

Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information

Proposed Amendments to the Regulation on Methane Emissions from Municipal Solid Waste Landfills

Public Hearing Date: November 20, 2025
Public Availability Date: April 2, 2026
Deadline for Public Comment: April 17, 2026

At its November 20, 2025, public hearing, the California Air Resources Board (CARB or Board) approved for adoption the proposed amendments to sections 95462, 95463, 95464, 95465, 95467, 95468, 95469, 95470, 95471, 95475, and Appendix I, Title 17, California Code of Regulations and proposed repeal of section 95466, Title 17, California Code of Regulations (collectively, the Proposed Amendments). The Proposed Amendments amend the existing Regulation on Methane Emissions from Municipal Solid Waste Landfills (the Landfill Methane Regulation, or LMR) to leverage research, technology, and implementation lessons learned to enhance the LMR's stringency and enforceability.

The Board directed the Executive Officer to determine if additional conforming modifications to the Proposed Amendments were appropriate and to make any proposed modified regulatory language available for public comment, with any additional supporting documents and information, for a period of at least 15 days as required by Government Code section 11346.8. The Board further directed the Executive Officer to consider written comments submitted during the public review period and make any further modifications that are appropriate available for public comment for at least 15 days, and present the regulation to the Board for further consideration if warranted, or take final action to adopt the Proposed Amendments after addressing all appropriate modifications.

The resolution and all other regulatory documents for this rulemaking are available online at the following [CARB website: https://ww2.arb.ca.gov/rulemaking/2025/landfill-methane-regulation-0](https://ww2.arb.ca.gov/rulemaking/2025/landfill-methane-regulation-0)

CARB has determined that additional modifications are appropriate for the proposed amendments and has developed the proposed modifications (15-Day Changes) as stated below in the "Summary of Proposed Modifications" section of this notice. The Attachments showing the specific proposed modifications to the text of the proposed regulation being made with these 15-Day Changes are shown in multiple ways in order to meet the requirements of the Administrative Procedure Act (APA) while also posting alternate/complementary versions that provide increased accessibility to view the modifications in multiple ways.

The Attachments are as follows:

Attachment A - Amendments to Sections 95462, 95463, 95464, 95465, 95466, 95467, 95468, 95469, 95470, 95471, 95475, and Appendix I., Title 17, California Code of Regulations

- Attachment A-1: Proposed 15-Day Modifications to Proposed Regulation Order (compared to version released for 45-day comments)
- Attachment A-2: ~Alternative format to Attachment A-1~
- Attachment A-3: Proposed 15-Day Modifications to Proposed Regulation Order (15-Day Modifications and 45-Day Modifications combined and compared to existing regulatory text) in Alternative format

The Attachments showing the specific proposed modifications to the text of the proposed regulation orders available for comment with this Notice are provided in the two formats denoted with the suffixes “-1,” and “-2.”

In the version denoted Attachment A-1, the 45-Day Changes (proposed regulatory language as posted on September 23, 2025) are shown in “normal type.” The deletions and additions to the 45-Day Changes that comprise the 15-Day Changes that are being made public and available for comment with this Notice are shown in ~~strikeout~~ to indicate deletions and underline to indicate additions.

In the version denoted Attachment A-2, the 15-Day Changes are provided in a tracked-changes format to meet the requirement for accessible electronic documents. The 45-Day Changes are incorporated into this version as plain, clean text because they are not being made available for public comment by this Notice. The proposed 15-Day Changes are shown in tracked changes and are made public with this Notice and available for comment. To review this document in a clean format, without underline or strikeout to show changes, that shows all the proposed regulations being considered for adoption, please select “Simple Markup” or “No Markup,” or accept all changes in Microsoft Word’s Review menu. You can also change the view to the initially proposed 45-Day Changes (originally proposed regulatory text prior to these proposed modifications) by selecting “Original” or rejecting all tracked changes. Additionally, “Advanced Track Changes Options” will allow for further options regarding color and other markings.

In the version denoted Attachment A-3, the existing, original regulatory language currently adopted into the California Code of Regulations (pre-45-Day Changes) is shown as plain, clean text, while the 45-Day Changes and the proposed 15-Day Changes are combined and shown in tracked changes. To review the net proposal in this document in a clean format (no underline or strikeout to show changes), please select “Simple Markup” or “No Markup” in Microsoft Word’s Review menu or accept all changes. You can also change the view to the original (originally proposed regulatory text prior to any proposed modifications, or 45-Day Changes) by selecting “Original” or rejecting all tracked changes. By progressing through the changes and comparing them with the 15-Day Changes, the public can see the net and stepwise changes being proposed in relation to existing law. Please refer to the version denoted A-1 to review the 15-Day Changes available for comment and its companion/alternate version A-2 to view an accessible version showing the 15-Day Changes.

In the Final Statement of Reasons, staff will respond to all comments received on the record during the comment periods. The APA requires that staff respond to comments received

regarding all noticed changes. Therefore, staff will only address comments received during this 15-day comment period that are responsive to this notice, documents added to the record, or the changes detailed in Attachment A-1.

Summary of Proposed Modifications

The following summary does not include all modifications to correct typographical or grammatical errors, changes in numbering or formatting, nor does it include all of the non-substantive revisions made to improve clarity.

Global Changes

1. In the “reference” portion of each section’s note, staff proposes to add a comma preceding “Health and Safety Code” for consistency with the pre-existing structure and the comma structure used in the “authority cited” portion.
2. Staff proposes to add “calendar” in front of any instances of “days” that were not already explicitly designated as either calendar days or business days. This is consistent with the longstanding interpretation and implementation of the LMR. This clarification does not change the meaning, interpretation, or implementation of this subarticle.
3. Staff proposes to change “will” to “shall” where directing actions. This change is intended to standardize language and does not change the meaning, interpretation, or implementation of this subarticle.
4. Staff proposes to remove “etc.” from the end of lists that begin with “e.g.,”. Because lists starting with “e.g.,” are providing examples rather than an exhaustive list, it is unnecessary to include “etc.”
5. Staff proposes to standardize references to section 95465 with the terminology “surface methane emission limits” or simply “limits.” The 45-Day Changes had used various terminologies such as “surface methane concentration limits,” “surface methane concentration standards,” and simply “standards.” This change is meant to standardize language and does not change the meaning, interpretation, or implementation of this subarticle.
6. Staff proposes to change instances of “surface testing” to “surface emissions monitoring,” which is necessary to align with terminology throughout the LMR for clarity.
7. Staff proposes to update all references to section 95470(b)(8) in the 45-Day Changes to section 95470(b)(9) in the 15-Day Changes to reflect that a new subsection was added under section 95470(b).

Modifications to Section 95462, Exemptions

8. In the “reference” portion of the note for section 95462, staff proposes to add the same new citations to the Health and Safety Code that were added to the other sections in the 45-Day Changes for the same reasons as the other amended sections. Staff inadvertently omitted these additions in section 95462 in the 45-Day Changes.

Modifications to Section 95463, Determination for Installing a Gas Collection and Control System

9. In section 95463(b)(2)(B), staff proposes to explicitly specify that surface methane concentration measurements taken during compliance inspections affect the demonstration in this subsection. This is the longstanding interpretation that has been applied, but it is clearer to explicitly state this in the regulatory language, especially given that staff added “during compliance inspections” to other passages in the 45-Day Changes that were also meant as clarifications of longstanding interpretations. Including measurements performed during compliance inspections is necessary to ensure regulatory agencies can verify that there are no locations with 200 ppmv or greater methane concentration, and if any are found, that the data is actionable to require the owner or operator to install a gas collection and control system (GCCS).

Modifications to Section 95464, Gas Collection and Control System Requirements

10. In section 95464(a)(1), staff proposes to change the name of the “Design Plan for MSW Landfills” to the “Gas Collection and Control System Design Plan for MSW Landfills” and specify that this is later referred to as “GCCS Design Plan.” This change is necessary to clarify which later provisions are applicable to this design plan, and the change in name is necessary to better reflect that the design plan is mostly related to the design and operation of the gas collection and control system. Staff also proposes to change the Executive Officer review period from 120 days to 180 days. Through discussions with air districts partners who jointly implement and enforce the LMR, staff has learned that more time may be needed to fully evaluate design plans, including time to allow for requesting additional information to be submitted, and relevant permitting considerations such as obtaining federal approvals and public comment periods.
11. In section 95464(a)(2) staff proposes to specify that the Design Plan for Gas Control Systems is later referred to as the “Control System Design Plan.” This change is necessary to clarify which later provisions are applicable to this design plan. Staff also proposes to change the Executive Officer review period from 120 days to 180 days. Through discussions with air districts partners who jointly implement and enforce the LMR, staff has learned that more time may be needed to fully evaluate design plans, including time to allow for requesting additional information to be submitted, and relevant permitting considerations such as obtaining federal approvals and public comment periods.
12. In section 95464(a)(3), staff proposes to change the allowable time to install and operate a GCCS at an active landfill after design plan approval to 12 months. After review of comments received on the 45-Day Changes and discussion with regulatory partners, staff believes that the originally proposed 6-month timeline would generally not be adequate to complete the entire process of installing a GCCS, including procurement, permitting, and construction. This is especially true for government-owned landfills that are required to use public procurement processes. Staff believes that 12 months better recognizes the barriers and constraints to constructing a GCCS, while maintaining the goal of reducing methane emissions by reducing the installation timeline (from 18 months in the current LMR).
13. In section 95464(a)(5), staff proposes several changes. First, staff proposes to clarify that the threshold for installing early gas collection in areas of new waste placement is

based on the amount “deposited” (rather than “accepted”). Second, staff proposes to add flexibility to the types of gas collection devices that can be used by describing the required functionality of these devices, rather than requiring specific types of collectors, and to change the timing by which gas collection devices must be installed. In the 45-Day Changes, staff had proposed requiring collection devices to be installed from the beginning of filling operations in an area, whereas in the 15-Day Changes these devices must be installed within 180 calendar days after initial filling in the area (in both 45-Day and 15-Day Changes, the collection devices are required to commence operation after meeting specified criteria indicating that anaerobic conditions have been established). Third, staff proposes to require the collection devices to be sealed and capped, and outfitted with a wellhead or sampling port. Fourth, staff proposes to require monthly monitoring of the collection devices. Fifth, staff proposes to add a timeline of 30 calendar days to operate the collection devices after meeting the operation criteria. Finally, staff proposes to adjust the criteria for when the devices must be operated by changing the waste depth from 15 feet to 30 feet, requiring positive pressure to be 1 inch of water column or greater (rather than any positive pressure), and adding a new criterion for methane content.

Specifying that the threshold is the amount “deposited” rather than “accepted” is necessary to recognize that some sites receive waste that is sorted onsite and sent to different destinations. This clarification ensures that only the amount being deposited in the landfill is considered in the threshold.

Adding flexibility to the types of collectors that can be used and changing the timing to install gas collection devices is necessary to ensure operational feasibility at all landfills subject to the early gas collection requirement. Space constraints, locations of existing gas and liquids management components, or other operational factors may prevent horizontal collectors or caisson wells from being effective in some cases. The 180-day time limit aligns with the period during which the working face is exempt from surface emissions monitoring (SEM) and is in line with the approximate amount of time that is typically necessary to establish anaerobic conditions (according to EPA Ireland,¹ anaerobic conditions typically develop within about 3 to 6 months after waste placement). By expanding the timeline for installation and the types of collectors that can be used, staff aims to ensure that all landfills are able to comply with the requirements and can install safe, effective gas collectors that are able to commence operation quickly upon establishment of anaerobic conditions. To staff’s knowledge, no other local, state, or federal rules require installation less than two years from initial disposal.

The added requirements to seal and cap the collectors and to outfit them with a wellhead or sampling port are necessary to avoid creating pathways for gas to escape to the atmosphere and to ensure that there is a mechanism by which the gas composition and pressure can be monitored. Monthly monitoring is necessary to determine when the wells have reached the operational criteria, and the frequency aligns with the originally proposed frequency for monitoring pressure. Gas composition is important to indicate when anaerobic conditions have been established.

¹ EPA Ireland. (n.d.). Management of Low Levels of Landfill Gas. Prepared by Golder Associates Ireland Limited on behalf of the Environmental Protection Agency. ISBN: 978-1- 84095-394-7.

Providing 30 calendar days to begin operating collection devices after meeting all criteria is necessary to allow time to construct piping to connect the collectors to the active gas collection system.

Changing the waste depth criterion from 15 feet to 30 feet is necessary to ensure there is sufficient depth to prevent ambient air intrusion. Staff selected 30 feet to align with the maximum waste depth that may be needed to prevent significant air intrusion as identified in the Landfill Methane Outreach Program's LFG Energy Project Development Handbook.²

Adding a threshold for positive pressure is necessary to ensure that minimal amounts of pressure measured in the wellhead, such as from instrument noise, would not cause this criterion to be met. Staff intended for this criterion to signal that gas generation has begun and is building up within the waste mass. One inch of positive pressure was selected because it represents a modest amount of pressure to ensure that instrument noise or other extenuating factors unrelated to significant gas generation would not cause this criterion to be met.

