



ENVIRONMENTAL PROTECTION AGENCY

[EPA-R06-RCRA-2025-3129; FRL – 13097-01-R6]

No-Migration Variance from Land Disposal Restrictions for Clean Harbors Lone Mountain, Oklahoma

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Proposal to Grant.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to grant, with conditions, no-migration variances for nine categories/groups of wastes, containing up to a combined 100 temporary disposal units (“put piles”) at any one time, from the Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions (LDR) standards at Clean Harbors’ Lone Mountain (Clean Harbors) commercial treatment, storage and disposal facility (TSDF) in Waynoka, Oklahoma. These variances will allow Clean Harbors to temporarily store treated hazardous wastes that are awaiting LDR compliance verification in put piles within its Subtitle C (hazardous waste) landfill. The petitioner demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the put piles for as long as the wastes remain hazardous. Additionally, once LDR compliance is verified, the put piles will be disposed within the onsite RCRA hazardous waste landfill area and will be subject to the conditions set out in the Compliance Monitoring Plan section of this document.

DATES: Comments must be received on or before [INSERT DATE 30 DAYS AFTER] DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, identified by Docket ID No. EPA-R06-RCRA-2025-3129, by any of the following methods:

- Federal eRulemaking Portal: <https://www.regulations.gov> (our preferred method).
Follow the online instructions for submitting comments.

- Email: Mustafa.golam@epa.gov. Include Docket ID No. EPA-R06-RCRA-2025-3129 in the subject line of the message.
- Courier/Hand Delivery: Golam Mustafa, Land, Chemicals and Redevelopment Division, EPA Region 6, 1201 Elm Street, Dallas, Texas 75270, Mail Code: R6LCR-RP, telephone number: (214) 665-6576. Courier or hand deliveries are only accepted during the Regional Office’s normal hours of operation. The public is advised to call in advance to verify the business hours. Special arrangements should be made of deliveries of boxed information.
- *Instructions:* All submissions must include the Docket ID No. EPA-R06-RCRA-2025-3129 for this proposed approval. Comments received may be posted without change to <https://www.regulations.gov>, including any personal information provided. For detailed instructions on sending comments and additional information, see the “Public Participation” heading of the **SUPPLEMENTARY INFORMATION** section of this document.
- **FOR FURTHER INFORMATION CONTACT:** Golam Mustafa, Land, Chemicals and Redevelopment Division, EPA Region 6, 1201 Elm Street, Dallas, Texas 75270, Mail Code: R6LCR-RP, telephone number: (214) 665-6576; and email: Mustafa.golam@epa.gov

SUPPLEMENTARY INFORMATION:

I. Public Participation

A. Docket

EPA has established a docket for this action under Docket ID No. EPA-R06-RCRA-2025-3129. All documents in the docket are listed in the <https://www.regulations.gov> index.

B. Written Comments

Submit your comments, identified by Docket ID No. EPA-R06-RCRA-2025-3129, at <https://www.regulations.gov> (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

C. Submitting CBI

Do not submit information that you consider to be CBI electronically through <https://www.regulations.gov> or email. Send or deliver information identified as CBI to only the following address: RCRA Document Control Officer, La Gayla Johnson, Office of Regional Counsel, EPA Region 6, 1201 Elm Street, Dallas, Texas 75270, Mail Code: R06-ORC-DRCGLCB-FIAB; telephone number: (214) 665-7517; and email: Johnson.lagayla@epa.gov

Attn: Docket ID No. EPA-R06-RCRA-2025-3129.

Clearly mark the part or all of the information that you claim to be CBI. For CBI information on a disk or CD-ROM that you mail to EPA, mark the outside of the disk or CD-ROM as CBI and then identify electronically within the disk or CD-ROM the specific information that is claimed as CBI. In addition to one complete version of the

comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. If you submit a CD-ROM or disk that does not contain CBI, mark the outside of the disk or CD-ROM to clearly indicate that it does not contain CBI. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 Code of Federal Regulations (CFR) Part 2.

II. General Information

A. Does this document apply to me?

This action applies only to Clean Harbors' Lone Mountain facility (Clean Harbors) located in Waynoka, Oklahoma.

