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# Guidance on Implementation of the Minimum Technological Requirements of HSWA of 1984, Respecting Liners and Leachate Collection Systems

## Reauthorization Statutory Interpretation # 5D

On November 8, 1984, the President signed into law the Hazardous and Solid Waste Amendments of 1984 (HSWA). Among the provisions of this new law are minimum technological requirements for hazardous waste landfills, surface impoundments, and waste piles. These provisions are found in Sections 3004(o) and 3015 of the Resource Conservation and Recovery Act (RCRA), as amended by HSWA. With respect to liners and leachate collection systems, these sections provide that:

- New units and lateral expansions and replacements of existing units at hazardous waste landfills and surface impoundments must be double lined and have leachate collection systems above (in the case of landfills) and between the liners;
- New units and lateral expansions and replacements of existing units at interim status waste piles must meet the requirements for single liners and leachate collection systems provided in the Agency's current permitting regulations for new waste piles.
- All hazardous waste facility permits issued after November 8, 1984, must ensure that these requirements are imposed on the appropriate units;
- Affected interim status units must meet these requirements by May 8, 1985;

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- Owners or operators of interim status units subject to the double liner requirements must notify EPA or the State of their intent to receive waste into one of the affected units sixty days before the waste is received; and
- Double liner systems installed in good faith compliance with Agency regulations and guidance during interim status will not have to be replaced at the time of permitting unless they are leaking.

Scope of this Guidance

The purpose of this document, and the associated technical guidance documents, is to provide further interpretation of the minimum technological requirements found in Sections 3004(o) and 3015 of the new statute as they relate to liners and leachate collection systems. As comments are received on this guidance document, they will be used to revise the guidance as appropriate and to establish a sound basis for future rulemaking.

This RCRA statutory interpretation describes the following provisions of HSWA:

- Applicability of the minimum technological requirements;
- Notification requirements for interim status facilities;
- Acceptable liner systems (detailed descriptions are contained in the two attached technical guidance documents);
- A description of the requirements for demonstrating good faith compliance with the double liner system requirements; and
- Variances from the double liner system requirements.

(Note: The minimum technological requirements are also imposed on existing interim status surface impoundments under Section 3005(j) of HSWA. Section 3005(j) provides that existing interim status surface impoundments shall not receive, store, or treat hazardous waste after November 8, 1988, unless such impoundments comply with the double liner and leachate collection system requirements of §3004(o)(1)(A). A number of variances to the minimum technological requirements are also contained in Section 3005(j) for existing interim status surface impoundments. The Section 3005(j) requirements, including the multiple variances, will be addressed in upcoming guidance to be issued by EPA. However, the attachment to this current guidance, entitled "Minimum Technology Guidance on Double Liner Systems for Landfills and Surface Impoundments--Design, Construction, and Operation" should be used for the installation of double liner systems at existing interim status surface impoundments that do not qualify for one of the Section 3005(j) variances. Although this current guidance makes no further mention of the Section 3005(j) requirements, it is important to note that existing interim status surface impoundment units, although referred to herein as exempt from the double liner system requirements of Sections 3004(o) and 3015, may or may not be exempt from the double liner requirements imposed by Section 3005(j).)

## Applicability of the Minimum Technological Requirements

### A. Interim Status Units

Section 3015 of RCRA, as amended by HSWA, imposes minimum technological requirements on certain interim status waste piles (single liner system), and on certain interim status landfills and surface impoundments (double liner system). EPA believes that the applicability of the minimum technological requirements should be determined with reference to the date of enactment of HSWA, November 8, 1984. The requirements apply during interim status to any new unit, replacement of an existing unit, or lateral expansion of an existing unit that first receives waste after November 8, 1984. Such a unit or expansion must comply with the minimum technological requirements with respect to waste received after May 8, 1985.