Adding a 30% methane criterion is needed to ensure that gas collection is not required until anaerobic conditions have been established and that the gas is of sufficient quality for destruction in control devices. As discussed in the Initial Statement of Reasons (ISOR) pp. 34-35, a methane content of 30% represents a threshold where control devices are typically able to operate effectively.

14. In sections 95464(a)(6) and (7), staff proposes to clarify that these provisions apply to both the GCCS Design Plan and the Control System Design Plan. This was the original intent of the term "Design Plan," and the change provides greater clarity.
15. In section 95464(b)(1)(A)1, staff proposes to change the time by which automatic gas mover shutdown and valve closing must accomplish that task to "within one hour of the collection or control system not operating." The previous timeline of "immediately" lacks specificity since these mechanisms take some amount of time to actuate. Within one hour aligns with the time allowed under federal rules.³
16. In section 95464(b)(1)(A)2, staff proposes to specify that control system downtime for utility power outages and catastrophic events outside the owner or operator's control are not subject to enforcement action so long as efforts are taken to minimize the downtime, and increase the downtime limit to 240 hours per year for gas collection and control systems that collected less than 12,000 metric tons of methane per year for all of the prior three years. For the GCCS owners or operators subject to the 240-hour limit, staff also proposes to add that no single downtime instance can last longer than 120 consecutive hours.

The increased downtime limit is necessary to reflect the significant difference in the magnitude of potential emissions resulting from downtime at sites generating lower quantities of gas compared to sites generating higher quantities of gas. Staff analyzed methane collection data submitted in LMR annual reports from 2020-2022 to assess methane collection thresholds for this provision. Staff selected 12,000 metric tons per

² Landfill Methane Outreach Program (LMOP). (2024, January). LFG Energy Project Development Handbook. https://www.epa.gov/system/files/documents/2024-01/pdh_full.pdf

³ 40 CFR § 60.763(e), 40 CFR § 60.34f(e), and 40 CFR § 63.1958(e)(1)(i).

year (in the highest year) because at this level approximately half of all emissions from control system downtime would be from systems over the threshold and half would be from systems under the threshold, assuming all facilities used the maximum allowable downtime (either 120 or 240 hours). The highest of the prior three years was set as the basis for this threshold because it provides stability over time and prevents a single year of disrupted gas collection from affecting the threshold. The 120-hour consecutive hour limit is intended to ensure that action is taken quickly to bring the control system back online.

The allowances for circumstances beyond the owner or operator's control are necessary because they can cause downtime that is not the result of poor planning, inadequate maintenance, or other issues within the control of the owner or operator. Not excluding these events could mean that owners or operators would need to install backup power to remain compliant in case of a utility outage (such as Public Safety Power Shutoffs or weather-related damage to utility poles, transmission lines, and substations), which was not considered as a compliance response in the analyses in the ISOR.

17. In section 95464(b)(1)(D), staff proposes to clarify that a set of devices of the same type, such as a bank of engines or a flare station, can have a single flow rate measurement device rather than flow rate measurement on each individual control device. The purpose of this metering is to ensure accurate quantification of the total amount of gas collected and combusted, sold, or otherwise used. Allowing combined metering when gas is routed to multiple control devices of the same type still accomplishes those goals while providing flexibility and avoiding increased costs for operators who already have such a metering design (e.g., one flow meter for an overall bank of engines or a flare station).
18. In section 95464(b)(1)(E), staff proposes to add that the gas collection system pressure measuring device can be downstream of the "blower system" to clarify that only one device is needed in the case of a system that uses multiple blowers. The intent is to measure if there are changes in applied system vacuum, not to understand how much vacuum is being applied by individual blowers.
19. In section 95464(b)(2)(B)3, staff proposes to change "offsite gas migration" to "subsurface gas migration." The latter term is defined in section 95475 and more clearly describes what gas migration is, including the location where landfill gases would be detected to meet this definition.
20. In section 95464(b)(3)(A)1, staff proposes to clarify that the existing requirement to reduce lean burn internal combustion engine outlet methane concentration to less than 3,000 ppmv is the standard for methane destruction efficiency instead of, not in addition to, 99% destruction by weight.
21. In section 95464(b)(2)(A)4, staff proposes to clarify that only a source test which demonstrates methane destruction efficiency of at least 99% is used to establish the operating parameter ranges for enclosed flares. This is necessary to avoid requiring a flare to operate within a range of parameters that were not shown to meet regulatory requirements for methane destruction efficiency.
22. In section 95464(b)(3)(A), staff proposes to generalize the language to allow any type of non-flare control device that can meet the requirements in this subsection, including

99% methane destruction efficiency, rather than just an energy recovery device. This change is necessary because there are other types of control devices besides flares and energy recovery devices that can control methane (e.g., thermal oxidizers), and in some cases these other types of control devices may be necessary to achieve compliant destruction of methane based on the properties of the landfill gas.

23. In section 95464(b)(3)(A)3, staff proposes to remove the requirement to monitor the oxygen content in the exhaust of internal combustion engines and gas turbines. Since the release of the 45-Day Changes, staff have learned that some engines and turbines do not have both a temperature and an oxygen sensor, and that temperature can serve alone as a continuous measure of performance between source tests.

Additionally, staff proposes to add a phase-in date of July 1, 2027, in the case that any engines or gas turbines lack a temperature sensor and will need to add that sensor.

24. In section 95464(b)(3)(A)4, staff proposes to change the parameter ranges that gas control devices need to be operated within from those in the manufacturer's specifications to those established during the most recent source test. This reverses a change that was proposed in the 45-Day Changes. Since the release of the 45-Day Changes, staff has learned that operators sometimes need to adjust control device operating parameters to account for site-specific conditions, so it is most appropriate to use the most recent source test parameters since those reflect the parameters that were tested for compliant destruction efficiency.

Additionally, staff proposes to clarify that only a source test which demonstrates at least 99% methane destruction efficiency (or 3,000 ppmv outlet methane concentration for a lean burn internal combustion engine) is used to establish the operating parameter ranges for gas control devices other than flares. This is necessary to avoid requiring a control device to operate within a range of parameters that were not shown to meet regulatory requirements for methane destruction.

25. In section 95464(b)(3)(B), staff proposes to revise the description of a treatment system that processes the collected gas for subsequent sale or use to include examples that align with the definition of "Gas Control System." This change is necessary to clarify that gas upgrading or refining processes, which are complex treatment processes involving several steps to purify landfill gas by removing carbon dioxide and other impurities to meet standards for use in natural gas equipment and pipelines, are considered gas control systems and must meet the standards in this subsection. By contrast, simple gas cleaning processes that commonly occur prior to routing the landfill gas to a combustion device (such as water vapor and hydrogen sulfide removal) are not required to measure gas at the inlet and outlet of each unit operation, because the gas composition and heat content is not substantially altered by these processes.

Additionally, staff proposes to clarify that landfill gas that cannot be routed for sale or use may be controlled using a gas control device other than a flare. Either a flare or a non-flare gas control device effectively destroy methane, and in some cases non-flare control devices may be necessary to achieve compliant destruction of methane based on the properties of the landfill gas.

26. In section 95464(b)(3)(B)1, staff proposes to change "each" to "the" when referring to the inlet and outlet of the treatment system. This clarifies staff's intent that only a

single metering location at the overall system inlet and single metering location at the overall system outlet is required, rather than metering at inlets and outlets of sub-processes within the treatment system.

27. In section 95464(b)(4), staff proposes to update the cross-referenced section number to 95471(i). The 45-Day Changes moved the test methods for source testing to from subsection (f) to (i), but staff missed updating this cross-reference.
28. In section 95464(b)(5), staff proposes to specify the date on which component leak monitoring plans need to be developed rather than “90 days after the effective date of the amendments.” This provides greater certainty to regulated entities about when they will need to comply. Staff also proposes to extend the time to develop the plans to reduce the burden on owners or operators who are starting up new systems and developing monitoring protocols that address various requirements. Staff also proposes to clarify that the compliance date is the later of the two (the date specified or 180 days after the initial start up of the gas collection and control system), as was originally intended.
29. In section 95464(b)(6), staff proposes to change the name to “Cover Integrity Monitoring Plan,” specify the date on which plans would need to be developed rather than “90 days after the effective date of the amendments,” and revise the scope of the plans to include only areas of daily and intermediate cover. The name change better reflects the purpose of the plan. Changing the date provides greater certainty to regulated entities about when they will need to comply. Revising the scope to only include daily and intermediate cover areas avoids potential conflicts with site-specific monitoring requirements for final covers and reflects staff’s understanding from research that areas of final cover experience fewer integrity issues due to their more durable design including an erosion-resistant layer (see California Code Regulations, Title 27, § 21090 - SWRCB-Closure and Post-Closure Maintenance Requirements for Solid Waste Landfills).
30. In section 95464(b)(6)(A), staff proposes to delete the full name of the plan for conciseness.
31. In section 95464(b)(6)(B), staff proposes to delete reference to CalRecycle regarding approved requirements because some of the requirements in the referenced California Code of Regulations subchapters are approved by a local enforcement agency, a Regional Water Quality Control Board, or the State Water Resources Control Board. Removing the reference to CalRecycle ensures that any requirements approved under the referenced portions of the California Code of Regulations are applicable. Further, staff proposes to clarify that repairs must be conducted according to the regulations referenced, rather than stating that the cover specifications must conform to the approved requirements. Because landfills are already subject to specifications approved pursuant to the regulations referenced, it is not necessary to state that the cover must conform to those requirements. Additionally, the cover integrity monitoring alone is not expected to fully confirm compliance with those specifications. This change clarifies that the LMR requirement to implement repairs or maintenance does not supersede the requirements approved under the applicable regulations referenced.
32. In section 95464(c)(1), staff proposes to specify that the referenced design plan is the GCCS Design Plan. Only the GCCS Design Plan would include wellhead specifications.

33. In section 95464(c)(2), staff proposes to change the time to perform SEM to 120 days (from 30 days). This change is intended to allow owners or operators to utilize the next regularly-scheduled SEM event at a landfill on the standard quarterly schedule without needing to time the decommissioning, and allows time for installing a replacement well after decommissioning a well that must be disconnected for safety or GCCS reliability purposes.
34. In section 95464(c)(2)(A), staff proposes to change the period over which a declining methane content must be present to 36 months (from 60 months). After reviewing comments and further consideration, staff believes that 36 months is a sufficient period to establish declining methane content and better balances the needs of operators to decommission wells in areas with low gas generation against the goal of establishing a long-term trend.
35. In section 95464(c)(2)(B), staff proposes to remove “full” from “radius of influence” and add specificity about what options are available to the owner or operator to determine that active gas extraction is maintained in the area via a reference to the newly added section 95471(p). “Full” is removed because there is no definitive way to determine the exact radius of influence of a well, and the word “full” implied a greater level of specificity than is practical, and the addition of methods makes clear the acceptable options for determining that active gas extraction is maintained in the area.
36. Staff proposes to add section 95464(c)(2)(C), which allows decommissioning a well that is damaged or not functioning such that a hazard to safety or GCCS reliability exists, and specifies the requirements for replacing the well. This new subsection is necessary to allow wells that are not functioning properly to be decommissioned immediately because these wells are not providing their intended gas collection benefit and could pose a risk of air intrusion or other adverse effects on system reliability or safety. Installing a replacement well is necessary to replace the extraction capability of the decommissioned well, and 120 calendar days aligns with the timeline to install a new or replacement well elsewhere in the LMR.
37. In section 95464(d), staff proposes to move where “interior” appears in the sentence. The placement of “interior” in the 45-Day Changes was ambiguous because it could be read as either referring to the type of well that this requirement applies to or to the gas *inside* (in the “interior” of) the wellhead. The intent of specifying “interior” was the former,⁴ which is consistent with federal rules on wellhead temperatures,⁵ and the rephrasing makes that clear.
38. In section 95464(e)(2), staff proposes to exclude well raising from the 5-day downtime limit, add a notification timeline for all other component downtime exceeding the 5-day limit, add the offline component identifier and description, add component leak monitoring, and make other minor wording changes. After reviewing comments and speaking with operators and other regulators, staff believes that more time is needed for well raising activities. This change will reduce unnecessary notifications for well raising. Additional time is given for the notification to allow for performing surface

⁴ Note that the wellhead gas temperature requirement is also referring to the gas *inside* the wellhead, but staff believes that is already clear without specifying “interior” in the spot where it was removed.

⁵ 40 CFR § 60.763(c), 40 CFR § 60.761, 40 CFR § 60.34f(c), 40 CFR § 60.41f, 40 CFR § 63.1958(c), and 40 CFR § 63.1990.

emissions and component leak monitoring. The component identifier and description is necessary to communicate which component the notification is for. Component leak monitoring is necessary to ensure that component downtime is not leading to excess emissions from GCCS components since components that are disconnected from vacuum are likely to contain gas under positive pressure and can be emissions sources. The other minor wording changes are necessary for improved clarity.

39. In section 95464(e)(3), staff proposes to change the number of wells that can be offline at once to ten wells, specify that this only applies to wells offline in excess of 24 hours, and restructure the allowances for wells shut down due to fire and decommissioned wells.

Staff proposes to adjust the number of wells to prevent excessive well disconnection at larger GCCSs that would have qualified for a high number of offline wells under the 45-Day Changes, while ensuring the limit is sufficient to allow for necessary maintenance, GCCS expansion, and filling operations.