B. What action is the Agency taking?

On November 29, 2023, Clean Harbors submitted a no-migration variance (NMV) petition, in accordance with 40 CFR 268.6, seeking an exemption from the Land Disposal Restrictions (LDR) prohibition on land placement of hazardous waste that does not meet the prescribed LDR standards of 40 CFR 268.40 for temporary piles of treated waste, referred to as put piles, placed within the boundary of a RCRA -permitted hazardous waste landfill. Because the petition demonstrated to a reasonable degree of certainty that, for as long as the wastes remain hazardous, there will be no migration of hazardous constituents from the put piles, EPA proposes to grant, with conditions, Clean Harbors' variance from the LDR prohibition for up to a combined 100 put piles at any one time for the nine categories/groups of wastes identified in the Waste Characterization section of this proposal. If granted, the term of this NMV shall be no longer than the term of the RCRA Subtitle C permit for the permitted landfill.

C. What is the Agency's authority for taking this action?

Sections 3004(d) through (g) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6294(d)-(g), prohibit the land disposal of hazardous wastes unless

such wastes meet the LDR treatment standards (“treatment standards”) established by EPA (“Agency”).

However, RCRA 3004(d)(1)¹, and its implementing regulations found at 40 CFR 268.6, provide an option for land disposal of hazardous waste that does not meet the applicable treatment standards where EPA has approved an NMV petition. Specifically, 40 CFR 268.6(a) describes the components that a demonstration of no migration must address; 268.6(b) specifies certain criteria that must be satisfied for that demonstration, and 268.6(c) describes the monitoring program that will be used to verify that the conditions of the NMV are being met.

III. Background

A. No-Migration Variances and Guidance

An NMV is a formal decision that can be rendered by the EPA in response to a petition filed with the Agency to allow land disposal within a particular disposal unit of specific prohibited waste when it has been demonstrated, “to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit...for as long as the wastes remain hazardous.”² It must be demonstrated, to a reasonable degree of certainty, that hazardous constituents will not exceed Agency-approved human health-based levels (or environmentally protective levels, if they are appropriate) beyond the boundary of the disposal unit.³ In most cases, the disposal unit boundary is defined as the outermost limit of engineered components.⁴

Approval of an NMV petition is delegated to the EPA Regional Administrator for the EPA Region in which the waste management unit is located. States are not authorized

¹ RCRA 3004(d)(1)(c) states: “...For the purposes of this paragraph, a method of land disposal may not be determined to be protective of human health and the environment for a hazardous waste referred to in paragraph (2)...unless, upon application by an interested person, it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous.”

² See 51 FR at 40578, November 7, 1986.

³ 57 FR 35941, August 11, 1992.

⁴ *Id.*

to implement the NMV authority; however, the EPA consulted with Oklahoma prior to proposing to grant this NMV. The final decision will be published in the *Federal Register*. If granted, the term of an NMV may be no longer than the term of the existing RCRA Subtitle C permit for the landfill. Any petitions to renew an NMV must undergo notice and comment procedures. An NMV that has been issued can be revoked for cause, including any migration of hazardous constituents.

The regulatory requirements for an NMV under the RCRA LDRs were codified in 40 CFR 268.6 in 1986,⁵ and EPA issued guidance on these requirements in 1992. The 1992 guidance is applicable to landfills, surface impoundments, and waste piles. While the 1992 guidance acknowledged temporary placement of waste under an approved NMV, it did not address the issue of temporary placement of treated wastes in put piles while awaiting LDR compliance verification (or retreatment) within the boundary of a RCRA-permitted Subtitle C (hazardous waste) landfill. After a put pile is confirmed to meet the LDR standards, it is moved to the “working face”⁶ of the landfill for final disposal; however, if there is an exceedance of an LDR standard, the put pile is returned to the treatment process for further treatment.

Hazardous waste in a put pile either must meet the LDR standards or have an approved NMV. To provide guidance specific to this circumstance, the EPA issued “*Information for Petitioners Seeking a No-Migration Variance Under the RCRA Land Disposal Restrictions for Temporary Placement of Treated Hazardous Waste Within a Permitted Subtitle C Landfill*” (88 FR 10894, February 22, 2023). This information (i.e., the “2023 Guidance”) is posted online at <https://rcrapublic.epa.gov/files/14952.pdf>.

⁵ 51 FR 40572, November 7, 1986.

⁶ The working face of a landfill is the area within a specific cell where waste is currently being placed and compacted. It is the designated section where waste is unloaded, and daily cover is applied at the end of each working day.

The 2023 Guidance acknowledges the need for unique considerations when a no migration demonstration for put piles occurs within a Subtitle C landfill prior to permanent disposal in the landfill. “EPA expects that petitioners will be able to take advantage of existing facility information (e.g., existing monitoring, inspections, engineered barriers, waste analyses), where appropriate, as part of any demonstration...For example, the use of temporary barriers, such as plastic covers above and below the piles; visual monitoring, prompt responses to possible releases, and good housekeeping practices that ensure the treated waste remains in the pile during the temporary storage period would be elements to consider. Attributes of the permitted landfill cell (e.g., design, existing controls, monitoring) in which the pile or piles are located should also be considered to the extent that they support the demonstration criteria being applied to the piles themselves.”