In order for a unit or portion of a unit to be exempted from the minimum technological requirements, i.e., to be considered an "existing unit" rather than a new unit, replacement, or lateral expansion, the unit must already have received waste as of November 8, 1984. In addition, the area must have been "operational" as of November 8, 1984. That is, the area must have been constructed by that date in accordance with Federal, State, and local requirements, including licenses and permits. If for some reason an entire unit was not operational on that date (for example, a required liner, leachate collection system, or berm had not yet been completely installed or constructed), only the portion of the unit that was constructed in compliance with Federal, State, and local requirements as of November 8, 1984, will be exempt from the new requirements. In order to determine whether an area is within the boundaries of the unit, available physical evidence (e.g., berms, excavation, or other construction) may indicate where the boundaries are located. Other objective information (e.g., operating records or the Part A), if available, may also be used to identify the boundaries of the unit.

Any new unit or replacement or lateral expansion of an existing unit that first receives waste after November 8, 1985, is subject to the new requirements. If such a unit still receives hazardous waste after May 8, 1985, the minimum technological requirements must be in place on that date.

For interim status facilities, several options are available for a new unit or replacement or lateral expansion of an existing unit:

(1) If the owner or operator wishes to continue using a unit after May 8, 1985, the entire unit could be lined in accordance with the new requirements; if waste were placed in the unit between November 8, 1984, and May 8, 1985, this option would require the retrofitting of the areas that received the waste so that these areas would meet the minimum technological requirements; or

(2) The owner or operator may be able to restructure a unit that has received waste between November 8, 1984, and May 8, 1985, by creating a barrier between the area that contains waste and any empty area (e.g., construction of a berm within a landfill trench). The area that contains waste could not receive additional waste after May 8, 1985 (unless it were retrofitted to meet the minimum technological requirements). The empty area would constitute a new unit that can receive waste after May 8, 1985, if it complies with the minimum technological requirements; or

(3) If the owner or operator stops receiving hazardous waste in the unit on or before May 8, 1985, the unit need not comply with the minimum technological requirements. In other words, Section 3015 does not impose any new requirements on a new interim status unit or replacement or lateral expansion that first receives waste after November 8, 1984, but ceases to receive waste by May 8, 1985.

B. Permitted Units

Section 3004(o) of RCRA, as amended by HSWA, requires landfills and surface impoundments to comply with the minimum technological requirements at the time of permit issuance. This provision mandates a double liner system for any new unit or replacement or lateral expansion of an existing unit that first receives

waste after the date of permit issuance. The requirements must be included in any permit issued after November 8, 1984.

Although both permitted and interim status landfills and surface impoundments must comply with the same double liner requirements, there are distinctions between the permitting and interim status requirements. Compliance with the minimum technological requirements through the permitting process is subject to more stringent EPA supervision than compliance during interim status. In addition, unlike the interim status provision, which gives facilities until May 8, 1985, to comply, the permitting requirements are effective as of the date of enactment of HSWA. All permits issued after November 8, 1984, must contain the new requirements.

C. Issues in Common to Both Interim Status and Permitted Units

Existing units, as noted above, are not affected by the requirements of Sections 3004(o) and 3015. Any portion of a landfill or surface impoundment that was operational on November 8, 1984, and already contained at least some waste as of that date, qualifies as an existing unit under the new law: it is an existing unit under Section 3015 (interim status) because it received waste and was operational before the date of enactment, and it is also an existing unit under Section 3004(o)(1) (permitting) because it received waste before permit issuance. Therefore, the entire unit is exempt from the minimum technological requirements. EPA's current regulations do require the lining of partial units at permit issuance: §264.221(a) (for surface impoundments), §264.251(a) (for waste piles), and §264.301(a)

(for landfills) require the portions of units not covered with waste at permit issuance to install a single liner (with a leachate collection system above the liner, in the case of a landfill or waste pile). This means that even if a landfill or surface impoundment unit is exempt from the new double liner standards, any portion of the unit not covered with waste at permit issuance is still subject to EPA's current single liner standards. Hence, in this instance, EPA's current standards have not been superseded by HSWA. (For technical guidance on EPA's current single liner standards, see the attached technical guidance entitled: "Minimum Technology Guidance on Single Liner Systems for Waste Piles, Landfills, and Surface Impoundments--Design, Construction, and Operation.")