Staff proposes to specify that this limit only applies to wells that are offline for more than 24 hours to allow for shutdowns of less than one day that may be occasionally needed to install, repair, or replace a major collection system component (such as a header that supplies vacuum to multiple wells). It also ensures that staff can evaluate compliance using reported data that only includes shutdowns exceeding 24 hours.

Staff proposes to restructure the exclusions because it was unclear whether shutting down wells to prevent or extinguish fire would relieve a landfill of the offline wells limit entirely. Staff intended for the wells shut down to prevent or extinguish fire to be excluded from the limit, but not for the entire landfill to be relieved of the limit. The rephrasing is necessary to clearly reflect that intent.

40. In section 95464(e)(4), staff proposes to change “sealed or capped” to “sealed and capped” and require that the well is returned to operation within 30 days. The change to “sealed and capped” is necessary to recognize that a cap alone does not always ensure that the well is sealed to fully prevent component leaks. Staff believes that 30 days represents a reasonable length of time to complete well raising with appropriate planning. Staff proposes additional minor changes for conciseness and organizational purposes.
41. Staff proposes to add section 95464(e)(5) which requires that well disconnection times are recorded to qualify for the exemptions in section 95464(e). This is necessary to ensure that only facilities following the recordkeeping requirements are allowed to have components offline, since that information is typically recorded manually and is vital for evaluating compliance with the component shutdown requirements.

Modifications to Section 95467, Semi-continuous Operation and Permanent Shutdown of the Gas Collection and Control System

42. In section 95467(a), staff proposes to specify that this process of requesting semi-continuous operation applies to a GCCS without an approved alternative compliance option (ACO) for semi-continuous operation. This change is meant to clarify that landfills with existing approved alternatives for semi-continuous operation (via section 95468) do not need to reapply through the new process in section 95467. Staff also moved a phrase to improve the sentence structure with no intended change to the meaning.

43. In section 95467(b)(2), staff proposes to replace “analyses” with “assessments” to align with the terminology used in sections 95467(a)(1) and (2).
44. In section 95467(b)(3), staff proposes minor re-organization. Staff proposes to reference the time period from the operation criteria instead of directly stating the time period to ensure the starting point of the three-year period is consistent. Staff proposes to move “including during compliance inspections” to the end of the subsection because the owner or operator will not have the detailed records described in section 95468(a)(1)(D) for those inspections.
45. In section 95467(b)(4), staff proposes to add specificity about what methane collection records need to be submitted by referring to the daily summary metrics outlined in section 95470(b)(3)(G). This is necessary to clarify the level of detail that is required so that the Executive Officer can appropriately evaluate the request.
46. In section 95467(c), staff proposes to change the Executive Officer review period for semi-continuous operation requests from 120 days to 180 days. Through discussions with air districts partners who jointly implement and enforce the LMR, staff has learned that more time may be needed to fully evaluate these requests, including relevant permitting considerations. Additionally, staff proposes to clarify that this review period starts upon receiving a complete request. This is necessary to ensure that the Executive Officer is not required to act on a request missing any of the required request elements.
47. In section 95467(c)(1), staff proposes to adjust the provision for Executive Officer review of a previously approved semi-continuous operation request to clarify the types of information that can form the basis of a revocation and that this provision only applies to a semi-continuous operation request that was approved through the process in section 95467 (i.e., it does not apply to semi-continuous operation requests that were approved through section 95468 under the current LMR, though those could be revoked under section 95468(d)). Specifying that monitoring, recordkeeping, and reporting data may be used to evaluate operation is necessary to ensure that ongoing data (i.e., periods of operation after the semi-continuous schedule has been implemented), rather than re-evaluating the initial request, can be considered in determining whether the operational schedule, methane emission control, or enforceability standards in (c) are met. The addition that this revocation process applies to just those semi-continuous operation requests approved through section 95467 is necessary to clarify that currently approved ACOs through section 95468 can only be revoked through the process in section 95468(d).

Staff also proposes to add that revocation takes effect 180 days after the determination. This period is necessary to allow the owner or operator sufficient time to make modifications to physical systems, personnel, or service contracts to comply without a semi-continuous operation approval.

48. In section 95467(d)(4), staff proposes to change the period over which no surface methane exceedances could exist to qualify for conditional permanent shutdown to three years (from five years). After further consideration, staff believes that this shorter period would be appropriate to establish a long-term pattern of no surface exceedances, especially because permanent shutdown would involve an additional eight quarters of surface methane concentration demonstration.

49. In section 95467(e)(4), staff proposes to more clearly describe what records need to be submitted to support the annual methane collection requirement (the daily summary metrics outlined in section 95470(b)(3)(G)). This is necessary to clarify the level of detail that is required so that the Executive Officer can appropriately evaluate the request.
50. In section 95467(e)(5), staff proposes to add an attestation and clarify that this includes exceedances found during compliance inspections. The attestation aligns the requirement for a permanent shutdown request with that for a semi-continuous operation request for consistency. The clarification regarding compliance inspections aligns with the criteria for conditional permanent shutdown in section 95467(d)(4).
51. In section 95467(f), staff proposes to change the Executive Officer review period for conditional permanent shutdown requests from 120 days to 180 days. Through discussions with air districts partners who jointly implement and enforce the LMR, staff has learned that more time may be needed to fully evaluate these requests, including relevant permitting considerations. Additionally, staff proposes to clarify that this review period starts upon receiving a complete request. This is necessary to ensure that the Executive Officer is not required to act on a request missing any of the required request elements.

Finally, staff proposes to replace “meets the requirements of section 95467(e)” with “includes all the minimum elements required in section 95467(e)” to clarify how that standard will be evaluated and for consistency with the phrasing in section 95467(c) for semi-continuous operation requests.

52. In section 95467(f)(1), staff proposes to remove the language requiring the GCCS to be restarted upon finding a surface methane exceedance during a simulated shutdown demonstration. Although lack of active gas extraction could be one reason for surface emissions, there are other potential reasons not related to the gas extraction system, such as defects in the surface cover. Removing this requirement recognizes that other actions may be appropriate for mitigating the surface emissions and removes ambiguity about how quickly the system needs to be restarted and how long it must operate before it can be shut down again. The revised language instead requires the exceedance to be repaired in the same process as any other exceedance.

Staff also proposes to reword the description of what kinds of monitoring can cause a failure of this demonstration to avoid unnecessarily specific language that staff generally did not use in other sections of the LMR. Staff also proposes to remove “for eight quarters” because this requirement is now stated in section 95467(f)(2) of the 15-Day Changes. Together with section 95467(f)(2), these changes clarify that quarterly surface emissions monitoring continues until there are eight consecutive quarters with no exceedances, and a new conditional shutdown request is not required.

Staff also proposes to change “discover[-ing/ed]” to “detect[-ing/ed]” to align with terminology used throughout the LMR referring to finding a surface emission exceedance.

53. In section 95467(f)(2), staff proposes to clarify that the demonstration of eight quarters without surface emission exceedances must be consecutive. This was staff’s original intent, but it was not clearly reflected in the regulatory language. Consecutive quarters are necessary to show that there is a long-term, continuous trend of no surface

exceedances. Staff also proposes to clarify that exceedances detected through compliance inspections count against the requirement to have eight quarters with no exceedances. This is necessary to prevent the permanent shutdown of a GCCS when there are surface emissions over the allowable threshold, even if the owner or operator did not find those surface emissions. Staff also proposes to add that subsection (A) applies to the final request for clarity and consistency with how the request is referred to the parent item and in subsection (B), and clarify that the demonstration period referred to is the eight-quarter period.

54. In section 95467(f)(2)(B), staff proposes to change the Executive Officer review period for final permanent shutdown requests from 120 days to 180 days. Through discussions with air districts partners who jointly implement and enforce the LMR, staff has learned that more time may be needed to fully evaluate these requests, including relevant permitting considerations. Additionally, staff proposes to clarify that this review period starts upon receiving a complete request. This is necessary to ensure that the Executive Officer is not required to act on a request missing any of the required request elements.

Modifications to Section 95468, Alternative Compliance Options

55. In section 95468(a), staff proposes to add section 95467 to the list of sections that an alternative compliance option (ACO) may be requested for. This is necessary to provide flexibility for unusual or unanticipated circumstances on a case-by-case basis when an owner or operator requests semi-continuous operation or permanent shutdown of their GCCS.
56. In section 95468(b), staff proposes to change “component testing and surface monitoring results” to “component leak and surface emissions monitoring results.” This is necessary to align terminology across the LMR, and does not change the meaning of the passage.
57. In section 95468(c), staff proposes to clarify that if the Executive Officer requests additional information needed to evaluate the alternatives, the 120-day review period will begin from the date that the additional information is submitted. This is necessary to ensure that the Executive Officer is not required to act on incomplete information and prevents the need for denying such applications, which typically results in resubmissions that start a new review period.
58. Staff proposes to remove section 95468(c)(3). After reviewing comments, staff believes that adding this section in the 45-Day Changes caused unnecessary confusion and did not achieve the goals staff intended with its inclusion, which was to clarify that an ACO request is not approved by default after 120 days have passed; ACOs are only approved formally and in writing. Staff believes the best course of action is to maintain the current LMR language to avoid misinterpretation.
59. In section 95468(d), staff proposes to change the reference to criteria from section 95468(c) to (b). The criteria for evaluation are contained in subsection (b) and staff referenced the wrong section in the 45-Day Changes.
60. In section 95468(d)(1), staff proposes to add a 180-day period after the Executive Officer determines that an ACO is revoked before that revocation takes effect. This period is necessary to allow the owner or operator sufficient time to make

modifications to physical systems, monitoring personnel, or service contracts to comply without their ACO.

61. In section 95468(e), staff proposes to move the date to submit documentation later and replace “the effective date of the amendments” with January 1, 2027. The submission date change is intended to provide owners and operators sufficient time to locate and submit records during a period when they will need to be complying with numerous other new requirements. The latter change provides greater certainty to regulated entities and aligns with the effective date that staff anticipates for the rulemaking overall.

Modifications to Section 95469, Monitoring Requirements

62. In section 95469(a), staff proposes to generalize the section callout for the definition of “unsafe-to walk surface areas.” The subsection number is unnecessary because the definitions are in alphabetical order making it easy to find the definition, and there is no ambiguity about which definition is being referred to.
63. In section 95469(a)(1)(A), staff proposes a non-substantive wording change for conciseness because the parent item (a) already specifies that the owner or operator is responsible for these requirements.
64. In section 95469(a)(1)(B), staff proposes to change the timeline for initiating corrective action from three days to five days and make a non-substantive wording change for conciseness. Additional time is provided to initiate repairs because a three-calendar day window would provide little time for action at sites that are only staffed on weekdays if an exceedance is found late in the week. Five days will ensure that there is sufficient time in all instances for the operator to initiate appropriate corrective action. A five-day timeline also aligns with how long operators have in the current LMR to initiate corrective action for positive pressure.
65. In sections 95469(a)(1)(B)1. and 2.a, staff proposes to change the corrective action initiation timeline from three days to five days to align with the change to section 95469(a)(1)(B) for the same reasons.
66. In section 95469(a)(1)(C), staff proposes to add that exceedances found during compliance inspections also return the entire landfill to quarterly monitoring. This was previously specified in section 95469(a)(1)(D) and was moved here for improved organization, clarity, and conciseness.
67. In section 95469(a)(1)(D), staff proposes to clarify that an exceedance of the instantaneous surface emissions standard detected during a compliance inspection is a violation of the LMR. This aligns with the longstanding interpretation and implementation of the LMR as section 95465 prohibits any location exceeding the limit. The allowance for corrective actions in section 95469(a)(1)(B) follow directly from the requirement for the owner or operator to perform their own routine monitoring.
68. In section 95469(a)(2)(A), staff proposes a non-substantive wording change for conciseness because the parent item (a) already specifies that the owner or operator is responsible for these requirements.
69. In section 95469(a)(2)(B), staff proposes to change the corrective action initiation timeline from three days to five days to align with the changes in section

95469(a)(1)(B) for the same reasons and make a non-substantive wording change for conciseness.

70. In sections 95469(a)(2)(B)1. and 2.a, staff proposes to change the corrective action initiation timeline from three days to five days to align with the change to section 95469(a)(1)(B) for the same reasons.
71. In section 95469(a)(2)(C), staff proposes to add that exceedances found during compliance inspections also return the entire landfill to quarterly monitoring. This was previously specified in section 95469(a)(2)(D) and was moved here for improved organization, clarity, and conciseness.
72. In section 95469(a)(2)(D), staff proposes to clarify that an exceedance of the integrated surface emissions standard detected during a compliance inspection is a violation of the LMR. This aligns with the longstanding interpretation and implementation of the LMR as section 95465 prohibits any location exceeding the limit. The allowance for corrective actions in section 95469(a)(2)(B) follow directly from the requirement for the owner or operator to perform their own routine monitoring.
73. In section 95469(a)(3), staff proposes to change the standard for an alternative remedy to a third surface exceedance from “more effective” to “at least as effective” as a new or replacement well, require the alternative proposal to explain why the action was not completed before the third exceedance, and add the feasibility of completing the proposed action before the third exceedance as a basis for approving or disapproving the request. Staff also proposes to remove the 120-day limit on the timeline that can be proposed by the owner or operator for completing the alternative corrective action.

