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Corrective Action Management Units and Temporary Units; Corrective Action Provisions; Final Rule

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ENVIRONMENTAL PROTECTION AGENCY

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Corrective Action Management Units and Temporary Units; Corrective Action Provisions Under Subtitle C

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency is promulgating today certain corrective action-related regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The specific provisions finalized in this rulemaking address two new units that will be used for remedial purposes under RCRA corrective action authorities: corrective action management units (CAMUs), and temporary units (TUs). These specific provisions were proposed as part of a more comprehensive corrective action rulemaking on July 27, 1990.

EFFECTIVE DATE: These final regulations are effective on April 19, 1993.

ADDRESSES: The official record for this rulemaking is located in the RCRA Docket, located in room 2427 at the U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. The telephone for the RCRA Docket is (202) 260-9327. The record is available for inspection, by appointment only, between the hours of 9 a.m. and 4 p.m., Monday through Friday, excluding legal holidays. As provided in 40 CFR part 2, a reasonable fee may be charged for copying services.

FOR FURTHER INFORMATION CONTACT: Questions relating to the technical content of this rule should be directed to Anne Price or David Fagan, Corrective Action Programs Branch, Office of Solid Waste (5303W), U.S. Environmental Protection Agency, at (703) 308-8657 or (703) 308-8620. Other inquiries should be directed to the RCRA/Superfund Hotline, at (800) 424-9346 or at (202) 260-3000.

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I. Authority

These regulations are issued under the authority of sections 1006, 2002(a), 3004(u), 3004(v), 3005(c), 3007 and 3008(h) of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments of 1984.

II. Background

The RCRA Hazardous and Solid Waste Amendments of 1984 established a broad new mandate for EPA and the States to implement corrective action at hazardous waste treatment, storage, and disposal facilities (TSDFs) regulated under subtitle C of RCRA. Under section 3004(u), permits issued to such facilities must address corrective action for all releases from solid waste management units at the facility. Under section 3008(h), EPA may issue administrative orders to compel corrective action at facilities authorized to operate under section 3005(e) of this subtitle (i.e., interim status facilities). Section 3004(v) established the authority to compel remediation of releases that have migrated beyond a facility's boundary.

On July 27, 1990, EPA issued a proposed rulemaking to establish, under subpart S of 40 CFR part 264, a comprehensive regulatory framework for implementing corrective actions at RCRA facilities under these new statutory authorities. 55 FR 30796-884 (July 27, 1990). The proposal established a detailed set of technical requirements and procedures for investigating and responding to environmental releases at RCRA facilities.

EPA received numerous public comments on the Subpart S proposal, many of which raised substantial issues which must be resolved prior to a final rulemaking. In addition, EPA is currently conducting a comprehensive new Regulatory Impact Analysis (RIA) to more thoroughly assess the costs and benefits of the Subpart S proposal, and to analyze specific regulatory alternatives for the final rule. EPA will make the results of the RIA available for public review and comment prior to promulgating the remainder of the proposed subpart S rules.

The proposed subpart S regulations contained several key remediation waste management provisions. These provisions were designed to reduce or eliminate certain waste management requirements of the current RCRA subtitle C regulations which, when applied to remediation wastes, impede the ability of the Agency to select and implement reliable, protective and cost-effective remedies at RCRA facilities. These impediments also occur at sites being remediated under CERCLA authorities, since RCRA requirements are often applicable or relevant and appropriate requirements (ARARs), as defined in CERCLA and in the CERCLA National Contingency Plan.

Therefore, EPA believes that pending the promulgation of the comprehensive subpart S rules, it is useful and necessary to expedite the promulgation of these key provisions of subpart S, and thereby realize the benefits that they will provide in an accelerated time frame.

The Agency remains committed to promulgating final comprehensive rules governing RCRA corrective actions. Today's rule is intended to advance that

process by putting into place certain key provisions that will produce immediate benefits for these important remedial programs. Specifically, today's rule promulgates provisions under subpart S for corrective action management units (CAMUs) and temporary units (TUs) to be used for the purpose of facilitating remediation waste management activities at RCRA facilities. The requirements for these units will also become RCRA ARARs for hazardous waste management activities at CERCLA sites.

A. Purpose and Context for Today's Final Rule

Today's rule finalizes provisions for corrective action management units (CAMUs) and temporary units under subpart S of 40 CFR part 264. Both of these units function solely to manage wastes that are generated at a RCRA facility for the purpose of implementing remedial actions required at that facility (i.e., remediation wastes, as defined in this rule). As explained elsewhere in this preamble, these units will not and cannot be used to manage "as-generated" hazardous wastes; as used in this preamble, as-generated wastes means those wastes generated from ongoing production processes or other industrial activities.

In creating the CAMU as a remediation waste management unit, EPA is providing remedial decisionmakers with an added measure of flexibility in order to expedite and improve remedial decisions. Although the CAMU provision does provide some additional flexibility, it is important to recognize that other existing requirements, policies, and guidelines for establishing site-specific cleanup goals and for selecting remedies remain in effect. EPA does not intend for this rule to replace existing state and federal requirements, guidelines, and standards that define the necessary level of protectiveness for remedies and the factors to be considered in selecting site-specific remedies.

For example, as is discussed more fully later, existing closure regulations and requirements for RCRA-regulated units, which require closure to occur in a manner that is protective of human health and the environment, remain in effect. Similarly, EPA guidance (most notably, the subpart S proposal) and state regulations and guidance documents provide information on the appropriate conduct of cleanup actions. The Subpart S proposal defines the process for establishing cleanup goals, defines the process for and principles of remedy selection, and, requires that remedies meet the statutory standard of "protective of human health and the environment".

In addition, several years ago, EPA developed treatability guidelines for contaminated soil (the "Superfund 6A" guidance) for making site-specific decisions regarding treatability variances from the land disposal restriction standards. Today's CAMU rule does not specifically address the issue of what specific treatment standards or technologies should be applied in remediating RCRA facilities using CAMUs. However, EPA's Regulatory Impact Analysis for this final rule strongly suggests that promulgation of this CAMU provision, with appropriate criteria to guide the designation of CAMUs, will result in more treatment, greater use of innovative technologies and less incineration. Further, EPA expects that such treatment will often follow the treatment guidelines in the Superfund 6A guidance. The Agency's experience with this guidance has been that the treatment levels prescribed in the guidance are generally workable and practicable for remediation purposes. Thus, EPA expects that the 6A guidance will continue to be used in a variety of remedial situations involving management of contaminated soils, even when such soils are not explicitly subject to LDR requirements.