40 CFR 268.6(e) acknowledges the potential for post-approval changes in conditions at the no migration unit(s) and/or the environment around the no migration unit(s). For the purpose of these put pile variances, all changes that significantly depart from the conditions described in the variances and affect the potential for migration of hazardous constituents from the put piles must be reported to the Region 6 Administrator as follows:

1. If Clean Harbors plans to make changes to the unit(s)' design, construction, or operation, such a change must be proposed, in writing, and include a demonstration to the Region 6 Administrator at least 30 days prior to making the change. The Region 6 Administrator will determine whether the proposed change invalidates the terms of the approved variance and will determine the appropriate response. A proposed change must first be approved by the Region 6 Administrator before taking any action.
2. If Clean Harbors discovers a site condition in the petition that does not occur as modeled or predicted, this change must be reported, in writing, to the Region 6

Administrator within 10 days of discovery. The Region 6 Administrator will determine whether the reported change from the terms of the approved variance requires further action.

B. Clean Harbors' Petition for No Migration Variances

On November 29, 2023, Clean Harbors' Lone Mountain facility in Waynoka, Oklahoma, submitted an NMV petition to the EPA seeking an exemption from the LDR prohibition on placing hazardous waste on the ground, if that waste does not meet the prescribed LDR standards of 40 CFR 268.40, by demonstrating that for as long as the waste remains hazardous, there will be no migration of hazardous constituents from the disposal units. Clean Harbors' no migration demonstration applies to nine categories/groups of wastes stored in up to a combined 100 put piles at any one time located within the facility's Subtitle C Landfill cell, known as "Cell 15." If Clean Harbors anticipates needing to exceed 100 put piles at any one time, it must request approval from EPA Region 6 prior to creating new put piles. Clean Harbors also requested that this variance proactively apply to future put piles of identical waste characteristics that would be staged in a future proposed and permitted Subtitle C landfill cell, known as "Cell 16."

While this Notice of Proposal to Grant applies only to those put piles placed within existing Landfill Cell 15, upon permit approval of Cell 16, Clean Harbors may submit to the Agency, an addendum to this petition to expand this NMV and all of its conditions and requirements, for the put piles located within the new landfill cell if:

1. Clean Harbors is in compliance with the approved NMV,
2. The new landfill cell uses the same disposal unit engineered controls (e.g., landfill cell interior berms for run-on and run-off control) as approved in this variance,
3. The duration of temporary placement remains at six (6) months or less and complies with the conditions established herein,
4. The waste categories remain the same, and

5. The monitoring program (e.g., groundwater monitoring) is expanded to include the new landfill cell.

In response to EPA requests following the original November 2023 submission, Clean Harbors provided supplemental information for the Agency's evaluation of Clean Harbors' no-migration demonstration. The original petition and associated responses to Agency information requests (together referred to as "the petition") can be found in the docket (EPA-R06-RCRA-2025-3129).

Clean Harbors' petition includes the following components: (a) facility description, (b) site characterization/unit description, (c) identification and characterization of the affected wastes, (d) disposal unit engineered controls, (e) duration of temporary staging, (f) uncertainty analysis, (g) monitoring program, and (h) documented compliance with other laws. These are discussed below.

IV. Basis for the EPA's Proposed Determination

A. Components of the Petition

1. Facility Description

Clean Harbors' Lone Mountain facility (EPA ID Number: OKD065438376) is located 14 miles southeast of the town of Waynoka. The mean annual precipitation in the region is approximately 28 inches and 11 inches for rain and snow, respectively. The permitted facility, which covers an area of approximately 560 acres, is expected to be in operation for more than ten years from the date of this notice. A RCRA Part B Permit (hazardous waste permit) was issued by the Oklahoma Department of Environmental Quality (ODEQ). The currently approved RCRA permit was signed on April 2, 2011, for a 10-year term, and then administratively continued.

Clean Harbors' hazardous waste permit authorizes the facility to manage liquid, solid, or semisolid hazardous waste and non-hazardous industrial waste. The facility has 15 hazardous waste landfill cells. Waste treatment services provided at the facility

include solidification, stabilization, and macro/microencapsulation of hazardous waste. Solid, liquid, and sludge wastes are accepted in containerized or bulk loads (e.g., roll-off containers); however, the wastes that would be covered under this NMV are generally received as bulk loads.