The change in standard aligns with other provisions in the LMR where an alternative can be requested that needs to have equivalent effectiveness, not be more effective. This includes alternative compliance options and alternative surface emissions monitoring procedures.

This option is not available for simple actions that should be completed during the initial repair and re-monitoring cycles. This option is for actions that could not be feasibly completed before the third exceedance. This provision is intended to be used for more involved actions that the owner or operator would need more time to complete, such as upgrading the blower or header pipes, or installing more robust cover over a larger area.

Removal of the 120-day time limit is necessary to recognize that given the need for the application and approval process, there may not be enough time left for the corrective action within that window. Because the owner or operator needs to propose a timeline and demonstrate the appropriateness of that timeline, owners and operators will still need to complete their corrective actions promptly based on the nature of the alternative action.

Additionally, staff proposes to change “obligated” to “required” for consistency with terminology used throughout the Proposed Amendments. This does not change the intended meaning.

74. In section 95469(a)(4), staff proposes to make several wording changes and reduce the area in which SEM frequency increases to encompass only the grid that exceeded

the recurring exceedance threshold (no longer including the adjacent grids). The wording changes do not change the meaning of the text but rather ensure greater clarity when referring to instantaneous and integrated exceedances, and align language across the LMR for clarifying which exceedances count toward the thresholds. After reviewing comments, further discussions, and reviewing reported data, staff does not have evidence that exceedances are likely to occur within the adjacent grids and thus most of the benefit of increased monitoring frequency is attained with less resources expended. Staff are retaining the requirement to perform collection system and cover integrity assessments in all adjacent grids, which helps to ensure that any deficiencies are addressed comprehensively in the larger area.

75. In section 95469(b)(2)(A), staff proposes to change the timeline for owners or operators to perform surface emissions and component leak monitoring after being notified of a remotely detected emission plume from 5 days to 10 days. This change is necessary to account for scheduling and the availability of personnel or contractors to perform the monitoring. Specifically, 10 calendar days is selected because it aligns with the time provided for re-monitoring of surface emissions and component leaks, making this a consistent standard for how quickly monitoring personnel must be dispatched upon finding an emission source or potential emission source.
76. In section 95469(d)(2), staff proposes to add “or set of devices” to align with the change made in section 95464(b)(1)(D).
77. In section 95469(d)(2)(A), staff proposes to add a phase-in date and change the averaging time from 3-hour periods to each calendar day. The phase-in is necessary to allow the collection of 12 months of monitoring data after the amendments become effective to establish the baseline. The change to calendar day periods simplifies the calculation process and focuses the reporting on longer-duration events that are more likely to represent meaningful operational changes or disruptions. Staff also proposes to re-word the 20% change standard to clearly convey that changes in either direction (higher or lower) invoke this requirement and revised the units to clarify that the parameter is a daily quantity (i.e., the totalized volume in standard cubic feet, scf) to avoid confusion with the flow rate (e.g., in scf per minute).
78. In section 95469(d)(4), staff proposes to add a future compliance date and remove the requirement to monitor oxygen content in the exhaust stream of engines and turbines. Both changes are made to align with changes to section 95464(b)(3)(A)3.
79. In section 95469(d)(4)(A), staff proposes to remove the oxygen content requirement for engines and turbines, add an allowance for up to 120 cumulative hours of excursion periods before a violation occurs, and change the operational range from that specified by the manufacturer to that on the device’s permit (or a minimum temperature of 50 degrees Fahrenheit (°F) below the source test temperature if not identified on the permit).

Removal of the oxygen content requirement was necessary to align with section 95464(b)(3)(A)3. Staff are adding the 120-hour cumulative allowance for consistency with a similar provision for enclosed flares in section 95469(d)(3)(A). This sets a realistic standard for proper operation of engines and gas turbines and avoids encouraging operators to shut down a device that could instead be promptly returned to operation within the required temperature range.

The change in operational range is necessary to reflect that a permit may modify the manufacturer-specified operating ranges to reflect site-specific conditions and achieve emissions limits based on source tests. The alternative minimum temperature specification is necessary in cases where the permit does not specify a range. The minimum temperature of 50 °F below the source test was selected to align with the minimum temperature standard for enclosed flares, and staff has identified a similar 50 °F allowance in a landfill gas control gas turbine permit.⁶

80. In section 95469(d)(6), staff proposes to add additional types of control devices (internal combustion engines and gas turbines) for which the owner or operator does not need to describe their operation, operating parameters indicating proper performance, and monitoring procedures. Because staff added monitoring parameters and requirements for internal combustion engines and gas turbines in section 95469(d)(4), owners or operators should not be required to separately identify parameters and monitoring procedures.
81. In section 95469(e)(1)(A), staff proposes to change “after” to “within” 15 calendar days for wellhead pressure re-monitoring. This change is necessary to avoid a conflict with the phrasing in section 95469(e)(1)(B), i.e., re-monitoring “after” 15 days would not provide confirmation of whether the pressure was corrected within 15 days.
82. In section 95469(e)(1)(B), staff proposes to specify that the collection system assessment performed as part of the root cause analysis must be performed in a 200-foot radius around the well. This is necessary to both constrain the area that must be assessed and ensure a sufficient area is assessed. The 200-foot radius aligns with the area that must be assessed in several other wellhead monitoring provisions, including in sections 95469(e)(2)(A), (3)(A), (5), and (7)(B). Staff also proposes to change the order of a passage to reduce sentence length and more closely align the first part of the subsection with the language here in the current LMR, and staff proposes to change “problem” to “positive pressure” to more clearly convey what “problem” was being referred to.
83. In section 95469(e)(2)(B), staff proposes to change the period over which weekly measurements of wellhead pressure are needed at a well with recurring positive pressure to six months (from one year) before the well either returns to monthly monitoring or converts to continuous monitoring. After further discussion with stakeholders, staff believes that six months is a sufficient period to establish whether there is a continuing recurring issue. A shorter period ensures that the monitoring frequency is adjusted to reflect the results of the weekly monitoring more quickly, whether to increase or decrease it. Staff also proposes to add a timeline for installing the continuous pressure monitoring system, which is necessary for enforceability, and based on how long staff believes it could be necessary to procure and install such a system. Finally, staff proposes to add a requirement to also “record” the pressure to ensure there is a record being generated of the continuous measurements.
84. In section 95469(e)(3), staff proposes to specify that the actions following a temperature over 55 degrees Celsius (°C) only applies to interior wells (i.e., within the waste perimeter). This change is consistent with federal regulations on well

⁶ Bay Area Air Quality Management District (BAAQMD). (2024, November 4). *Final Major Review Permit Issued To: Waste Management of Alameda County Facility #A2066*.

temperatures and aligns with the wellhead type description for the wellhead temperature standard in section 95464(d).

85. In section 95469(e)(3)(A), staff proposes to change “standard” to “threshold” when referring to exceeding a landfill gas temperature of 55 °C (131 °F). This change aligns with the use of “threshold” later in the same subsection to clarify that both instances are referring to the same metric.
86. In section 95469(e)(3)(C)1., staff proposes to clarify that the conditions which allow decreasing frequency or cessation of enhanced monitoring are specific to each well, rather than dependent on the conditions in the well that initially triggered monitoring. Staff believes this is appropriate to limit unnecessary monitoring over time in surrounding wells that have demonstrated normal temperatures and low carbon monoxide. Additionally, staff proposes to change the temperature that a well must be under to cease enhanced monitoring to 62.8 °C (145 °F) and clarify that this temperature refers to the temperature at any point in the well (not just at the wellhead). This aligns with the original intent of requirements for preventative action and additional monitoring in response to gas temperatures above 131 °F, which are designed to determine the actual temperature the well is exposed to (i.e., if corrective action is needed because the downwell measurement shows that the actual temperature exceeds 145 °F), inform the appropriate steps to ensure that temperatures are stabilized to avoid reaching the maximum limit of 145 °F, and ensure such exceedance is promptly detected.
87. In section 95469(e)(3)(C)2, staff proposes to add conditions under which downwell temperature monitoring frequency can be decreased, and conditions under which it can be ceased. In the 45-Day Changes, the lack of a mechanism to cease downwell monitoring was unintentional. These allowances better align the downwell monitoring provision with the enhanced monitoring provision in section 95469(e)(3)(C)1. Downwell monitoring is necessary in response to wellhead temperatures above 131 °F to investigate whether temperatures are higher downwell and inform appropriate preventative actions. Staff also recognizes that downwell monitoring is a more difficult process than wellhead monitoring, typically requiring temporarily disconnecting the well from vacuum and/or removing the wellhead each time a measurement is taken. This process may pose safety concerns and result in the release of landfill gas during the measurements. Thus, based on currently available information, staff believes the most reasonable practice is to perform downwell monitoring at least once in a well with an elevated wellhead temperature to ascertain whether there are hotter temperatures downwell, but that it is appropriate to reduce this frequency or cease monitoring based on the findings of enhanced and downwell monitoring.
88. In section 95469(e)(4), staff proposes to specify that the actions following a temperature over 62.8 °C (145 °F) only applies to interior wells. This change is consistent with how federal regulations on well temperatures are implemented and aligns with the wellhead type description for the wellhead temperature standard in section 95464(d).
89. In section 95469(e)(4)(C), staff proposes to specify that the collection system assessment and cover integrity assessment performed as part of the root cause analysis must be performed in a 200-foot radius around the well. This is necessary to both constrain the area that must be assessed and ensure a sufficient area is assessed. The 200-foot radius aligns with the area that must be assessed in several

other wellhead monitoring provisions, including in sections 95469(e)(2)(A), (3)(A), (5), and (7)(B).

90. In section 95469(e)(4)(D), staff proposes to add a mechanism for the Executive Officer to request submission of any gas collection system operations and maintenance manual in use at the facility. Operators generally have operations and maintenance manuals that specify procedures which guide personnel actions regarding wellfield tuning, safety precautions, monitoring objectives, inspections, maintenance checklists, and similar policies—potentially including procedures to address high temperatures or other issues that may contribute to high temperatures, such as oxygen intrusion. This change is necessary because staff anticipates that details regarding how an owner or operator operates and maintains their gas collection system will be needed in some cases for the Executive Officer to better understand and contextualize the root cause analysis and corrective action analysis. The submission timeline is selected to align with the existing submission timeline for records requests under section 95470(a)(3).

91. In section 95469(e)(5), staff proposes to specify that the actions following high wellhead oxygen only applies to interior wells, and staff proposes to add that the actions in that subsection are only required if the well has not been reduced below 5% oxygen within 15 days.

Specification of interior wells is necessary because GCCSs often utilize perimeter wells to detect and control subsurface gas migration, and these wells can operate normally at higher oxygen content by design. Non-interior wells are not placed within the waste perimeter, so high oxygen content in those wells is not indicative of oxygen intrusion into the waste mass.

The 15-day period is intended to provide flexibility for an operator to determine and implement a course of action to reduce oxygen content in the wellhead before more thorough assessments are required. This is particularly relevant if the cause is readily observable and a simple adjustment or repair (e.g., re-tuning the well or repairing a broken component on the well) successfully reduces the oxygen content.

92. In section 95469(e)(6), staff proposes to change the number of high oxygen readings that represent recurring high oxygen to six (from three), specify that this applies only to interior wells, revise when enhanced monitoring can be ceased, change when downwell temperature monitoring is required, and move various passages for improved organization and clarity. Staff is changing to six high oxygen readings to recognize the variability in oxygen content over time and limit instances where the provision could be invoked due to temporary activities (e.g., installation of a new well that may occur within a 120-day period and result in temporary air intrusion), to focus this provision on wells with persistent high oxygen content where previously attempted assessment and repair actions were not effective. This change is not expected to delay prompt detection of potential issues with the gas collection system and maintains the objective of focusing more intensive monitoring in areas with persistent measurable deviations to support safe and effective operation. Staff is specifying interior wells for the reason provided for section 96469(e)(5). Staff is removing the requirement for temperature to be low to cease this monitoring because this provision is based on high oxygen, not high temperature. If high temperatures are seen, the provisions in section 95469(e)(3) and (4) would be invoked. Staff is removing the automatic invoking of downwell temperature monitoring to instead invoke this only if carbon monoxide is elevated because oxygen alone is not typically an indicator of a

subsurface reaction, and as discussed earlier, downwell temperature monitoring is not a simple measurement and can release landfill gas.

