of a GCCS may include a preventative maintenance program, expeditious repair or replacement of equipment that frequently fails, the use of valves and bypass systems to segregate portions of the GCCS that are undergoing expansion, maintenance, or repairs from those portions that are unaffected by the work, and the use of redundant equipment and controls so that the system can remain online even if one component fails to operate properly. Additional reasonable steps include the controls of vehicular equipment on the landfill to avoid damage to the GCCS or crushed pipes. This may include speed limits and traffic routes that avoid passing over buried ductwork or other equipment.

Another commenter requested the EPA clarify that SSM events be reported as stated in the proposal preamble (84 FR 36696, July 29, 2019) in order to evaluate whether the general duty to minimize emissions is being met. The commenter stated that while the preamble stated that reporting will be required (84 FR 36696, July 29, 2019), the rule only requires records of SSM events.

The EPA proposed to add recordkeeping requirements for startup and shutdown to 40 CFR 63.1983(c) (84 FR 36696, July 29, 2019). Because 40 CFR 63.1958(e) specifies a different standard for periods when the GCCS is not operating under normal conditions (which would include periods of startup, shutdown, and maintenance or repair), we noted that it will be important to know when such startup and shutdown periods begin and end in order to determine compliance with the appropriate standard. Thus, we proposed language in 40 CFR 63.1983(c)(6) to require that a landfill owner or operator report the date, time, and duration of each startup and shutdown period. However, the paragraphs we cited in the preamble and revised in the rule require only the records of such events.

The EPA agrees with the commenter that recordkeeping and reporting for SSM events needs to be clarified in the final rule. Thus, the EPA revised 40 CFR 63.1981(h)(1) to make it clear that the semi-annual report must describe the date, time, and duration of periods during which an operating standard was exceeded, as well as when the GCCS was not operating. The semi-annual report in 40 CFR 63.1981(h) does not require separate reporting of SSM events, but every exceedance, including when operating standards are exceeded and when the GCCS is not operating, must be reported including during SSM.

4. What is the rationale for our final approach for the SSM provisions?

We evaluated the comments on the EPA's proposed amendments to the SSM provisions. For the reasons explained in the proposed rule, we determined that the proposed amendments appropriately remove and revise provisions related to SSM not consistent with the requirement that the standards apply at all times. More information concerning the amendments we are finalizing for SSM is in the preamble to the proposed rule (84 FR 36693, July 29, 2019). Therefore, we are finalizing our approach for the SSM provisions as proposed with the clarifications described in section IV.C.3 of this preamble.

D. Summary of Changes Since Proposal

1. Enhanced Monitoring, Recordkeeping, and Reporting for Elevated Wellhead Temperature

Given concerns with fire risks from elevated temperatures, and the fact that parameters other than temperature can be indicators of a SOE, we proposed enhanced wellhead monitoring and visual inspections for subsurface oxidation events (40 CFR 63.1961(a)), and in some cases more frequent reporting (40 CFR 63.1981(k)), for any landfill with wellhead temperature exceeding 145 °F. The proposed enhanced monitoring included weekly monitoring of CO, oxygen, and methane. For each CO measurement, the EPA proposed to require an independent laboratory analysis (84 FR 36691, July 29, 2019). As part of enhanced monitoring, the EPA proposed weekly temperature monitoring every 10 vertical feet down the well (downwell monitoring).

Several commenters expressed concerns with the requirement for independent laboratory CO testing. One commenter observed that laboratory testing is expensive, and three commenters stated that requiring laboratory testing would extend the response time and not provide timely information that can help the landfill owner or operator improve compliance. One commenter also noted several concerns with the logistics of independent laboratory analysis, including concerns with the proposed test methods and sample transportation.

The EPA agrees with commenters that independent laboratory analysis could present logistical challenges and potentially increase costs. Shipping passivated canisters or multi-layer foil gas sampling bags could require specialized shipping and could delay results that could improve operation of the GCCS. Therefore, based on public comments, the EPA is removing the requirement for an independent laboratory to analyze each CO measurement. In the final rule, landfill owners or operators have the option to collect the sample and conduct analysis on-site, using purchased or rented equipment that meets the requirements of EPA Method 10. This could generate results quicker, enabling the owner or operator to adjust the GCCS in a more timely manner. Conducting the analysis on-site would also prevent the need to package and ship the canisters or bags, thus, saving shipping costs and eliminating the logistical concerns of shipping the samples.

One commenter expressed concerns with the indefinite term of the enhanced monitoring. The commenter advised that if CO readings are less than 1,500 ppmv, monitoring should not be required indefinitely, but instead cease after 3 consecutive months. The commenter observed that this approach is consistent with the requirements of the consent decrees in the docket and with historical HOV demonstrations.

Regarding when to stop enhanced CO monitoring, the EPA agrees with commenters because the weekly enhanced monitoring is not intended to continue indefinitely. In the proposal, there were two means to stop enhanced

weekly CO monitoring. Enhanced monitoring could be stopped once an HOV is approved, at which time the monitoring provisions issued with the HOV should be followed (40 CFR 63.1961(a)(5)(viii)). Alternatively, the enhanced monitoring could stop once the measurement of LFG temperature at the wellhead is below 145 °F (40 CFR 63.1961(a)(5)(viii)). In the final rule, the EPA is retaining these two means to stop enhanced CO monitoring. The EPA is also providing an opportunity to reduce the frequency of monitoring in the final rule while still maintaining sufficient data availability of wellhead parameters for those wells that consistently operate at higher temperatures. Specifically, the EPA is extending the frequency of enhanced monitoring. Enhanced monitoring must be conducted on a weekly basis. However, if four consecutive weekly CO readings are below 100 ppmv, then monitoring may be decreased to a monthly basis. If the CO level exceeds 100 ppmv again, the landfill must return to weekly monitoring. Additionally, the EPA is specifically clarifying in the final rule that HOVs that have been previously approved under another MSW Landfill NSPS or EG regulation will not have to seek pre-approval for that HOV under the provisions in the NESHAP (40 CFR 63.1961(a)(5)).

One commenter expressed concern with the proposed 1,500 ppmv threshold for CO, asserting that 1,000 ppmv would be a more reasonable upper limit for detecting or preventing landfill fires. The EPA agrees with the commenter. The EPA reexamined the MSW Landfills consent decrees cited in the proposed rule; documents from CalRecycle, the Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers, and the Solid Waste Association of North America. These documents (see Docket ID No. EPA–HQ–OAR–2002–0047) all cite a 1,000 ppmv CO concentration as an indication of an underground landfill fire, in combination with other factors. Additionally, a guidance document from the Ohio EPA for subsurface heating events refers to the CO concentration cited in the FEMA and CalRecycle documents. Two of the consent decrees, Forward and Central Maui, require 24-hour electronic notification to the delegated authority for any CO reading of 1,000 ppmv or above. For these reasons, the EPA is reducing the reporting threshold for CO from 1,500 ppmv to 1,000 ppmv in the final rule.

One commenter expressed support for the downwell temperature reading requirement. However, another commenter warned that the downwell monitoring may not be achievable or yield meaningful data, noting that installation of thermocouples to measure well temperature may not be possible on a well that is already constructed due to shifting in the well as settlement occurs. The commenter also noted that if wells have been raised with solid pipe, or the boring log does not provide accurate as-built information, the data may not be meaningful. Another commenter requested that the EPA eliminate the downwell temperature monitoring requirement. The commenter observed that the EPA claims that the proposed enhanced monitoring for well temperature is intended to facilitate the detection of a subsurface fire, yet the solid waste industry has long recognized that subsurface fires occur near the surface, require oxygen, are visually recognizable, and are addressed with known remedies. The commenter asserted that weekly downwell measurements could be counter-productive and inconsistent with the GCCS best management practices or challenging to implement.

The EPA reexamined the consent decrees and supporting documents and agrees with the commenters that weekly downwell monitoring could be potentially burdensome to implement. Requirements for conducting downwell temperature monitoring is in only the referenced consent decrees and not prescribed in the other supporting documents. Although the 2009 Ohio EPA best management practices document [5] suggests that inter-well and intra-well temperature data may be useful, it does not require those data in all cases. For these reasons, the EPA is reducing the frequency of downwell monitoring from weekly to annually. Annual downwell temperature monitoring will provide more robust data on waste temperatures throughout the radius of influence of the well. In addition, the EPA is increasing the wellhead temperature threshold that triggers downwell monitoring. In the final rule, downwell monitoring is required for wellhead temperatures of 165 °F or greater rather than 145 °F. The EPA believes the downwell monitoring data to be critical for assessing the operations of wells with these higher temperatures in order to minimize fire risks. The EPA expects that these changes will reduce the burden and implementation challenges associated with downwell monitoring.

Because the EPA has changed the frequency of CO monitoring and downwell temperature monitoring, the EPA has modified the requirement to include a well-specific summary trend analysis in the semi-annual report (40 CFR 63.1981(h)(8)(ii)) to remove the downwell temperature and recognizes that CO monitoring may occur on a monthly or weekly basis depending on the level at the well. Additionally, the EPA has removed the requirement to submit a 24-hour high temperature report if the well is subject to an approved HOV for temperature (40 CFR 63.1981(k)).

The EPA has also adjusted the enhanced monitoring provisions at 40 CFR 63.1961(a)(5) to remove the upper bound limitation of 170 °F. Enhanced monitoring should continue until both this temperature level and a CO level of 1,000 ppmv have been reached, at which point the provisions 40 CFR 63.1960(a)(4)(i)(D) and 63.1981(k) apply. Consistent with the proposed preamble (80 FR 36692, July 29, 2019), high temperatures in combination with high levels of CO are considered a positive indication of an active underground fire. The EPA has adjusted the requirements for the records and reports associated with these enhanced monitoring data to remove the upper bound limitation.

2. Delegation of Authority

Commenters expressed concerns with the EPA's proposed delegation of authority language (40 CFR 63.1985(c)). The EPA proposed at 40 CFR 63.1985(c) that the EPA will not delegate "approval of alternatives to the standards" in 40 CFR 63.1955–63.1962, which the commenters interpreted to include authority to approve alternatives to monitoring (*i.e.,* HOVs). Thus, the commenters contend that the language restricts delegated state or local agencies from approving or disapproving HOVs and other alternatives that are needed to reflect a source's site-specific conditions. The commenters claim that the proposed provision will lead to confusion in the compliance and enforcement work of the delegated states or create conflicts wherein a state agency and the EPA disagree. One commenter contended that the proposal allows the EPA to approve an HOV by incorporating additional monitoring requirements. The commenter questioned whether incorporation of applicable NSPS-required limits and corrective actions in the title V permits would preclude the applicability of flexibility outside these terms. Another commenter was concerned that the

[5] Ohio EPA. *Guidance Document for Higher Operating Value Demonstrations. http://web.epa.state.oh.us/eBusinessCenter/Agency/DAPC/HOV%20Demonstration.doc.*

NESHAP was much more restrictive in the items that could be delegated than the NSPS and that this would create conflict between the EPA and delegated authorities.

The EPA disagrees that proposed 40 CFR 63.1985(c) includes authority to approve HOVs. The EPA did not intend to preclude state or local agencies from approving or disapproving HOVs and other alternatives that are needed to reflect a source's site-specific conditions. The final NESHAP directly incorporates the major compliance provisions of the NSPS rules (subparts WWW and XXX). Consistent with the NSPS rules, the final NESHAP allows owners or operators to establish an HOV for temperature at a particular well (40 CFR 63.1958(c)(1)). The owner or operator must submit a request for an HOV, along with supporting data, to the Administrator for approval. Also consistent with the NSPS rules, the collection and control system design plan may include for Administrator approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions. The Administrator or delegated authority would review and approve the HOV or design plan.

The EPA recognizes that proposed 40 CFR 63.1985(c) does not reflect its intent and may have caused confusion. In 40 CFR 63.1985(c), the EPA retains authority to approve "alternatives to the standards" in 40 CFR 63.1955–63.1962. Commenters incorrectly interpreted that the term "alternative emission standards" includes authority to approve HOVs. The term "emission standards" is defined in 40 CFR 60.21(f) as "a legally enforceable regulation setting forth an allowable rate of emissions into the atmosphere, establishing an allowance system, or prescribing equipment specifications for control of air pollution emissions." The EPA intends the use of the phrase "alternative emission standards" to refer to the "Standards" for MSW landfill emissions in 40 CFR 63.1955–63.1962. The EPA does not intend "alternative emission standards" to include alternatives for wellhead monitoring in 40 CFR 63.1958. The EPA also does not intend to retain authority to review and approve gas collection and control design plans.

Thus, based on public comments, the EPA is revising 40 CFR 63.1985(c) to reflect the EPA's intent, which is not to preclude states or other delegated authorities from approving HOVs and design plans. The EPA will delegate authority to approve HOVs and design plans. However, consistent with the NSPS, the final rule retains the EPA's authority to approve alternative methods for determining the NMOC concentration in 40 CFR 63.1959(a)(3) and a site-specific methane generation rate constant in 40 CFR 63.1959(a)(4).

3. Technical Corrections

Based on public comments, the EPA made several technical corrections and clarifications to make clear the requirements of the regulation.

- 40 CFR 60.38f(k) and 60.767(j). Clarified that if an MSW landfill owner or operator is complying with the major compliance provisions of the NESHAP, then the owner or operator must follow the corrective action and the corresponding timeline reporting requirements in the NESHAP (40 CFR 63.1981(j)) in lieu of the corresponding timeline reporting requirements of the EG or NSPS, respectively.
- 40 CFR 60.39f(e)(6). Corrected a typographical error. Removed the word "you" and retained "owner or operator."
- 40 CFR 60.750. Clarified that an affected MSW landfill continues to comply with 40 CFR part 60, subpart WWW until it becomes subject to the more stringent requirements in an approved and effective state or federal plan that implements 40 CFR part 60, subpart Cf of this part, or until it modifies or reconstructs after July 17, 2014, and, thus, becomes subject to subpart XXX.
- 40 CFR 60.768(e)(6). Corrected a typographical error. Removed the word "you" and retained "owner or operator."
- 40 CFR 63.1947(a)(2). Corrected typographical error. Refer to 40 CFR 63.1982(c) and (d) instead of 40 CFR 63.1980(g) and (h) for moisture calculations.
- 40 CFR 63.1955(a). Clarified that alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions that have already been approved under 40 CFR part 60, subpart XXX can be used to comply with the NESHAP.
- 40 CFR 63.1960(a)(4)(i). Corrected typographical error. Removed the phrase, "for the purpose of identifying whether excess air infiltration exists" because the phrase does not apply to temperature.
- 40 CFR 63.1960(a)(4)(i)(D). Clarified that if the LFG temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7 °C (170 °F) and the CO concentration measured is greater than or equal to 1,000 ppmv, the owner or operator must complete the corrective action(s) for the wellhead temperature standard (62.8 °C or 145 °F) within 15 days.
- 40 CFR 63.1960(e). Corrected reference from 40 CFR 63.1958(c) to 40 CFR 63.1958(e) to refer to SSM requirements.
- 40 CFR 63.1961(a)(5). Clarified that landfills with previously approved HOVs for temperature under various landfills subparts are not required to conduct enhanced monitoring.
- 40 CFR 63.1961(a)(5)(vii). Corrected reference from paragraph (a)(4) to (a)(5) to reference enhanced monitoring requirements.
- 40 CFR 63.1981(h)(1), (h)(1)(i), and (h)(1)(ii). Clarified that the semi-annual report must include the date, time, and duration of "each exceedance" of the applicable monitoring parameters, not "each failure."
- 40 CFR 63.1983(e)(2)(i). Corrected paragraph numbering to be (i), (ii), and (iii) instead of (i), (i), and (ii) and corrected cross-reference to the enhanced monitoring provisions in 40 CFR 63.1961(a)(5).
- 40 CFR 63.1990. Definition of controlled landfill. Clarified that the landfill is a controlled landfill when a collection and control system design plan is submitted in compliance with 40 CFR 60.752(b)(2)(i) or in compliance with 40 CFR 63.1959(b)(2)(i), regardless of whether that submittal is within 18 months after date of publication of the final rule in the **Federal Register**.
- Table 1 to subpart AAAA of part 63. Expanded to indicate which initial notifications apply before and which notifications apply after the date 18 months after publication of the final rule in the **Federal Register**. Added "Yes" entries for 40 CFR 63.6(i) and (j), and 40 CFR 63.10(a) to show applicability after the initial 18-month timeframe. Added a "No" entry for 40 CFR 63.10(c).