2. Site Characterization/Unit Description

All put piles are temporarily stored in Landfill Cell 15 until LDR compliance has been confirmed. LDR-compliant piles are then moved to the working face of Landfill Cell 15 after verification of successful treatment. Put piles that fail to meet LDR standards are retreated and subsequently returned as a put pile to landfill Cell 15. This variance, if approved, will apply to put piles of the nine waste categories/groups and not to Landfill Cell 15. As stated in the 2023 guidance, where multiple piles contain the same or similar wastes, the petition can address these units as a group where such piles are effectively being managed as a single unit. As such, the Agency proposes that this NMV apply to the put piles containing the nine categories/groups described in the Waste Characterization section below; however, each put pile within each category/group will be assigned its own unit boundary.

Each put pile measuring approximately 35-cubic yards is placed on a polyethylene barrier sheet (20-millimeter (mil) minimum thickness) within landfill Cell 15. Because wastes are treated and presumed to meet LDR standards prior to placement in Landfill Cell 15, and storage in the petitioned units is temporary, the Agency herein proposes to establish unit boundaries (i.e., points of compliance for no-migration purposes) for each of the put piles to account for existing landfill controls and appropriate deviations from the waste pile liner design standards of 40 CFR 264.251.

The Agency proposes that each put pile boundary extend vertically one inch below the 20-mil thick polyethylene liner and laterally one foot short of the outermost surface edges of the 20-mil thick polyethylene liner. Air dispersion compliance will be

demonstrated at the outer thickness of the Posi-Shell® liner, described in the *Covers* section, below.

3. Waste Characterization

In accordance with 40 CFR 268.6(a)(1), Clean Harbors indicated that the following nine categories/groups of hazardous wastes and their underlying hazardous constituents (UHCs) found at 40 CFR 268.48 could be temporarily placed in the put piles in Landfill Cell 15 after treatment to meet LDR standards: 1) general metals (D001, D002, D004 through D011, K046, F006, F019, F039 and U051); 2) cyanide/sulfide with metals (D001 through D011, F006 through F012, F019, K052 and P106); 3) cyanide/sulfide (D001 through D011, F006 through F012, F019, P106 and U135); 4) high-chromium wastes (D001 through D011, F006 and F019); 5) high arsenic wastes (D004, D005, D006, D008, D009, D010, P011 and P012); 6) oxidizers with metals (D001, D002, D003, D005, D007, D008, D011 and K088); 7) acids with metals (D001, D002, D004 through D011, K061, K062, F006, U204 and U134); 8) bases with metals (D002 through D011, D028, K061, F006 through F008, F019, F035, P106, U144, U151, U188 and U210); and 9) waste certified by generators to meet all or some LDR treatment standards (referenced as CBPR by Clean Harbors; codes vary and include K052, F020 and U210).

Appropriate and adequate sampling and analysis of both incoming hazardous wastes and treated hazardous wastes are essential to precise waste characterization for accurate creation of treatment protocols or “recipes,” and ultimately, confirmation of treatment effectiveness/LDR compliance. These are discussed in Clean Harbors’ Waste Analysis Plan (WAP), approved by ODEQ in February 2010, and included in the docket for this notice and available, at the time of this notice, on the ODEQ website at <https://oklahoma.gov/deq/divisions/land-protection/waste-management/waste-management-facilities/clean-harbors-lone.html>.

The following generalized summary of waste characterization (also referred to as a fingerprint analysis), waste treatment, and verification of effective treatment/LDR compliance is extracted from the Clean Harbors' WAP for incoming bulk loads of hazardous waste. Incoming bulk wastes undergo a fingerprint analysis that includes eight basic screening procedures (physical appearance, pH, specific gravity, reactive cyanides, reactive sulfides, water reactivity, ignitability, and halogen organic compound content) to provide a general waste characterization for appropriate treatment, storage, or disposal. Additional analyses are performed, as appropriate, to ensure adequate waste characterization. After characterization, bulk hazardous wastes are treated in stabilization tanks to reduce the hazardousness of the wastes, make them safer to dispose, and/or reduce the volume of the wastes. Waste treatment processes include stabilization, blending, and the LDR technology standards for chemical oxidation (CHOXD), neutralization (NEUTR), chromium or chemical reduction (CHRED), and deactivation (DEACT). If stabilization is performed, any combination of the following reagents may be used to prevent leaching: cement kiln dust, water, calcium polysulfide, lime, caustic, fly ash, portland cement, clay, ferrous sulfate, sodium hypochlorite, oxidizer soak, and acid.