93. In section 95469(e)(7)(A), staff proposes to specify that this applies to interior wells, remove the requirement to perform downwell temperature monitoring, and change the conditions under which enhanced monitoring can be ceased (note that the addition of “all wells within 200 feet,” “and conduct enhanced monitoring weekly thereafter,” “enhanced monitoring shall be conducted according to the procedure in section 95471(o),” and the allowance to step down monitoring frequency were already requirements through the reference to section 95469(e)(3)(C)1. that was deleted). Staff is specifying interior wells for consistency with sections 95469(e)(3) and (4). Staff is removing the requirement to perform downwell temperature monitoring because the intent of this section is to more closely watch a trending well for further changes in temperature or indications of a subsurface reaction. Without a high wellhead temperature, staff believes that downwell temperature monitoring may not yet be warranted. If the temperature in the wellhead rises above 55 °C (131 °F) during the weekly enhanced monitoring, that monitoring will continue weekly, and after 60 days, downwell temperature monitoring will be required by section 95469(e)(3)(C). Four consecutive monitoring events with low temperature is selected to provide enough monitoring events for the operator to observe the trend and verify that the temperature has remained below the thresholds.
94. In section 95469(e)(7)(B), staff proposes to specify that this applies only to interior wells, add that the oxygen content difference must be sustained for two consecutive monthly monitoring events to invoke collection system and cover integrity assessments, and add a timeline for correcting any issues or deficiencies. Staff is specifying interior wells for consistency with sections 95469(e)(5) and (6). As clarified by an example in the regulatory text, the subsequent monthly monitoring event language means that oxygen content in months 2 and 3 must both be at least two percentage points higher than the oxygen content in month 1, where months 1, 2, and 3 are three months in a row. This is designed to ensure that the change is sustained and not simply due to a temporary fluctuation or a cause that was quickly corrected. This change is not expected to delay prompt detection of potential issues with the gas collection system and maintains the objective of expediting identification of operational issues that could be indicated by a sudden increase in oxygen. Adding a timeline for correcting issues or deficiencies is necessary for enforceability and aligns with the timelines provided for the same activities in sections 95469(a)(4)(A), (e)(2)(A), (e)(3)(A), and (e)(5).
95. In section 95469(e)(7)(C), staff proposes to add a phase-in date and change the deviation thresholds for methane content changes and decreases in the ratio of methane to carbon dioxide. The phase-in date is necessary to ensure that 12 months of data has been collected on the relevant parameters to establish the baseline for changes. The adjustment to the methane content deviation threshold simplifies the analysis. After further discussion with operators, staff believes that a 25% decrease in the methane to carbon dioxide ratio better represents a meaningful change than the originally proposed 10% decrease. These changes are intended to focus reporting on the most significant events.
96. In section 95469(e)(8), staff proposes rephrasing to clarify that this subsection only applies when the more frequent monitoring is being used as the means of complying

with monitoring requirements. The intention of subsection (8) is primarily to minimize the compliance risks of voluntarily adding continuous wellhead monitoring systems. The 15-Day Changes to this section are intended to further that goal by not penalizing an operator who chooses to install a continuous wellhead monitoring system while continuing to perform manual monthly wellhead monitoring and using that data for compliance purposes.

97. In section 95469(f), staff proposes to change the initial frequency of well liquid level monitoring to annually (from semiannually), specify that this applies only to interior vertical gas collection wells, and specify that monitoring is not required at horizontal collectors or wells with remote or inaccessible wellheads that cannot be monitored. Staff also proposes to remove “semiannual well” from the header.

Since releasing the 45-Day Changes, staff has learned that performing liquid level monitoring typically requires temporarily disconnecting the well from vacuum and/or removing the wellhead each time a measurement is taken. This process may pose safety concerns and result in the release of landfill gas during the measurements. Performing a single annual measurement in the typical wet season maintains the overall goal of monitoring liquid levels to ensure effective functionality of the collection system, while avoiding an additional monitoring event at wells that have low liquids. Keeping the increased monitoring frequency (quarterly) if liquid levels or other obstructions exceed 50% aligns with Staff’s original intent to focus additional monitoring efforts on areas with measurable deviations. Staff believes these changes better support the goal of improving GCCS operations and minimizing emissions while utilizing resources and personnel efficiently. The specified timing for annual monitoring is constrained to a single calendar year to simplify compliance determinations on the calendar year basis.

Applying this provision only to vertical wells is necessary to reflect that measurements in horizontal collectors may be difficult to perform due to their length and may not be meaningful (as a percentage of screened interval length) due to collector geometry. Wells with remote or inaccessible wellheads need to be exempt where liquid level measurements are impractical to perform.

“Semiannual” is removed to reflect that the monitoring frequency will be annual, quarterly, or less than annual, depending on the results of previous monitoring events. This is also consistent with the other headers in section 95469 that do not include the measurement frequency. “Well” is removed from the title to avoid awkward phrasing.

98. Staff proposes to move section 95469(f)(1)(A) in the 45-Day Changes to (f)(2) in the 15-Day Changes. This move is necessary to reflect that the requirement to repair or replace a compromised well is independent of whether the well has a liquid level over 50 percent of the screened interval length, as staff had originally intended. The process of performing liquid level monitoring is conducive to finding compromised wells (e.g., pinches), so this is relevant even for wells with a low liquid level. Staff also proposes to add a 120-day timeline for repair or replacement to clarify how quickly this action must be completed and the timeline was chosen to align with the timeline to add a new or replacement well in sections 95464(c)(2), 95469(a)(1)(B)3., and 95469(a)(2)(B)3.
99. Staff proposes to remove section 95469(f)(2) of the 45-Day Changes. After reviewing comments, staff recognizes that installing a pump is not always the most appropriate

liquids management method for all wells, and creating this single-solution requirement is unnecessary for the overall goals of improving liquids management. Instead, the requirements in section 95469(f)(1) use a frequent, measurable, performance-based approach to ensure frequent removal of liquids and incentivize owners or operators to use the most effective solutions for liquids management based on site-specific conditions.

100. Staff proposes adding section 95469(f)(3) that allows a decrease in monitoring frequency based on demonstration of repeated liquid levels below 50% of the screened interval length. This frequency is structured as a sampling schedule wherein 25% of those wells are sampled each year. This is necessary to avoid excessive monitoring of wells that have a good history of compliant liquid levels. Two annual monitoring events is chosen as the threshold to reduce the effects of unusual precipitation conditions in any one year. The 25% sampling schedule approach accomplishes a frequency of once every four years for each well, while ensuring that some liquids monitoring is occurring each year.
101. In section 95469(g), staff proposes to add “system” to align with the change made in section 95464(b)(1)(E) for the same reason.
102. In section 95469(g)(1), staff proposes to change the timeline to re-tune all wells after a pressure setpoint change from 1 day to 10 days. This change is necessary to allow sufficient time for tuning activities at larger landfills with a large number of wells.

Modifications to Section 95470, Recordkeeping and Reporting Requirements

103. In section 95470(a)(1)(A), staff proposes to add “component,” change “one calendar day” to “24 hours,” add the component identification number, and restructure where the well identification number is placed. Adding “component” is necessary to clarify that this recordkeeping applies to individual components such that it provides records for assessing compliance with section 95464(e) and which is in line with historical LMR interpretation and implementation. “One calendar day” is ambiguous because it is unclear whether this means downtime that only exists within a single calendar day, if the entire next calendar day is included as well, or if it is a 24-hour period. The change to a 24-hour threshold resolves this ambiguity. The component identification number is needed to be able to easily track which component the downtime is related to, and moving the well identification number is simply to improve formatting.
104. In section 95470(a)(1)(B), staff proposes to clarify that the specific downtime records required include date and time and added recordkeeping for whether the GCCS was shut down and closed as required during periods of control system downtime to create a record of compliance with the requirement in section 95464(b)(1)(A)1. Additionally, staff proposes adding recordkeeping of the applicable downtime limit, which is intended to inform a determination of whether the control system exceeded the downtime limit based on annual methane collection in the three prior calendar years.
105. In section 95470(a)(1)(F), staff proposes to add the component type and description to component leak monitoring records and delete the reference to one hertz readings. The component type and description will enable a more meaningful interpretation of the data. Removing reference to one hertz readings is necessary because the records are intended to provide a single maximum concentration for each component as determined according to the requirements of U.S. EPA Method 21.

106. In section 95470(a)(1)(G), staff proposes to add recordkeeping for the initial corrective action taken and the date of the initial corrective action. This is needed to facilitate evaluation of compliance with the requirement to initiate corrective action within 5 days.
107. In section 95470(a)(1)(H), staff proposes to change “five calendar days” to “10 calendar days” to align with the change made to section 95471(d)(5) for the same reason.
108. In section 95470(a)(1)(K), staff proposes to add “or downwell” to the type of temperature exceedances for which records need to be kept. This is necessary because downwell temperatures can also be the basis for exceedances.
109. In section 95470(a)(1)(L), staff proposes to specify that this recordkeeping only applies at interior wells in line with the changes to section 95469(e)(5) and (7)(B) and add that the date and reading of any re-monitoring must also be recorded. The date and reading of re-monitoring is necessary to document cases where the owner or operator reduced the oxygen content below 5% within 15 days as provided in section 95469(e)(5), to confirm compliance with section 95469(e)(3)(B), and to generally provide regulators with information about the effectiveness of any actions taken in reducing the oxygen content.
110. In section 95470(a)(1)(R), staff proposes to add “or other gas collection device” to ensure complete records of gas collection system expansions. This is necessary to recognize that “wells” are not the only type of collection device that might be installed and to clarify that the requirements apply regardless of the type of collection device.
111. In section 95470(a)(1)(S), staff proposes to change the terminology from “solid waste acceptance rate” to “amount of solid waste deposited.” This change clarifies that staff is seeking only the amount of waste deposited in the landfill which will contribute to the waste-in-place. This also ensures that the reporting is aligned with the change in section 95464(a)(5).
112. In section 95470(a)(1)(Y), staff proposes to reference the entirety of section 95469(d) as recordkeeping. The two subsections omitted in 45-Day Changes – (4) and (5) – both contain requirements to monitor equipment operation and record the values. Including these subsections in section 95470(a) helps clarify that these records must be kept (including that they must be maintained in electronic format for at least five years).
113. In section 95470(a)(1)(Y)4, staff proposes to add a phase-in compliance date, remove oxygen content records for engines and turbines, and replace the description of the operational range to align with the changes in section 95469(d)(4)(A).
114. In section 95470(a)(1)(Y)5, staff proposes to add a phase-in compliance date, change the period of analysis from 3-hour periods to each calendar day, and clarify that records need to be kept of changes in either direction. Additionally, staff proposes conforming changes to the description of records that need to be kept and add a unit for total gas flow. These changes are necessary to align with the changes made in section 95469(d)(2)(A).
115. In section 95470(a)(1)(CC), staff proposes to add the dates that monitoring occurred to the records demonstrating compliance with the cover integrity monitoring

requirements. These dates are necessary to maintain a record of compliance with the requirement to monitor the cover monthly.

116. Staff proposes to add section 95470(a)(1)(FF) to add recordkeeping for remote or inaccessible wellheads where liquid level monitoring could not be performed. These records are necessary to establish which wells are not subject to liquid level monitoring for compliance evaluation.
117. In section 95470(a)(1)(GG), staff proposes to add recordkeeping to demonstrate compliance with the requirements for permanently decommissioning wells. These records are necessary to confirm a well met the criteria for decommissioning and effective gas collection system coverage is maintained for compliance determination purposes, and to align with changes made in sections 95464(c)(2) and 95471(p).
118. In section 95470(b)(3)(E), staff proposes to change the topographic map reporting to require a separate file to show any changes for each quarter, rather than separate files showing any changes during the calendar year. The 45-Day Changes requirement could have been interpreted in such a way that would result in a very large number of files (e.g., to show daily or weekly changes). Staff believes that quarterly files (up to four per year) are a reasonable simplification to reflect conditions at the site throughout the year. Tying the files to SEM dates is necessary because many of the items included in the map are recorded when SEM is performed.
119. In section 95470(b)(3)(E)2, staff proposes to add that the type of well must be identified. This is necessary to assess which wells are subject to various monitoring requirements that depend on the well type (e.g., a vertical well).
120. In section 95470(b)(3)(E)5, staff proposes to add the SEM pathway to the map showing any areas excluded from SEM. This change is necessary to simplify reporting because it aligns with a common format already used by operators for recordkeeping. Further, the change will simplify compliance evaluations for the regulatory agency by eliminating the need for staff to plot the location coordinates required under section 95470(a)(1)(D) to confirm SEM was performed at the correct spacing interval, at all cover penetrations, and other specifications of the SEM procedures in section 95471(c). Additionally, staff proposes revising the example of a reason for exclusion to better align with existing practice; paved areas (with no cracks, pot holes, or other penetrations) can be excluded from monitoring, but are rarely, if ever, shown on SEM pathway maps because they do not typically cover a significant area. Staff proposes to remove the word “surface” to recognize that the map is required to identify native areas that are not part of the “landfill surface” as defined in section 95475.
121. In section 95470(b)(3)(E)6, staff proposes to clarify that the surface emissions monitoring date is the date that the monitoring actually occurred, or the date by which that monitoring is due according to section 95471(c)(1)(A). This clarification is necessary to resolve ambiguity in the 45-Day Changes about whether the reporting requirement is the date SEM occurred or the date that SEM must be conducted by.
122. Staff proposes to add a new section 95470(b)(3)(G) for any GCCS operating semi-continuously that requires a daily summary of gas collected, methane content, runtime, and cause of GCCS shutdown. This information is necessary to evaluate the effectiveness of semi-continuous operation over time.