V. Summary of Cost, Environmental, and Economic Impacts and Additional Analyses Conducted

A. What are the affected facilities?

We anticipate that approximately 738 active or closed MSW landfills in the United States and territories will be affected by these final amendments in the year 2023. This number is based on all landfills that accepted waste after November 8, 1987, that have a design capacity of at least 2.5 million Mg and 2.5 million m^3. In addition, this number reflects the subset of landfills meeting these two criteria with modeled emission estimates of 50 Mg/yr NMOC or greater that have installed controls on or before 2023. While the EPA

recognizes some uncertainty regarding which landfills have actually exceeded the emission threshold, given the allowance of sites to estimate emissions using Tiers 1, 2, or 3, and the site-specific nature of NMOC concentrations, the number of MSW landfills that are collocated with major sources and, therefore, also subject to control requirements under this rule is also unknown. Therefore, 738 is the best estimate of the affected sources.

B. What are the air quality impacts?

The final amendments are expected to have a minimal impact on air quality. While these amendments do not require stricter control requirements or work practice standards on landfills to comply with the proposed amendments, some landfills may find that the adjustments made to the oxygen, nitrogen, and temperature wellhead standards finalized herein provide enough operational flexibility to install, expand, and operate additional voluntary GCCS, which could reduce emissions. The other proposed revisions that affect testing, monitoring, recordkeeping, and reporting will ensure that the GCCS equipment continues to perform as expected and provide reliable data from each facility to be reported for compliance.

C. What are the cost impacts?

The EPA has estimated $0 compliance costs for all new and existing sources affected by this final rule, beyond what is already required under the existing NESHAP and what is already included in the previously approved information collection activities contained in the existing NESHAP (Office of Management and Budget (OMB) control number 2060–0505), as described in section VI.C of this preamble. Furthermore, landfills accepting waste after November 8, 1987, must comply with the similar, yet, more stringent requirements of the 2016 NSPS or a plan implementing 40 CFR part 60, subpart Cf. Many of the changes in these amendments better align the NESHAP with the requirements of the NSPS and plans implementing subpart Cf. These changes simplify compliance, which in turn could reduce costs. For example, elimination of the wellhead operating standards for oxygen and nitrogen to match requirements in the NSPS will reduce the number of requests for HOVs, which in turn could decrease compliance costs.

The EPA maintains that final changes to enhanced monitoring for wellhead temperature are not estimated to incur a cost. The EPA is finalizing a temperature standard that is 14 °F higher than the standard that currently exists in the baseline regulations in order to provide additional flexibility to controlled landfills. However, ultimately, the requirement in the final NESHAP remains to install and operate a well-designed and well-operated GCCS. The EPA is not requiring enhanced monitoring from all controlled landfills, but this option is being made available as a compliance flexibility to the population of wells that do not already have an approved HOV and for which temperature cannot be adjusted downward through routine GCCS adjustments. Based on feedback provided in public comments, over 6,000 HOV requests have been submitted and reviewed by regulatory agencies, and the enhanced monitoring requirements would not apply to any of the HOV requests that have received approval. Furthermore, the concern that the enhanced monitoring requirements would continue in perpetuity is unsubstantiated. First, landfills have up to 7 days to adjust the well to achieve a lower temperature before the enhanced monitoring requirements are triggered (40 CFR 63.1961(a)(5)(vii)). Second, the enhanced monitoring can stop once the well temperature drops back to 145 °F or less. The EPA did not receive any comments on the number of wells that are operating above 145 °F without an approved HOV, which would have helped the EPA quantify how many wells would be affected and the corresponding costs. Additionally, the EPA did not receive any data on how long the wells without an approved HOV typically exceed 145 °F. Given insufficient data on the number and length of each temperature exceedance to make an estimate, the EPA has not quantified any cost impacts for the enhanced monitoring.

The EPA also contends that many of the parameters required in the enhanced monitoring are also parameters that are required to obtain an approval of an HOV request under the baseline regulations and so these costs are not an incremental cost that is not otherwise happening outside of the NESHAP amendments. For example, the Ohio EPA already requires 6 months of historical data, narrative discussion of the visual evidence of fire, and CO measurements using appropriate laboratory techniques.[6] Under the final amendments, the EPA anticipates that landfill operators will immediately implement corrective actions to lower well temperatures, as well as immediately file appeals for HOVs for their wells, if appropriate. The EPA anticipates that processing requests for HOVs will be quicker because fewer requests are expected to be submitted due to the higher temperature standard and elimination of the oxygen and nitrogen standard.

The EPA also maintains that removal of the requirement to prepare an SSM plan and removal of the associated recordkeeping and reporting requirements will not result in additional costs for new or modified facilities, but instead result in a cost savings. Owners or operators will not incur the cost of preparing an SSM plan. To meet their obligation under 40 CFR 63.1955(c) to minimize emissions during collection or control system downtime, owners or operators are expected to rely on existing standard operating procedures and safety practices. The EPA expects that some landfills may incorporate automated controls that would shut down the gas mover system and valves in the event of detection of a collection or control system malfunction. Such systems are expected to have existing corresponding written or automated standard operating procedures and safety practices.

The recordkeeping and reporting requirements will not result in additional costs for new or modified facilities. The final work practice requirements mandate a shutdown of the gas mover system and all valves within the collection and control system within 1 hour of the collection or control system not operating and then require repair efforts to proceed in a way that keeps downtime to a minimum (40 CFR 63.1958(e)(1)(i)–(ii)). A landfill demonstrates compliance with these requirements via recordkeeping as specified in 40 CFR 63.1983(c)(6)–(7). The work practice requirement to record and report all instances of downtime will not result in an increased recordkeeping and reporting burden as compared to the 2003 NESHAP. Via cross-reference to the 1996 NSPS (40 CFR part 60, subpart WWW) to (40 CFR 63.1955(a)(1)), the 2003 NESHAP already required landfill owners to keep continuous records of the indication of flow to the control device, report periods when the control device was not operating for a period exceeding 1 hour. The records required by existing regulations serve as the records of system downtime.

Note that this work practice itself does not add incremental cost to new or modified landfills subject to the proposed regulation because this requirement already appears in the

[6] Ohio EPA. *Guidance Document for Higher Operating Value Demonstrations. http://web.epa.state.oh.us/eBusinessCenter/Agency/DAPC/HOV%20Demonstration.doc.*

NESHAP as promulgated in 2003 at 40 CFR 63.1955(a)(1), which says affected landfills must comply with the requirements of the 1996 NSPS. 40 CFR 60.753(e) already requires owners or operators to shut down the gas mover system and close all valves in the collection and control system contributing to venting of the gas to the atmosphere within 1 hour.

Given that the costs for these enhanced monitoring requirements cannot be quantified, in addition to the fact that there are some cost savings previously documented to offset these costs,[7] the EPA concludes that the final rule is best characterized as a no-cost action.

D. What are the economic impacts?

The economic impact analysis is designed to inform decision makers about the potential economic consequences of a regulatory action. Because there are no costs associated with the final rule, no economic impacts are anticipated.

E. What are the benefits?

As stated in section V.B of this preamble, we were unable to quantify the specific emissions reductions associated with adjustments made to the oxygen and nitrogen wellhead operating standards, although this change has the potential to reduce emissions. Any reduction in HAP emissions would be expected to provide health benefits in the form of improved air quality and less exposure to potentially harmful chemicals.

F. What analysis of environmental justice did we conduct?

To examine the potential for any environmental justice issues that might be associated with the MSW Landfills source category, we performed a demographic analysis, which is an assessment of risk to individual demographic groups of the populations living within 5 kilometers (km) and within 50 km of the facilities. In the analysis, we evaluated the distribution of HAP-related cancer and noncancer risk from the source category across different demographic groups within the populations living near facilities.[8]

The results of the demographic analysis are summarized in Table 3 of this preamble. These results, for various demographic groups, are based on the estimated risk from actual emissions levels for the population living within 50 km of the facilities.

TABLE 3—MSW LANDFILLS SOURCE CATEGORY DEMOGRAPHIC RISK ANALYSIS RESULTS

		Population with cancer risk greater than or equal to 1 in 1 million	Population with hazard index greater than 1
	Nationwide	Source category	
Total Population	317,746,049	18,217	0
	Race by Percent		
White	62	58	0
All Other Races	38	42	0
	Race by Percent		
African American	12	13	0
Native American	0.8	0.1	0
Hispanic or Latino (includes white and nonwhite)	18	20	0
Other and Multiracial	7	8	0
	Income by Percent		
Below Poverty Level	14	15	0
Above Poverty Level	86	85	0
	Education by Percent		
Over 25 and without a High School Diploma	14	17	0
Over 25 and with a High School Diploma	86	83	0
	Linguistically Isolated by Percent		
Linguistically Isolated	6	8	0

G. What analysis of children's environmental health did we conduct?

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action's health and risk assessments are summarized in section IV.A of this preamble and are further documented in the report, *Risk and Technology Review-Analysis of Demographic Factors for Populations*

[7] U.S. EPA, *Cost Impacts of National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste (MSW) Landfills Risk and Technology Review*, May 20, 2019, Docket ID Item No. EPA–HQ–OAR–2002–0047–0081.

[8] Demographic groups included in the analysis are: White, African American, Native American, other races and multiracial, Hispanic or Latino, children 17 years of age and under, adults 18 to 64 years of age, adults 65 years of age and over, adults without a high school diploma, people living below the poverty level, people living two times above the poverty level, and linguistically isolated people.

Living Near Municipal Solid Waste Landfill Source Category Operations, available in the docket for this action.

VI. Incorporation by Reference

In accordance with the requirements of 1 CFR 51.5, we are finalizing regulatory text in 40 CFR 63.1961(a)(2)(ii) and (2)(iii)(B) that includes the IBR of ASTM D6522–11—Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers (Approved December 1, 2011), as an alternative for determining oxygen for wellhead standards in 40 CFR 63.1961(a)(2). For this test method, a gas sample is continuously extracted from a duct and conveyed to a portable analyzer for determination of nitrogen oxides, CO, and oxygen gas concentrations using electrochemical cells. Analyzer design specifications, performance specifications, and test procedures are provided to ensure reliable data. This method is an alternative to EPA methods and is consistent with the methods already allowed under the 2016 NSPS and EG (subparts XXX and Cf). The ASTM standards are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, Post Office Box C700, West Conshohocken, PA 19428–2959. See *http://www.astm.org.* You may inspect a copy at the EPA Docket Center, WJC West Building, Room Number 3334, 1301 Constitution Ave. NW, Washington, DC; phone number: (202) 566–1744; Docket ID No. EPA–HQ–OAR–2019–0338. This IBR has been approved by the Office of the Federal Register and the method is federally enforceable under the CAA as of the effective date of this final rulemaking.

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Orders 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was, therefore, not submitted to the OMB for review.

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is considered an Executive Order 13771 deregulatory action. This final rule provides meaningful burden reduction by removing the requirements for SSM plans and periodic SSM reports, removing the oxygen and nitrogen wellhead operating standards, increasing the temperature wellhead standard, revising the corrective action timeline and procedures, providing flexibility for landfills to remove controls, and adding electronic reporting.

C. Paperwork Reduction Act (PRA)

This action does not impose any new information collection burden under the PRA. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control number 2060–0505. The only burden associated with the final rule is limited to affected sources becoming familiar with the changes in the final rule. The burden for respondents to review rule requirements each year is already accounted for in the previously approved information collection activities contained in the existing regulations (40 CFR part 63, subpart AAAA), which were assigned OMB control number 2060–0505. Additionally, changes to 40 CFR part 60, subpart WWW, subpart XXX, and subpart Cf only add clarifying language for affected sources and provide alternatives for any deviations from the respective standards. These changes would not increase any burden for affected sources.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden, or otherwise has a positive economic effect on the small entities subject to the rule. This action is projected to affect 738 MSW landfills, and approximately 60 of these facilities are owned by a small entity. The small entities subject to the requirements of this final rule may include private small business and small governmental jurisdictions that own or operate landfills, but the cost for complying with the final amendments is expected to be $0. We have, therefore, concluded that this action will have no net regulatory burden for all directly regulated small entities.

E. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. While state, local, or tribal governments own and operate landfills subject to these final amendments, the impacts resulting from this regulatory action are far below the applicable threshold.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. The database used to estimate impacts of these final amendments identified one tribe, the Salt River Pima-Maricopa Indian Community, that owns three landfills potentially subject to the NESHAP. Two of these landfills are already controlling emissions—the Salt River Landfill and the Tri Cities Landfill. Although the permits for these landfills indicate they are subject to this subpart, these final changes are not expected to increase the costs. The other landfill, North Center Street Landfill, is not estimated to install controls under the NESHAP. The EPA offered to consult with tribal officials under the EPA Policy on Consultation and Coordination with Indian Tribes in the process of developing this regulation to permit them to have meaningful and timely input into its development. A copy of the letter offering consultation is in the docket for this action.

H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental

health or safety risks addressed by this action present a disproportionate risk to children. This action's health and risk assessments are contained in sections III.A and IV.A of this preamble.

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

J. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR part 51

This action involves technical standards. The EPA has decided to use voluntary consensus standards ASTM D6522–11, "Standard Test Method for the Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers," as an acceptable alternative to EPA Method 3A when used at the wellhead before combustion. It is advisable to know the flammability and check the lower explosive limit of the flue gas constituents prior to sampling, in order to avoid undesired ignition of the gas. The results of ASTM D6522–11 may be used to determine nitrogen oxides and CO emission concentrations from natural gas combustion at stationary sources. This test method may also be used to monitor emissions during short-term emission tests or periodically in order to optimize process operation for nitrogen oxides and CO control. The EPA's review is documented in the memorandum, *Voluntary Consensus Standard Results for National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills Residual Risk and Technology Review,* in the docket for this rulemaking (Docket ID No. EPA–HQ–OAR–2002–0047).