Finally, today's rule is only one component of what the Agency intends as a comprehensive regulatory framework under RCRA that will apply to the Agency's remedial programs. Today's rule for CAMUs and temporary units should be viewed in the context of the Agency's overall strategy to establish comprehensive remediation regulations under RCRA subtitle C, and is one of the first steps EPA is taking in developing a comprehensive risk-based regulatory framework. EPA is committed to proceed expeditiously to develop a complete regulatory framework for RCRA Corrective Action under subpart S and to develop new proposed regulations governing the status of contaminated media as hazardous waste. EPA is also committed to conducting these rulemakings in a manner which ensures ample opportunities for public dialogue to discuss appropriate regulatory requirements for the cleanup of contaminated media. EPA expects the dialogue to include discussions of risk-based cleanup standards for contaminated groundwater, soils, and other media, remedy selection decision criteria, and other specific cleanup requirements.

The Agency therefore wishes to emphasize that the scope and intent of today's final rules for CAMUs and temporary units is limited to establishing certain regulatory provisions relating to the management of remediation wastes. As is clarified in § 264.552(h), today's rule does not address the many important issues relating to "how clean is clean", or where compliance with cleanup standards must be achieved (i.e., points of compliance for remediation of ground water and other media). These are issues that will be addressed in the final Subpart S corrective action rule. Thus, for example, under today's rule the RA's designation of a CAMU at a facility, pursuant to the enumerated criteria, does not have any relevance to where the point of compliance for ground water remediation will be specified for that facility.

CAMU decisions will generally be made based on extensive discussions and consultations with the owner/operator. Once the preliminary decisions are made, the Agency will incorporate the CAMU designation into the permit or order, through a modification process that allows the owner/operator, and the public, the opportunity to comment on the specifics of the CAMU designation.

It is possible that in certain cases the owner/operator of a facility may disagree with the Agency regarding how the CAMU concept should be applied for purposes of implementing the CAMU. Such disagreements are usually resolved by informal discussions. In the rare event that such disagreements persist after the permit has been modified to incorporate the CAMU selected by the Agency, the owner/operator may file an administrative appeal to contest the CAMU decision. Under this appeal process, the provisions being appealed are not effective until a decision on the appeal is rendered by the Environmental Appeals Board. EPA believes that this process serves to protect the due process rights of the owner/operator.

In the proposed subpart S rule, EPA recognized that the existing regulatory structure of RCRA subtitle C, when applied to management of hazardous wastes for remedial purposes, can often seriously hamper the ability of decisionmakers to select and to implement effective, protective and cost effective remedies. CAMUs and temporary units, as finalized today, are expected to address these problems in several important ways.

The basis for establishing a separate regulatory framework for these new remediation waste management units is the premise that remediation of existing contamination problems is inherently

different from the management of as-generated industrial hazardous waste, and that applying "as-generated" regulatory requirements to remediation wastes does not always result in implementation of the best remedies. In fact, EPA's preliminary analysis indicates that better remedies, in terms of increased environmental benefits, are likely under a regulatory framework tailored to remediation wastes.

The original RCRA subtitle C program, which was established beginning in 1980, was designed to be a "cradle-to-grave" system of controls governing the generation and subsequent transportation, storage, treatment and disposal of hazardous wastes from ongoing industrial processes. Thus, RCRA was first and foremost a "prevention" oriented program, with the primary objective to prevent new releases (e.g., new Superfund sites) resulting from management of hazardous wastes. Following this objective, a stringent set of standards were developed to ensure protection of human health and the environment from such ongoing waste management. For the most part, the subtitle C regulations are specified as uniform, national standards that must be complied with at all RCRA-regulated facilities. These standards are generally considered very stringent; in order to ensure an adequate level of protection nationally, the standards must be adequate in preventing or minimizing environmental releases over a wide range of hazardous wastes types, environmental conditions, operational contingencies and other factors. Although there are certain limited provisions for waivers from the subtitle C regulations based on site-specific factors, the regulated community's experience has been that it is difficult and time-consuming to modify RCRA standards through site-specific waivers.

The 1984 HSWA amendments to RCRA strengthened the RCRA prevention program by adding several important statutory provisions governing the treatment and disposal of hazardous wastes. In particular, the RCRA land disposal restrictions (LDRs) and the minimum technology requirements (MTRs) have become central features of the RCRA prevention program. One of the important objectives of Congress in mandating the 1984 amendments (including LDRs and MTRs) was to provide increased incentives for generators of hazardous wastes to minimize the amounts of wastes being generated. See RCRA section 1003(b). EPA's experience in implementing the LDR program has shown that the costs associated with meeting the stringent, technology-based LDR standards actually have resulted in substantial reductions in the volumes of hazardous wastes generated from many industrial sectors.

In addition to these prevention-oriented provisions, the HSWA corrective action provisions created a very different, new mandate for the RCRA program: Cleaning up releases from solid waste management units (SWMUs) at over 4,000 RCRA TSDFs. RCRA is now both a prevention program and a cleanup program. These two basic elements of the RCRA program have markedly different objectives and incentives, and are impacted in very different ways by regulatory controls on waste management. As discussed below, therein lies the basic problem that today's final rule is intended to address.

EPA has found that subtitle C requirements, when applied to remediation wastes, can act as a disincentive to more protective remedies, and can limit the flexibility of a regulatory decisionmaker in choosing the most practicable remedy at a specific site. In contrast, RCRA subtitle C regulations, when applied to as-generated wastes, ensure that the wastes are handled according to stringent national standards; due to the cost of subtitle C management, they also create a significant incentive for process changes to minimize hazardous waste generation. Yet these same requirements, when applied to existing contamination problems, provide a strong incentive for leaving wastes in place, or for selecting remedies that minimize regulation under subtitle C.

EPA recognizes, of course, that both Superfund and RCRA provide it the authority to compel specific remedies, as long as the remedies are consistent with the goals of the statutes. Under the current programs, the Agency can require facility owner/operators or responsible parties to excavate wastes and manage them fully in compliance with Subtitle C. Similarly, in a fund-financed remedy under Superfund, EPA can use CERCLA funds to effect a similar remedy. Thus, through its regulatory authority, EPA can, at least in theory, override any regulatory disincentive against a given remedy. In its conduct of the Superfund and RCRA programs, however, EPA has come to recognize the fact that RCRA subtitle C requirements may make more sense when applied to some remedies than to others, and can influence the remedy selection process in undesirable ways. For example, compliance with LDR requirements may completely eliminate from consideration remedies that would otherwise meet Superfund or RCRA remedial standards, and that might be the most sensible remedy from a technical point of view. In such cases, the regulatory decisionmaker might be faced with the dilemma of choosing between two or more extreme options, such as a remedy involving containment in place versus removal of the wastes and management according to full RCRA subtitle C standards, without having the opportunity to consider a middle option that might be fully protective, in compliance with Superfund or RCRA cleanup goals, and acceptable to the local community. In such cases, practical considerations and the need for prompt action may often force the decisionmaker to select the less protective of the available extremes.

