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Solid Waste Disposal Facility Criteria

Technical Manual

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INTRODUCTION

This manual was originally published in November, 1993 as a companion to the Criteria for Municipal Solid Waste Landfills (MSWLF Criteria) that were promulgated on October 9, 1991 as 40 CFR Part 258. Since that time the MSWLF Criteria have been modified several times due to statutory revisions and court decisions that are discussed below. Most of the modifications delayed the effective dates but all provisions are now effective. All changes to the rule are included in the text of the manual. The technical content of the manual did not require revision and only typographical errors were corrected.

The manual is now available in electronic format and can be accessed on the Environmental Protection Agency's (EPA) web site **<www.epa.gov/osw>**.

Purpose of This Manual

This technical manual has been developed to assist owners/operators of MSWLFs in achieving compliance with the revised MSWLF Criteria. This manual is not a regulatory document, and does not provide mandatory technical guidance, but does provide assistance for coming into compliance with the technical aspects of the revised landfill Criteria.

Example of Technical and Performance Standards in 40 CFR Part 258: Liners

Technical standard:
MSWLFs must be built with a composite liner consisting of a 30 mil flexible membrane liner over 2 feet compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

Performance standard:
MSWLFs must be built in accordance with a design approved by the Director of an approved State or as specified in 40 CFR § 258.40(e) for unapproved States. The design must ensure that the concentration values listed in Table 1 of 40 CFR § 258.40 will not be exceeded in the uppermost aquifer at the relevant point of compliance, as specified by the Director of an approved State under paragraph 40 CFR § 258.40(d).

Implementation of the Landfill Criteria

The EPA fully intends that States and Tribes maintain the lead role in implementing and enforcing the revised Criteria. States will achieve this through approved State permit programs. Due to recent decisions by the courts, Tribes will do so using a case-by-case review process.[1] Whether in a State or in Indian Country, landfill owners/operators must comply with the revised[2] MSWLF Criteria.

State Process

The Agency's role in the regulation of MSWLFs is to establish national minimum standards that the states are to incorporate into their MSWLF permitting programs. EPA evaluates state

[1] The Agency originally intended to extend to Indian Tribes the same opportunity to apply for permit program approval as is available to States, but a court decision blocked this approach. See the **Tribal Process** section below for complete details.

[2] EPA finalized several revisions to 40 CFR Part 258 on October 1, 1993 (58 *FR* 51536) and issued a correction notice on October 14, 1993 (58 *FR* 53136). Questions regarding the final rule and requests for copies of the *Federal Register* notices should be made to the RCRA/Superfund Hotline at 800 424-9346.

MSWLF permitting programs under the procedures set out in 40 CFR Part 239, "Requirements for State Permit Program Determination of Adequacy," proposed on January 26, 1996 (61 *FR* 2584), to determine whether programs are adequate to ensure that MSWLF owners/operators comply with the federal standards. As of early 1998, 40 States and Territories had received full approval and another seven had received partial approval.

If their permitting programs have been approved by EPA, States can allow the use of flexible performance standards established in 40 CFR Part 258 in addition to the self-implementing technical standards for many of the Criteria. Approved States can provide owners/operators flexibility in satisfying the location restrictions, operating criteria, and requirements for liner design, ground-water monitoring, corrective action, closure and post-closure care, and financial assurance. This flexibility allows for the consideration of site-specific conditions in designing and operating a MSWLF at the lowest cost possible while ensuring protection of human health and the environment. In unapproved states, owners/operators must follow the self-implementing technical standards.

EPA continues to work with States toward approval of their programs and recommends that owners/operators stay informed of the approval status of the programs in their State. States may be in various stages of the program approval process. The majority of states have received full program approval and others have received "partial" program approval (i.e., only some portions of the State program are approved while the remainder of the program is pending approval). Regardless of a State's program approval status, landfill owners/operators must comply with the Criteria. States can grant flexibility to owners/operators only in the areas of their program that have been approved. For example, a state in which only the ground-water monitoring area of the permitting program has been approved by EPA cannot grant owners/operators flexibility to use alternative liner designs.

States are free to enact landfill regulations that are *more* stringent than the MSWLF Criteria. Certain areas of flexibility provided by the Criteria (e.g., the small landfill exemption) may not be reflected in a State program. In such instances, the owner/operator must comply with the more stringent provisions (e.g., no exemption). These regulations would be enforced by the State independently from the Criteria. **NOTE: The program requirements for approved States may differ from those described in this manual, which are based specifically on the Federal Criteria. Therefore, owners/operators are urged to work closely with their approved State in order to ensure that they are fully in compliance with all applicable requirements.**

State regulatory personnel will find this document helpful when reviewing permit applications for landfills. This manual presents technical information to be used in siting, designing, operating, and closing landfills, but does not present a mandatory approach for demonstrating compliance with the Criteria. This manual also outlines the types of information relevant to make the demonstrations required by the Criteria, including demonstrations for restricted locations and performance-based designs in approved States.