In this rule, the EPA is finalizing regulatory text for 40 CFR part 63, subpart AAAA that includes IBR in accordance with requirements of 1 CFR 51.5. Specifically, the EPA is incorporating by reference ASTM D6522–11. See section VI of this preamble for information on the availability of this material.

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specified in Executive Order 12898 (58 FR 7629, February 16, 1994).

Our analysis of the demographics of the population with estimated risks greater than 1-in-1 million indicates potential disparities in risks between demographic groups, including the African American, Hispanic or Latino, Over 25 Without a High School Diploma, and Below the Poverty Level groups. In addition, the population living within 50 km of MSW landfills has a higher percentage of minority, lower income, and lower education people when compared to the nationwide percentages of those groups. However, acknowledging these potential disparities, the risks for the source category were determined to be acceptable, and any emissions reductions from the final revisions will benefit these groups the most.

The documentation for this decision is contained in section IV.B and C of this preamble, and the technical report, *Risk and Technology Review—Analysis of Demographic Factors for Populations Living Near Municipal Solid Waste Landfill Source Category Operations,* which is available in the docket for this action.

L. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects

40 CFR Part 60

Environmental protection, Administrative practice and procedure, Air pollution control, Hazardous substances, Intergovernmental relations, Reporting and recordkeeping requirements.

40 CFR Part 63

Environmental protection, Administrative practice and procedure, Air pollution control, Hazardous substances, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: February 25, 2020.

Andrew R. Wheeler,

Administrator.

For the reasons set forth in the preamble, the EPA amends 40 CFR parts 60 and 63 as follows:

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

■ 1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart Cf—Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

■ 2. Section 60.34f is amended by revising the introductory text to read as follows:

§ 60.34f Operational standards for collection and control systems.

For approval, a state plan must include provisions for the operational standards in this section (as well as the provisions in §§ 60.36f and 60.37f), or the operational standards in § 63.1958 of this chapter (as well as the provisions in §§ 63.1960 of this chapter and 63.1961 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of § 60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of § 63.1958 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section. Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of § 60.33f(b) and (c) must:

* * * * *

■ 3. Section 60.36f is amended by revising the introductory text and paragraph (a)(3)(ii) to read as follows:

§ 60.36f Compliance provisions.

For approval, a state plan must include the compliance provisions in this section (as well as the provisions in §§ 60.34f and 60.37f), or the compliance provisions in § 63.1960 of this chapter (as well as the provisions in §§ 63.1958 of this chapter and 63.1961 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of § 60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of § 63.1960 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section.

(a) * * *

(3) * * *

(ii) If corrective actions cannot be fully implemented within 60 days following the positive pressure or elevated temperature measurement 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 greater than 55 degrees Celsius (131 degrees Fahrenheit) or positive pressure. The owner or operator must submit the items listed in § 60.38f(h)(7) as part of the next annual report. The owner or operator must keep records according to § 60.39f(e)(4).

* * * * *

■ 4. Section 60.37f is amended by revising the introductory text to read as follows:

§ 60.37f Monitoring of operations.

For approval, a state plan must include the monitoring provisions in this section, (as well as the provisions in §§ 60.34f and 60.36f) except as provided in § 60.38f(d)(2), or the monitoring provisions in § 63.1961 of this chapter (as well as the provisions in §§ 63.1958 of this chapter and 63.1960 of this chapter), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of § 60.33f(b) and (c). Once the owner or operator begins to comply with the provisions of § 63.1961 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of this section.

* * * * *

■ 5. Section 60.38f is amended by revising paragraphs (h) introductory, (h)(7), and (k) introductory text and adding paragraph (n) to read as follows:

§ 60.38f Reporting guidelines.

* * * * *

(h) *Annual report.* The owner or operator of a landfill seeking to comply with § 60.33f(e)(2) using an active collection system designed in accordance with § 60.33f(b) must submit to the Administrator, following the procedures specified in paragraph (j)(2) of this section, an annual report of the recorded information in paragraphs (h)(1) through (7) of this section. The initial annual report must be submitted within 180 days of installation and startup of the collection and control system. The initial annual report must include the initial performance test report required under § 60.8, as applicable, unless the report of the results of the performance test has been submitted to the EPA via the EPA's CDX. In the initial annual report, the process unit(s) tested, the pollutant(s) tested and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. The initial performance test report must be submitted, following the procedure specified in paragraph (j)(1) of this section, no later than the date that the initial annual report is submitted. For enclosed combustion devices and flares, reportable exceedances are defined under § 60.39f(c)(1). If complying with the operational provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at §§ 60.34f, 60.36f, and 60.37f, the owner or operator must follow the semi-annual reporting requirements in § 63.1981(h) of this chapter in lieu of this paragraph.

* * * * *

(7) For any corrective action analysis for which corrective actions are required in § 60.36f(a)(3) or (5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or elevated temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

* * * * *

(k) *Corrective action and the corresponding timeline.* The owner or operator must submit according to paragraphs (k)(1) and (2) of this section. If complying with the operational provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at §§ 60.34f, 60.36f, and 60.37f, the owner or operator must follow the corrective action and the corresponding timeline reporting requirements in § 63.1981(j) of this chapter in lieu of paragraphs (k)(1) and (2) of this section.

* * * * *

(n) Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§ 60.34f, 60.36f, and 60.37f, must submit the 24-hour high temperature report according to § 63.1981(k) of this chapter.

■ 6. Section 60.39f is amended by revising paragraph (e) introductory text and adding paragraph (e)(6) to read as follows:

§ 60.39f Recordkeeping guidelines.

* * * * *

(e) Except as provided in § 60.38f(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of the items in paragraphs (e)(1) through (5) of this section. Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§ 60.34f, 60.36f, and 60.37f, must keep the records in paragraph (e)(6) of this section and must keep records according to § 63.1983(e)(1) through (5) of this chapter in lieu of paragraphs (e)(1) through (5) of this section.

* * * * *

(6) Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed in §§ 60.34f, 60.36f, and 60.37f, must keep records of the date upon which the owner or operator started complying with the provisions in §§ 63.1958, 63.1960, and 63.1961.

* * * * *

Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification on or after May 30, 1991, but Before July 18, 2014

■ 7. Section 60.750 is amended by revising paragraph (a) and adding paragraph (d) to read as follows:

§ 60.750 Applicability, designation of affected facility, and delegation of authority.

(a) The provisions of this subpart apply to each municipal solid waste landfill that commenced construction, reconstruction, or modification on or after May 30, 1991, but before July 18, 2014.

* * * * *

(d) An affected municipal solid waste landfill must continue to comply with this subpart until it:

(1) Becomes subject to the more stringent requirements in an approved and effective state or federal plan that implements subpart Cf of this part, or

(2) Modifies or reconstructs after July 17, 2014, and thus becomes subject to subpart XXX of this part.

Subpart XXX—Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification After July 17, 2014

■ 8. Section 60.762 is amended by revising paragraph (b)(2)(iv) to read as follows:

§ 60.762 Standards for air emissions from municipal solid waste landfills.

* * * * *

(b) * * *

(2) * * *

(iv) *Operation.* Operate the collection and control device installed to comply with this subpart in accordance with the provisions of §§ 60.763, 60.765, and 60.766; or the provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter. Once the owner or operator begins to comply with the provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter, the owner or operator must continue to operate the collection and control device according to those provisions and cannot return to the provisions of §§ 60.763, 60.765, and 60.766.

* * * * *

■ 9. Section 60.765 is amended by revising paragraph (a)(5)(ii) to read as follows:

§ 60.765 Compliance provisions.

(a) * * *

(5) * * *

(ii) If corrective actions cannot be fully implemented within 60 days following the positive pressure or elevated temperature measurement 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 greater than 55 degrees Celsius (131 degrees Fahrenheit) or positive pressure. The owner or operator must submit the items listed in § 60.767(g)(7) as part of the next annual report. The owner or operator must keep records according to § 60.768(e)(4).

* * * * *

■ 10. Section 60.767 is amended by revising paragraphs (g) introductory text, (g)(7, and (j) introductory text and adding paragraph (m) to read as follows:

§ 60.767 Reporting requirements.

* * * * *

(g) *Annual report.* The owner or operator of a landfill seeking to comply with § 60.762(b)(2) using an active collection system designed in accordance with § 60.762(b)(2)(ii) must submit to the Administrator, following the procedure specified in paragraph (i)(2) of this section, annual reports of the recorded information in paragraphs (g)(1) through (7) of this section. The initial annual report must be submitted within 180 days of installation and startup of the collection and control system and must include the initial performance test report required under § 60.8, as applicable, unless the report of the results of the performance test has been submitted to the EPA via the EPA's CDX. In the initial annual report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. For enclosed combustion devices and flares, reportable exceedances are defined under § 60.768(c). If complying with the operational provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at § 60.762(b)(2)(iv), the owner or operator must follow the semi-annual reporting requirements in § 63.1981(h) of this chapter in lieu of this paragraph.

* * * * *

(7) For any corrective action analysis for which corrective actions are required in § 60.765(a)(3) or (5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or elevated temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

* * * * *

(j) *Corrective action and the corresponding timeline.* The owner or operator must submit according to paragraphs (j)(1) and (2) of this section. If complying with the operational provisions of §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at § 60.762(b)(2)(iv), the owner or operator must follow the corrective action and the corresponding timeline requirements in § 63.1981(j) of this chapter in lieu of this paragraph.

* * * * *

(m) Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961, as allowed at § 60.762(b)(2)(iv), must submit the 24-hour high temperature report according to § 63.1981(k) of this chapter.

■ 11. Section 60.768 is amended by revising paragraph (e) introductory text and adding paragraph (e)(6) to read as follows:

§ 60.768 Recordkeeping requirements.

* * * * *

(e) Except as provided in § 60.767(c)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of the items in paragraphs (e)(1) through (5) of this section. Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at § 60.762(b)(2)(iv), must keep the records in paragraph (e)(6) of this section and must keep records according to §§ 63.1983(e)(1) through (5) of this chapter in lieu of paragraphs (e)(1) through (5) of this section.

* * * * *

(6) Each owner or operator that chooses to comply with the provisions in §§ 63.1958, 63.1960, and 63.1961 of this chapter, as allowed at § 60.762(b)(2)(iv), must keep records of the date upon which the owner or operator started complying with the provisions in §§ 63.1958, 63.1960, and 63.1961.

* * * * *

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

■ 12. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

■ 13. Section 63.14 is amended by revising paragraph (h)(94) to read as follows:

§ 63.14 Incorporations by reference.

* * * * *

(h) * * *

(94) ASTM D6522–11 Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers, Approved December 1, 2011, IBR approved for § 63.1961(a) and table 3 to subpart YYYY.

* * * * *

■ 14. Subpart AAAA is revised to read as follows:

Subpart AAAA—National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills

What This Subpart Covers

Sec.
63.1930 What is the purpose of this subpart?
63.1935 Am I subject to this subpart?
63.1940 What is the affected source of this subpart?
63.1945 When do I have to comply with this subpart?
63.1947 When do I have to comply with this subpart if I own or operate a bioreactor?
63.1950 When am I no longer required to comply with this subpart?
63.1952 When am I no longer required to comply with the requirements of this subpart if I own or operate a bioreactor?

Standards

63.1955 What requirements must I meet?
63.1957 Requirements for gas collection and control system installation and removal
63.1958 Operational standards for collection and control systems
63.1959 NMOC calculation procedures
63.1960 Compliance provisions
63.1961 Monitoring of operations
63.1962 Specifications for active collection systems

General and Continuing Compliance Requirements

63.1964 How is compliance determined?
63.1965 What is a deviation?
63.1975 How do I calculate the 3-hour block average used to demonstrate compliance?

Notifications, Records, and Reports

63.1981 What reports must I submit?
63.1982 What records and reports must I submit and keep for bioreactors or liquids addition other than leachate?
63.1983 What records must I keep?

Other Requirements and Information

63.1985 Who enforces this subpart?
63.1990 What definitions apply to this subpart?

Table 1 to Subpart AAAA of Part 63—Applicability of NESHAP General Provisions to Subpart AAAA

Subpart AAAA—National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills

What This Subpart Covers

§ 63.1930 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants for existing and new municipal solid waste (MSW) landfills.

(a) Before September 28, 2021, all landfills described in § 63.1935 must meet the requirements of 40 CFR part 60, subpart WWW, or an approved state or federal plan that implements 40 CFR part 60, subpart Cc, and requires timely control of bioreactors and additional reporting requirements. Landfills must also meet the startup, shutdown, and malfunction (SSM) requirements of the general provisions as specified in Table 1 to Subpart AAAA of this part and must demonstrate compliance with the operating conditions by parameter monitoring results that are within the specified ranges. Specifically, landfills must meet the following requirements of this subpart that apply before September 28, 2021, as set out in: §§ 63.1955(a), 63.1955(b), 63.1965(a), 63.1965(c), 63.1975, 63.1981(a), 63.1981(b), and 63.1982, and the definitions of "Controlled landfill" and "Deviation" in § 63.1990.

(b) Beginning no later than September 27, 2021, all landfills described in § 63.1935 must meet the requirements of this subpart. A landfill may choose to meet the requirements of this subpart rather than the requirements identified in § 63.1930(a) at any time before September 27, 2021. The requirements of this subpart apply at all times, including during periods of SSM, and the SSM requirements of the General Provisions of this part do not apply.

§ 63.1935 Am I subject to this subpart?

You are subject to this subpart if you meet the criteria in paragraph (a) or (b) of this section.

(a) You are subject to this subpart if you own or operate an MSW landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition and meets any one of the three criteria in paragraphs (a)(1) through (3) of this section:

(1) Your MSW landfill is a major source as defined in § 63.2 of subpart A.

(2) Your MSW landfill is collocated with a major source as defined in § 63.2 of subpart A.

(3) Your MSW landfill is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to § 63.1959.

(b) You are subject to this subpart if you own or operate an MSW landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition, that includes a bioreactor, as defined in § 63.1990, and that meets any one of the criteria in paragraphs (b)(1) through (3) of this section:

(1) Your MSW landfill is a major source as defined in § 63.2 of subpart A.

(2) Your MSW landfill is collocated with a major source as defined in § 63.2 of subpart A.

(3) Your MSW landfill is an area source landfill that has a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3 and that is not permanently closed as of January 16, 2003.

§ 63.1940 What is the affected source of this subpart?

(a) An affected source of this subpart is an MSW landfill, as defined in § 63.1990, that meets the criteria in § 63.1935(a) or (b). The affected source includes the entire disposal facility in a contiguous geographic space where household waste is placed in or on land, including any portion of the MSW landfill operated as a bioreactor.

(b) A new affected source of this subpart is an affected source that commenced construction or reconstruction after November 7, 2000. An affected source is reconstructed if it meets the definition of reconstruction in § 63.2 of subpart A.