More broadly, under Superfund and RCRA corrective action, the regulatory decisionmaker must address a situation that is already unacceptable—that is, a situation which needs remediation. The decisionmaker's goal in each case is to select a remedy that is fully protective, yet that reflects the technical and practical realities of the site. In addressing this situation, the decisionmaker needs the flexibility to consider a full range of strategies so that one may be selected that promptly and effectively addresses the problem. EPA believes that constraining this range of strategies by requiring compliance with subtitle C standards for wastes "generated" during remediation can often lead to remedies that are not cost-effective and that in some cases may actually be less protective solutions than the remedies that otherwise would be chosen.

This is reflected in the results of the preliminary CAMU analysis ("Supplemental Information of Corrective Action Management Units (CAMUs)", October 16, 1992) and in the Regulatory Impact Analysis (summarized in section VI. of today's preamble). According to these analyses, the "expanded" CAMU concept, which has been adopted in today's rule, is estimated to result in more treatment of wastes using more effective treatment technologies than would occur under the other regulatory options considered by the Agency. In addition, today's rule is predicted to result in more on-site waste management (vs. off-site management); lesser reliance on incineration; greater reliance on innovative technologies; and a lower incidence of capping waste in place without treatment.

Another reason for instituting a regulatory approach for management of remediation wastes that differs from the base Subtitle C program is the type and amount of Agency oversight that is

given to cleanup activities under RCRA and CERCLA, as opposed to ongoing generated waste streams. Remedial actions under these statutes are typically conducted with substantial Agency oversight; remedial decisions are made by the Agency based on a thorough study of the nature and extent of the contamination problems at the site. In contrast, most RCRA subtitle C regulations for as-generated waste streams are uniform, national standards, and as such must require a level of protection sufficient for a highly diverse universe of facilities and environmental settings, so as to be implemented with little Agency oversight.

One final difference between as-generated wastes and remediation wastes is that remediation often involves management of large volumes of contaminated media, such as soils or ground water. The physical characteristics of contaminated media can be quite different from those of as-generated wastes. Contaminated soils, for example, are highly variable in their composition and handling characteristics. Treatment of such soils can thus be particularly difficult. This is not to say that remediation wastes are always different; some remediation wastes, such as sludges, may be essentially identical to as-generated wastes. As a general matter, however, remediation wastes pose unique waste management issues.

The above considerations—the level of Agency oversight over remedial actions, the counterproductive constraints and disincentives that subtitle C requirements can impose on the remedy selection process, and the physical and chemical differences that are often found between remediation wastes and as-generated wastes—suggest that it is sensible and necessary to develop regulations under RCRA for management of remediation wastes that are better tailored to the realities of remediation actions. As a result, under today's rule, regulatory requirements for remediation wastes will differ from the standards applied to as-generated wastes.

Today's final rule for CAMU and temporary units is consistent with that policy objective. As explained earlier, these rules will create a markedly different regulatory framework for applying subtitle C requirements, particularly the LDRs and MTRs, to remediation waste management.

B. Summary of Today's Rule

Today's rule promulgates regulations for CAMUs and temporary units. These regulations will provide the Regional Administrator with the authority to designate and approve such units for the purpose of managing remediation waste. The final CAMU provisions are an expansion of the proposed CAMU concept, and are intended to provide even greater flexibility for decisionmakers in implementing protective, reliable and cost-effective remedies. CAMU is a tool that can be used by an owner/operator when implementing corrective action at a facility. It is available to those owner/operators compelled to take corrective action under RCRA or those who initiate corrective action and seek Agency approval under RCRA. The temporary unit provisions in today's rule are changed little from the proposal, except that the time limit for temporary units has been increased from 180 days to one year.

Today's regulations will apply to corrective action implemented under RCRA permits (as provided under RCRA section 3004(u) and in § 264.101) and under section 3008(h) actions. In the subpart S proposal, EPA fully intended that the CAMU and TU regulations would apply to interim status facilities under section 3008(h). See 55 FR 30,802 (July 27, 1990). However, the proposed regulatory language did not contain explicit requirements for the use of CAMUs and TUs under section 3008(h). Several commenters requested clarification as to how and to what extent the substantive subpart S requirements would actually be applied under section 3008(h). Today's rule clarifies, in § 264.552 and in other conforming changes, that these rules for CAMUs and TUs will be applicable to corrective actions under section 3008(h). The Agency has also provided the opportunity for public comment through both the permit modification and order processes.

Under the final CAMU provisions, remediation waste management will be subject to LDRs and MTRs in a much more limited way than has been the case under existing regulations. For example, remediation wastes, including hazardous remediation wastes, may be placed into a CAMU without triggering applicability of LDRs or any other unit-specific requirements applying to hazardous waste land disposal units. Thus, remediation wastes generated at a facility, but outside a CAMU can be consolidated into the CAMU, and remediation wastes may be moved between two or more CAMUs at that facility, without triggering LDRs. Likewise, the "replacement" scenario, where remediation wastes are excavated from a CAMU, treated in a separate unit (which could be located inside or outside the CAMU at the facility), and redeposited into the CAMU, is not a new "disposal" event which triggers LDRs or other hazardous waste land disposal unit requirements. As explained in the proposal, MTRs would not apply to CAMUs, since by definition a CAMU is not subject to MTRs under 3004(o) and 3015. These regulatory features of CAMUs are described in more detail later in today's preamble.

Today's final rules for CAMUs grow out of the proposed approaches for defining the CAMU and the comments received by the Agency on those approaches. In the July, 1990 notice, the Agency discussed in detail several important proposed limitations on the scope of the CAMU. 55 FR 30843–44. First, a CAMU could only be designated by the Agency or the authorized State, and such designations would be subject to the public review and comment process as part of remedy selection. Second, the CAMU could only contain contaminated areas. Third, the CAMU was a land area and non-land-based units, such as incinerators or tanks, could not be considered part of the CAMU. Fourth, remediation waste from outside the CAMU that would be placed within the CAMU would be subject to the land disposal restriction requirements.

In the preamble, EPA also discussed several alternatives to the proposed CAMU, including options under which the CAMU would not have the second, third, or fourth restrictions noted above. 55 FR 30844. The Agency cited several problems with these options, noting that (1) including uncontaminated areas in the CAMU could be viewed as contradicting its remedial purpose, (2) including non-land-based units could be viewed as inconsistent with the land-based concept of the CAMU, and (3) including non-land-based units would complicate the application of relevant 264 standards to the non-land-based units.