Post-treatment, samples are collected directly from the stabilization tank and a paint filter test is performed to ensure that all free liquids have chemically reacted, and the mixture is suitable for disposal in the landfill. Treated batches are subsequently sampled and analyzed for LDR compliance pursuant to the WAP. The treated wastes are then moved to a put pile within a temporary staging area in Landfill Cell 15 while curing and awaiting LDR compliance confirmatory sampling. Section 4.2.2 of the WAP defines how sampling of the waste piles for LDR compliance must be performed.

4. Uncertainty Analysis

40 CFR 268.6(b)(5) requires the petitioner to include an analysis to identify and

quantify any aspects of the demonstration that contribute significantly to uncertainty. The analysis must include an evaluation of the consequences of predictable future events, including, but not limited to, earthquakes, floods, severe storm events, droughts, or other natural phenomena. The Agency accepts Clean Harbors' uncertainty analysis as presented in the petition located in the docket.

5. No-Migration Demonstration

The bases for EPA's proposed conclusion that Clean Harbors demonstrated to a reasonable degree of certainty that no hazardous constituents will migrate from the put piles for as long as the wastes remain hazardous are discussed in this section. Although wastes are treated with the intent of meeting the RCRA LDR standards prior to being placed in put piles, the conditions established in this NMV are a safeguard to ensure that if a put pile does not meet LDR standards and must be retreated, hazardous constituents will not migrate beyond the boundary of the put pile. This NMV is conditioned upon the temporary nature of the put piles within Landfill Cell 15 and is intended for situations where the put piles are used as part of an overall strategy to confirm consistent and compliant treatment that meets the applicable LDR treatment standards.

Where reasonable, the Agency took into consideration existing landfill design and operating requirements (40 CFR 264.301) that include run-on and run-off controls to prevent the migration of hazardous constituents beyond the designated unit boundary. Additional information including monitoring data and discussions regarding the temporary nature of these put piles (i.e., duration of storage), testing for verification of treatment effectiveness, retreatment protocols and engineered controls, as referenced in this section, is available in the petition or supplemental information in the RCRA regulatory docket for this document.

i. Treatment Effectiveness

As required by 40 CFR 268.6(a)(2), Clean Harbors characterizes the subject wastes,

post-treatment, to determine if LDR standards were met. Specifics on sampling protocols can be found in the WAP. Analytical data were provided in non-sequential order in tables A-2 (inorganic constituents) and A-3 (organic constituents) for January 2022 through October 2023 for each category of hazardous waste identified in the petition in the docket for today's notice. Analyses were performed for compliance with the 40 CFR 268.48 Universal Treatment Standards (UTS) for all UHCs, including antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), lead (Pb), nickel (Ni), selenium (Se), silver (Ag), thallium (Tl), vanadium (V), zinc (Zn), mercury (Hg), sulfides (S), and cyanides (CN).

Clean Harbors provided analytical data indicating that approximately 98-99% of all wastes treated met the LDR standards following the first treatment procedure, without the need for additional treatment. They reported that in 2022, of the 770 put piles treated and analyzed, 762 met post-treatment LDR standards, resulting in a net “pass rate” of 98.9%. In 2023, 519 put piles were treated and analyzed and 509 met post-treatment LDR standards (98.1%).

The sampling methodology used by Clean Harbors to verify compliance with LDR standards for the wastes post-treatment was deemed adequate by ODEQ through the issuance of the existing RCRA Part B permit, including the WAP. Clean Harbors’ sampling strategy for confirmation of LDR compliance is discussed in Appendix A of Clean Harbors’ September 10, 2024, Response to Request for Additional Information included in the docket. Clean Harbors reported in the petition that the current “pass rate” for temporarily staged put piles exceeds 98%, demonstrating that these put piles do not routinely receive treated wastes that do not meet applicable LDR standards, thereby supporting the “temporary” nature of storage for each waste category. The Agency herein relies on ODEQ’s approval of the LDR confirmatory sampling methodology in the WAP and Clean Harbors’ presentation of historical analytical data to conclude that Clean

Harbors has provided sufficient waste characterization information in its petition to support the conclusion of treatment effectiveness.

ii. Duration of Temporary Storage

When the LDR standard for a put pile is confirmed to “pass,” it is moved to the working face of Landfill Cell 15 for final disposal generally within 45 days⁷ of initial placement of the put pile in the temporary storage area. LDR verification sampling must conform to the WAP, and a generalized procedure for this verification process is discussed in Appendix A of Clean Harbors’ September 10, 2024, Response to Request for Additional Information included in the docket.