(c) An affected source of this subpart is existing if it is not new.

§ 63.1945 When do I have to comply with this subpart?

(a) If your landfill is a new affected source, you must comply with this subpart by January 16, 2003, or at the time you begin operating, whichever is later.

(b) If your landfill is an existing affected source, you must comply with this subpart by January 16, 2004.

§ 63.1947 When do I have to comply with this subpart if I own or operate a bioreactor?

You must comply with this subpart by the dates specified in § 63.1945(a) or (b). If you own or operate a bioreactor located at a landfill that is not permanently closed as of January 16, 2003, and has a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3, then you must install and operate a collection and control system that meets the criteria in § 63.1959(b)(2) according to the schedule specified in paragraph (a), (b), or (c) of this section.

(a) If your bioreactor is at a new affected source, then you must meet the requirements in paragraphs (a)(1) and (2) of this section:

(1) Install the gas collection and control system for the bioreactor before initiating liquids addition.

(2) Begin operating the gas collection and control system within 180 days after initiating liquids addition or within 180 days after achieving a moisture content of 40 percent by weight, whichever is later. If you choose

to begin gas collection and control system operation 180 days after achieving a 40-percent moisture content instead of 180 days after liquids addition, use the procedures in §§ 63.1982(c) and (d) to determine when the bioreactor moisture content reaches 40 percent.

(b) If your bioreactor is at an existing affected source, then you must install and begin operating the gas collection and control system for the bioreactor by January 17, 2006, or by the date your bioreactor is required to install a gas collection and control system under 40 CFR part 60, subpart WWW; a federal plan; or an EPA-approved and effective state plan or tribal plan that applies to your landfill, whichever is earlier.

(c) If your bioreactor is at an existing affected source and you do not initiate liquids addition to your bioreactor until later than January 17, 2006, then you must meet the requirements in paragraphs (c)(1) and (2) of this section:

(1) Install the gas collection and control system for the bioreactor before initiating liquids addition.

(2) Begin operating the gas collection and control system within 180 days after initiating liquids addition or within 180 days after achieving a moisture content of 40 percent by weight, whichever is later. If you choose to begin gas collection and control system operation 180 days after achieving a 40-percent moisture content instead of 180 days after liquids addition, use the procedures in § 63.1980(e) and (f) to determine when the bioreactor moisture content reaches 40 percent.

§ 63.1950 When am I no longer required to comply with this subpart?

You are no longer required to comply with the requirements of this subpart when your landfill meets the collection and control system removal criteria in § 63.1957(b).

§ 63.1952 When am I no longer required to comply with the requirements of this subpart if I own or operate a bioreactor?

If you own or operate a landfill that includes a bioreactor, you are no longer required to comply with the requirements of this subpart for the bioreactor provided you meet the conditions of either paragraph (a) or (b) of this section.

(a) Your affected source meets the control system removal criteria in § 63.1950 or the bioreactor meets the criteria for a nonproductive area of the landfill in § 63.1962(a)(3)(ii).

(b) The bioreactor portion of the landfill is a closed landfill as defined in § 63.1990, you have permanently ceased adding liquids to the bioreactor, and you have not added liquids to the bioreactor for at least 1 year. A closure report for the bioreactor must be submitted to the Administrator as provided in § 63.1981(g).

Standards

§ 63.1955 What requirements must I meet?

(a) Before September 28, 2021, if alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions have already been approved under 40 CFR part 60, subpart WWW; subpart XXX; a federal plan; or an EPA-approved and effective state or tribal plan, these alternatives can be used to comply with this subpart, except that all affected sources must comply with the SSM requirements in subpart A of this part as specified in Table 1 of this subpart and all affected sources must submit compliance reports every 6 months as specified in § 63.1981(h), including information on all deviations that occurred during the 6-month reporting period. Deviations for continuous emission monitors or numerical continuous parameter monitors must be determined using a 3-hour monitoring block average. Beginning no later than September 28, 2021, the collection and control system design plan may include for approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions, as provided in § 63.1981(d)(2).

(b) If you own or operate a bioreactor that is located at an MSW landfill that is not permanently closed and has a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3, then you must meet the requirements of this subpart, including requirements in paragraphs (b)(1) and (2) of this section.

(1) You must comply with this subpart starting on the date you are required to install the gas collection and control system.

(2) You must extend the collection and control system into each new cell or area of the bioreactor prior to initiating liquids addition in that area.

(c) At all times, beginning no later than September 27, 2021, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the owner or operator to make any further efforts to reduce emissions if the requirements of this subpart have been achieved. Determination of whether a source is operating in compliance with operation and maintenance requirements will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

§ 63.1957 Requirements for gas collection and control system installation and removal.

(a) *Operation.* Operate the collection and control device in accordance with the provisions of §§ 63.1958, 63.1960, and 63.1961.

(b) *Removal criteria.* The collection and control system may be capped, removed, or decommissioned if the following criteria are met:

(1) The landfill is a closed landfill (as defined in § 63.1990). A closure report must be submitted to the Administrator as provided in § 63.1981(f);

(2) The gas collection and control system has been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flow; and

(3) Following the procedures specified in § 63.1959(c), the calculated NMOC emission rate at the landfill is less than 50 Mg/yr on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

§ 63.1958 Operational standards for collection and control systems.

Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of § 63.1957 must:

(a) Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:

(1) 5 years or more if active; or

(2) 2 years or more if closed or at final grade;

(b) Operate the collection system with negative pressure at each wellhead except under the following conditions:

(1) A 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 semi-annual reports as provided in § 63.1981(h);

(2) Use of a geomembrane or synthetic cover. The owner or operator must develop acceptable pressure limits in the design plan;

(3) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes must be approved by the Administrator as specified in § 63.1981(d)(2);

(c) Operate each interior wellhead in the collection system as specified in § 60.753(c), except:

(1) Beginning no later than September 27, 2021, operate each interior wellhead in the collection system with a landfill gas temperature less than 62.8 degrees Celsius (145 degrees Fahrenheit).

(2) The owner or operator may establish a higher operating temperature value at a particular well. A higher operating value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria in order to be approved (*i.e.,* neither causing fires nor killing methanogens is acceptable).

(d)(1) Operate the collection system so that the methane concentration is less than 500 parts per million (ppm) above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

(2) Beginning no later than September 27, 2021, the owner or operator must:

(i) Conduct surface testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in § 63.1960(d).

(ii) Conduct surface testing at all cover penetrations. Thus, the owner or operator must monitor any cover penetrations that are within an area of the landfill where waste has been placed and a gas collection system is required.

(iii) Determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(e) Operate the system as specified in § 60.753(e) of this chapter, except:

(1) Beginning no later than September 27, 2021, operate the system in accordance to § 63.1955(c) such that all collected gases are vented to a control system designed and operated in compliance with § 63.1959(b)(2)(iii). In the event the collection or control system is not operating:

(i) The gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating; and

(ii) Efforts to repair the collection or control system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation.

(2) [Reserved]

(f) Operate the control system at all times when the collected gas is routed to the system.

(g) If monitoring demonstrates that the operational requirements in paragraph (b), (c), or (d) of this section are not met, corrective action must be taken as specified in § 63.1960(a)(3) and (5) or (c). If corrective actions are taken as specified in § 63.1960, the monitored exceedance is not a deviation of the operational requirements in this section.

§ 63.1959 NMOC calculation procedures.

(a) Calculate the NMOC emission rate using the procedures specified in § 60.754(a) of this chapter, except:

(1) *NMOC emission rate.* Beginning no later than September 27, 2021 the landfill owner or operator must calculate the NMOC emission rate using either Equation 1 provided in paragraph (a)(1)(i) of this section or Equation 2 provided in paragraph (a)(1)(ii) of this section. Both Equation 1 and Equation 2 may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (a)(1)(i) of this section, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (a)(1)(ii) of this section, for part of the life of the landfill. The values to be used in both Equation 1 and Equation 2 are 0.05 per year for k, 170 cubic meters per megagram (m^3/Mg) for L_O, and 4,000 parts per million by volume (ppmv) as hexane for the C_{NMOC}. For landfills located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year.

(i)(A) Equation 1 must be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^{n} 2\,k\,L_o M_i \left(e^{-kt_i}\right) (C_{NMOC}) (3.6x10^{-9}) \quad \text{(Eq. 1)}$$

Where:

M_{NMOC} = Total NMOC emission rate from the landfill, Mg/yr.

k = Methane generation rate constant, year − 1.

L_o = Methane generation potential, m^3/Mg solid waste.

M_i = Mass of solid waste in the ith section, Mg.

t_i = Age of the ith section, years.

C_{NMOC} = Concentration of NMOC, ppmv as hexane.

$3.6 \times 10 - 9$ = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

(ii)(A) Equation 2 must be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC} = 2L_oR\left(e^{-kc} - e^{-kt}\right) C_{NMOC}(3.6 \times 10^{-9}) \quad \text{(Eq. 2)}$$

Where:

M_{NMOC} = Mass emission rate of NMOC, Mg/yr.

L_o = Methane generation potential, m^3/Mg solid waste.

R = Average annual acceptance rate, Mg/yr.

k = Methane generation rate constant, $year^{-1}$.

t = Age of landfill, years.

C_{NMOC} = Concentration of NMOC, ppmv as hexane.

c = Time since closure, years; for active landfill c=0 and $e^{-kc} = 1$.

3.6×10^{-9} = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

(2) *Tier 1.* The owner or operator must compare the calculated NMOC mass emission rate to the standard of 50 Mg/yr.

(i) If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 50 Mg/yr, then the landfill owner or operator must submit an NMOC emission rate report according to § 63.1981(c) and must recalculate the NMOC mass emission rate annually as required under paragraph (b) of this section.

(ii) If the calculated NMOC emission rate as calculated in paragraph (a)(1) of this section is equal to or greater than 50 Mg/yr, then the landfill owner must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in § 63.1981(d) and install and operate a gas collection and control system within 30 months of the first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, according to paragraphs (b)(2)(ii) and (iii) of this section;

(B) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures provided in paragraph (a)(3) of this section; or

(C) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures provided in paragraph (a)(4) of this section.

(3) *Tier 2.* The landfill owner or operator must determine the site-specific NMOC concentration using the following sampling procedure. The landfill owner or operator must install at least two sample probes per hectare, evenly distributed over the landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The probes should be evenly distributed across the sample area. The sample probes should be located to avoid known areas of nondegradable solid waste. The owner or operator must collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using EPA Method 25 or 25C of appendix A–7 to part 60. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If more than the required number of samples are taken, all samples must be used in the analysis. The landfill owner or operator must divide the NMOC concentration from EPA Method 25 or 25C of appendix A–7 to part 60 by 6 to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, EPA Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe. The sample location on the common header pipe must be before any gas moving, condensate removal, or treatment system equipment. For active collection systems, a minimum of three samples must be collected from the header pipe.

(i) Within 60 days after the date of completing each performance test (as defined in § 63.7 of subpart A), the owner or operator must submit the results according to § 63.1981(i).

(ii) The landfill owner or operator must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 provided in paragraph (a)(1)(i) or (ii) of this section and use the average site-specific NMOC concentration from the collected samples instead of the default value provided in paragraph (a)(1) of this section.

(iii) If the resulting NMOC mass emission rate is less than 50 Mg/yr, then the owner or operator must submit a periodic estimate of NMOC emissions in an NMOC emission rate report according to § 63.1981(c) and must recalculate the NMOC mass emission rate annually as required under paragraph (b) of this section. The site-specific NMOC concentration must be retested every 5 years using the methods specified in this section.

(iv) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration is equal to or greater than 50 Mg/yr, the landfill owner or operator must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in § 63.1981(d) and install and operate a gas collection and control system within 30 months according to paragraphs (b)(2)(ii) and (iii) of this section; or

(B) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the Tier 3 procedures specified in paragraph (a)(4) of this section.

(4) *Tier 3.* The site-specific methane generation rate constant must be determined using the procedures provided in EPA Method 2E of appendix A–1 to part 60 of this chapter. The landfill owner or operator must estimate the NMOC mass emission rate using Equation 1 or Equation 2 in paragraph (a)(1)(i) or (ii) of this section and using a site-specific methane generation rate constant, and the site-specific NMOC concentration as determined in paragraph (a)(3) of this section instead of the default values provided in paragraph (a)(1) of this section. The landfill owner or operator must compare the resulting NMOC mass emission rate to the standard of 50 Mg/yr.

(i) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration and Tier 3 site-specific methane generation rate is equal to or greater than 50 Mg/yr, the owner or operator must:

(A) Submit a gas collection and control system design plan within 1 year as specified in § 63.1981(e) and install and operate a gas collection and control system within 30 months of the first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, according to paragraphs (b)(2)(ii) and (iii) of this section.

(B) [Reserved]

(ii) If the NMOC mass emission rate is less than 50 Mg/yr, then the owner or operator must recalculate the NMOC mass emission rate annually using Equation 1 or Equation 2 in paragraph (a)(1) of this section and using the site-specific Tier 2 NMOC concentration and Tier 3 methane generation rate constant and submit a periodic NMOC emission rate report as provided in § 63.1981(c).

The calculation of the methane generation rate constant is performed only once, and the value obtained from this test must be used in all subsequent annual NMOC emission rate calculations.

(5) *Other methods.* The owner or operator may use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to the methods required in paragraphs (a)(3) and (4) of this section if the method has been approved by the Administrator.

(b) Each owner or operator of an affected source having a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3 must either comply with paragraph (b)(2) of this section or calculate an NMOC emission rate for the landfill using the procedures specified in paragraph (a) of this section. The NMOC emission rate must be recalculated annually, except as provided in § 63.1981(c)(1)(ii)(A).

(1) If the calculated NMOC emission rate is less than 50 Mg/yr, the owner or operator must:

(i) Submit an annual NMOC emission rate emission report to the Administrator, except as provided for in § 63.1981(c)(1)(ii); and

(ii) Recalculate the NMOC emission rate annually using the procedures specified in paragraph (a)(1) of this section until such time as the calculated NMOC emission rate is equal to or greater than 50 Mg/yr, or the landfill is closed.

(A) If the calculated NMOC emission rate, upon initial calculation or annual recalculation required in paragraph (b) of this section, is equal to or greater than 50 Mg/yr, the owner or operator must either: comply with paragraph (b)(2) of this section or calculate NMOC emissions using the next higher tier in paragraph (a) of this section.

(B) If the landfill is permanently closed, a closure report must be submitted to the Administrator as provided for in § 63.1981(f).

(2) If the calculated NMOC emission rate is equal to or greater than 50 Mg/yr using Tier 1, 2, or 3 procedures, the owner or operator must either:

(i) Submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year as specified in § 63.1981(d) or calculate NMOC emissions using the next higher tier in paragraph (a) of this section. The collection and control system must meet the requirements in paragraphs (b)(2)(ii) and (iii) of this section.

(ii) Collection system. Install and start up a collection and control system that captures the gas generated within the landfill as required by paragraphs (b)(2)(ii)(B) or (C) and (b)(2)(iii) of this section within 30 months after:

(A) The first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 Mg.