In summary, the combined effect of Sections 3004(o)(1)(A) and 3015 is to require any landfill, surface impoundment, or waste pile unit, replacement, or lateral expansion that first receives waste after November 8, 1984, to comply with the minimum technological requirements after May 8, 1985 (if such unit or replacement or lateral expansion is still receiving hazardous waste after that date), or at permit issuance, whichever occurs first. Landfills and surface impoundment units that install double liners and leachate collection systems in good faith during interim status cannot be required to retrofit at the time of first permitting unless there is reason to believe that the liner is leaking. Any landfill or surface impoundment unit that received waste before November 8, 1984, is exempt from the double

liner system requirements but must comply with Agency's current single liner regulations with respect to portions not covered with waste at the time of permit issuance.

Since enactment of the HSWA, the Agency has received numerous inquiries regarding the applicability of the minimum technological requirements for liners and leachate collection systems at hazardous waste landfills, surface impoundments, and waste piles. The following definitions, questions, and answers address some of the more critical issues that have been raised.

(1) Existing unit

° Issues:

(a) If berms are constructed after November 8, 1984, to allow wastes to be placed higher on an existing unit, are the minimum technological requirements applicable?

- Response: The new requirements do not apply if the additional waste will be placed within the boundaries of the existing unit (See note below) and if Federal, State, or local requirements, including State and local permits, applicable to the unit on November 8, 1984, would not require the new construction in order to receive wastes.

(b) Can a unit that has already been partially or finally capped receive additional waste without complying with the minimum technological requirements?

- Response: If the cap effectively isolates the new waste from the waste within the capped

unit, then the area on which the new waste is placed will be a new unit. (Also, see note below.)

NOTE (applicable to (a) and (b) above):

If the plan, permit, etc., specifies any final elevation or maximum capacity of the unit, the elevation or capacity limitation will restrict the maximum allowable height of the existing unit. If no final elevation or maximum capacity of the unit is specified in operating records, closure plans, State permits, etc., additional waste can be placed on the area if the area is operational. However, the additional placement of waste on a unit must also consider the slope of the final cover at closure.

(c) If a unit qualifies as an "existing unit" and had a very thin layer of hazardous waste placed throughout the unit prior to November 8, 1984, is the entire unit exempt from the minimum technological requirements?

- Response: One of the criteria for a unit to qualify as an existing unit is that waste must have been placed in some part of the unit prior to November 8, 1984. Therefore, the unit meets the criterion of having received waste prior to November 8, 1984. (Because the entire unit is covered with waste, the unit will be exempt from the single liner requirements at permitting.)

(2) Permitted unit

° Issue:

Does a unit that received a RCRA permit prior to November 8, 1984, have to meet the minimum technological requirements?

- Response: As long as the unit was permitted prior to November 8, 1984, even if it has not been constructed, it is not subject to the minimum technological requirements.

(3) Replacement unit

° Definition:

Consistent with the legislative history of HSWA, replacement of a unit occurs when (a) the unit is taken out of service (i.e., the unit has stopped receiving waste or the "normal" rate of waste receipt is significantly decreased), (b) all or substantially all of the waste is removed, and (c) the unit is reused.

° Issues:

a) Is the removal of all or substantially all waste from a surface impoundment or waste pile for the purpose of inspecting the liner or base a replacement?

- Response: This will be a replacement unit if wastes are again placed in the unit.

b) If wastes are removed from a portion of a waste pile, either in the normal operation of the pile, to facilitate inspection of the base under that portion, or as part of a closure activity, while

the remainder of the waste pile continues to receive waste at the normal rate, is this a replacement?