The end result of a multi-stage process for sampling and retreating is that a few put piles may remain temporarily staged even after an LDR “fail” if the analytical data indicate additional curing time is appropriate. Clean Harbors requested up to twelve (12) months duration for temporary staging of a put pile to account for the retreatment and curing process; however, in Clean Harbors’ August 4, 2025 Response to EPA’s May 2025 Review Comments on the Response to Request for Additional Information located in the docket, the state agreed that exceedances of six (6) months of temporary staging have not occurred and are unlikely and as such agreed that six (6) months are a sufficient duration for temporary staging of put piles. The Agency concludes that Clean Harbors has provided sufficient analytical data to justify a six (6)-month duration for storage of a put pile from the time the pile is first staged until final disposal in the working face of the Landfill Cell 15. If an issue arises where greater than 180 days temporary staging of a put pile is necessary, ODEQ may issue such an extension, if warranted.

⁷ May take up to 90 days in cases when specialized compliance tests are required or laboratory backup delays LDR compliance confirmation data.

iii. Disposal Unit Engineered Controls

This section describes existing and proposed put pile liners, put pile covers, and run-off/run-on controls. Man-made barriers or engineered systems (e.g., liner systems) alone generally will not meet the "no migration" standard. In the case of put piles, however, the containment of hazardous waste within engineered barriers is considered in making the "no migration" demonstration for waste awaiting the results of verification sampling after treatment, provided that wastes are to be removed after a reasonably short storage period that is conservatively projected to be well before the failure of the engineered barrier system.⁸ Because Clean Harbors' temporary storage for each put pile must not exceed six (6) months, and the lifespan of the engineered barriers described below extends into multiple decades with appropriate operational controls to prevent rips or tears, excluding the Posi-Shell® system, which has an observed lifespan of up to 2 (two) years, the Agency concurs that Clean Harbors' use of the barriers described below will prevent migration of hazardous constituents via infiltration, lateral migration (e.g., erosion, surface water interaction or movement of infiltration), and air dispersion/particulate loss.

The put piles will be encapsulated (liner below and Posi-Shell® atop) by the unit-specific engineered barriers discussed below to prevent migration of hazardous constituents beyond the put pile boundary. These unit-specific barriers are distinct from the existing landfill controls for Landfill Cell 15, such as run-on and run-off controls, that were considered in the overall prevention of migration of hazardous constituents.

Liners

A liner of at least 20-mil thickness polyethylene geomembrane must be used as a barrier to vertical and lateral migration for the put piles. The liner beneath the pile will provide a barrier for vertical migration. The Agency agrees that a minimum of 20-mil

⁸ *No Migration Variances to the Hazardous Waste Land Disposal Prohibitions: A Guidance Manual for Petitioners*, at 4, EPA Office of Solid Waste, July 1992, EPA-530-R92-023.

thickness barrier is sufficient for this temporary application that will last six (6) months or less. Because the layout of the put piles is accommodated within the standard width of a prefabricated geomembrane roll, the liner must be one solid piece without the need for welding of seams. The lack of seams lends to additional assurance that hazardous constituents will not migrate through a broken seam. The Agency concludes that a liner of at least 20-mil thickness, in conjunction with the inspection program described in the Compliance Monitoring Program section, is appropriate for use in this temporary disposal scenario; however, there must always be at least 12 inches of the liner visible on all sides of the put pile to prevent potential horizontal migration of the waste from the edge of the liner.

Covers

Clean Harbors will use a Posi-Shell® cover to act as a rain and wind barrier for put piles, to ensure no migration of hazardous constituents from the put piles occurs via lateral migration or air pathways. Posi-Shell® is a spray-applied mortar applied as a coating to the surface of the put piles, with a minimum cover thickness of 3/8-inch. Because Posi-Shell® is a mortar, curing is necessary to allow it to harden. Curing typically occurs within 12-24 hours in dry weather, forming a relatively impermeable thin layer of durable, hardened mortar. However, if moderate to heavy rainfall occurs unexpectedly or is imminent, sustained freezing temperatures are expected for more than one day, or the temperature falls below 30°F, the Posi-Shell® will not harden sufficiently. During these times of inclement weather, Clean Harbors must temporarily cover the put piles with polyethylene sheeting of at least 20-mil thickness, anchored with sandbags around its edges, until the adverse weather conditions abate, and the Posi-Shell® coating can be applied. Within twenty-four (24) hours of weather conditions amenable to Posi-Shell® application, Clean Harbors must apply the coating.

To ensure Posi-Shell® is appropriate for put pile covering, the Agency reviewed

several case studies provided by Clean Harbors where Posi-Shell® was demonstrated to prevent erosion, air dispersion, infiltration of rainwater, and overall migration of wastes. Table 2 in the petition located in the docket summarizes these case studies.