(B) An active collection system must:

(*1*) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment;

(*2*) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade;

(*3*) Collect gas at a sufficient extraction rate; and

(*4*) Be designed to minimize off-site migration of subsurface gas.

(C) A passive collection system must:

(*1*) Comply with the provisions specified in paragraphs (b)(2)(ii)(B)(1), (2), and (3) of this section; and

(*2*) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners must be installed as required under § 258.40 of this chapter.

(iii) Control system. Route all the collected gas to a control system that complies with the requirements in either paragraph (b)(2)(iii)(A), (B), or (C) of this section.

(A) A non-enclosed flare designed and operated in accordance with the parameters established in § 63.11(b) except as noted in paragraph (f) of this section; or

(B) A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppmv, dry basis as hexane at 3-percent oxygen. The reduction efficiency or ppmv must be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in paragraph (e) of this section. The performance test is not required for boilers and process heaters with design heat input capacities equal to or greater than 44 megawatts that burn landfill gas for compliance with this subpart.

(*1*) If a boiler or process heater is used as the control device, the landfill gas stream must be introduced into the flame zone.

(*2*) The control device must be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in §§ 63.1961(b) through (e);

(C) A treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-British thermal unit (Btu) gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either paragraph (b)(2)(iii)(A) or (B) of this section.

(D) All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of paragraph (b)(2)(iii)(A) or (B) of this section. For purposes of this subpart, atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of paragraph (b)(2)(iii)(A) or (B) of this section.

(c) After the installation and startup of a collection and control system in compliance with this subpart, the owner or operator must calculate the NMOC emission rate for purposes of determining when the system can be capped, removed, or decommissioned as provided in § 63.1957(b)(3), using Equation 3:

$$MNMOC = 1.89 \times 10^{-3} Q_{LFG} C_{NMOC} \quad \text{(Eq. 3)}$$

Where:

M_{NMOC} = Mass emission rate of NMOC, Mg/yr.

Q_{LFG} = Flow rate of landfill gas, m^3 per minute.

C_{NMOC} = Average NMOC concentration, ppmv as hexane.

1.89×10^{-3} = Conversion factor.

(1) The flow rate of landfill gas, Q_{LFG}, must be determined by measuring the

total landfill gas flow rate at the common header pipe that leads to the control system using a gas flow measuring device calibrated according to the provisions of section 10 of EPA Method 2E of appendix A–1 of part 60.

(2) The average NMOC concentration, C_{NMOC}, must be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in EPA Method 25 or 25C of appendix A–7 to part 60 of this chapter. The sample location on the common header pipe must be before any condensate removal or other gas refining units. The landfill owner or operator must divide the NMOC concentration from EPA Method 25 or 25C of appendix A–7 to part 60 by 6 to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

(3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

(i) Within 60 days after the date of completing each performance test (as defined in § 63.7), the owner or operator must submit the results of the performance test, including any associated fuel analyses, according to § 63.1981(i).

(ii) [Reserved]

(d) For the performance test required in § 63.1959(b)(2)(iii)(B), EPA Method 25 or 25C (EPA Method 25C of appendix A–7 to part 60 of this chapter may be used at the inlet only) of appendix A of this part must be used to determine compliance with the 98 weight-percent efficiency or the 20- ppmv outlet concentration level, unless another method to demonstrate compliance has been approved by the Administrator as provided by § 63.1981(d)(2). EPA Method 3, 3A, or 3C of appendix A–7 to part 60 must be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), EPA Method 25A should be used in place of EPA Method 25. EPA Method 18 may be used in conjunction with EPA Method 25A on a limited basis (compound specific, *e.g.,* methane) or EPA Method 3C may be used to determine methane. The methane as carbon should be subtracted from the EPA Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The landowner or operator must divide the NMOC concentration as carbon by 6 to convert from the C_{NMOC} as carbon to C_{NMOC} as hexane. Equation 4 must be used to calculate efficiency:

$$\text{Control Efficiency} = (NMOC_{in} - NMOC_{out})/(NMOC_{in}) \quad \text{(Eq. 4)}$$

Where:

$NMOC_{in}$ = Mass of NMOC entering control device.

$NMOC_{out}$ = Mass of NMOC exiting control device.

(e) For the performance test required in § 63.1959(b)(2)(iii)(A), the net heating value of the combusted landfill gas as determined in § 63.11(b)(6)(ii) is calculated from the concentration of methane in the landfill gas as measured by EPA Method 3C of appendix A to part 60 of this chapter. A minimum of three 30-minute EPA Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. EPA Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under § 63.11(b)(7) of subpart A.

(1) Within 60 days after the date of completing each performance test (as defined in § 63.7), the owner or operator must submit the results of the performance tests, including any associated fuel analyses, required by § 63.1959(c) or (e) according to § 63.1981(i).

(2) [Reserved]

(f) The performance tests required in §§ 63.1959(b)(2)(iii)(A) and (B), must be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Representative conditions exclude periods of startup and shutdown unless specified by the Administrator. The owner or operator may not conduct performance tests during periods of malfunction. The owner or operator must record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

§ 63.1960 Compliance provisions.

(a) Except as provided in § 63.1981(d)(2), the specified methods in paragraphs (a)(1) through (6) of this section must be used to determine whether the gas collection system is in compliance with § 63.1959(b)(2)(ii).

(1) For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with § 63.1959(b)(2)(ii)(C)(1), either Equation 5 or Equation 6 must be used. The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator. The methane generation rate constant (k) and methane generation potential (L_o) kinetic factors should be those published in the most recent *Compilation of Air Pollutant Emission Factors* (AP–42) or other site-specific values demonstrated to be appropriate and approved by the Administrator. If k has been determined as specified in § 63.1959(a)(4), the value of k determined from the test must be used. A value of no more than 15 years must be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

(i) For sites with unknown year-to-year solid waste acceptance rate:

$$Qm = 2L_oR\,(e^{-kc} - e^{-kt}) \quad \text{(Eq. 5)}$$

Where:

Qm = Maximum expected gas generation flow rate, m^3/yr.

L_o = Methane generation potential, m^3/Mg solid waste.

R = Average annual acceptance rate, Mg/yr.

k = Methane generation rate constant, $year^{-1}$.

t = Age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill,

whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years.

c = Time since closure, years (for an active landfill c = 0 and $e^{-kc} = 1$).

2 = Constant.

$$Q_M = \sum_{i=1}^{n} 2kL_oM_i\left(e^{-kt_i}\right) \text{ (Eq. 6)}$$

Where:

Q_m = Maximum expected gas generation flow rate, m^3/yr.

k = Methane generation rate constant, $year^{-1}$.

L_o = Methane generation potential, m^3/Mg solid waste.

M_i = Mass of solid waste in the ith section, Mg.

t_i = Age of the ith section, years.

(iii) If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, Equation 5 or Equation 6 in paragraphs (a)(1)(i) and (ii) of this section. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using Equation 5 or Equation 6 in paragraph (a)(1)(i) or (ii) of this section or other methods must be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

(2) For the purposes of determining sufficient density of gas collectors for compliance with § 63.1959(b)(2)(ii)(B)(*2*), the owner or operator must design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

(3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with § 63.1959(b)(2)(ii)(B)(*3*), the owner or operator must measure gauge pressure in the gas collection header applied to each individual well monthly. Any attempted corrective measure must not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the Administrator for approval. If a positive pressure exists, follow the procedures as specified in § 60.755(a)(3), except:

(i) Beginning no later than September 27, 2021, if a positive pressure exists, action must be initiated to correct the exceedance within 5 days, except for the three conditions allowed under § 63.1958(b).

(A) If negative pressure cannot be achieved without excess air infiltration within 15 days of the first measurement of positive pressure, 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 positive pressure was first measured. The owner or operator must keep records according to § 63.1983(e)(3).

(B) If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement 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 positive pressure measurement. The owner or operator must submit the items listed in § 63.1981(h)(7) as part of the next semi-annual report. The owner or operator must keep records according to § 63.1983(e)(5).

(C) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to § 63.1981(j). The owner or operator must keep records according to § 63.1983(e)(5).

(ii) [Reserved]

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph § 63.1958(c), for the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator must follow the procedures as specified in § 60.755(a)(5) of this chapter, except:

(i) Once an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1), the owner or operator must monitor each well monthly for temperature. If a well exceeds the operating parameter for temperature as provided in § 63.1958(c)(1), action must be initiated to correct the exceedance within 5 days. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(A) If a landfill gas temperature less than or equal to 62.8 degrees Celsius (145 degrees Fahrenheit) cannot be achieved within 15 days of the first measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit), 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 greater than 62.8 degrees Celsius (145 degrees Fahrenheit) was first measured. The owner or operator must keep records according to § 63.1983(e)(3).

(B) If corrective actions cannot be fully implemented within 60 days following the temperature measurement 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 greater than 62.8 degrees Celsius (145 degrees Fahrenheit). The owner or operator must submit the items listed in § 63.1981(h)(7) as part of the next semi-annual report. The owner or operator must keep records according to § 63.1983(e)(4).

(C) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to § 63.1981(h)(7) and (j). The owner or operator must keep records according to § 63.1983(e)(5).

(D) If a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7 degrees Celsius (170 degrees Fahrenheit) and the carbon monoxide concentration measured, according to the procedures in § 63.1961(a)(5)(vi) is greater than or equal to 1,000 ppmv the corrective action(s) for the wellhead temperature standard (62.8 degrees Celsius or 145 degrees Fahrenheit) must be completed within 15 days.

(5) An owner or operator seeking to demonstrate compliance with

(ii) For sites with known year-to-year solid waste acceptance rate:

§ 63.1959(b)(2)(ii)(B)(*4*) through the use of a collection system not conforming to the specifications provided in § 63.1962 must provide information satisfactory to the Administrator as specified in § 63.1981(c)(3) demonstrating that off-site migration is being controlled.

(b) For purposes of compliance with § 63.1958(a), each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in § 63.1981(b). Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:

(1) 5 years or more if active; or

(2) 2 years or more if closed or at final grade.

(c) The following procedures must be used for compliance with the surface methane operational standard as provided in § 63.1958(d).

(1) After installation and startup of the gas collection system, the owner or operator must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.

(2) The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.

(3) Surface emission monitoring must be performed in accordance with section 8.3.1 of EPA Method 21 of appendix A–7 of part 60 of this chapter, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions.

(4) Any reading of 500 ppm or more above background at any location must be recorded as a monitored exceedance and the actions specified in paragraphs (c)(4)(i) through (v) of this section must be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of § 63.1958(d).

(i) The location of each monitored exceedance must be marked and the location and concentration recorded. Beginning no later than September 27, 2021, the location must be recorded using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(ii) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 days of detecting the exceedance.

(iii) If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in paragraph (c)(4)(v) of this section must be taken, and no further monitoring of that location is required until the action specified in paragraph (c)(4)(v) of this section has been taken.

(iv) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in paragraph (c)(4)(ii) or (iii) of this section must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 ppm above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in paragraph (c)(4)(iii) or (v) of this section must be taken.

(v) For any location where monitored methane concentration equals or exceeds 500 ppm above background three times within a quarterly period, a new well or other collection device must be installed within 120 days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Administrator for approval.

(5) The owner or operator must implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

(d) Each owner or operator seeking to comply with the provisions in paragraph (c) of this section must comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

(1) The portable analyzer must meet the instrument specifications provided in section 6 of EPA Method 21 of appendix A of part 60 of this chapter, except that "methane" replaces all references to "VOC".

(2) The calibration gas must be methane, diluted to a nominal concentration of 500 ppm in air.

(3) To meet the performance evaluation requirements in section 8.1 of EPA Method 21 of appendix A of part 60 of this chapter, the instrument evaluation procedures of section 8.1 of EPA Method 21 of appendix A of part 60 must be used.

(4) The calibration procedures provided in sections 8 and 10 of EPA Method 21 of appendix A of part 60 of this chapter must be followed immediately before commencing a surface monitoring survey.

(e)(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standards in introductory paragraph § 63.1958(e), the provisions of this subpart apply at all times, except during periods of SSM, provided that the duration of SSM does not exceed 5 days for collection systems and does not exceed 1 hour for treatment or control devices. You must comply with the provisions in Table 1 to subpart AAAA that apply before September 28, 2021.

(2) Once an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in § 63.1958(c)(1), the provisions of this subpart apply at all times, including periods of SSM. During periods of SSM, you must comply with the work practice requirement specified in § 63.1958(e) in lieu of the compliance provisions in § 63.1960.

§ 63.1961 Monitoring of operations.

Except as provided in § 63.1981(d)(2):

(a) Each owner or operator seeking to comply with § 63.1959(b)(2)(ii)(B) for an active gas collection system must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:

(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in § 63.1960(a)(3); and

(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as follows:

(i) The nitrogen level must be determined using EPA Method 3C of appendix A–2 to part 60 of this chapter, unless an alternative test method is established as allowed by § 63.1981(d)(2).

(ii) Unless an alternative test method is established as allowed by § 63.1981(d)(2), the oxygen level must be determined by an oxygen meter using EPA Method 3A or 3C of appendix A–2 to part 60 of this chapter or ASTM

D6522–11 (incorporated by reference, see § 63.14). Determine the oxygen level by an oxygen meter using EPA Method 3A or 3C of appendix A–2 to part 60 or ASTM D6522–11 (if sample location is prior to combustion) except that:

(A) The span must be set between 10- and 12-percent oxygen;

(B) A data recorder is not required;

(C) Only two calibration gases are required, a zero and span;

(D) A calibration error check is not required; and

(E) The allowable sample bias, zero drift, and calibration drift are ±10 percent.

(iii) A portable gas composition analyzer may be used to monitor the oxygen levels provided:

(A) The analyzer is calibrated; and

(B) The analyzer meets all quality assurance and quality control requirements for EPA Method 3A of appendix A–2 to part 60 of this chapter or ASTM D6522–11 (incorporated by reference, see § 63.14).

(3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph § 63.1958(c), the owner or operator must follow the procedures as specified in § 60.756(a)(2) and (3) of this chapter. Monitor temperature of the landfill gas on a monthly basis as provided in § 63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of EPA Method 2 of appendix A–1 to part 60 of this chapter.

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1), monitor temperature of the landfill gas on a monthly basis as provided in § 63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of EPA Method 2 of appendix A–1 to part 60 of this chapter. Keep records specified in § 63.1983(e).

(5) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1), unless a higher operating temperature value has been approved by the Administrator under this subpart or under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a federal plan or EPA-approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, you must initiate enhanced monitoring at each well with a measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) as follows:

(i) Visual observations for subsurface oxidation events (smoke, smoldering ash, damage to well) within the radius of influence of the well.

(ii) Monitor oxygen concentration as provided in paragraph (a)(2) of this section;

(iii) Monitor temperature of the landfill gas at the wellhead as provided in paragraph (a)(4) of this section.

(iv) Monitor temperature of the landfill gas every 10 vertical feet of the well as provided in paragraph (a)(6) of this section.