Many of the comments on the proposed CAMU were critical of these proposed limitations and requested that EPA adopt an expanded type of CAMU as discussed in the preamble to the proposal. In response, EPA evaluated regulatory options for defining a CAMU and provided supplemental information for public comment summarizing the relative environmental benefits of the proposed CAMU and expanded CAMU options. 57 FR 48195 (October 22, 1992).

In light of EPA's 1992 supplemental information and the public comments received on the July, 1990 proposal and the October, 1992 supplemental information notice, EPA has decided to adopt a CAMU definition which is

broader than the proposed CAMU, but is consistent with the options for expanding the CAMU discussed in the July, 1990 preamble and in the October, 1992 supplemental notice. As explained below, EPA believes that the CAMU definition adopted today better achieves the policy goal of facilitating timely, protective, and effective cleanups at RCRA facilities than does the proposed CAMU. Moreover, EPA has structured the final CAMU definition to avoid the problems relating to expanding the CAMU concept, as noted in the July, 1990 preamble and in comments received by the Agency.

The principal difference between the proposed CAMU and the CAMU definition in today's final rule is that, under today's rule, the CAMU has been structured so that any waste managed within the CAMU which was generated as part of the corrective action at that facility (i.e., remediation waste) would not be subject to RCRA regulatory disposal requirements. Thus, waste generated from the corrective action at the facility may be placed within the CAMU without pre-treatment to the technology-based levels established under the RCRA land disposal restrictions (LDR) program.

EPA believes that Congress left ample authority for the Agency to modify, where appropriate, the regulatory requirements for as-generated hazardous waste under RCRA when applying those requirements to wastes generated during cleanup activities, so long as the requirements for these remediation wastes remain protective of human health and the environment. With respect to LDRs in particular, Congress defined the term "land disposal" to include the placement of hazardous waste in certain types of units historically used by the Agency to establish land disposal requirements for non-remediation wastes. See section 3004(k). Congress did not address in that provision how the LDRs would apply to wastes managed in newly-created types of land-based units or to units created solely for the management of remediation wastes, rather than as-generated hazardous wastes. Congress did, however, recognize the special problems that might be created by applying the LDRs to remediation wastes in the same manner as to as-generated wastes and provided some relief for remediation wastes placed in the units enumerated in section 3004(k). See e.g., RCRA sections 3004(d)(3) and 3020.

For the reasons outlined above, the application of regulatory requirements designed for as-generated wastes to remediation wastes has proven problematic. In essence, standards designed to prevent releases from occurring and to force hazardous waste generators to internalize the costs posed by hazardous waste management can be highly counterproductive when applied to wastes generated during remediations, where the release has already occurred and the desired incentive is to increase, rather than decrease, waste production. Cf. H.Rep. 98–198, Part 1, 98th Cong., 1st Sess. at 37 (1983) (noting that one of the primary Congressional purposes in establishing the comprehensive LDR program was to "compel generators to internalize the costs of disposal and treatment of hazardous wastes.") In addition, a primary goal of Congress in establishing the land disposal restrictions program was to ensure that hazardous wastes are managed properly in the first instance, thereby reducing the need for costly corrective action. See RCRA section 1003(5); H.Rep. 98–198, Part 1, 98th Cong., 1st Sess. at 30, 32 (1983). Remediation wastes are, however, waste which, by definition, were not managed properly "in the first instance," and for which corrective action is now necessary.

That Congress recognized, but did not fully resolve, the dilemma of applying preventive standards to remediation wastes when enacting remediation-related amendments to RCRA in 1984 is not surprising, since EPA's principal remedial programs, under CERCLA and RCRA subtitle C, were at that time in their early stages of development or sharply limited in scope.

Since 1984, the Agency also has struggled to determine exactly how the regulatory units described in section 3004(k) should apply to remediation situations, where the areas in question do not easily fit within the unit definitions referenced in that provision, and where the unit concepts themselves were designed with as-generated and managed wastes in mind. For example, a RCRA permitted disposal facility managing hazardous wastes will typically have one or more well-defined land areas constructed and operated for the purpose of a single type of hazardous waste land disposal practice (e.g., landfilling of containers, or treatment of liquid hazardous wastes in a surface impoundment). A typical RCRA corrective action, in contrast, involves scattered and diverse land and/or water areas with both "hot spots" of wastes and highly contaminated soils and generally dispersed contamination. In addition, such areas typically include a variety of historical land disposal practices, many of which are far different from the management practices authorized for ongoing hazardous waste management in land disposal units (*e.g.*, pipeline leaks, product spills, dewatered surface impoundments). Since 1988, the Agency has used the definition of "landfill" to describe these remediation land areas simply because EPA had no unit definition that applied to these areas, and the "landfill" definition served as a catchall. See 55 FR 8760 (March 8, 1990). With today's rule, EPA intends to provide a more appropriate set of standards and definitions tailored to remediation areas.

Today's rule addresses the ambiguity in the application of RCRA preventive standards to remediation wastes generated at RCRA facilities, especially the LDRs. Because Congress did not provide direction under section 3004(k) on how the LDRs should apply to areas that are used solely for the management of remediation wastes, and consequently, do not fit within the unit definitions constructed by EPA for as-generated wastes, EPA interprets the definition of "land disposal" in section 3004(k) to exclude the placement of remediation waste in CAMUs under today's rule. EPA believes that this interpretation is reasonable since remedial areas are not a listed regulatory unit under section 3004(k), because Congress recognized that the application of LDRs to remediation wastes might require a different framework than that developed for the application to as-generated wastes, and, as discussed above, because the direct application of preventive standards to remediation wastes is often inappropriate and counterproductive.

Today's rule is thus designed to address RCRA's ambiguity with respect to remediation wastes in a manner which best meets the twin Congressional objectives of minimizing reliance on land disposal by encouraging proper treatment of hazardous remediation wastes and by facilitating prompt and effective corrective action at RCRA facilities. As a result of today's rule, remediation wastes placed in CAMUs will not be subject to LDRs or other hazardous waste disposal requirements.

III. Section-by-Section Analysis

A. Definitions

Today's final rule defines three key terms related to the implementation of CAMUs: Corrective Action Management Unit, Facility, and Remediation Wastes. In addition, certain conforming changes have been made to several § 260.10 and § 270.2 definitions, to § 264.3, to § 264.101, to § 265.1, and to § 268.2.