123. Staff proposes to remove section 95470(b)(3)(G) of the 45-Day Changes. The wording of the requirement was potentially subjective, and the data is mostly duplicative of that recorded under sections 95470(a)(1)(B), (Y), and (Z) (and reported in the Annual Gas Collection and Control System Report).
124. In section 95470(b)(3)(H), staff proposes to specify that only subsections 1. through 5. of section 95470(a)(1)(Y) needs to be submitted in the annual report (i.e., periods of operation during which parameter boundaries are exceeded, not including the full records of data in the parent item (Y)). This is necessary to focus data in the annual reports to the relevant periods for compliance evaluation.
125. In section 95470(b)(4), staff proposes to change the deadline for submitting quarterly monitoring data to 30 days after the end of each calendar quarter. This change is necessary to allow sufficient time for quality assurance and quality control checks by the owner or operator to minimize submission of erroneous and incomplete data, and to accommodate time to prepare the additional data added to quarterly reporting in these 15-Day Changes.
126. In section 95470(b)(4)(C), staff proposes to add records of enhanced wellhead monitoring and downwell temperature monitoring to the quarterly data report. These data are critical for regulatory agency oversight to understand and rapidly respond to conditions at facilities with high wellhead temperatures or other indications that trigger such monitoring. Staff also proposes to add that if wellhead monitoring is being performed more frequently than weekly, monthly averages shall be submitted instead of all the data. Records of all the data will still be kept and may be requested by regulators, but the amount of data generated by a continuous monitoring system would be cumbersome to report and could discourage the use of such systems.
127. Staff proposes to add section 95470(b)(4)(D), which requires records of gas control system downtime to be submitted as part of the quarterly data reporting. This information is simple to compile and critical for regulators and the public to understand when the GCCS was offline, and emissions were not controlled.
128. In section 95470(b)(5), staff proposes to change “discovery” to “initial detection.” The new wording is more consistent with the language used throughout the LMR and refers to the same event.
129. In section 95470(b)(7)(A), staff proposes to change the reporting deadline to 15 days (from 8 days) after the owner or operator receives a remote plume detection notification from CARB and change the reporting from the number of leaks (surface and component) to the concentration of each leak. Changing the deadline is necessary to align with the change in section 95469(b)(2)(A), which allows 10 days for the owner or operator’s monitoring.

The timeline of 15 calendar days is selected to provide a 5-day window after the monitoring deadline, consistent with the 5 days provided for reporting the outcome of a leak repair in section 95470(b)(7)(B). Reporting the concentrations is consistent with other reporting for surface and component leaks and is necessary to understand the relative magnitude of each.

130. Staff proposes to add a new section 95470(b)(8) which requires owners or operators to notify CARB of any requests and approvals/denials of higher operating values for temperature submitted to or received from another regulatory agency. This

requirement is necessary to inform regulators of conditions at a landfill when evaluating compliance data or planning compliance inspections, and to understand what conditions and monitoring provisions have been approved under other regulatory structures. Staff selects a timeline of 15 calendar days for each submission to balance the need for timely knowledge of conditions by CARB staff with the need of owners or operators to assemble and submit the information.

131. In section 95470(b)(9) (previously (b)(8) in the 45-Day Changes), staff proposes to specify that the reporting must use standardized forms for items where a form is provided. The use of standardized forms was described in the ISOR purpose and rationale statement for this section (referred to as “templates”), but staff believes it is best to clarify this in the regulatory text.

Modifications to Section 95471, Test Methods and Procedures

132. In section 95471(a), staff proposes to correct the appendix number where EPA Reference Method 21 is contained. Staff referenced the incorrect appendix to 40 CFR Part 60 in the 45-Day Changes.
133. In section 95471(b)(2)(B), staff proposes to add an option to measure the landfill gas flow rate and methane content at the outlet of the carbon adsorption unit. Some operators only have instrumentation at the outlet, and because a carbon adsorption system does not destroy methane, the methane flow rate (product of the landfill gas flow rate and the methane content) measured at the outlet should be approximately the same as that measured at the inlet. Therefore, this change provides additional flexibility and avoids the installation of unnecessary equipment.
134. In section 95471(c)(1)(E), staff proposes to add that SEM cannot occur in the 72 hours following application of water or other liquids. The added restriction is necessary because – regardless of the reason for water application (whether naturally through precipitation or manually as irrigation), the effect is the same – the liquid can fill pore spaces and temporarily suppress surface emissions, leading to inconclusive or invalid monitoring results. Adding, compacting, and “watering in” soil is a common corrective action for SEM exceedances; the addition of water may be beneficial by reducing air pockets, but this change ensures a sufficient time has elapsed before re-monitoring is conducted to confirm the SEM results are valid and the repair is effective.
135. In section 95471(c)(2)(B), staff proposes to specify at least a 5-ft radius around the area of a detected exceedance must be monitored. After further discussions with enforcement staff experienced in landfill inspections, staff believes that the language proposed in 45-Day Changes regarding the entire “contiguous” area could be ambiguous and subject to differing interpretations. Instead, a 5-ft radius provides a clear and consistent standard while achieving staff’s original intent of determining the extent of the area exceeding the methane concentration limit (because, for example, an exceedance measured four feet from the initial exceedance would in turn require monitoring of its 5-ft radius). Five feet is selected to be roughly equivalent to the measurement spacing with a 1 Hz measurement frequency and upper end of the typical human walking speed that would be normally experienced during SEM.

Additionally, staff proposes specifying that any locations with elevated concentrations within this 5-ft radius are considered part of the same exceedance. This addition is necessary for consistently defining individual exceedances, as some entities might

count multiple close locations over the surface methane concentration threshold as multiple exceedances, while others might count them as part of the same exceedance.

136. In section 95471(d)(1)(C), staff proposes to add additional types of platforms to the example and reworded the sampling mechanism. This change is intended to better reflect the broader set of technologies that might be applicable. However, because these are examples and not an exhaustive list, this change does not alter the options available.
137. In section 95471(d)(2)(C), staff proposes to restructure the sentence to fix awkward sentence structure in the 45-Day Changes.
138. In section 95471(d)(4)(F), staff proposes to add that SEM cannot occur in the 72 hours following application of water or other liquids to align with section 95471(c)(1)(E) and for the same reason.
139. In section 95471(d)(5) and (d)(5)(A), staff proposes to extend the timelines to follow up on screening detections, make minor wording changes for improved clarity, and correct a cross reference. After reviewing comments and discussing with operators, the staff believes that the extended timelines reflected in the 15-Day Changes are appropriate to ensure that personnel can take all steps necessary to safely access the location. The cross reference read “9540(a)(1)(H)” in the 45-Day Changes, but was referring to section 95470(a)(1)(H) as clearly established by the other text in section 95471(d)(5)(A) referring to “the Annual Gas Collection and Control System Report” and by the lack of a section 9540 in the LMR.
140. In section 95471(e)(1), staff proposes to add specifications for the procedure to include follow-up monitoring, repair, and re-monitoring in accordance with the existing SEM procedures for either instantaneous or integrated concentration measurements. In the 45-day Changes, staff overlooked the potential that the capabilities of certain technologies may be more analogous to an instantaneous detection approach (i.e., an approach that identifies point sources with high concentrations) while others may be more similar to integrated detections (i.e., an approach that can detect diffuse concentrations over larger areas). Therefore, establishing conditions to trigger instantaneous or integrated monitoring (or both) could be useful, especially for demonstrating emission reduction equivalence. Additionally, staff proposes to change “surface methane concentration” to “surface methane emissions” for consistency with the name of section 95465.
141. In section 95471(f), staff proposes to correct the appendix number where EPA Reference Method 21 is contained. Staff referenced the incorrect appendix to 40 CFR Part 60 in the 45-Day Changes.
142. In section 95471(g), staff proposes to adjust which sections the measured methane collection rate calculation applies to because it is used in an additional section of the 15-Day Changes (section 95464(b)(1)(A)2.).
143. In section 95471(i)(1), staff proposes to remove the text incorporating by reference 40 CFR Part 60, Appendix A-7 because Appendix A-7 is incorporated in section 95471(a) in the 15-Day Changes.
144. In section 95471(j), staff proposes to specify the timeline to repair or replace a compromised component, and that a new collection system assessment is not

required if one has already been performed for the same area in the past six months. The timeline is necessary to clarify how quickly this action must be completed and was chosen to align with the timeline to add a new or replacement well in sections 95464(c)(2), 95469(a)(1)(B)3, 95469(a)(2)(B)3, and 95469(f)(2). The six-month allowance protects against performing an excessive number of assessments in the same area, such as if multiple provisions that require a collection system assessment are triggered in short order. Staff believes six months represents a reasonable amount of time over which collection system conditions may change enough that a new assessment might produce new findings.

145. In section 95471(k), staff proposes to reorganize and adjust requirements to improve text structure, provide more flexibility, and recognize the additional complexity of investigating and repairing the final cover.

The description of deficiencies is moved to its own subsection (4) so that the parent item (k) can focus on describing the assessment. Staff adds three options for assessing the properties of the cover (subsections (1), (2), and (3)) instead of only allowing soil classification and removed the requirement to assess the grain size (operators must choose one of the three options). These three options provide for more methods of measurement, including non-destructive testing that may be necessary e.g., for areas of final cover or synthetic covers. Staff proposes to add an allowance for submitting cover specifications where the thickness of synthetic or final cover cannot be measured without compromising cover integrity. This is necessary to avoid potential adverse impacts to the integrity of synthetic covers and final covers for such a measurement. Staff also proposes to specify that new measurements would not be needed if those measurements were performed in the same area within the past 12 months. Staff believes 12 months represents a reasonable amount of time over which cover conditions may change enough that a new assessment might produce new findings, and this reduces the need for repetitive testing that is likely to show the same results.

146. Staff proposes to add sections 95471(k)(1)-(3) of the 15-Day Changes, which describe the three types of tests that can be performed as part of a cover integrity assessment (operators must choose one of the three options). Each of these three methods can provide information about the effectiveness of the cover to contain landfill gas. For subsection (1), staff proposes to add a minimum number of samples per acre to improve clarity and enforceability, and believes three per acre represents the minimum density needed to obtain a representative sample. Staff proposes adding the same number of samples or locations per acre to the options in subsections (2) and (3) for consistency. Subsection (2) provides for an option to measure the gas profile at depths of 4-12 inches. Staff is adding this because high or increasing concentrations of methane near the surface or a low ratio of carbon dioxide to methane may indicate poor oxidation conditions or compromised cover integrity. Subsection (3) provides for a saturated hydraulic conductivity test. Staff is adding this because it provides a non-destructive testing option that provides information about the permeability of the cover material. Collecting measurable data in areas where issues have been observed (e.g., recurring SEM exceedances, high oxygen content, or elevated temperatures that invoke the assessment) can inform the operator's selection of appropriate corrective actions and inform future policy decisions; further, repeated assessments can reveal deficiencies that develop over time (e.g., decreased thickness due to erosion or increased permeability due to cracks).

147. Staff proposes to add section 95471(k)(4) which describes what a deficiency is. Most of the text in this section is simply moved from the parent item for better organization. Some changes are made to clarify that specifications approved for the landfill can include general or site-specific plans that are approved by other regulatory agencies such as Regional Water Quality Control Boards, CalRecycle, or Local Enforcement Agencies, and that failure to install or use in accordance with manufacturer specifications for engineered or synthetic covers constitutes a deficiency. These clarifications are necessary to account for the variability in cover specifications for different sites.
148. In section 95471(k)(5) in the 15-Day Changes, staff proposes several changes. In subsection (A) staff proposes to change the option to double to the minimum thickness to achieving a uniform thickness, add examples of actions that could be taken to repair or prevent erosion, change to “minimize” disturbance from animals rather than “prevent” it, and provide an option to repair engineered or synthetic covers. Staff’s main intention with the corrective action options in subsection (A) is to provide for common and relatively simple solutions to address each type of deficiency based on the findings of the cover integrity assessment. The added options are needed to provide flexibility to ensure a wider range of deficiencies can be dealt with. Removing the requirement to double the minimum thickness recognizes that areas with cracks or depressions below the minimum thickness can be addressed by adding material without doubling the thickness.
- In subsection (C), staff proposes to remove the option to replace intermediate cover with final cover as a means to correct a deficiency in intermediate cover. This is necessary because the timeline to design and construct the final cover cannot be completed within the timeframes specified by the sections that require the assessment to be conducted. Instead, any deficiencies in intermediate cover identified through the cover integrity assessment must be corrected using one of the options in subsections (A) or (C).
- In subsection (D), staff proposes to replace the final cover repair options with a requirement to follow specific approved plans pursuant to existing regulations as referenced in the text. Final covers design and modification is subject to regulatory requirements from other agencies, so the options provided in the 45-Day Changes may not be feasible modifications to make within the time periods allotted for repair. Staff decided to simply reference the relevant other regulatory requirements to prevent potential regulatory conflicts.
149. In section 95471(l), staff proposes to add piezoresistive sensors as a type of device that can be used to determine wellhead pressure. This type of device has been successfully used in continuous wellhead monitoring systems to accurately and reliably measure pressure. This change is necessary to avoid discouraging the use of continuous monitoring technologies that provide operators with better insights to effectively manage their GCCS. Staff also proposes to fix a typo in “manufacturer’s.”
150. In section 95471(m), staff proposes to incorporate 40 CFR Part 60, Appendix A-1 by reference. This appendix had been incorporated at section 95471(a) in the 45-Day Changes, but because that reference was inaccurate, this is now the first place where 40 CFR Part 60, Appendix A-1 is referenced in the 15-Day Changes.