(v) Monitor the methane concentration with a methane meter using EPA Method 3C of appendix A–6 to part 60, EPA Method 18 of appendix A–6 to part 60 of this chapter, or a portable gas composition analyzer to monitor the methane levels provided that the analyzer is calibrated and the analyzer meets all quality assurance and quality control requirements for EPA Method 3C or EPA Method 18.

(vi) Monitor carbon monoxide concentrations, as follows:

(A) Collect the sample from the wellhead sampling port in a passivated canister or multi-layer foil gas sampling bag (such as the Cali-5-Bond Bag) and analyze that sample using EPA Method 10 of appendix A–4 to part 60 of this chapter, or an equivalent method with a detection limit of at least 100 ppmv of carbon monoxide in high concentrations of methane; and

(B) Collect and analyze the sample from the wellhead using EPA Method 10 of appendix A–4 to part 60 to measure carbon monoxide concentrations.

(vii) The enhanced monitoring this paragraph (a)(5) must begin 7 days after the first measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit); and

(viii) The enhanced monitoring in this paragraph (a)(5) must be conducted on a weekly basis. If four consecutive weekly carbon monoxide readings are under 100 ppmv, then enhanced monitoring may be decreased to monthly. However, if carbon monoxide readings exceed 100 ppmv again, the landfill must return to weekly monitoring.

(ix) The enhanced monitoring in this paragraph (a)(5) can be stopped once a higher operating value is approved, at which time the monitoring provisions issued with the higher operating value should be followed, or once the measurement of landfill gas temperature at the wellhead is less than or equal to 62.8 degrees Celsius (145 degrees Fahrenheit).

(6) For each wellhead with a measurement of landfill gas temperature greater than or equal to 73.9 degrees Celsius (165 degrees Fahrenheit), annually monitor temperature of the landfill gas every 10 vertical feet of the well. This temperature can be monitored either with a removable thermometer, or using temporary or permanent thermocouples installed in the well.

(b) Each owner or operator seeking to comply with § 63.1959(b)(2)(iii) using an enclosed combustor must calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:

(1) A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 degrees Celsius, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts.

(2) A device that records flow to the control device and bypass of the control device (if applicable). The owner or operator must:

(i) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; and

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(c) Each owner or operator seeking to comply with § 63.1959(b)(2)(iii) using a non-enclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame; and

(2) A device that records flow to the flare and bypass of the flare (if applicable). The owner or operator must:

(i) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least

once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(d) Each owner or operator seeking to demonstrate compliance with § 63.1959(b)(2)(iii) using a device other than a non-enclosed flare or an enclosed combustor or a treatment system must provide information satisfactory to the Administrator as provided in § 63.1981(d)(2) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator must review the information and either approve it, or request that additional information be submitted. The Administrator may specify additional appropriate monitoring procedures.

(e) Each owner or operator seeking to install a collection system that does not meet the specifications in § 63.1962 or seeking to monitor alternative parameters to those required by §§ 63.1958 through 63.1961 must provide information satisfactory to the Administrator as provided in § 63.1981(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.

(f) Each owner or operator seeking to demonstrate compliance with the 500-ppm surface methane operational standard in § 63.1958(d) must monitor surface concentrations of methane according to the procedures in § 63.1960(c) and the instrument specifications in § 63.1960(d). If you are complying with the 500-ppm surface methane operational standard in § 63.1958(d)(2), for location, you must determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters and the coordinates must be in decimal degrees with at least five decimal places. In the semi-annual report in 63.1981(i), you must report the location of each exceedance of the 500-ppm methane concentration as provided in § 63.1958(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

(g) Each owner or operator seeking to demonstrate compliance with § 63.1959(b)(2)(iii)(C) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to the treatment system and bypass of the treatment system (if applicable). Beginning no later than September 27, 2021, each owner or operator must maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan required in § 63.1983(b)(5)(ii). The owner or operator must:

(1) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and

(2) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(h) The monitoring requirements of paragraphs (a), (b), (c), (d), and (g) of this section apply at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph § 63.1958(c)(1), (d)(2), and (e)(1), the standards apply at all times.

§ 63.1962 Specifications for active collection systems.

(a) Each owner or operator seeking to comply with § 63.1959(b)(2)(i) must site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Administrator as provided in § 63.1981(d)(2) and (3):

(1) The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: Depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in paragraph (a)(1) of this section must control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (ii) of this section.

(i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under § 63.1983(d). The documentation must provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area and must be provided to the Administrator upon request.

(ii) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

(A) The NMOC emissions from each section proposed for exclusion must be computed using Equation 7:

$$Q_i = 2\ k\ L_o M_i (e^{-kt_i})\ (C_{NMOC})\ (3.6 \times 10^{-9})\ (Eq.\ 7)$$

Where:

Q_i = NMOC emission rate from the ith section, Mg/yr.

k = Methane generation rate constant, year $^{-1}$.

L_o = Methane generation potential, m^3/Mg solid waste.

M_i = Mass of the degradable solid waste in the ith section, Mg.

t_i = Age of the solid waste in the ith section, years.

C_{NMOC} = Concentration of NMOC, ppmv.

3.6×10^{-9} = Conversion factor.

(B) If the owner/operator is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (*e.g.,* separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in § 63.1959(c) or Equation 7 in paragraph (a)(3)(ii)(A) of this section.

(iii) The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_o and C_{NMOC} provided in § 63.1959(a)(1) or the alternative values from § 63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in paragraph (a)(3)(i) of this section.

(b) Each owner or operator seeking to comply with § 63.1959(b)(2)(ii) must construct the gas collection devices using the following equipment or procedures:

(1) The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: Convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

(2) Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices must be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(c) Each owner or operator seeking to comply with § 63.1959(b)(2)(iii) must convey the landfill gas to a control system in compliance with § 63.1959(b)(2)(iii) through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

(1) For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (c)(2) of this section must be used.

(2) For new collection systems, the maximum flow rate must be in accordance with § 63.1960(a)(1).

General and Continuing Compliance Requirements

§ 63.1964 How is compliance determined?

Compliance is determined using performance testing, collection system monitoring, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data collected under § 63.1961(b)(1), (c)(1), and (d) are used to demonstrate compliance with the operating standards for control systems. If a deviation occurs, you have failed to meet the control device operating standards described in this subpart and have deviated from the requirements of this subpart.

(a) Before September 28, 2021, you must develop a written SSM plan according to the provisions in § 63.6(e)(3) of subpart A. A copy of the SSM plan must be maintained on site. Failure to write or maintain a copy of the SSM plan is a deviation from the requirements of this subpart.

(b) After September 27, 2021, the SSM provisions of § 63.6(e) of subpart A no longer apply to this subpart and the SSM plan developed under paragraph (a) of this section no longer applies. Compliance with the emissions standards and the operating standards of § 63.1958 of this subpart is required at all times.

§ 63.1965 What is a deviation?

A deviation is defined in § 63.1990. For the purposes of the landfill monitoring and SSM plan requirements, deviations include the items in paragraphs (a) through (c) of this section.

(a) A deviation occurs when the control device operating parameter boundaries described in § 63.1983(c)(1) are exceeded.

(b) A deviation occurs when 1 hour or more of the hours during the 3-hour block averaging period does not constitute a valid hour of data. A valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.

(c) Before September 28, 2021, a deviation occurs when a SSM plan is not developed or maintained on site and when an affected source fails to meet any emission limitation, (including any operating limit), or work practice requirement in this subpart during SSM, regardless of whether or not such failure is permitted by this subpart.

§ 63.1975 How do I calculate the 3-hour block average used to demonstrate compliance?

Before September 28, 2021, averages are calculated in the same way as they are calculated in 40 CFR part 60, subpart WWW (§ 60.758(b)(2)(i) for average combustion temperature and § 60.758(c) for 3-hour average combustion temperature for enclosed combustors), except that the data collected during the events listed in paragraphs (a) through (d) of this section are not to be included in any average computed under this subpart. Beginning

no later than September 27, 2021, averages are calculated according to §§ 63.1983(b)(2)(i) and 63.1983(c)(1)(i) and the data collected during the events listed in paragraphs (a) through (d) of this section are included in any average computed under this subpart.

(a) Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.

(b) Startups.

(c) Shutdowns.

(d) Malfunctions.

Notifications, Records, and Reports

§ 63.1981 What reports must I submit?

You must submit the reports specified in this section and the reports specified in Table 1 to this subpart. If you have previously submitted a design capacity report, amended design capacity report, initial NMOC emission rate report, initial or revised collection and control system design plan, closure report, equipment removal report, or initial performance test under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a federal plan or EPA-approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, then that submission constitutes compliance with the design capacity report in paragraph (a) of this section, the amended design capacity report in paragraph (b) of this section, the initial NMOC emission rate report in paragraph (c) of this section, the initial collection and control system design plan in paragraph (d) of this section, the revised design plan in paragraph (e) of this section, the closure report in paragraph (f) of this section, the equipment removal report in paragraph (g) of this section, and the initial performance test report in paragraph (i) of this section. You do not need to re-submit the report(s). However, you must include a statement certifying prior submission of the respective report(s) and the date of submittal in the first semi-annual report required in this section.

(a) *Initial design capacity report.* The initial design capacity report must contain the information specified in § 60.757(a)(2) of this chapter, except beginning no later than September 28, 2021, the report must contain:

(1) A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the permit issued by the state, local, or tribal agency responsible for regulating the landfill.

(2) The maximum design capacity of the landfill. Where the maximum design capacity is specified in the permit issued by the state, local, or tribal agency responsible for regulating the landfill, a copy of the permit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity must be calculated using good engineering practices. The calculations must be provided, along with the relevant parameters as part of the report. The landfill may calculate design capacity in either Mg or m^3 for comparison with the exemption values. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million Mg or 2.5 million m^3, the calculation must include a site-specific density, which must be recalculated annually. Any density conversions must be documented and submitted with the design capacity report. The state, tribal, local agency or Administrator may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.

(b) *Amended design capacity report.* An amended design capacity report must be submitted to the Administrator providing notification of an increase in the design capacity of the landfill, within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million Mg and 2.5 million m^3. This increase in design capacity may result from an increase in the permitted volume of the landfill or an increase in the density as documented in the annual recalculation required in § 63.1983(f).

(c) *NMOC emission rate report.* Each owner or operator subject to the requirements of this subpart must submit a copy of the latest NMOC emission rate report that was submitted according to § 60.757(b) of this chapter or submit an NMOC emission rate report to the Administrator initially and annually thereafter, except as provided for in paragraph (c)(1)(ii)(A) of this section. The Administrator may request such additional information as may be necessary to verify the reported NMOC emission rate. If you have submitted an annual report under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a Federal plan or EPA-approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, then that submission constitutes compliance with the annual NMOC emission rate report in this paragraph. You do not need to re-submit the annual report for the current year. Beginning no later than September 27, 2021, the report must meet the following requirements:

(1) The NMOC emission rate report must contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in § 63.1959(a) or (b), as applicable.

(i) The initial NMOC emission rate report must be submitted no later than 90 days after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction on or after March 12, 1996.

(ii) Subsequent NMOC emission rate reports must be submitted annually thereafter, except as provided for in paragraph (c)(1)(ii)(A) of this section.

(A) If the estimated NMOC emission rate as reported in the annual report to the Administrator is less than 50 Mg/yr in each of the next 5 consecutive years, the owner or operator may elect to submit, an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate must include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based must be provided to the Administrator. This estimate must be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate must be submitted to the Administrator. The revised estimate must cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(B) The report must be submitted following the procedure specified in paragraph (l)(2) of this section.

(2) The NMOC emission rate report must include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(3) Each owner or operator subject to the requirements of this subpart is exempted from the requirements to submit an NMOC emission rate report, after installing a collection and control system that complies with § 63.1959(b)(2), during such time as the collection and control system is in operation and in compliance with §§ 63.1958 and 63.1960.

(d) *Collection and control system design plan.* Each owner or operator

subject to the provisions of § 63.1959(b)(2) must submit a collection and control system design plan to the Administrator for approval according to § 60.757(c) of this chapter and the schedule in § 60.757(c)(1) and (2). Beginning no later than September 27, 2021, each owner or operator subject to the provisions of § 63.1959(b)(2) must submit a collection and control system design plan to the Administrator according to paragraphs (d)(1) through (6) of this section. The collection and control system design plan must be prepared and approved by a professional engineer.

(1) The collection and control system as described in the design plan must meet the design requirements in § 63.1959(b)(2).

(2) The collection and control system design plan must include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of §§ 63.1957 through 63.1983 proposed by the owner or operator.

(3) The collection and control system design plan must either conform with specifications for active collection systems in § 63.1962 or include a demonstration to the Administrator's satisfaction of the sufficiency of the alternative provisions to § 63.1962.

(4) Each owner or operator of an MSW landfill affected by this subpart must submit a collection and control system design plan to the Administrator for approval within 1 year of becoming subject to this subpart.

(5) The landfill owner or operator must notify the Administrator that the design plan is completed and submit a copy of the plan's signature page. The Administrator has 90 days to decide whether the design plan should be submitted for review. If the Administrator chooses to review the plan, the approval process continues as described in paragraph (d)(6) of this section. In the event that the design plan is required to be modified to obtain approval, the owner or operator must take any steps necessary to conform any prior actions to the approved design plan and any failure to do so could result in an enforcement action.

(6) Upon receipt of an initial or revised design plan, the Administrator must review the information submitted under paragraphs (d)(1) through (3) of this section and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems.

(e) *Revised design plan.* Beginning no later than September 27, 2021, the owner or operator who has already been required to submit a design plan under paragraph (d) of this section must submit a revised design plan to the Administrator for approval as follows:

(1) At least 90 days before expanding operations to an area not covered by the previously approved design plan.

(2) Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Administrator according to paragraph (d) of this section.

(f) *Closure report.* Each owner or operator of a controlled landfill must submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of § 258.60 of this chapter. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under § 63.9(b) of subpart A.

(g) *Equipment removal report.* Each owner or operator of a controlled landfill must submit an equipment removal report as provided in § 60.757(e) of this chapter. Each owner or operator of a controlled landfill must submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.

(1) Beginning no later than September 27, 2021, the equipment removal report must contain all of the following items:

(i) A copy of the closure report submitted in accordance with paragraph (f) of this section;

(ii) A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, or information that demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's Central Data Exchange (CDX); and

(iii) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 Mg or greater of NMOC per year. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports.

(2) The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in § 63.1957(b) have been met.

(h) *Semi-annual report.* The owner or operator of a landfill seeking to comply with § 63.1959(b)(2) using an active collection system designed in accordance with § 63.1959(b)(2)(ii) must submit to the Administrator semi-annual reports. Beginning no later than September 27, 2021, you must submit the report, following the procedure specified in paragraph (l) of this section. The initial report must be submitted within 180 days of installation and startup of the collection and control system and must include the initial performance test report required under § 63.7 of subpart A, as applicable. In the initial report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. For enclosed combustion devices and flares, reportable exceedances are defined under § 63.1983(c). The semi-annual reports must contain the information in paragraphs (h)(1) through (8) of this section.