Tribal Process

From the beginning of EPA's development of the permitting program approval process, the Agency planned to offer permitting program approval to tribes as well as to states. In a 1996 court

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decision[3], however, the court ruled that EPA cannot approve tribal permitting programs. The Agency has therefore developed a site-specific rulemaking process to meet its goal of quickly and efficiently providing owners/operators in Indian Country[4] the same flexibility that is available to landfill owners/operators in states with EPA-approved MSWLF permitting programs. The process is described in *Site-Specific Flexibility Requests for Municipal Solid Waste Landfills in Indian Country—Draft Guidance* (EPA530-R-97-016).

Under this process, an owner or operator can request to use certain alternative approaches at a specific MSWLF site to meet the 40 CFR Part 258 performance standards. Unless the tribal government is the owner/operator, the tribal government should review the request for consistency with tribal law and policy and forward it to EPA with a recommendation. If EPA approves a request, it will issue a site-specific rule allowing the use of the requested alternative approaches. Owners/operators in Indian Country should therefore understand that when this manual refers to areas of flexibility that can be granted by a "State Director," they would instead seek such flexibility in the form of a site-specific rulemaking from EPA after tribal government review of their petition for rulemaking. Although tribes will not issue permits as EPA-approved permitting entities under the Criteria, they are free to enact separate tribal landfill regulations that are more stringent than the Criteria. Tribal regulations are enforced by the tribe independently of the Criteria.

The site-specific process encourages active dialogue among tribes, MSWLF owners/operators, EPA, and the public. The guidance is designed so that the Agency works in partnership with tribes. Because EPA recognizes tribal sovereignty, EPA will respect tribal findings concerning consistency of proposed approaches with tribal law and policy.

Revisions to Part 258

Some important changes have been made to Part 258 since its original promulgation. In addition, other regulations that affect solid waste management have been implemented.

Ground-Water Monitoring Exemption for Small, Dry, and Remote Landfills (40 CFR § 258.1(f)(1))

The Land Disposal Program Flexibility Act (LDPFA) of 1996 reestablished an exemption for ground-water monitoring for owners/operators of certain small MSWLFs. EPA revised 40 CFR § 258.1(f)(1) on September 25, 1996 (61 *FR* 50409) to codify the LDPFA ground-water monitoring exemption. To qualify for an exemption, owners/operators must accept less than 20 tons per day of MSW (based on an annual average), have no evidence of ground-water contamination, and be located in either a dry or remote location. This exemption eases the burden on certain small MSWLFs without compromising ground-water quality.[5]

[3] *Backcountry Against Dumps v. EPA*, 100 F.3d 147 (D.C. Cir. 1996).

[4] This manual uses the term "Indian Country" as defined in 40 CFR § 258.2.

[5] In the original 40 CFR Part 258 rulemaking, promulgated October 9, 1991, the Agency provided an exemption from ground-water monitoring for small MSWLF units located in dry or remote locations. In 1993, the U.S. Court of Appeals for the District of Columbia set aside this ground-water monitoring exemption. *Sierra Club v. EPA*, 992 F.2d 337 (D.C. Cir. 1993).

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New Flexibility for Small Landfills (40 CFR §§ 258.21, 258.23, 258.60)

In addition to reestablishing the ground-water exemption for small, dry, and remote MSWLFs, the LDPFA provided additional flexibility to approved states for any small landfill that receives 20 tons or less of MSW per day. EPA revised 40 CFR Part 258 to allow approved states to grant the use of alternative frequencies of daily cover, alternative frequencies of methane monitoring, and alternative infiltration layers for final cover (62 *FR* 40707 (July 29, 1997)). The LDPFA also authorized flexibility to establish alternative means for demonstrating financial assurance, and this flexibility was granted in another action. The additional flexibility will allow owners and operators of small MSWLFs the opportunity to reduce their costs of MSWLF operation while still protecting human health and the environment.

Added Financial Assurance Options (40 CFR § 258.74)

A revision to 40 CFR Part 258, published November 27, 1996 (61 *FR* 60328), provided additional options to the menu of financial assurance instruments that MSWLF owners/operators can use to demonstrate that adequate funds will be readily available for the costs of closure, post-closure care, and corrective action for known releases associated with their facilities. The existing regulations specify several mechanisms that owners and operators may use to make that demonstration, such as trust funds and surety bonds. The additional mechanisms are a financial test for use by local government owners and operators, and a provision for local governments that wish to guarantee the closure, post-closure, and corrective action costs for an owner or operator. These financial assurance options allow local governments to use their financial strength to avoid incurring the expenses associated with the use of third-party financial instruments. This action granted the flexibility to all owners and operators (including owners and operators of small facilities) to establish alternative means for demonstrating financial assurance as envisioned in the LDPFA.