- Response: The key criterion in this case is whether the unit has been taken out of service. Since the normal flow of waste to the unit has not ceased, this is not a replacement.

c) Is the removal of all or substantially all the waste from a landfill, waste pile, or surface impoundment for the purpose of recovering materials, with the residue returned to the unit, a replacement?

- Response: If the normal flow of waste to the unit has ceased and all or substantially all the waste is gradually removed from the unit while processed waste is being returned to the unit, this is a replacement. However, if new waste is continually placed in the unit (i.e., normal waste-receiving operations are continuing) while unprocessed waste is being removed for recovery and then return to the unit, this is not a replacement.

d) At the time of replacement are there any closure requirements?

- Response: There are no closure requirements such as public comment or removal of contaminated soil at the time of replacement. Any contamination of soils at the site, including contamination from activities prior to the replacement unit, will

be addressed at final closure of the replacement unit. However, all applicable criteria for constructing the replacement unit must be adhered to, including the need for a stable base that does not contain contaminants that would be incompatible with the replacement unit liner.

(4) Solid Waste

° Issue:

Can a new unit or a replacement or lateral expansion of an existing unit operating under interim status that receives hazardous waste between November 8, 1984, and May 8, 1985, continue to receive non-hazardous waste after May 8, 1985, without complying with the minimum technological requirements?

- Response: Since this is a new unit, replacement, or a lateral expansion, it can only receive hazardous waste until May 8. After that date it can continue to receive non-hazardous waste without complying with the new requirements. The owner or operator of all interim status units that stop receiving hazardous waste must comply with the closure requirements of Subpart G of Part 265. EPA has issued a proposed rule providing that if a unit is unlikely to receive additional hazardous waste, the expected date of closure is 30 days after the date of receipt of the known final volume of hazardous waste. See 50 FR 11090 (March 19, 1985). EPA policy is that

closure activities for interim status units should begin within 30 days of the last receipt of hazardous waste.

(5) Conversion of a surface impoundment to a landfill

° Issue:

Can the owner/operator of an interim status surface impoundment change the facility process to become a landfill? If the process can be changed, is the landfill an existing unit, replacement unit, or a new unit?

- Response: For an interim status, existing unit, surface impoundment to qualify for a change in process to a landfill it will need to meet the requirements in §270.72(c). Under this provision, an owner/operator can submit a revised Part A application (along with a justification) for consideration of a process change. Only two circumstances can be used to request a change of process:

  (1) It is necessary to prevent a threat to human health or the environment because of an emergency situation, or

  (2) It is necessary to comply with Federal regulations or State or local laws.

  However, for circumstances that do allow a process change under this very restrictive requirement, the landfill unit would be an existing unit. However, the size of the landfill would be restricted by the existing unit requirements.

(6) Liners and Leachate Collection Systems

° Issue:

In a double liner system, must both liners and the leachate collection sytems extend up the sidewalls of a landfill or surface impoundment (impoundments have only one leachate collection system, which is between the liners)?

- Response

The Agency interprets Section 3004(o)(1)(A)(i) to require that both liners of the double liner system and the leachate collection system between the liners extend to any area of the unit that is in contact with the waste. This interpretation of the statutory requirement is consistent with the Agency's current regulatory practice regarding the design of double lined units. Congress intended that the Agency's existing design standards provide the basis for interpreting the new minimum technological requirements. In addition, the legislative history of HSWA suggests that the leachate collection system between the liners should act both as leachate collection and removal system and a leak detection system. These purposes can be achieved only if the liners and the leachate collection system between the liners cover all surfaces of the unit that are in contact with the wastes.

The HSWA does not specifically require that the primary leachate collection system of a landfill (the leachate collection system above the top liner) extend up the sidewalls. The legislative history of HSWA also does not address this issue. EPA's past policy, as stated in guidance, has been to allow the installation of a primary leachate collection system on the base and only partially up the sides of a landfill in some cases, depending on site-specific circumstances. Although the Agency believes that the statute has done nothing to alter this policy, we believe that, in general, it is more protective to install primary leachate collection systems on both the base and sidewalls, and we encourage such designs. Such a design allows leachate to drain to the sump faster and minimizes ponding of leachate within the waste on the sidewalls of the top liner.