1. Corrective Action Management Unit (CAMU) (§ 260.10 and § 270.2)

The proposed rule defined CAMU as "a contiguous area within a facility as designated by the Regional Administrator[1] for the purpose of implementing corrective action requirements of this subpart, which is contaminated by hazardous wastes (including hazardous constituents), and which may contain discrete, engineered land-based sub-units." The definition of CAMU in today's final rule modifies the proposed definition in several ways:

(1) The final definition is promulgated under § 260.10, rather than under § 264.501, as proposed;

(2) The definition specifies that CAMUs may be used for corrective actions under section 3008(h) orders, as well as at permitted facilities under section 3004(u);

(3) The new definition does not specify CAMUs as being contiguous areas of contamination; and

(4) The definition specifies that CAMUs are to be used for the purposes of managing remediation wastes only.

These changes to the proposed definition are intended to clarify and provide a more complete description of what a CAMU is and how it may affect management of wastes in the context of implementing corrective actions. As such, the definition includes certain provisions that were not included in the actual definition as proposed, but were presented in the proposed regulations for CAMUs under § 264.551(c). The definition also reflects the substantive changes that have been made in "expanding" the CAMU concept under today's final rule. Each of these modifications from the original proposed CAMU definition is discussed below.

The definition of CAMU has been finalized in § 260.10 and in § 270.2, rather than under § 264.501. As proposed, § 264.501 specified definitions that would apply only to subpart S of 40 CFR part 264. However, EPA is promulgating in today's rule only the CAMU and temporary unit provisions of subpart S. Rather than create a section under subpart S that would only contain the definition of CAMU, EPA believes that it will be clearer and more straightforward to codify this definition under the general definitions sections of parts 260 and 270. These definitions apply to the part 264 CAMU provisions, as well as other parts of 40 CFR. However, the new locations of the CAMU definition will not affect either the applicability or the substance of the definition.

In the proposal, the regulations for CAMUs did not explicitly state that CAMUs could be implemented under section 3008(h) orders, as well as at permitted facilities under section 3004(u) authority. However, as stated in the July 27, 1990 preamble, EPA intended that the subpart S regulations would be implemented at interim status facilities through section 3008(h) orders, as well as at permitted facilities. 55 FR 30802. In addition, the general applicability of subpart S to section 3008(h) orders was raised as a question by several commenters to the proposal. Thus, in order to make clear that the final CAMU provisions will apply under section 3008(h) and section 3004(u), the CAMU definition contains an explicit reference to 3008(h) orders.

As mentioned earlier, the definition in today's final rule does not specify that a CAMU is a "contiguous area of contamination". This change reflects the basic change in the nature of the CAMU as related to the applicability of LDRs. Under the proposal, the CAMU was in essence linked to where existing contamination was located at the facility. As provided in the final rule, a CAMU instead is linked primarily to where remediation wastes are to be managed. In other words, decisions for designation of CAMUs will now be more related to the function and purpose they will serve in facilitating management of remediation wastes during cleanup, rather than to the areal extent and "contiguousness" of surficial contamination at the facility prior to cleanup. Although these changes to the CAMU definition have provided the discretion for the Regional Administrator to include uncontaminated land areas in a CAMU, the decision factors specified in § 264.552(c) (see § 264.552(c)(3), in particular) make clear that inclusion of uncontaminated areas in a CAMU is only allowed when necessary to achieve the overall remedial goals for the facility, and when such inclusion will enhance the protectiveness of the remedial actions.

In addition to other advantages, this new definition will eliminate many of the drawbacks of the proposed definition that were identified by numerous commenters. For example, many commenters requested clarification as to what was to be considered "contaminated" or "uncontaminated" in the context of defining the areal extent of a CAMU. Such issues could potentially have been contentious and technically difficult to resolve. Likewise, some commenters suggested that the remedial advantages provided by CAMUs would actually create an incentive to contaminate additional areas of facilities. These issues have been effectively eliminated by the final CAMU definition.

The proposed definition also stated that CAMUs could contain "discrete, engineered land-based sub-units". This was intended to make clear that contaminated areas could include solid waste management units (e.g., pre-RCRA impoundments or landfills); it also provided that remediation within a CAMU could involve construction of land-based "sub-units", where wastes could be managed during remediation, or left in place with long-term monitoring and maintenance. Although such sub-units might still be located within a CAMU, today's definition does not explicitly refer to them because, as explained above, CAMUs are now designated with regard to where remedial wastes will be managed, rather than what areas of the facility are "contaminated".

As mentioned in section II of this preamble, EPA outlined in the subpart S proposal an alternative regulatory option for CAMUs that would have broadened the concept in ways similar to today's final CAMU provisions. In addition, EPA received many comments that identified the shortcomings of the proposed CAMU, as well as the advantages that an expanded CAMU would provide in implementing protective, timely and cost-effective remedies. The results of the RIA developed for this rulemaking, in the Agency's estimation, corroborate many of these comments. As a policy matter, therefore, EPA believes that its decision to promulgate today's CAMU definition is amply justified. As explained in detail in section II of this preamble, the Agency also believes that there is ample legal support for today's expanded CAMU definition.

The final CAMU definition also specifies that CAMUs must be used only for the management of remediation wastes. One commenter on the proposal requested that the Agency clarify that only wastes that are generated as part of a facility's corrective action cleanup would be eligible for management within a CAMU. The commenter noted that this restriction was explicitly provided in the temporary unit provisions of the proposal. The Agency's intention, under both the proposed CAMU provisions and under today's final rule is that only wastes that are generated pursuant to implementing corrective actions for a facility can be

[1] The term Regional Administrator, as used in today's rule, refers to the EPA Regional Administrator or the State Hazardous Waste Program Director (or equivalent) in a State authorized for this rule.

managed within a CAMU. Today's CAMU definition thus clarifies this important limitation, by specifying that a CAMU "shall only be used for the management of remediation wastes." (See the following discussion of the definition of remediation waste).

2. Facility for the Purpose of Corrective Action (§ 260.10)

As clarification, today's rule codifies, in § 260.10, the definition of facility for the purposes of corrective action. Under this definition, a facility is "all contiguous property under the control of the owner or operator seeking a Subtitle C permit." This definition is the same as was proposed in the July, 1990 proposal, presented in the First Codification Rule (50 FR 28702, Codification Rule, July 15, 1985), and upheld in a decision of the U.S. District Court of Appeals (*United Technologies v. U.S. EPA*, 821 F.2d 714 (DC Cir. 1987).

As explained in the proposed rule and in the Codification Rule, this definition applies only in the context of implementing HSWA-mandated corrective actions. As such, this definition is distinct from the other facility definition in § 260.10 that is narrower in scope, and applies to the non-corrective-action-related provisions of RCRA subtitle C. EPA believes that codifying this definition is important to the clear understanding of today's CAMU and temporary unit rules. Both types of units are restricted to managing wastes that are generated in implementing corrective action at a "facility". Finalizing this facility definition, therefore, will ensure that this key concept is clear within the definitions of CAMU and remediation wastes (see following discussion).