151. In section 95471(n)(1), staff proposes to specify that 40 CFR section 62.16722(a)(ii)(A) does not apply to oxygen content monitoring requirements. That subsection specifies the span that must be used for calibration (10 to 12%). This change is necessary because operators sometimes rely on ambient air for oxygen calibration, which is acceptable as it represents the maximum oxygen concentration that would be found in landfill gas (i.e., 21%).
152. In section 95471(n)(3), staff proposes to generalize the requirements for using a portable gas composition analyzer. This change is intended to provide greater flexibility in the types of analyzers that can be used for determining carbon dioxide content. Staff believes that operating in accordance with the manufacturer's specifications is acceptable to ensure that instruments already in voluntary use by operators can continue to be used under the LMR.
153. Staff proposes to add a new section 95471(o)(4) requiring enhanced wellhead monitoring to include the flow rate of landfill gas. This parameter is typically read on the same instrument as the temperature, oxygen, carbon dioxide, and methane content, and provides valuable contextual information when interpreting overall monitoring results, especially in cases where the operator adjusted the flow rate (e.g., through changes in applied vacuum).
154. In sections 95471(o)(5)(A) and (B), staff proposes to relocate the sampling and value calculation instructions that were previously in subsections (C) and (D) of the 45-Day Changes and revise the wording for conciseness without changing the meaning of the instructions.
155. Staff proposes to add new sections 95471(o)(5)(C) and (D) with additional methods for measuring carbon monoxide concentration. Staff is adding these methods because they are approved alternatives under U.S. EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP)⁷ that may be more convenient for operators.
- Staff is specifying that a passivated canister or multi-layer foil gas sampling bag must be used to collect the sample. This specification aligns with the same type of sampling devices that are allowed under subsection (A), which itself is borrowed from a federal rule for the measurement of carbon monoxide from landfill gas extraction wellheads.⁸
156. Staff proposes to add section 95471(p) in the 15-Day Changes, which includes the methods by which an owner or operator can determine that active gas extraction is maintained in an area where a well is to be decommissioned. The options provided reflect methodologies and practices that were brought to staff's attention through discussions with stakeholders and experts, and were added to improve enforceability and clarity. For subsection (3), staff chose a 10-foot spacing interval (versus the standard 25-foot spacing interval) to increase the data collected by surface emissions monitoring to better characterize the instantaneous and integrated surface concentrations when relying on SEM alone to demonstrate the lack of need for a well.

⁷ 40 CFR Part 63, Subpart AAAAA.

⁸ 40 CFR § 63.1961(a)(5)(vi)(A).

Modifications to Section 95475, Definitions

157. Staff proposes to add a definition for “CARB” at section 95475(a)(2). This abbreviation is used in several subsections of the Proposed Amendments and was not defined.
158. Staff proposes to add a definition for “compliance inspection” at section 95475(a)(9). This term is used in several places in the current LMR and the Proposed Amendments. This definition is needed to ensure it is clear which types of inspections are being referred to and is aligned with the longstanding interpretation and implementation of the LMR.
159. In section 95475(a)(10), staff proposes to add a new subsection (A) with the definition of an “Uncontrolled MSW Landfill.” This definition was previously in section 95475(a)(39) in the 45-Day Changes. Staff is relocating this definition because it relies on being the opposite of a “Controlled MSW Landfill” and this placement better highlights that connection.
160. Staff proposes to add a definition for “Interior Well” at section 95475(a)(25). This definition is identical to the definition of an interior well in federal rules,⁹ except that staff added the last sentence regarding an “interior wellhead” for clarity.
161. Staff proposes to remove the definition of “perimeter” at section 95475(a)(32) as numbered in the 45-Day Changes. This change is necessary because section 95470(b)(3)(E)1. added in the 45-Day Changes and sections 95470(b)(3)(E)2. and 95475(a)(25) added in these 15-Day Changes all use the word perimeter with a different meaning than this definition. In the current LMR the word “perimeter” is only used in the definition of “subsurface gas migration” and staff has simply added the “perimeter” definition language to the “subsurface gas migration” definition.
162. In section 95475(a)(36), staff proposes to add “without physical access to a facility” to the definition of “Remote Monitoring Data.” This change is necessary to convey what staff intended by “remote.”
163. In section 95475(a)(40), staff proposes to replace “on the perimeter” with the language that had previously been in the definition of “perimeter” because “perimeter” is used with other meanings in sections 95470(b)(3)(E)1. and 2., and section 95475(a)(25).

Modifications to Appendix I

164. In Appendix I, section 6.0, staff proposes to add a description of how to calculate the amount of liquids added when determining the average precipitation plus liquids. This description is necessary to clarify what types of information can be used for determining the volume of liquid applied and what area belongs in the denominator of the calculation.
165. In Appendix I, section 6.0, staff labeled the table with waste type (%) by year up to 1995 as “Table 21A” in the 45-Day Changes. Staff intended this to be “Table 2A,” and have reflected that in the 15-Day Changes.
166. In Appendix I, Table 2B, staff proposes to correct spelling errors in the row labels for leaves and branches. The current LMR (prior to the 45-Day Changes) correctly listed

⁹ 40 CFR § 60.761, 40 CFR § 60.41f, and 40 CFR § 63.1990.

these as “Leaves” and “Branches.” However, a transcription error by staff resulted in the 45-Day Changes text showing these as “Leave” and “Branche.” Staff did not intend to change these row labels in the 45-Day Changes. Staff also proposes to remove the 0s in the hundredths place of each entry from 2008-present to match the level of precision in the figures provided for 1996-2007 and to reflect that the values were actually rounded to the nearest tenth.

In addition to the modifications described above, additional modifications correcting grammar, punctuation, and spelling have been made throughout the proposed changes. These changes are nonsubstantive.

Updates to the Information in the Initial Statement of Reasons

Typographical Corrections

In Chapter III of the ISOR, the purpose for section 95469(e)(7) (p. 65) stated that the 45-Day Changes “require additional monitoring and assessments in response to significant increases in landfill gas temperature (+11°F or 20°F).” The parenthetical should have read “(+11°C or +20°F).” The units were stated correctly in the proposed regulatory text provided as Appendix A-1 to the ISOR.

Changes to Landfill Ownership/Status Figures

After publication of the ISOR, staff discovered errors in the ownership type, operational status, or owner name for certain landfills, none of which affect the costs presented in the economic and fiscal analysis.¹⁰ Staff is providing updated versions of Table 5 from the ISOR, and Tables B-3 and B-5 from Appendix B of the ISOR to ensure an accurate record. In these tables, the incorrect data is shown in strikethrough and the updated data is shown in underline.

¹⁰ The changes include one uncontrolled landfill that is federally-owned, but was classified as local-owned in the ISOR; one uncontrolled landfill that is active, but was listed as closed in the ISOR; and two government owners that were counted as four government owners in the ISOR due to naming inconsistencies.

Table 1. Number of Businesses Impacted (updated version of ISOR Table 5)

Type of Owner	NAICS Code	Private	Government
Owners of at Least One Controlled ¹¹ Landfill (may also own uncontrolled landfills)	562212	39	66 <u>65</u>
Owners of Only Uncontrolled Landfills	562212	1	45 <u>14</u>
Third-party Gas Control System Owners	221118	33	0
<i>Total</i>	<i>N/A</i>	73	79

Table 2 . Number of Landfills by Ownership Type, Landfill Status, and Control Status (updated version of ISOR Table B-3)

Owner Type – Status	Controlled	Uncontrolled	Total
Private – active	28	0 <u>1</u>	28 <u>29</u>
Private – closed (or inactive)	19	4 <u>0</u>	20 <u>19</u>
Government – active	51	33	84
Government – closed (or inactive)	55	1	56
Total	153	35	188

Table 3. Landfill Surface Area by Ownership Type, Landfill Status, and Control Status (updated version of ISOR Table B-5)

Owner Type – Status	Controlled (acres)	Uncontrolled (acres)	Total (acres)
Private – active	5,794	0 <u>29</u>	5,794 <u>5,823</u>
Private – closed (or inactive)	2,215	29 <u>0</u>	2,244 <u>2,215</u>
Government – active	9,384	1,098	10,482
Government – closed (or inactive)	5,616	83	5,699
Total	23,009	1,210	24,219

Note: Totals may be different from sum of column or row due to rounding.

¹¹ A “controlled” landfill is a landfill with a gas collection and control system (i.e., a system of wells, pipes, gas moving equipment, and control devices that actively extract the gas and either combust the gas to destroy methane, or process the gas e.g., for use as transportation fuel with subsequent destruction in a vehicle engine).

Changes to the Economic Impacts Assessment for Regulated Entities

Staff is making several updates to the estimates of costs to regulated entities described in Chapter VIII and Appendix B of the ISOR. The changes are as follows:

- Staff is increasing the labor rates for all three labor types. In the ISOR analysis, staff accounted for the costs of wages and benefits. However, staff's understanding is that most owners and operators hire contractors to perform most of the tasks that would be added by the Proposed Amendments rather than directly hiring staff. After reviewing comments on the 45-Day Changes and consulting publicly available contracts,^{12,13} staff believes that labor rates were underestimated by approximately 50% for landfills that use contractors. Therefore, staff is increasing all labor rates by 50% for this updated cost estimate, resulting in the following rates:
 - Administrative: \$58.48/hr
 - Technician (civil engineering technician): \$88.50/hr
 - Engineering (civil engineer): \$125.49/hr
- In these 15-Day Changes, staff is proposing to reduce the default frequency of liquid level monitoring from semiannually to annually. Additionally, staff has learned through discussions with operators that liquid level monitoring is generally a more involved measurement than wellhead gas measurements, typically requiring the wellhead to be removed. Through these discussions staff now believes that liquid level monitoring would take approximately 20 minutes per well rather than 5 minutes per well as estimated in the ISOR. Therefore, staff is changing the frequency of measurements to one per year and the time per measurement to 20 minutes.
- In these 15-Day Changes, staff is proposing to reduce the area where SEM frequency must be increased to monthly in response to recurring surface emission exceedances. In the 45-Day Changes, the grid exceeding the recurring exceedances threshold and all adjacent grids would be converted to monthly monitoring. Under the 15-Day Changes, the adjacent grids are removed from this requirement. Therefore, staff is updating the number of grids with monthly monitoring from nine grids to one grid.

Using the methodology described in the ISOR Appendix B with the above substitutions, the updated cumulative cost estimate for all landfills (and third-party gas control systems) is \$14.8 million in the first year and \$14.5 million per year thereafter. The breakdown by summary category is shown in Table 4 (updated version of the ISOR Table 4), rounded to the nearest thousand dollars.

¹² Salinas Valley Solid Waste Authority (SVSWA). (2023, May 18). *Agenda, Regular Meeting, Board of Directors*. https://svswa.org/wp-content/uploads/2023/05/bd_agenda_2023_05_18.pdf.

¹³ County of San Diego. (2016). *County Contract Number 553542: Agreement with Stearns, Conrad and Schmidt, Consulting Engineers, Inc. DBA SCS Field Services for Monitoring Operation and Maintenance of County of San Diego Landfill Gas Control and Related Systems*.

Table 4. Estimated Costs of the Proposed Amendments by Summary Category (in 2023\$)
(updated version of ISOR Table 4)

Summary Category	Cumulative First Year Cost for All Landfills*	Cumulative Annual Ongoing Costs in Subsequent Years for All Landfills*
Remotely Detected Emission Plumes	\$132,000	\$132,000
Surface Emissions Monitoring and Exceedances	\$3,352,000	\$3,352,000
Gas Collection System Monitoring and Downtime	\$3,783,000	\$3,783,000
Early Gas Collection Infrastructure	\$6,951,000	\$6,951,000
Component Leak Monitoring Plans and Third-Party Gas Control Systems	\$607,000	\$299,000

*And third-party gas control systems.

Landfills subject to the LMR are owned by both private businesses and government entities. Of the total costs, approximately half are borne by private businesses (including landfill and third-party gas control system owners) and half by government entities (landfill owners). The updated cumulative cost estimate for all private businesses is \$7.2 million in the first year and \$7.0 million annually thereafter. The updated cumulative cost estimate for all government-owned landfills is \$7.6 million in the first year and \$7.5 million annually thereafter.

Changes to the Fiscal Analysis for Local Air Districts

There are 22 local air districts that have entered into memoranda of understanding (MOU) with CARB to primarily implement and enforce the LMR in their districts. In the ISOR, staff estimated costs to these local air districts based on estimated labor time requirements for various implementation activities. Staff has received input from air districts regarding the resource demands of the Proposed Amendments and has used that input to re-evaluate the costs that air districts that implement the enforce the LMR may incur. The estimated additional labor time due to the changes in the Proposed Amendments (above the level air districts are currently incurring to implement and enforce the current LMR) are shown in Table 5 and replaces the analysis from the ISOR. The labor hours in the table are based primarily on the

input staff received from air districts, along with staff’s statewide estimate of the number of landfills likely to invoke a particular requirement or number of anticipated events, where available (e.g., in the ISOR, staff estimated that recurring surface emissions exceedances would occur at 29 landfills per year). These are intended to represent population averages per landfill, not the hours per landfill that trigger any specific action or requirements.