(7) Interim Status Waste Piles

° Issue:

What are the liner and ground-water monitoring requirements at interim status waste piles?

- Response:

A. Existing units:

° Subject to current regulations promulgated under Part 265.

° Ground-water monitoring not required.

- If leachate or run-off from the pile is a hazardous waste, then either:
  - a) The pile must have a single impermeable liner with leachate collection; or
  - b) The pile must be protected from precipitation and run-on and no free liquids may be placed in the pile.

B. New units, replacements, and lateral expansions:

- Subject to requirements for a single liner with leachate collection and removal under §264.251(a).
- Variances from single-liner requirements are available if:
  - a) The waste pile is in a structure so that neither run-off nor leachate is generated (§264.250(c)); or
  - b) The owner or operator shows that alternate design and operating practices, together with location characteristics, will prevent the migration of hazardous constituents into the ground water or surface water at any future time (§264.251(b)).
- Ground-water monitoring is not required.

(8) Monofills

° Issue:

What requirements must a landfill or surface impoundment meet to qualify as a monofill and be eligible for a waiver from the minimum technological requirements?

- Response:

The unit must meet the requirements of (A),(B), and (C):

(A) Contain only hazardous wastes from foundry furnace emission controls or metal casting molding sand;

(B) The wastes must not contain constituents that would render the wastes hazardous for reasons other than Extraction Procedure (EP) toxicity; and

(C) Meet the requirements of (1) or (2):

(1) the unit must (a) have at least one liner, for which there is no evidence that such liner is leaking, (b) be located more than one-quarter mile (a one-quarter mile radius hemisphere drawn under and around the unit) from an underground source of drinking water, and (c) be in compliance with generally applicable ground water monitoring requirements for permitted units; or

(2) The owner/operator demonstrates that the unit is located, designed, and operated such that hazardous constituents will not migrate into ground water or surface water at any future time.

Notification Requirements for Interim Status Facilities

A. Overview

Section 3015(b)(2) of HSWA requires the owner or operator of an interim status landfill or surface impoundment to notify the Administrator at least 60 days prior to receiving waste at a new unit, replacement of an existing unit, or lateral expansion of an existing unit. However, the statute does not specify the content of the notice. The Agency believes that a brief notification will be sufficient because the Regions and States already have good information about most of the facilities that will be making changes during interim status. Further, we do not foresee problems in obtaining additional information, if necessary, through field inspections, Part B reviews, or through the provisions of §270.72 (changes during interim status) that require a revised Part A permit application prior to an increase in the design capacity of processes used at a facility.

B. Requirements

The Agency will, therefore, consider that the owner or operator has complied with the notification requirement of HSWA if he submits to the Agency: (1) the EPA Identification Number for the facility; (2) an indication of whether the proposed

change is for a new unit or replacement or lateral expansion of an existing unit; (3) the initial date waste will be received at the unit(s) or lateral expansion(s); and (4) a statement signed and dated by a company officer that the information provided under (1),(2), and (3) is accurate.

C. Authorized State

All requirements of HSWA, including notification requirements associated with the minimum technological provisions, are effective immediately in authorized States as well as unauthorized States. No States are currently authorized for implementation of the minimum technological requirements. Until such time as States are authorized (for interim or final authorization for minimum technological requirements), all notification should be sent to the appropriate EPA Regional Office. Applicants who are uncertain as to the status of their State should contact the EPA Regional Office.

Acceptable Liner Systems

A. Surface Impoundments and Landfills

Section 3004(o)(5)(B) allows the use of a particular type of liner design until EPA issues regulations implementing the double liner requirements in §3004(o). The Agency has identified two additional designs, or more accurately performance requirements for two designs, that it believes meet the liner and leachate collection system requirements for certain landfills and surface impoundments under §§3004(o) and 3015. The Agency will accept permit applications and issue draft permits for facility designs that meet the performance-based designs described in this guidance.