Although the July, 1990 definition of facility did not explicitly state that this definition applied to facilities undergoing corrective action pursuant to section 3008(h) authority, as with the definition of CAMU, this definition was always intended to apply both to facilities with a RCRA permit and to those operating under interim status. This has been clarified by adding a phrase stating that this definition also applies to facilities implementing corrective action under section 3008(h).

In the July, 1990 proposal, EPA addressed several issues associated with this facility definition, including the concept of "contiguous" property, and EPA's interpretation of "owner or operator". These subsidiary issues will be addressed in the final subpart S rulemaking, and/or in subsequent guidance.

3. Remediation Wastes (§ 260.10)

Today's rule defines remediation wastes as "* * * all solid and hazardous wastes, and all media (including ground water, surface water, soils and sediments) and debris that contain listed hazardous wastes, or which themselves exhibit a hazardous waste characteristic, that are managed at a facility for the purpose of implementing corrective action requirements under § 264.101 and RCRA section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA section 3004(v) or section 3008(h) for releases beyond the facility boundary."

This new definition provides clarification as to the types of wastes that may be managed in CAMUs or temporary units. The proposed temporary unit provisions specified that such units would be used only for treatment or storage of wastes "* * * that originated within the boundary of the facility." However, a similar provision was not specified in the proposed CAMU regulations, although the Agency clearly intended that CAMUs would function only for the purpose of implementing corrective action at facilities. 55 FR 30843. One commenter, citing the language in the proposed temporary unit provisions, requested that EPA make clear that CAMUs may be used only to manage wastes that are part of implementing corrective actions under section 3004(u), 3004(v) or 3008(h) authorities. Thus, for the sake of clarity, EPA is promulgating in § 260.10 a definition for remediation wastes; both the CAMU and temporary unit sections of today's rule specify that only remediation wastes can be managed in these units.

Today's definition of remediation waste excludes "new" or as-generated wastes (either hazardous or non-hazardous) that are generated from ongoing industrial operations at a facility. In addition, remediation wastes must have originated from the facility (including waste managed as a result of section 3004(v) or section 3008(h) corrective action). Wastes generated as part of the site investigations (e.g., drilling muds, etc.) are considered to be remediation wastes.

In limiting remediation wastes to those that have "originated" from the facility, it should be clear that this term refers to wastes that originate from remedial activities at the facility, rather than where such wastes might first have been produced. For example, some facilities, such as commercial waste management facilities, may have accepted wastes from off-site, but which have subsequently contributed to contamination problems at the facility, and thus need remediation. Such waste would be considered remediation wastes for that facility when they are managed in the course of conducting corrective action requirements under § 264.101 or 3008(h).

Although the definition of remediation wastes includes non-hazardous solid wastes, it should be noted that management of such wastes would not require the designation of a CAMU or a temporary unit, since subtitle C requirements would not apply to management of those wastes.

Contaminated media in the context of this rule includes groundwater, surface water, soils and sediments that contain listed hazardous wastes or that themselves exhibit a hazardous waste characteristic. Like other remediation wastes, these media can be managed within the CAMU even if they were originally located at the facility, but outside of the CAMU, or if they were associated with a release that had migrated beyond the facility boundary, and that was being remediated under section 3004(v) or section 3008(h) authorities. Debris, for the purpose of this rule, is as defined in § 268.2. (See 57 FR 37270).

The definition of remediation wastes does not include wastes from outside the facility undergoing remediation, other than those associated with off-site releases being managed under section 3004(v) or section 3008(h). If wastes are transported to the facility from an outside source, they would not be considered remediation waste for that facility, regardless of whether those wastes were the result of some type of remedial action conducted at another facility. Therefore, those wastes could not be managed in a temporary unit or in a CAMU at that facility. Similarly, wastes that are excavated, transported to an off-site treatment facility, and returned to the facility are not remediation wastes under this rule.

EPA believes that restricting the definition of remediation wastes in today's rule is important to preserving the concept of CAMUs and temporary units as units to be used only for the purpose of remediating the facility at which these units are located. Wastes which leave a facility for off-site treatment are no longer subject to direct oversight, and it may be difficult to ensure that the wastes that are returned after treatment are actually the same wastes that left the facility originally. Fundamentally, the Agency is concerned that allowing wastes from

off-site to be managed in CAMUs or temporary units could create an undesirable incentive for such units to "attract" wastes that are not legitimately linked to the objective of remediating that facility.

4. Conforming Changes

a. *Conforming change to § 264.101.* The proposed subpart S regulations were to have replaced the current corrective action regulatory provisions codified in § 264.101. However, since the Agency is not finalizing all of subpart S in today's final rule, § 264.101 is being retained and the amendment to § 264.101 promulgated today creates a link between the general corrective action requirements of § 264.101 and the CAMU and temporary unit provisions of subpart S. This is necessary to make clear that these sections together now constitute the regulatory provisions for corrective action under sections 3004(u) and (v), and section 3008(h).

b. *Conforming changes to § 264.3 and § 265.1.* As discussed earlier in this section of today's preamble, the definitions of CAMU and remediation waste specify, as a clarification of the subpart S proposal, that the final CAMU and temporary unit provisions apply to interim status facilities undergoing corrective action according to section 3008(h) authority, as well as to permitted facilities. In effect, these corrective action provisions promulgated under subpart S of part 264 will be the only part 264 requirements that actually apply to interim status facilities; heretofore, technical requirements for interim status facilities were specified only under part 265. Therefore, conforming changes are necessary for the regulatory provisions of § 264.3, so as to address the relationship of the part 264 standards to interim status facilities, and to § 265.1, so as to specify the applicability of part 265 regulations. In effect, these two conforming changes create a bridge between the interim status regulations and the regulations for permitted facilities, for the purpose of implementing today's CAMU and temporary unit regulations.

c. *Conforming changes to Definitions in § 260.10, § 268.2 and § 270.2.* Today's rules also make several conforming changes to existing regulatory definitions that are specified in various sections of the subtitle C regulations. The specific definitions being modified are:

- The definition of "disposal facility" in § 260.10 and § 270.2;
- The definition of "land disposal" in § 268.2;
- The definition of "landfill" in § 260.10; and
- The definition of "miscellaneous units" in § 260.10.