The Agency concludes that Posi-Shell®, or a minimum 20-mil polyethylene sheeting cover under the limited inclement weather circumstances described above, will serve as an appropriate barrier to protect the put pile from wind dispersion, erosion, and rainwater infiltration.

Run-on/Run-off Controls

Before placing the put piles in the temporary storage area of Landfill Cell 15, Clean Harbors must grade the temporary storage area where put piles will be located. The grading must be relatively flat but with a slight positive grade to preclude ponding of water on the polyethylene liners. Clean Harbors must construct and/or maintain a diversion berm of sufficient height/width to direct run-on away from the put pile upgradient of the staging area. As Landfill Cell 15 is filled, if the waste grade changes adjacent to the put pile temporary storage area, additional diversion berms must be added, if necessary to divert stormwater run-on and run-off to isolate the staging area on the working face of Landfill Cell 15. To control run-off, in addition to the Posi-shell® coating, Clean Harbors will include, at a minimum, ditches around the inside perimeter of Landfill Cell 15 embankments and will remove ponded stormwater that accumulates on top of the put piles. In combination with General Surrounding Area Engineered Controls described below, these controls must be constructed and operated to contain at least the water volume of a 24-hour, 25-year storm event or greater if required by the permit.

iv. General Surrounding Area Engineered Controls

All put piles are temporarily stored in a designated area of Landfill Cell 15 until LDR compliance has been confirmed. The put piles are then moved to the working face of Landfill Cell 15. Landfill Cell 15's existing liner system bolsters prevention of

vertical or horizontal migration of hazardous constituents. The liner system consists of: 1) a bottom 60-mil textured high density polyethylene (HDPE) liner atop a 3-foot-thick compacted clay layer with a hydraulic conductivity of less than 1.7×10^{-7} cm/sec; 2) a double-sided geocomposite leak detection system drainage layer; 3) a top composite liner consisting of geosynthetic clay between two 60-mil textured HDPE liners; 4) a double-sided geocomposite leak collection system; and 5) a 2-foot thick cover layer.

v. Groundwater Monitoring

Clean Harbors has a groundwater monitoring well network at the facility that currently includes five (5) upgradient monitoring wells and 39 downgradient monitoring wells. In particular, Landfill Cell 15 has five (5) downgradient monitoring wells in its proximity. The wells are monitored semi-annually under the Groundwater Detection Monitoring program as required by the facility's RCRA Part B permit for the analytes set forth therein. The Groundwater Detection Monitoring program is an attachment to the Part B permit and is located in the docket. Clean Harbors Lone Mountain has two relevant RCRA permits- an Operations Permit for current hazardous waste treatment and disposal activities and a Post-Closure Permit for landfill cell(s) undergoing closure. In the last 10-year monitoring period, no hazardous waste constituents have been reported above their respective health-based levels in groundwater wells that monitor the operating portions of the landfill where the put piles will be staged. The Permit Renewal Application is currently undergoing technical review and pending completion of ongoing Class 3 Tier III Permit Modifications for container management expansion and proposed Landfill Cell 16.

vi. Sufficient Information

40 CFR 268.6(a)(5) requires that sufficient information exists to assure the Administrator that the owner/operator of an NMV unit will comply with other applicable Federal, State, and local laws. Clean Harbors is in compliance with their state-issued

permits, and the Agency concludes that sufficient assurances exist through the RCRA, air, and water permits that govern Clean Harbors' treatment, storage, and disposal operations.

vii. Compliance Monitoring Plan

40 CFR 268.6(a)(4) requires a petition to include a monitoring plan to verify continued compliance with the conditions of the NMV. The monitoring plan must be designed to detect migration "at the earliest practicable time." As stated in the 2023 Guidance, the plan must include frequent visual monitoring and prompt responses to possible releases, and generally good housekeeping practices that ensure the treated waste remains in the pile during the temporary storage period. The monitoring plan must also include a discussion of the sampling and analysis of the treated waste that determines *when* the put pile will be moved to the working face of the landfill for final disposal.

Clean Harbors must maintain at the facility a put pile monitoring plan that includes, at a minimum, components 1-16 below, many of which were included by Clean Harbors in the petition and the Agency adopts as proposed.

Deficiencies identified during inspection must be remedied/repared to ensure no migration of hazardous constituents occurs. Deficiencies may include but are not limited to cracking, breakdown, or insufficient application of the Posi-Shell cover; gaps, tears, or holes in plastic sheeting utilized for the management of the unit; presence of stormwater run-on flow and/or ponded water; visibly exposed waste; and poor overall pile condition. Deficiencies must be remedied within one (1) week of discovery, and remedies must be recorded in the facility's operating record.