Whether these designs appear in the final permit will depend upon the Agency's response to comments on the draft permit. The two designs are fully described in the attached draft technical guidance entitled "Minimum Technology Guidance on Double Liner Systems for Landfills and Surface Impoundments--Design, Construction, and Operation." The Agency will accept convincing demonstrations of equivalency of performance to the specifications in this guidance as adequate demonstration of compliance with RCRA Section 3004(o)(1)(A)(i).

In addition to the designs in the attached technical guidance, EPA will accept the design set out in §3004(o)(5)(B). However, the Agency has reservations about whether the interim statutory bottom liner design, i.e., three feet of compacted clay with a hydraulic conductivity of not greater than $1X10^{-7}$ centimeters per second, will meet the bottom liner performance criteria of that section in most cases. The specified performance standard requires that the bottom liner prevent migration of any constituent through it during the operating period, including any post-closure monitoring period. To meet this standard, a bottom liner of compacted clay or other natural soil material must be thick enough and low enough in permeability to prevent the migration of any constituent through the liner during the stated period. The breakthrough time for constituents, in most cases, will be governed by unsaturated liquid flow through the liner. EPA is studying the breakthrough of constituents through compacted soil liners. There is currently, however, no field-verified method for determining either breakthrough or the associated liner

thickness requirements. EPA believes that the interim design (i.e., a three-foot thick compacted liner with a saturated hydraulic conductivity of $1X10^{-7}$ cm/sec) will result in a breakthrough time substantially shorter than the operating period in most cases, as explained more fully in the attached technical guidance. EPA does not discourage rigorous demonstrations of liner designs. The Agency has, however, strong reservations concerning the likelihood that such a design is either economically or technically feasible in most cases. However, because §3004(o)(5)(B) authorizes the use of a lower liner constructed of a 3-foot thick compacted soil liner with a saturated hydraulic conductivity of $1X10^{-7}$ cm/sec, owners and operators may use this design until such time as the effective date of regulations or until this guidance is finalized.

B. Waste Piles

Section 3015(a) of HSWA requires the owner or operator of new units, replacements, and lateral expansions of interim status waste piles to meet the existing Agency requirements for single liners and leachate collection systems for new waste piles under Part 264. These single liner system requirements are contained in §264.251.

The attached technical guidance entitled "Minimum Technology Guidance on Single Liner Systems for Waste Piles, Landfills, and Surface Impoundments--Design, Construction, and Operation" updates the Agency's previously issued single liner system guidance. It contains single liner system design, construction, and operation specifications that the Agency believes are acceptable for meeting

the requirements of §264.251. (In addition to waste piles, the attached single liner system guidance also addresses landfills and surface impoundments because certain portions of existing landfills and surface impoundments, although exempt from the double liner requirements of HSWA, are required by Agency regulations to be single lined at permitting.)

C. Construction Quality Assurance for Liner Systems

To assure, to a reasonable degree of certainty, that a completed liner system meets or exceeds all required design criteria, plans, and specifications, a construction quality assurance (CQA) program is necessary. CQA is included as part of the attached technical guidance to detect deviations from the design, caused by error or negligence on the part of the construction contractor, and to provide the suitable corrective measures before wastes are placed in the unit. A CQA guidance document is currently being developed.

Good Faith Compliance with Guidance and Regulations

HSWA requires that an owner or operator of an interim status landfill or surface impoundment facility, who builds a new unit, lateral expansion of an existing unit, or replacement of an existing unit, comply with the minimum technological requirements of §3004(o) with respect to waste received after May 8, 1985. Before a permit is issued, the owner or operator of the facility is required to show that the liner and leachate collection systems installed during interim status have been installed in "good faith compliance" with EPA's regulations and guidance documents. If the system has been installed in

good faith compliance, then the Administrator can not require liner retrofitting at the time of permit issuance unless he has reason to believe that the liner is leaking.