The changes to the definitions of "disposal facility" and "land disposal" are for the purpose of clarifying how LDRs apply to CAMUs. As discussed earlier in this preamble, LDRs will not apply to hazardous remediation wastes that are placed into a CAMU, since such placement is not considered "land disposal" for the purposes of section 3004(k). These existing definitions must therefore be modified to reflect this important concept. The conforming changes to the definitions of "landfill" and "miscellaneous units" are both intended to clarify that such units do not include CAMUs.

B. Corrective Action Management Units (CAMUs) (§ 264.552)

1. General Authority (§ 264.552(a))

The general authority for allowing the Regional Administrator to designate a CAMU for remedial purposes is presented in § 264.552(a). This provision is analogous to the CAMU provision specified at § 264.551(c) in the proposed subpart S regulations. This final provision specifies, for clarification, that CAMUs may be designated for purposes of implementing corrective action under section 3008(h) authority, as well as at permitted facilities under section 3004(u) and § 264.101. This explicit reference to section 3008(h) order authority conforms with similar references in other provisions of today's rule (see, e.g., the definitions of CAMU and remediation waste). The provisions of today's rule that delineate the relationship of the subpart S regulations to section 3008(h) orders are in response to commenters who requested a general clarification of the relationship of the subpart S proposed rules to section 3008(h) orders.

In the July, 1990 proposed rule, CAMUs were identified as areas of contiguous contamination. Today's rule in § 264.552(a) has eliminated the provision that a CAMU must be a contiguously contaminated area of a facility. As explained earlier in today's preamble (see discussion of the CAMU definition in § 260.10), the expanded CAMU concept is linked primarily to where remediation wastes will be managed at the facility, rather than where there may be contiguous, surficially contaminated land areas prior to cleanup. Specific criteria regarding how CAMUs must be designated, and how the existence of contaminated land areas may affect CAMU decisions, are specified under § 264.552(c) of today's rule.

The language of § 264.552(a) specifies that the Regional Administrator may designate a CAMU "in accordance with the requirements of this section" (i.e., 264.552). This language, which did not appear in the proposal, simply clarifies that the requirements for CAMUs have been consolidated into a separate section. In the proposed rule, CAMUs were addressed as part of a section that dealt generally with management of hazardous wastes.

Section 264.552(a) also specifies that one or more CAMUs may be designated at a facility. This statement is included for clarification; the Agency received a number of comments on the proposal which queried how CAMUs might address situations where several non-contiguous areas of a facility were contaminated. In addition, given the expanded CAMU concept promulgated in today's rule, EPA believes that this explicit statement in the CAMU regulations will be useful in clarifying that two or more CAMUs may be necessary and appropriate to implementing remedial solutions for a given facility.

As discussed earlier in this preamble, the CAMU provisions in today's final rule codify an expanded version of the CAMU concept that was presented in the proposed subpart S rule. In particular, § 264.552(a) (1) and (2) specify the essential regulatory basis for the expanded CAMU:

(1) Placement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes; and

(2) Consolidation or placement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to MTRs.

These provisions are derived from those in the proposed CAMU regulations. The primary difference reflected in today's rule is that placement "into" a CAMU does not trigger LDRs or MTRs, whereas the proposal stated only that those requirements would not apply when hazardous wastes were moved or consolidated within the CAMU. This important distinction primarily derives from the fact that under these final CAMU rules, placement of hazardous remediation wastes into a CAMU is not "land disposal," under RCRA section 3004(k). A detailed explanation of the Agency's rationale for adopting this expanded CAMU concept is presented in section II of this preamble.

The final CAMU regulations will greatly enhance the waste management flexibility provided by CAMUs, and

thereby will enhance EPA's ability to select and implement effective, protective, reliable and cost-effective remedies for RCRA facilities. These general conclusions regarding the positive remedial results that the CAMU will provide are supported by the preliminary analyses developed by the Agency that were made available for public review and comment as part of this rulemaking process (57 FR 48195 (Oct. 22, 1992)), and that are summarized in section VIII of today's preamble.

The following is a discussion of some specific waste management scenarios (and limitations) that will be operative under today's CAMU provisions.

a. As with the proposed CAMU, movement and consolidation of remediation wastes within a designated CAMU will not be subject to LDRs or other hazardous wasteland disposal unit requirements. Likewise, the CAMU would not be subject to MTRs, since it is not a landfill, surface impoundment or waste pile and thus is not subject to MTRs under sections 3004(o) and 3015. (See e.g., § 264.301(c)).

b. Placement of remediation wastes into a CAMU from an area or unit at the facility, but outside the CAMU, will not trigger LDRs or MTRs, for the reasons cited above.

c. Movement and subsequent placement of remediation wastes from one CAMU at a facility into another CAMU at the facility will also not trigger LDRs or MTRs.

d. Excavation of remediation wastes from a CAMU, and placement of those wastes into a land-based unit that is not a CAMU (either at the facility or off-site) will be subject to applicable LDRs and MTRs.

e. Excavation of remediation wastes from a CAMU, treatment on-site in another unit (such as a tank, temporary unit or an incinerator), and redeposition of those wastes or residuals into the CAMU will not trigger LDRs or MTRs.

f. Non-land-based units, such as tanks, may be physically located within the boundaries of a CAMU. However, the tank will not actually be a part of the CAMU; it would maintain its separate regulatory identity, and all applicable subtitle C requirements will continue to apply to the tank.

g. Temporary units (as provided under § 264.553 of today's rule) can also be located either inside or outside the physical boundaries of a CAMU. However, such location will not affect the requirements that apply to the temporary unit, for the same reasons as for non-temporary tanks or container storage areas. (See further discussion of the relationship between TUs and CAMUs in section III.C.)

In addition to the waste management activities outlined above, under today's CAMU rule, land-based waste management activities within a CAMU that may otherwise be subject to unit-specific standards under part 264 or 265, may be considered as part of the CAMU, rather than as a distinct and separate "unit". For example, wastes are often excavated and staged in piles before being transported to a treatment unit. Under a CAMU, the area where the wastes are piled would not be considered a separate "waste pile" unit for RCRA purposes; rather, the Regional Administrator will specify technical standards for that area of the CAMU (e.g., liners, wind dispersion controls, closure requirements) according to the decision criteria in § 264.552(c). Similarly, areas of a CAMU could also be used for land-based treatment processes, such as bioremediation systems that involve structures or equipment to maintain optimal treatment conditions.

2. Inclusion of Regulated Units Into CAMUs (§ 264.552(b))

Given the remedial flexibility afforded by the CAMU provision in today's final rule, EPA anticipates that there may be situations where a CAMU would be useful in promoting effective remedial actions involving "regulated units", as well as SWMUs and other contaminated areas of a facility. Regulated units, as defined in § 264.90(a)(2), are landfills, surface impoundments, waste piles and land treatment units that received hazardous wastes after July 26, 1982. These units are subject to full subtitle C design, operating, closure and post-closure, and financial responsibility requirements under subparts F, G and H, and the unit specific requirements of part 264 or 265. Regulated units thus have a well defined regulatory identity, and can be either operating, closing, or closed units.