(1) Number of times that applicable parameters monitored under § 63.1958(b), (c), and (d) were exceeded and when the gas collection and control system was not operating under § 63.1958(e), including periods of SSM. For each instance, report the date, time, and duration of each exceedance.

(i) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph § 63.1958(c), provide a statement of the wellhead operational standard for temperature and oxygen you are complying with for the period covered by the report. Indicate the number of times each of those parameters monitored under § 63.1961(a)(3) were exceeded. For each instance, report the date, time, and duration of each exceedance.

(ii) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1), provide a statement of the wellhead operational standard for temperature and oxygen you are complying with for the period covered by the report. Indicate the number of times each of those parameters monitored under § 63.1961(a)(4) were exceeded. For each instance, report the date, time, and duration of each exceedance.

(iii) Beginning no later than September 27, 2021, number of times the parameters for the site-specific treatment system in § 63.1961(g) were exceeded.

(2) Description and duration of all periods when the gas stream was diverted from the control device or treatment system through a bypass line or the indication of bypass flow as specified under § 63.1961.

(3) Description and duration of all periods when the control device or treatment system was not operating and length of time the control device or treatment system was not operating.

(4) All periods when the collection system was not operating.

(5) The location of each exceedance of the 500-ppm methane concentration as provided in § 63.1958(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. Beginning no later than September 27, 2021, for location, you record the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(6) The date of installation and the location of each well or collection system expansion added pursuant to § 63.1960(a)(3) and (4), (b), and (c)(4).

(7) For any corrective action analysis for which corrective actions are required in § 63.1960(a)(3)(i) or (a)(5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

(8) Each owner or operator required to conduct enhanced monitoring in §§ 63.1961(a)(5) and (6) must include the results of all monitoring activities conducted during the period.

(i) For each monitoring point, report the date, time, and well identifier along with the value and units of measure for oxygen, temperature (wellhead and downwell), methane, and carbon monoxide.

(ii) Include a summary trend analysis for each well subject to the enhanced monitoring requirements to chart the weekly readings over time for oxygen, wellhead temperature, methane, and weekly or monthly readings over time, as applicable for carbon monoxide.

(iii) Include the date, time, staff person name, and description of findings for each visual observation for subsurface oxidation event.

(i) *Initial performance test report.* Each owner or operator seeking to comply with § 63.1959(b)(2)(iii) must include the following information with the initial performance test report required under § 63.7 of subpart A:

(1) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

(2) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

(3) The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

(4) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

(5) The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

(6) The provisions for the control of off-site migration.

(j) *Corrective action and the corresponding timeline.* The owner or operator must submit information regarding corrective actions according to paragraphs (j)(1) and (2) of this section.

(1) For corrective action that is required according to § 63.1960(a)(3) or (4) and is not completed within 60 days after the initial exceedance, you must submit a notification to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance.

(2) For corrective action that is required according to § 63.1960(a)(3) or (4) and is expected to take longer than 120 days after the initial exceedance to complete, you must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 62.8 degrees Celsius (145 degrees Fahrenheit) or above. The Administrator must approve the plan for corrective action and the corresponding timeline.

(k) *24-hour high temperature report.* Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1) and a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7 degrees Celsius (170 degrees Fahrenheit) and the carbon monoxide concentration measured is greater than or equal to 1,000 ppmv, then you must report the date, time, well identifier, temperature and carbon monoxide reading via email to the Administrator within 24 hours of the measurement unless a higher operating temperature value has been approved by the Administrator for the well under this subpart or under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a Federal plan or EPA approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf.

(l) *Electronic reporting.* Beginning no later than September 27, 2021, the owner or operator must submit reports electronically according to paragraphs (l)(1) and (2) of this section.

(1) Within 60 days after the date of completing each performance test required by this subpart, you must submit the results of the performance test following the procedures specified in paragraphs (l)(1)(i) through (iii) of this section.

(i) Data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website (*https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert*) at the time of the test. Submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's CDX (*https://cdx.epa.gov/*). The data must be submitted in a file format generated

through the use of the EPA's ERT. Alternatively, you may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website.

(ii) Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test. The results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Submit the ERT generated package or alternative file to the EPA via CEDRI.

(iii) Confidential business information (CBI). If you claim some of the information submitted under paragraph (a) of this section is CBI, you must submit a complete file, including information claimed to be CBI, to the EPA. The file must be generated through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Submit the file on a compact disc, flash drive, or other commonly used electronic storage medium and clearly mark the medium as CBI. Mail the electronic medium to U.S. EPA/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404–02, 4930 Old Page Rd., Durham, NC 27703. The same file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described in paragraph (l)(1)(i) of this section.

(2) Each owner or operator required to submit reports following the procedure specified in this paragraph must submit reports to the EPA via CEDRI. CEDRI can be accessed through the EPA's CDX. The owner or operator must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (*https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri*). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the owner or operator must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The NMOC emission rate reports, semi-annual reports, and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the owner or operator must submit the reports to the Administrator at the appropriate address listed in § 63.13 of subpart A.

(m) *Claims of EPA system outage.* Beginning no later than September 27, 2021, if you are required to electronically submit a report through CEDRI in the EPA's CDX, you may assert a claim of EPA system outage for failure to comply timely with the reporting requirement. To assert a claim of EPA system outage, you must meet the following requirements:

(1) You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either the EPA's CEDRI or CDX systems.

(2) The outage must have occurred within the period of time beginning 5 business days prior to the date that the submission is due.

(3) The outage may be planned or unplanned.

(4) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(5) You must provide to the Administrator a written description identifying:

(i) The date(s) and time(s) when CDX or CEDRI was accessed and the system was unavailable;

(ii) A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

(iii) Measures taken or to be taken to minimize the delay in reporting; and

(iv) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(6) The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(7) In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

(n) *Claims of force majeure.* Beginning no later than September 2, 2021, if you are required to electronically submit a report through CEDRI in the EPA's CDX, you may assert a claim of force majeure for failure to comply timely with the reporting requirement. To assert a claim of force majeure, you must meet the following requirements:

(1) You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning 5 business days prior to the date the submission is due. For the purposes of this section, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (*e.g.,* hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (*e.g.,* large scale power outage).

(2) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(3) You must provide to the Administrator:

(i) A written description of the force majeure event;

(ii) A rationale for attributing the delay in reporting beyond the regulatory deadline to the force majeure event;

(iii) Measures taken or to be taken to minimize the delay in reporting; and

(iv) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(4) The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(5) In any circumstance, the reporting must occur as soon as possible after the force majeure event occurs.

§ 63.1982 What records and reports must I submit and keep for bioreactors or liquids addition other than leachate?

Submit reports as specified in this section and § 63.1981. Keep records as specified in this section and § 63.1983.

(a) For bioreactors at new affected sources you must submit the initial semi-annual compliance report and performance test results described in § 63.1981(h) within 180 days after the date you are required to begin operating the gas collection and control system by § 63.1947(a)(2).

(b) If you must submit a semi-annual compliance report for a bioreactor as well as a semi-annual compliance report for a conventional portion of the same landfill, you may delay submittal of a subsequent semi-annual compliance report for the bioreactor according to paragraphs (b)(1) through (3) of this section so that the reports may be submitted on the same schedule.

(1) After submittal of your initial semi-annual compliance report and performance test results for the bioreactor, you may delay submittal of the subsequent semi-annual compliance report for the bioreactor until the date the initial or subsequent semi-annual compliance report is due for the conventional portion of your landfill.

(2) You may delay submittal of your subsequent semi-annual compliance report by no more than 12 months after the due date for submitting the initial semi-annual compliance report and performance test results described in § 63.1981(h) for the bioreactor. The report must cover the time period since the previous semi-annual report for the bioreactor, which would be a period of at least 6 months and no more than 12 months.

(3) After the delayed semi-annual report, all subsequent semi-annual reports for the bioreactor must be submitted every 6 months on the same date the semi-annual report for the conventional portion of the landfill is due.

(c) If you add any liquids other than leachate in a controlled fashion to the waste mass and do not comply with the bioreactor requirements in §§ 63.1947, 63.1955(b), and paragraphs (a) and (b) of this section, you must keep a record of calculations showing that the percent moisture by weight expected in the waste mass to which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of water added to the waste including leachate recirculation and other liquids addition and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. You must document the calculations and the basis of any assumptions. Keep the record of the calculations until you cease liquids addition.

(d) If you calculate moisture content to establish the date your bioreactor is required to begin operating the collection and control system under § 63.1947(a)(2) or (c)(2), keep a record of the calculations including the information specified in paragraph (e) of this section for 5 years. Within 90 days after the bioreactor achieves 40-percent moisture content, report the results of the calculation, the date the bioreactor achieved 40-percent moisture content by weight, and the date you plan to begin collection and control system operation to the Administrator. Beginning no later than September 27, 2021, the reports should be submitted following the procedure specified in § 63.1981(l)(2).

§ 63.1983 What records must I keep?

You must keep records as specified in this subpart. You must also keep records as specified in the general provisions of 40 CFR part 63 as shown in Table 1 to this subpart.

(a) Except as provided in § 63.1981(d)(2), each owner or operator of an MSW landfill subject to the provisions of § 63.1959(b)(2)(ii) and (iii) of this chapter must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered § 63.1959(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Except as provided in § 63.1981(d)(2), each owner or operator of a controlled landfill must keep up-to-date, readily accessible records for the life of the control system equipment of the data listed in paragraphs (b)(1) through (5) of this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal.

(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 63.1959(b)(2)(ii):

(i) The maximum expected gas generation flow rate as calculated in § 63.1960(a)(1).

(ii) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in § 63.1962(a)(1) and (2).

(2) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 63.1959(b)(2)(iii) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts:

(i) The average temperature measured at least every 15 minutes and averaged over the same time period of the performance test.

(ii) The percent reduction of NMOC determined as specified in § 63.1959(b)(2)(iii)(B) achieved by the control device.

(3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 63.1959(b)(2)(iii)(B)(*1*) through use of a boiler or process heater of any size: A description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 63.1959(b)(2)(iii)(A) through use of a non-enclosed flare, the flare type (*i.e.,* steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in § 63.11; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

(5) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 63.1959(b)(2)(iii)(C) through use of a landfill gas treatment system:

(i) *Bypass records.* Records of the flow of landfill gas to, and bypass of, the treatment system.

(ii) *Site-specific treatment monitoring plan.* Beginning no later than September 27, 2021, the owner or operator must prepare a site-specific treatment monitoring plan to include:

(A) Monitoring records of parameters that are identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas.

(B) Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas.

(C) Documentation of the monitoring methods and ranges, along with justification for their use.

(D) List of responsible staff (by job title) for data collection.

(E) Processes and methods used to collect the necessary data.

(F) Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems (CMS).

(c) Except as provided in § 63.1981(d)(2), each owner or operator of a controlled landfill subject to the

provisions of this subpart must keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in § 63.1961 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

(1) The following constitute exceedances that must be recorded and reported under § 63.1981(h):

(i) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million Btu per hour) or greater, all 3-hour periods of operation during which the average temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature during the most recent performance test at which compliance with § 63.1959(b)(2)(iii) was determined.

(ii) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (b)(3) of this section.

(2) Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible continuous records of the indication of flow to the control system and the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under § 63.1961(b)(2)(ii), (c)(2)(ii), and (g)(2).

(3) Each owner or operator subject to the provisions of this subpart who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with § 63.1959(b)(2)(iii) must keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other state, local, tribal, or federal regulatory requirements.

(4) Each owner or operator seeking to comply with the provisions of this subpart by use of a non-enclosed flare must keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under § 63.1961(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

(5) Each owner or operator of a landfill seeking to comply with § 63.1959(b)(2) using an active collection system designed in accordance with § 63.1959(b)(2)(ii) must keep records of periods when the collection system or control device is not operating.

(6) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in § 63.1958(e)(1), the date, time, and duration of each startup and/or shutdown period, recording the periods when the affected source was subject to the standard applicable to startup and shutdown.

(7) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in § 63.1958(e)(1), in the event that an affected unit fails to meet an applicable standard, record the information below in this paragraph:

(i) For each failure record the date, time and duration of each failure and the cause of such events (including unknown cause, if applicable).

(ii) For each failure to meet an applicable standard; record and retain a list of the affected sources or equipment.

(iii) Record actions taken to minimize emissions in accordance with the general duty of § 63.1955(c) and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

(8) Beginning no later than September 27, 2021, in lieu of the requirements specified in § 63.8(d)(3) of subpart A you must keep the written procedures required by § 63.8(d)(2) on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan is revised, you must keep previous (*i.e.,* superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. The program of corrective action should be included in the plan required under § 63.8(d)(2).

(d) Except as provided in § 63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

(1) Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under § 63.1960(b).

(2) Each owner or operator subject to the provisions of this subpart must keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in § 63.1962(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in § 63.1962(a)(3)(ii).

(e) Except as provided in § 63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of the following:

(1) All collection and control system exceedances of the operational standards in § 63.1958, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

(2) Each owner or operator subject to the control provisions of this subpart must keep records of each wellhead temperature monitoring value of greater than 55 degrees Celsius (131 degrees Fahrenheit), each wellhead nitrogen level at or above 20 percent, and each wellhead oxygen level at or above 5 percent, except:

(i) When an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the compliance provisions for wellhead temperature in § 63.1958(c)(1), but no later than September 27, 2021, the records of each wellhead temperature monitoring value of 62.8 degrees Celsius (145 degrees Fahrenheit) or above instead of values greater than 55 degrees Celsius (131 degrees Fahrenheit).

(ii) Each owner or operator required to conduct the enhanced monitoring provisions in § 63.1961(a)(5), must also keep records of all enhanced monitoring activities.

(iii) Each owner or operator required to submit the *24-hour high temperature report in* § 63.1981(k), must also keep a record of the email transmission.

(3) For any root cause analysis for which corrective actions are required in § 63.1960(a)(3)(i)(A) or (a)(4)(i)(A), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed.

(4) For any root cause analysis for which corrective actions are required in § 63.1960(a)(3)(i)(B) or (a)(4)(i)(B), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the

positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

(5) For any root cause analysis for which corrective actions are required in § 63.1960(a)(3)(i)(C) or (a)(4)(i)(C), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the Administrator.

(f) Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million Mg or 2.5 million m^3, as provided in the definition of ''design capacity,'' must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(g) Except as provided in § 63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of all collection and control system monitoring data for parameters measured in § 63.1961(a)(1) through (5).

(h) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in § 63.1958(c)(1), you must keep the following records.

(1) Records of the landfill gas temperature on a monthly basis as monitored in § 63.1960(a)(4).

(2) Records of enhanced monitoring data at each well with a measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) as gathered in § 63.1961(a)(5) and (6).

(i) Any records required to be maintained by this subpart that are submitted electronically via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for facilities to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation.

(ii) [Reserved]

Other Requirements and Information

§ 63.1985 Who enforces this subpart?