The owner and operator will meet his burden of demonstrating good faith compliance if he complies with the notification requirements discussed earlier in this guidance and makes the following two demonstrations. The owner and operator should:

- present evidence to the Agency that all the appropriate units were lined; and
- present evidence that the liner and leachate collection systems were <u>designed</u> and <u>installed</u> in accordance with the Agency's regulations and with the double liner guidance described in the attachment to this document or any additional guidance provided on Section 3004(o)(5)(B).

The information for these demonstrations should be kept at the facility. The required records for making a good faith demonstration are described below.

A. <u>Demonstrating that all appropriate units have been double lined</u>

According to §265.73(b)(1) and (2) (and §265.309 for landfills), the owner or operator must keep written operating records at his facility that contain:

> 1) a description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility . . . .
>
> 2) the location of each hazardous waste within the facility and the quantity at each location. For <u>disposal</u> facilities (emphasis added) the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. . . .

The Agency will request the submission of the facility's operating records when the permit application is submitted. Compliance with these two recordkeeping requirements discussed above may provide sufficient information for the owner or operator to demonstrate where waste was placed on the facility as of November 8, 1984, and May 8, 1985. The owner or operator should clearly distinguish between "existing units" and new units, lateral expansions of existing units, or replacement units.

In addition to the information found in the operating records, the Agency will look to the information submitted in the facility's Part B application to be assured that the proper units were double lined. EPA will receive all the facilities' Part B applications by November 8, 1985.

Furthermore, the Agency will look to the information gathered by our field inspectors. EPA may elect to conduct an inspection after the owner or operator notifies the Agency 60 days prior to receipt of waste at a new unit, replacement of an existing unit, or lateral expansion of an existing unit. The inspector will review the operating records and visually inspect the site to determine if the operating records accurately detail the boundaries of the existing units and the units that are being double lined.

The owner or operator should bear in mind the importance of keeping accurate and complete operating records to demonstrate that the proper units were double lined during interim status. The permit writer will look to the owner or operator to make this demonstration at the time of permit review, which may be some time after the units have been lined and in use. The permit

writer will depend on the operating records, Part B application, and inspection records to decide whether an owner or operator double lined the proper units.

B. Demonstrating that the liner and leachate collection system(s) were designed and installed in accordance with the Agency's regulations and guidance

The Agency has interpreted HSWA to mean that an owner or operator who demonstrates that he followed the guidance in this document and its attachments, or the terms of §3004(o)(5)(B), will be considered to have acted in good faith. The owner or operator can demonstrate that the liners and leachate collection systems were designed and installed in good faith by showing that the design conforms to the guidance, or §3004(o)(5)(B), and an adequate construction quality assurance (CQA) plan was prepared and followed. This CQA plan should be kept at the facility. The procedure for developing a CQA plan is specified in the attached technical guidance. Additional guidance will be provided in Construction Quality Assurance for Land Based Hazardous Waste Facilities, which will be issued in draft form in June 1985. The CQA plan will be reviewed during the site inspection and will be the chief means for the permit writer to determine whether the owner or operator followed the liner guidance in designing and installing the double liner system.

Owners and operators of facilities that have already installed double lined units before the issuance of this guidance must show that their liners meet the requirements of HSWA §3004(o). To meet this requirement, owners and operators may use the statutory interim design in §3004(o)(5)(B), or may show that

the design complies with §3004(o)(1)(A)(i), which EPA believes requires a design that protects human health and the environment.

Some owners or operators who plan to install a double liner system may choose to deviate from the design in §3004(o)(5)(B) or the designs in this liner guidance. Alternate designs may be installed if they meet the performance standards embodied in the double liner system design in this guidance. Owners or operators should confer with the Agency during the design and construction of the alternate system in order for EPA to ascertain whether the system will meet the double liner performance standards. As a result, these facilities will be able to more easily demonstrate to the Agency during the Part B review that their alternate design meets the performance standards in this guidance.