Deficiencies described by this section must be remedied regardless of whether Clean Harbors determines that a migration of hazardous constituents has occurred or may have occurred if LDR compliance verification of the waste in the unit is not yet available. If Clean Harbors determines that there has been a migration of hazardous constituents

from any of the put piles or is unable to remedy any deficiency within one (1) week of discovery, Clean Harbors must immediately suspend receipt of waste at the affected put pile and notify the Region 6 Administrator, in writing, within ten (10) days of the determination that a release has occurred or that a deficiency was unable to be remedied within one (1) week.

Monitoring Plan Conditions:

1. Review and track LDR standard “pass rates” for put piles to ensure that the put piles are only being “temporarily stored,” as described in the February 2023 guidance. If the failure rate of the initial verification test for treated put piles exceeds 5% in a calendar month, Clean Harbors must conduct a root cause analysis and adjust the treatment protocol for the affected category of waste.
2. Inspection of the temporary staging area for put piles must be performed before installation of the 20-mil polyethylene liner. The underlying area must be free of large, sharp, or rigid objects that may damage the liner.
3. Observing that the liner is not displaced or damaged during placement of the put piles on the liner to confirm the integrity of the liner beneath a put pile. A damaged liner must be replaced with a new liner.
4. Daily inspection of covered put piles to verify integrity of the liner, cover, and overall pile condition. Inspectors must, at a minimum, check for: 1) signs of stormwater run-on flow that has or is migrating towards a put pile or other signs of the potential for put pile erosion, undermining, or washout of the waste encapsulation barriers; 2) damage from strong winds, heavy rain, or other extreme weather events (e.g., in particular, causing holes, uplift, or other breaches in the Posi-Shell® cover) within 24 hours of such an event; 3) visible exposed waste; 4) releases of waste (washout/undermining, displacement/movement of pile, such as shifting or slumping, windblown waste particles, etc.); 5) other indications of potential for migration or actual observed migration of

hazardous constituents from the pile (e.g., liquid seeps on the put pile slopes or emanating from its base); and 6) cracks in the Posi-Shell®.

5. Appropriate Posi-Shell® application. Adhering to inclement weather application prohibitions as recommended by the manufacturer. If a put pile is unable to be immediately covered with a Posi-Shell® (e.g., due to moderate to heavy rainfall), the put pile must be temporarily covered with polyethylene liner that is at least 20-mil thick and anchored with sandbags around its edges until the adverse weather conditions abate and the Posi-Shell® coating can then be applied. Posi-Shell® should not be applied when sustained freezing temperatures are expected for more than one day or during temperatures below 30°F.

6. Verify that 100% coverage of Posi-Shell® is achieved over the entire put pile (no bare or thin spots).

7. Confirm that the minimum 3/8-in thickness of Posi-Shell® is achieved.

8. Confirm that the Posi-Shell® cover is sufficiently set (hardened) before a moderate to heavy rainfall event.

9. Promptly re-apply Posi-Shell® cover if any deficiencies are identified during application, including but not limited to lack of coverage, thickness, or hardening.

10. Check for loss of 100% coverage of Posi-Shell® or other signs of cover degradation (imminent potential for loss of barrier effectiveness or thickness).

Landfill Cell 15-specific remediation requirements:

11. Remove ponded water on the landfill surface that could affect the put piles.

12. Modify, as needed, run-on controls to continue to divert surface water around the put pile staging area.

13. Maintain or alter, as appropriate, landfill grading to prevent put pile run-on.

14. Isolate the nine waste categories/groups of put piles from each other to prevent potential commingling.

15. Maintain landfill equipment.

16. Submit a duplicate copy of the RCRA annual report required by 40 CFR §268.6(c)(3). This will include all LDR verification sampling, resampling, and retreatment to EPA Region 6 at: Golam Mustafa, Land, Chemicals and Redevelopment Division, EPA Region 6, 1201 Elm Street, Dallas, Texas 75270, Mail Code: R6LCR-RP.

V. Conclusion

The Agency proposes that Clean Harbors has successfully demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents beyond the unit boundary for treated hazardous wastes temporarily stored in put piles within their permitted Subtitle C hazardous waste Landfill Cell 15 while awaiting LDR compliance verification.

Therefore, EPA proposes to grant, with the conditions stated herein, no-migration variances for the nine categories/groups of wastes designated herein, containing up to 100 put piles at any one time at Clean Harbors' Lone Mountain facility.

Dated: December 2, 2025

Walter Mason,

Regional Administrator,

Region 6.

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