Air districts anticipate significant additional indirect labor hours to implement the Proposed Amendments, especially in the initial stages (e.g., modifying internal database systems, training staff on the new requirements, and updating Title V permits). These costs are not included because they are not directly required by the LMR, though staff acknowledges they may be necessary to comply with federal and local rules (e.g., Title V permitting) or internal policies. Further, staff plans to issue training materials and guidance to assist in transitioning to implement the amendments, potentially reducing some indirect costs borne by districts.

Table 5. Estimated Additional Annual Labor Hours per Controlled Landfill for MOU Air District Implementation and Enforcement (Additional Tasks Due to Changes in the Proposed Amendments)

Implementation and Enforcement Tasks	Additional Annual Labor Hours Per Active Landfill	Additional Annual Labor Hours per Closed or Inactive Landfill
Collection system monitoring	29	29
GCCS expansion and operational standards	24	18
Surface emissions monitoring and remotely-detected plumes	16	1
Quarterly monitoring data and monitoring plans	12	11
<i>Total</i>	<i>81</i>	<i>59</i>

In Table 5, implementation and enforcement tasks associated with collection system monitoring include compliance assessments of all wellhead monitoring records and follow-up actions to verify appropriate action was taken in response to parameters that exceed thresholds (e.g., cover integrity and collection system assessments, downwell temperature measurements; root cause analyses, corrective action analyses, trend analyses). Similarly, tasks associated with GCCS expansion and operational standards include reviewing plans, requests, notifications, and monitoring records to assess compliance with new well installation, decommissioning, downtime, and monitoring of GCCS and control device parameters. Time estimated for reviewing records includes appropriate follow-up with facilities (e.g., regarding missing or incomplete data). Tasks associated with surface emissions monitoring include compliance assessments and any follow-up actions related to recurring exceedances,

evaluating requests for alternative corrective actions, monitoring in unsafe-to-walk areas, remotely-detected plume notifications, and performing compliance inspections as necessary. Finally, quarterly monitoring data and monitoring plans include review of quarterly monitoring data submittals and evaluating component leak monitoring plans and cover integrity monitoring plans as needed. Note that the total hours include estimated staff time and 10% additional time for management reviews and approvals.

Staff used the engineering labor rate of \$125.49/hr derived above as the labor rate for air district staff time. This labor rate is very close to the average hourly (or converted annual) labor rate provided by air districts that submitted resource estimates identifying their fully-burdened labor costs.

According to data reported under the LMR for 2022 (the same data used for the ISOR analysis), there are 74 active controlled landfills and 72 closed or inactive controlled landfills in MOU districts. Based on these landfill counts, the population-average hours per landfill shown in Table 5, and the labor rate of \$125.49/hr, staff estimates annual ongoing air district costs of \$1,285,269 per year.

Updates to Chapter III: The Specific Purpose and Rationale of Each Adoption, Amendment, or Repeal

Staff is supplementing the rationale in the ISOR Chapter III for section 95469(d)(4) with the following: Staff selected 3-hour periods of operation to align with the analysis period for the analogous enclosed flare temperature monitoring.

Reference Corrections

The following reference was included in Appendix B to the ISOR, released to the public on September 23, 2025. The author name was misspelled in that citation and is corrected below:

County of San Diego. (2016). *County Contract Number 553542: Agreement with Stearns, Conrad and Schmidt, Consulting Engineers, Inc. DBA SCS Field Services for Monitoring Operation and Maintenance of County of San Diego Landfill Gas Control and Related Systems.*

Additional Documents and Incorporated Documents Added to the Record

In the interest of completeness and in accordance with Government Code section 11347.1, subdivision (a), staff has also added to the rulemaking record and invites comments on the following additional documents.

Additional References

- Agency for Toxic Substances and Disease Registry (ATSDR). (2001, November). Chapter 3: Landfill Gas Safety and Health Issues. In, *Landfill Gas Primer: An Overview for Environmental Health Professionals* (pp. 15-30).
- Aghdam, E. F., Scheutz, C., & Kjeldsen, P. (2019). Impact of meteorological parameters on extracted landfill gas composition and flow. *Waste Management*, 87, 905-914.

- Bay Area Air Quality Management District (BAAQMD). (2024, November 4). *Final Major Review Permit Issued To: Waste Management of Alameda County Facility #A2066*.
- California Department of Finance (California DOF). (2025, May). *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2020-2025*. Retrieved March 23, 2026, from https://dof.ca.gov/media/docs/forecasting/Demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2025/E-5_2025_InternetVersion.xlsx.
- CalRecycle. (2025, March 28). *Review of the November 26, 2024, Revised Soil Reaction Break/Barrier Plan for the Chiquita Canyon Landfill Subsurface Elevated Temperature (SET) Event*. Letter from Todd Thalhamer to Karen Gork.
- CARB. (2025). *State and Local Sales Tax Spreadsheet*.
- Cusworth, D. H., Duren, R. M., Ayasse, A. K., Jiorle, R., Howell, K., Aubrey, A., ... & Thorneloe, S. (2024). Quantifying methane emissions from United States landfills. *Science*, 383(6690), 1499-1504.
- Dean, S. A., Horvath, D. R., & Bechtel, J. D. (2012). *Horizontal Gas Wells That Last: A Case Study of Performance*. EarthRes Group, Inc.
- Environmental Research & Education Foundation (EREF). (2024, May). *Analysis of MSW Landfill Tipping Fees - 2023*.
- Georg Fischer Piping Systems. (2010). *Technical Manual: Schedule 80 PVC and CPVC, Schedule 40 PVC, Piping Systems*.
- Jafari, N. H., Stark, T. D., & Thalhamer, T. (2017). Spatial and temporal characteristics of elevated temperatures in municipal solid waste landfills. *Waste Management*, 59, 286-301.
- Jafari, N. H., Stark, T. D., & Rowe, R. K. (2014). Service Life of HDPE Geomembranes Subjected to Elevated Temperatures. *Journal of Hazardous, Toxic, and Radioactive Waste*, 18(1), 16-26.
- Lerner, M.S. (2025, July). *Leading With Landfills: The Immense, Cost-Effective Potential of Advanced Technology To Reduce Methane Emissions at Landfills Nationwide*. Energy Vision. <https://energy-vision.org/pdf/EnergyVision-LeadingWithLandfills.pdf>.
- Martin, J. W., Stark, T. D., Thalhamer, T., Gerbasi-Graf, G. T., & Gortner, R. E. (2013). Detection of Aluminum Waste Reactions and Waste Fires. *Journal of Hazardous, Toxic, and Radioactive Waste*, 17(3), 164-174.
- McCarron, G. P., Dillah, D. D., & Esterly, O. R. (2003). Horizontal Collectors: Design Parameters, Mathematical Model, and Case Study. *Proceedings from the Solid Waste Association of North America's 26th Annual Landfill Gas Symposium*.
- Nastev, M., Therrien, R., Lefebvre, R., & G elinas, P. (2001). Gas production and migration in landfills and geological materials. *Journal of Contaminant Hydrology*, 52(1-4), 187-211.
- Nesser, H., Jacob, D. J., Maasackers, J. D., Lorente, A., Chen, Z., Lu, X., ... & Randles, C. A. (2024). High-resolution US methane emissions inferred from an inversion of 2019 TROPOMI satellite data: contributions from individual states, urban areas, and landfills. *Atmospheric Chemistry and Physics*, 24(8), 5069-5091.
- New Jersey Department of Environmental Protection (NJDEP). (2023, December). Chapter 9: Soil Gas Surveys. In *Field Sampling Procedures Manual*.
- Omid, A., Bourlon, E., Khaleghi, A., Tarakki, N., Martino, R., Stuart, J., & Risk, D. (2025). Most landfill methane emissions Escape detection in EPA21 surface emission monitoring surveys. *Waste Management*, 207, 115104.

- Salinas Valley Solid Waste Authority (SVSWA). (2023, May 18). *Agenda, Regular Meeting, Board of Directors*. https://svswa.org/wp-content/uploads/2023/05/bd_agenda_2023_05_18.pdf.
- Solid Waste Association of North America (SWANA). (1997, March). *Landfill Gas Operation and Maintenance Manual of Practice*. NREL/SR-430-23070. <https://docs.nlr.gov/docs/legosti/fy97/23070.pdf>.
- Thalhamer, T. (2013, June 17). *Data Evaluation of the Subsurface Smoldering Event at the Bridgeton Landfill*. For The Solid Waste Management Program, Division of Environmental Quality, Missouri Department of Natural Resources. <https://dnr.mo.gov/waste-recycling/sites-regulated-facilities/solid-waste/closed-inactive-landfills/bridgeton-sanitary-landfill/reports/data-evaluation-subsurface-smoldering-event-bridgeton>.
- TriData Corporation. (2002, May). *Landfill Fires: Their Magnitude, Characteristics, and Mitigation*. Prepared by TriData Corporation for Federal Emergency Management Agency, United States Fire Administration, National Fire Data Center. FA-225.
- US Army Corps of Engineers. (2008, May 30). *Landfill Off-Gas Collection and Treatment Systems*. EM 1110-1-4016.
- Virginia Tech, College of Engineering. (2022, April 25). *Expert Panel Report: Bristol Integrated Solid Waste Management Facility, Bristol, Virginia*. https://www.vdh.virginia.gov/content/uploads/sites/90/2022/04/Bristol-Landfill-Expert-Panel-Report_25April2022.pdf.

Additional Documents Incorporated by Reference

- United States Environmental Protection Agency (U.S. EPA), October 6, 2021. ALT-144. Determination of Carbon Monoxide Concentration in Landfill Gas Wellheads – Gas Chromatographic Measurement (FID). **Section 95471(o)(5)(C)**.
- United States Environmental Protection Agency (U.S. EPA), October 6, 2021. ALT-145. Determination of Carbon Monoxide Concentration in Landfill Gas Wellheads – Gas Chromatographic Measurement (TCD). **Section 95471(o)(5)(D)**.

The documents below were incorporated by reference in the 45-Day Changes. However, in two instances, 40 C.F.R. Part 60 Appendix A-1 was referenced when the test method is actually contained in 40 C.F.R. Part 60 Appendix A-7 (sections 95471(a) and (f)(1)). Staff is now re-adding these documents to the rulemaking record with the correct section numbers to ensure an accurate record.

- Title 40, Code of Federal Regulations, Part 60, Appendix A-1 – Test Methods 1 through 2F. Effective May 30, 2023. **Section 95471(m)**.
- Title 40, Code of Federal Regulations, Part 60, Appendix A-7 – Test Methods 19 through 25E. Effective May 30, 2023. **Sections 95471(a), (f)(1), and (i)(1)**.

These documents are available for inspection at the California Air Resources Board, 1001 I Street, Sacramento, California, 95814, between the hours of 9:00am to 4:00pm, Monday through Friday (excluding holidays). To inspect these documents please contact Bobbi Ruch, Regulations Coordinator, at regulations@arb.ca.gov or (279) 208-7881.

Agency Contacts

Inquiries concerning the substance of the proposed regulation may be directed to Quinn Langfitt, Staff Air Pollution Specialist, Short-lived Climate Pollutant Policy Section, at (279) 208-7487 or quinn.langfitt@arb.ca.gov or (designated back-up contact) Anthony Alexiades, Manager, Short-lived Climate Pollutant Policy Section, at (279) 208-7215 or anthony.alexiaades@arb.ca.gov.

Public Comments

Written comments will only be accepted on the modifications identified in this Notice. Comments may be submitted by postal mail or by electronic submittal no later than the due date to the following:

Postal mail: Clerks' Office, California Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: <https://ww2.arb.ca.gov/lispub/comm/bclist.php>

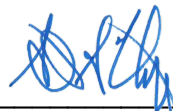
Please note that under the California Public Records Act (Gov. Code § 6250 et seq.), your written and verbal comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

In order to be considered by the Executive Officer, comments must be directed to CARB in one of the two forms described above and received by CARB no later than the deadline date for public comment listed at the beginning of this notice. Only comments relating to the above-described modifications to the text of the regulations shall be considered by the Executive Officer.

If you need this document in an alternate format or another language, please contact the Clerks' Office at (916) 322-5594 or by facsimile at (916) 322-3928 no later than five (5) business days from the release date of this notice. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Si necesita este documento en un formato alternativo u otro idioma, por favor llame a la oficina del Secretario del Consejo de Recursos Atmosféricos al (916) 322-5594 o envíe un fax al (916) 322-3928 no menos de cinco (5) días laborales a partir de la fecha del lanzamiento de este aviso. Para el Servicio Telefónico de California para Personas con Problemas Auditivos, ó de teléfonos TDD pueden marcar al 711.

California Air Resources Board



Steven S. Cliff, Ph.D.,
Executive Officer

Date: April 2, 2026

Attachment(s)

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see [CARB's website](http://ww2.arb.ca.gov) (ww2.arb.ca.gov).