Variances from the Double Liner System Requirements

RCRA §3004(o)(2) and (3) provides authority to the Administrator to waive the double liner requirements in two situations. In one case, a waiver may be allowed if the owner or operator demonstrates that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at least as effectively as double liner and leachate collection systems specified in this guidance. The second waiver applies to monofills receiving only wastes from foundry furnace emission controls or metal casting molding sand that are not hazardous wastes for reasons other than Extraction Procedure toxicity.

Owners or operators applying for a waiver for a permitted unit should submit appropriate information in their Part B

permit application. Until EPA develops specific procedures for interim status purposes, owners and operators seeking a variance for an interim status unit should seek approval on a case-by-case basis from the EPA Regional Administrator before designing the unit.

This guidance should be used in preparing and evaluating waiver requests regarding alternate design and operating practices. In addition, the Agency is developing more detailed guidance on alternate design and operating practices. We expect to make this additional guidance available in 1986. No specific guidance is planned for the monofill waiver.

In order to evaluate any waiver request, the objectives of the liner and leachate collection systems must be established. These objectives are: (1) to maximize the removal of leachate containing hazardous constituents during the active life and through any post-closure monitoring period and (2) in combination with the final cover system, to minimize the escape of hazardous constituents from the unit in the long-term future.

Until regulations are developed, the design specified in §3004(o)(5)(B) provides the standard against which alternate designs should be compared. Three factors--design, operation, and location--determine whether an alternate design can meet the waiver criteria. These factors must be used recognizing the characteristics of the land disposal process and how migration can be expected to occur. Hazardous constituents that escape the unit can be expected to migrate if they are liquids or if they are dissolved or suspended in liquids. Therefore, surface

impoundments, because they are storage or disposal units for liquids, are more difficult to qualify for the waiver. Landfills, on the other hand, may be more likely to qualify for the waiver if the owner or operator can demonstrate that the facility adequately manages liquids.

Adequate liquids management can be demonstrated by showing that liquids are minimized at the facility. First, the landfill should be kept as dry as possible. This includes not accepting bulk liquid wastes for disposal, controlling surface run-on so that rainfall does not add excessive moisture, and keeping the disposal site above the ground-water table. There are other design and operating features that can be used to minimize moisture, including building the landfill under roof and rapid removal of any incident precipitation. The goal of these liquids management activities is to minimize the formation of leachate during the life of the facility. With little or no leachate, which is the driving force to cause migration of hazardous constituents, the waiver may be granted. This waiver would not relieve the owner or operator from any responsibility to construct and maintain a proper final cover.

The demonstration that there is no likelihood of significant amounts of leachate may also be made based on climate. Certain areas of the country receive very small amounts of rainfall annually. By using calculations or experience gained at other units constructed in the same climate, it may be possible to demonstrate that little or no leachate is formed. The waiver could be granted when such a demonstration is made. As before,

this would not affect the design of a final cover.

Another way to qualify for the waiver is to prove that the leachate does not contain hazardous constituents. This demonstration requires specific testing because leachate is presumed to contain hazardous constituents. Some hazardous constituents may not leach and may be eligible for a waiver. It may also be possible to qualify for a waiver by showing that the wastes are treated prior to disposal so that they do not leach. This demonstration can be made based on the non-leaching characteristics of the waste alone or in combination with the facility location (e.g., the facility is located in a very low rainfall area).

A facility located in an area that is capable of attenuating all the hazardous constituents before they reach ground water or surface water may also qualify for a waiver. This demonstration may be possible, under some circumstances, for inorganic hazardous constituents, especially heavy metals. It is less likely that a successful demonstration could be made for most organic hazardous constituents.

In general, EPA expects that waiver demonstrations will be difficult to make. The owner or operator will be expected to make a comprehensive demonstration that his alternative design and operating practices, together with location characteristics, are as effective as the double liner and leachate collection systems specified in this guidance.