(a) This subpart can be implemented and enforced by the EPA, or a delegated authority such as the applicable state, local, or tribal agency. If the EPA Administrator has delegated authority to a state, local, or tribal agency, then that agency as well as the EPA has the authority to implement and enforce this subpart. Contact the applicable EPA Regional office to find out if this subpart is delegated to a state, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a state, local, or tribal agency under subpart E of this part, the authorities contained in paragraph (c) of this section are retained by the EPA Administrator and are not transferred to the state, local, or tribal agency.

(c) The authorities that will not be delegated to state, local, or tribal agencies are as follows. Approval of alternatives to the standards in §§ 63.1955 through 63.1962. Where this subpart references 40 CFR part 60, subpart WWW, the cited provisions will be delegated according to the delegation provisions of 40 CFR part 60, subpart WWW. For this subpart, the EPA also retains the authority to approve methods for determining the NMOC concentration in § 63.1959(a)(3) and the method for determining the site-specific methane generation rate constant k in § 63.1959(a)(4).

§ 63.1990 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, 40 CFR part 60, subparts A, Cc, Cf, WWW, and XXX; 40 CFR part 62, subpart GGG, and subpart A of this part, and this section that follows:

Active collection system means a gas collection system that uses gas mover equipment.

Active landfill means a landfill in which solid waste is being placed or a landfill that is planned to accept waste in the future.

Bioreactor means an MSW landfill or portion of an MSW landfill where any liquid other than leachate (leachate includes landfill gas condensate) is added in a controlled fashion into the waste mass (often in combination with recirculating leachate) to reach a minimum average moisture content of at least 40 percent by weight to accelerate or enhance the anaerobic (without oxygen) biodegradation of the waste.

Closed area means a separately lined area of an MSW landfill in which solid waste is no longer being placed. If additional solid waste is placed in that area of the landfill, that landfill area is no longer closed. The area must be separately lined to ensure that the landfill gas does not migrate between open and closed areas.

Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under § 63.9(b). Once a notification of modification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.

Closure means that point in time when a landfill becomes a closed landfill.

Commercial solid waste means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

Controlled landfill means any landfill at which collection and control systems are required under this subpart as a result of the nonmethane organic compounds emission rate. The landfill is considered controlled at the time a collection and control system design plan is submitted in compliance with § 60.752(b)(2)(i) of this chapter or in compliance with § 63.1959(b)(2)(i).

Corrective action analysis means a description of all reasonable interim and long-term measures, if any, that are available, and an explanation of why the selected corrective action(s) is/are the best alternative(s), including, but not limited to, considerations of cost effectiveness, technical feasibility, safety, and secondary impacts.

Cover penetration means a wellhead, a part of a landfill gas collection or operations system, and/or any other object that completely passes through the landfill cover. The landfill cover includes that portion which covers the waste, as well as the portion which borders the waste extended to the point where it is sealed with the landfill liner or the surrounding land mass. Examples of what is not a penetration for purposes of this subpart include but are not limited to: Survey stakes, fencing including litter fences, flags, signs, utility posts, and trees so long as these items do not pass through the landfill cover.

Design capacity means the maximum amount of solid waste a landfill can accept, as indicated in terms of volume or mass in the most recent permit issued by the state, local, or tribal agency responsible for regulating the landfill, plus any in-place waste not accounted

for in the most recent permit. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million Mg or 2.5 million m^3, the calculation must include a site-specific density, which must be recalculated annually.

Deviation before September 28, 2021, means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including, but not limited to, any emissions limitation (including any operating limit) or work practice requirement;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Fails to meet any emission limitation, (including any operating limit), or work practice requirement in this subpart during SSM, regardless of whether or not such failure is permitted by this subpart.

Deviation beginning no later than September 27, 2021, means any instance in which an affected source subject to this subpart or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart including but not limited to any emission limit, or operating limit, or work practice requirement; or

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit.

Disposal facility means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of solid waste.

Emissions limitation means any emission limit, opacity limit, operating limit, or visible emissions limit.

Enclosed combustor means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

EPA approved State plan means a State plan that EPA has approved based on the requirements in 40 CFR part 60, subpart B to implement and enforce 40 CFR part 60, subparts Cc or Cf. An approved state plan becomes effective on the date specified in the document published in the **Federal Register** announcing EPA's approval.

EPA approved Tribal plan means a plan submitted by a tribal authority pursuant to 40 CFR parts 9, 35, 49, 50, and 81 to implement and enforce 40 CFR part 60, subpart Cc or subpart Cf.

Federal plan means the EPA plan to implement 40 CFR part 60, subparts Cc or Cf for existing MSW landfills located in states and Indian country where state plans or tribal plans are not currently in effect. On the effective date of an EPA approved state or tribal plan, the Federal Plan no longer applies. The Federal Plan implementing 40 CFR part 60, subpart Cc is found at 40 CFR part 62, subpart GGG.

Flare means an open combustor without enclosure or shroud.

Gas mover equipment means the equipment (*i.e.,* fan, blower, compressor) used to transport landfill gas through the header system.

Household waste means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). Household waste does not include fully segregated yard waste. Segregated yard waste means vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities. Household waste does not include construction, renovation, or demolition wastes, even if originating from a household.

Industrial solid waste means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under Subtitle C of the Resource Conservation and Recovery Act, 40 CFR parts 264 and 265. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: Electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

Interior well means any well or similar collection component located inside the perimeter of the landfill waste. A perimeter well located outside the landfilled waste is not an interior well.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile as those terms are defined under § 257.2 of this chapter.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing MSW landfill. A lateral expansion is not a modification unless it results in an increase in the design capacity of the landfill.

Leachate recirculation means the practice of taking the leachate collected from the landfill and reapplying it to the landfill by any of one of a variety of methods, including pre-wetting of the waste, direct discharge into the working face, spraying, infiltration ponds, vertical injection wells, horizontal gravity distribution systems, and pressure distribution systems.

Modification means an increase in the permitted volume design capacity of the landfill by either lateral or vertical expansion based on its permitted design capacity after November 7, 2000. Modification does not occur until the owner or operator commences construction on the lateral or vertical expansion.

Municipal solid waste landfill or *MSW landfill* means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. An MSW landfill may also receive other types of RCRA Subtitle D wastes (§ 257.2 of this chapter) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.

Municipal solid waste landfill emissions or *MSW landfill emissions* means gas generated by the decomposition of organic waste deposited in an MSW landfill or derived from the evolution of organic compounds in the waste.

NMOC means nonmethane organic compounds, as measured according to the provisions of § 63.1959.

Nondegradable waste means any waste that does not decompose through chemical breakdown or microbiological activity. Examples are, but are not

limited to, concrete, municipal waste combustor ash, and metals.

Passive collection system means a gas collection system that solely uses positive pressure within the landfill to move the gas rather than using gas mover equipment.

Root cause analysis means an assessment conducted through a process of investigation to determine the primary cause, and any other contributing causes, of an exceedance of a standard operating parameter at a wellhead.

Segregated yard waste means vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities.

Sludge means the term sludge as defined in § 258.2 of this chapter.

Solid waste means the term solid waste as defined in § 258.2 of this chapter.

Sufficient density means any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this subpart.

Sufficient extraction rate means a rate sufficient to maintain a negative pressure at all wellheads in the collection system without causing air infiltration, including any wellheads connected to the system as a result of expansion or excess surface emissions, for the life of the blower.

Treated landfill gas means landfill gas processed in a treatment system as defined in this subpart.

Treatment system means a system that filters, de-waters, and compresses landfill gas for sale or beneficial use.

Untreated landfill gas means any landfill gas that is not treated landfill gas.

Work practice requirement means any design, equipment, work practice, or operational standard, or combination thereof, that is promulgated pursuant to section 112(h) of the Clean Air Act.

Table 1 to Subpart AAAA of Part 63—Applicability of NESHAP General Provisions to Subpart AAAA

As specified in this subpart, you must meet each requirement in the following table that applies to you. The owner or operator may begin complying with the provisions that apply no later than September 27, 2021, any time before that date.

TABLE 1 TO SUBPART AAAA OF PART 63—APPLICABILITY OF NESHAP GENERAL PROVISIONS TO SUBPART AAAA

Part 63 citation	Description	Applicable to subpart AAAA before September 28, 2021	Applicable to subpart AAAA no later than September 27, 2021	Explanation
§ 63.1(a)	Applicability: General applicability of NESHAP in this part.	Yes	Yes.	
§ 63.1(b)	Applicability determination for stationary sources.	Yes	Yes.	
§ 63.1(c)	Applicability after a standard has been set	No [1]	Yes.	
§ 63.1(e)	Applicability of permit program before relevant standard is set.	Yes	Yes.	
§ 63.2	Definitions	Yes	Yes.	
§ 63.3	Units and abbreviations	No [1]	Yes.	
§ 63.4	Prohibited activities and circumvention	Yes	Yes.	
§ 63.5(a)	Construction/reconstruction	No [1]	Yes.	
§ 63.5(b)	Requirements for existing, newly constructed, and reconstructed sources.	Yes	Yes.	
§ 63.5(d)	Application for approval of construction or reconstruction.	No [1]	Yes.	
§ 63.5(e) and (f)	Approval of construction and reconstruction	No [1]	Yes.	
§ 63.6(a)	Compliance with standards and maintenance requirements—applicability.	No [1]	Yes.	
§ 63.6(b) and (c)	Compliance dates for new, reconstructed, and existing sources.	No [1]	Yes.	
§ 63.6(e)(1)(i)–(ii)	Operation and maintenance requirements	Yes	No	See § 63.1955(c) for general duty requirements.
63.6(e)(3)(i)–(ix)	SSM plan	Yes	No.	
63.6(f)(1)	Exemption of nonopacity emission standards during SSM.	Yes	No.	
§ 63.6(f)(2) and (3)	Compliance with nonopacity emission standards.	Yes	Yes.	
§ 63.6(g)	Use of an alternative nonopacity standard	No [1]	Yes.	
§ 63.6(h)	Compliance with opacity and visible emission standards.	No [1]	No	Subpart AAAA does not prescribe opacity or visible emission standards.
§ 63.6(i)	Extension of compliance with emission standards.	No [1]	Yes.	
§ 63.6(j)	Exemption from compliance with emission standards.	No [1]	Yes.	
§ 63.7	Performance testing	No [1]	Yes.	
§ 63.7(e)(1)	Conditions for performing performance tests	No [1]	No	40 CFR 63.1959(f) specifies the conditions for performing performance tests.
§ 63.8(a) and (b)	Monitoring requirements—Applicability and conduct of monitoring.	No [1]	Yes.	
§ 63.8(c)(1)	Operation and Maintenance of continuous emissions monitoring system.	No [1]	Yes.	

TABLE 1 TO SUBPART AAAA OF PART 63—APPLICABILITY OF NESHAP GENERAL PROVISIONS TO SUBPART AAAA—Continued

Part 63 citation	Description	Applicable to subpart AAAA before September 28, 2021	Applicable to subpart AAAA no later than September 27, 2021	Explanation
§ 63.8(c)(1)(i)	Operation and Maintenance Requirements	No [1]	No	Unnecessary due to the requirements of § 63.8(c)(1) and the requirements for a quality control plan for monitoring equipment in § 63.8(d)(2).
§ 63.8(c)(1)(ii)	Operation and Maintenance Requirements	No [1]	No.	
§ 63.8(c)(1)(iii)	SSM plan for monitors	No [1]	No.	
§ 63.8(c)(2)–(8)	Monitoring requirements	No [1]	Yes.	
§ 63.8(d)(1)	Quality control for monitors	No [1]	Yes.	
§ 63.8(d)(2)	Quality control for monitors	No [1]	Yes.	
§ 63.8(d)(3)	Quality control records	No [1]	No	See § 63.1983(c)(8).
§ 63.9(a), (c), and (d)	Notifications	No [1]	Yes.	
§ 63.9(b)	Initial notifications	No [1]	Yes [2].	
§ 63.9(e)	Notification of performance test	No [1]	Yes [2].	
§ 63.9(f)	Notification of visible emissions/opacity test	No [1]	No	Subpart AAAA does not prescribe opacity or visible emission standards.
§ 63.9(g)	Notification when using CMS	No [1]	Yes [2].	
§ 63.9(h)	Notification of compliance status	No [1]	Yes [2].	
§ 63.9(i)	Adjustment of submittal deadlines	No [1]	Yes.	
§ 63.9(j)	Change in information already provided	No [1]	Yes.	
§ 63.10(a)	Recordkeeping and reporting—general	No [1]	Yes.	
§ 63.10(b)(1)	General recordkeeping	No [1]	Yes.	
§ 63.10(b)(2)(i)	Startup and shutdown records	Yes	No	See § 63.1983(c)(6) for recordkeeping for periods of startup and shutdown.
§ 63.10(b)(2)(ii)	Recordkeeping of failures to meet a standard	Yes	No	See § 63.1983(c)(6)–(7) for recordkeeping for any exceedance of a standard.
§ 63.10(b)(2)(iii)	Recordkeeping of maintenance on air pollution control equipment.	Yes	Yes.	
§ 63.10(b)(2)(iv)–(v)	Actions taken to minimize emissions during SSM.	Yes	No	See § 63.1983(c)(7) for recordkeeping of corrective actions to restore compliance.
§ 63.10(b)(vi)	Recordkeeping for CMS malfunctions	No [1]	Yes.	
§ 63.10(b)(vii)–(xiv)	Other Recordkeeping of compliance measurements.	No [1]	Yes.	
§ 63.10(c)	Additional recordkeeping for sources with CMS.	No [1]	No	See § 63.1983 for required CMS recordkeeping.
§ 63.10(d)(1)	General reporting	No [1]	Yes.	
§ 63.10(d)(2)	Reporting of performance test results	No [1]	Yes.	
§ 63.10(d)(3)	Reporting of visible emission observations	No [1]	Yes.	
§ 63.10(d)(4)	Progress reports for compliance date extensions.	No [1]	Yes.	
§ 63.10(d)(5)	SSM reporting	Yes	No	All exceedances must be reported in the semi-annual report required by § 63.1981(h).
§ 63.10(e)	Additional reporting for CMS systems	No [1]	Yes.	
§ 63.10(f)	Recordkeeping/reporting waiver	No [1]	Yes.	
§ 63.11	Control device requirements/flares	No [1]	Yes	§ 60.18 is required before September 27, 2021. However, § 60.18 and 63.11 are equivalent.
§ 63.12(a)	State authority	Yes	Yes.	
§ 63.12(b)–(c)	State delegations	No [1]	Yes.	
§ 63.13	Addresses	No [1]	Yes.	
§ 63.14	Incorporation by reference	No [1]	Yes.	
§ 63.15	Availability of information and confidentiality	Yes	Yes.	

[1] Before September 28, 2021, this subpart requires affected facilities to follow 40 CFR part 60, subpart WWW, which incorporates the General Provisions of 40 CFR part 60.

[2] If an owner or operator has complied with the requirements of this paragraph under either 40 CFR part 60, subpart WWW or subpart XXX, then additional notification is not required.

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