Additionally, EPA promulgated a regulation allowing corporate financial tests and corporate guarantees as financial assurance mechanisms that private owners and operators of MSWLFs may use to demonstrate financial assurance (63 *FR* 17706 (April 10, 1998)). This test extends to private owners and operators the regulatory flexibility already provided to municipal owners or operators of MSWLFs. These regulations allow firms to demonstrate financial assurance by passing a financial test. For firms that qualify for the financial test, this mechanism will be less costly than the use of a third party financial instrument such as a trust fund or a surety bond.

How to Use This Manual

This document is subdivided into six chapters arranged to follow the order of the Criteria. The first chapter addresses the general applicability of the Part 258 Criteria; the second covers location restrictions; the third explains the operating requirements; the fourth discusses design standards; the fifth covers ground-water monitoring and corrective action; and the sixth chapter addresses closure and post-closure care. Each chapter contains an introduction to that section of the Criteria. This document does not include a section on the financial responsibility requirements;

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questions regarding these requirements may be addressed to EPA's RCRA/Superfund Hotline at 800 424-9346.

Within each chapter, the Criteria have been subdivided into smaller segments. The *Statement of Regulation* section provides a verbatim recital of the regulatory language. The second section, entitled *Applicability*, provides a general explanation of the regulations and who must comply with them. Finally, for each segment of the regulation, a *Technical Considerations* section identifies key technical issues that may need to be addressed to ensure compliance with a particular requirement. Each chapter ends with a section entitled *Further Information*, which provides references, addresses, organizations, and other information that may be of use to the reader.

Limitations of This Manual

The ability of this document to provide current guidance is limited by the technical literature that was available at the time of preparation. Technology and product development are advancing rapidly, especially in the areas of geosynthetic materials and design concepts. As experience with new waste management techniques expands in the engineering and science community, an increase in published literature, research, and technical information will follow. The owners and operators of MSWLFs are encouraged to keep abreast of innovation through technical journals, professional organizations, and technical information developed by EPA. Many of the Criteria contained in Part 258 are performance-based. Future innovative technology may provide additional means for owners/operators to meet performance standards that previously could not be met by a particular facility due to site-specific conditions.

Deadlines and Effective Dates

The original effective date for the Criteria, October 9, 1993, was revised for several categories of landfills, in response to concerns that a variety of circumstances was hampering some communities' abilities to comply by that date. Therefore, the Agency provided additional time for certain landfills to come into compliance, especially small units and those that accepted waste from the 1993 Midwest floods. As the accompanying table indicates, the extended general effective dates for all MSWLF categories have passed, and all units should now be in compliance.

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SUMMARY OF CHANGES TO THE EFFECTIVE DATES OF THE MSWLF CRITERIA

	MSWLF Units Accepting Greater than 100 TPD	MSWLF Units Accepting 100 TPD or Less; Are Not on the NPL; and Are Located in a State That Has Submitted an Application for Approval by 10/9/93, or on Indian Lands or Indian Country	MSWLF Units That Meet the Small Landfill Exemption in 40 CFR §258.1(f)	MSWLF Units Receiving Flood-Related Waste
General effective date.[1,2,3] This is the effective date for location, operation, design, and closure/post-closure.	October 9, 1993	April 9, 1994	October 9, 1997; exempt from the design requirements	Up to October 9, 1994 as determined by State
Date by which to install final cover if cease receipt of waste by the general effective date.[2,3]	October 9, 1994	October 9, 1994	October 9, 1998	Within one year of date determined by State; no later than October 9, 1995
Effective date of ground-water monitoring and corrective action.[2,3]	Prior to receipt of waste for new units; October 9, 1994 through October 9, 1996 for existing units and lateral expansions	October 9, 1993 for new units; October 9, 1994 through October 9, 1996 for existing units and lateral expansions	Exempt from the ground-water monitoring requirements.[5]	October 9, 1993 for new units; October 9, 1994 through October 9, 1996 for existing units and lateral expansions
Effective date of financial assurance requirements.[3,4]	April 9, 1997	April 9, 1997	October 9, 1997	April 9, 1997

[1] If a MSWLF unit receives waste after this date, the unit must comply with all of Part 258.
[2] See the final rule and preamble published on October 1, 1993 (58 FR 51536) for a full discussion of all changes and related conditions.
[3] See the final rule and preamble published on October 6, 1995 (60 FR 52337) for a full discussion of all changes and related conditions.
[4] See the final rule and preamble published on April 7, 1995 (60 FR 17649) for a discussion of this delay.
[5] See the final rule and preamble published on September 25, 1990 (61 FR 50409) for a discussion of the ground-water monitoring exemption.