Although the 1990 CAMU regulations, as proposed, provided for the incorporation of regulated units into the corrective action remedy at the facility (see proposed § 264.526(c)), the proposal did not explicitly address how and under what circumstance regulated units could be incorporated into CAMUs. One commenter on the proposal suggested that regulated units should be able to be included within CAMUs, if it were to make practical sense. Another commenter suggested that, while it might be advantageous to include one regulated unit within a CAMU, allowing more than one regulated unit to be included within a CAMU could create improper incentives for owner/operators to mismanage wastes so as to create contamination between regulated units, and thereby obtain a larger CAMU. The same commenter also argued that all permitted regulated units should remain separate units throughout the corrective action.

EPA believes that in certain circumstances, inclusion of one or more regulated units as part of a CAMU may be appropriate, and may enhance implementation of sensible remedial actions for a facility. One example could involve a situation where a closing regulated unit (e.g., a surface impoundment) contained a volume of hazardous waste sludges. Under the existing subtitle C closure regulations, the owner/operator could be required to remediate the surface impoundment (e.g., by removing and treating some or all of the sludges). However, by designating the surface impoundment as a CAMU or as part of a CAMU, EPA could allow treatment of the sludges and redeposition of the treatment residuals back into the impoundment without triggering LDRs. Thus, use of a CAMU could provide for more flexibility in selecting among effective and protective waste management options for closing regulated units.

Another example might be a facility undergoing remediation, that also includes a closing regulated landfill unit that was constructed in accordance with the RCRA minimum technology standards. By designating the regulated unit as a CAMU or as part of a CAMU, remediation wastes from elsewhere at the facility could be placed into the unit, which would then be closed. Thus, use of this existing MTR unit would be a highly protective, cost-effective, and expeditious remedial solution for the facility.

EPA believes that the Regional Administrator should have the discretion, in certain well defined circumstances, to designate a regulated unit as a CAMU, or to include a regulated unit as part of a larger CAMU. Today's final rule provides this authority, under § 264.552(b). In addition, this provision specifies two important limitations to this authority. First, only closed or closing units (i.e., those units required to begin the closure process under § 264.113 or § 265.113), would be able to be so designated. Operating regulated units, including regulated units continuing to operate under delay of closure provisions (in § 264.113 or § 265.113), would not be eligible for designation as CAMUs. Such units will continue to receive and manage non-remediation wastes, and

EPA does not believe that designating, as a CAMU, a regulated unit that would subsequently continue operating, is consistent with the general concept of a CAMU being a unit that functions solely for the purpose of facilitating management of remediation wastes.

Second, the Regional Administrator will have the authority to designate a regulated unit as a CAMU, or as a part of a larger CAMU, only if doing so will enhance implementation of an effective, protective and reliable remedy for the facility (see § 264.552(b)(1)(ii)). As illustrated in the examples described above, EPA believes that there may be a number of situations where this would be the case. This requirement is consistent with the overall objective of CAMUs in implementing corrective actions, as outlined in the decision criteria for CAMUs specified in today's rule (see § 264.552(c)).

Today's rule also provides that for any regulated unit that is designated by the Regional Administrator as a CAMU or as part of a CAMU, the applicable part 264 or 265 ground-water monitoring, closure and post-closure, and financial responsibility requirements would continue to apply to the unit as before. (See § 264.552(b)(2).) Inclusion of a regulated unit within a larger CAMU, however, would not cause the entire CAMU to become subject to the standards applicable to the regulated unit. In this case, the part 264 and 265 requirements would apply only to that portion of the CAMU that was originally the regulated unit.

EPA believes that maintaining the applicability of part 264 or 265 standards to regulated units that are included in CAMUs is a logical and conservative approach, which will provide substantial remedial benefits while ensuring that the stringent prevention-oriented requirements of parts 264 and 265 will continue to apply to such units.

EPA expects, on the other hand, that there could be situations in which it would be appropriate in remediating a facility to include a regulated unit in a CAMU, but where it would not make sense to continue treating that specific portion of the CAMU separately according to the applicable part 264 or 265 regulated unit standards. In some situations, therefore, it might be sensible to allow the Regional Administrator the discretion to prescribe requirements for ground-water monitoring and closure/post closure for that portion of the CAMU in the context of the overall remediation of the CAMU, rather than continuing to strictly apply the part 264 or 265 requirements. However, there are a number of issues associated with this particular scenario that EPA believes merit further consideration, and thus EPA has not, in this final rule, provided for such discretion. However, the Agency intends to address this issue and request comment in an upcoming proposed rule addressing changes to certain RCRA closure regulations for regulated units, entitled "Standards Applicable to Owners and Operators of Closed and Closing Hazardous Waste Management Units; Post-Closure Permit Requirement; Definition of Unit for Closure; Closure Process."

In situations where regulated units are located within an area that has been designated as a CAMU, but the regulated unit will not be used for remedial purposes and was therefore not designated part of the CAMU, the regulated unit will remain a distinct and separate unit subject to all applicable subtitle C requirements.

For situations where a regulated unit is designated as or is incorporated into a CAMU, issues may arise as to the respective roles of EPA and the State with regard to oversight and enforcement of part 264 or 265 standards that remain applicable to that portion of the CAMU. As a general rule, the State would retain implementation responsibility for the State analogues to parts 264 and 265, that continue to apply with respect to that area of the CAMU that, prior to the CAMU designation, was identified by the State as the regulated unit. Further discussion of Federal and State roles in implementing CAMUs, and this role in particular, is presented in section IV.C. of this preamble.

3. Decision Criteria for CAMU Designation (§ 264.552(c))

Section 264.552(c) specifies decision criteria which will apply to CAMUs and which will be the basis for the Regional Administrator (RA) to make CAMU determinations. These criteria in today's rule are either clarifications of the decision factors for CAMUs in the proposed rule (in § 264.551(c)(3)) or are outgrowths of the proposed subpart S remedy selection decision framework (in § 264.525(a)–(c)).

In the proposed subpart S, EPA identified four main factors that an RA would consider in designating a CAMU. (Sections 264.551(c)(3)(i)–(iv), as proposed.) In addition, under the proposal, CAMUs would have been subject to the overall remedy selection decision framework. As proposed, the remedy selection decision framework presented four standards that remedies must meet, five additional decision factors, and six factors for review in setting the remedy schedule. (Sections 264.525(a)–(c), as proposed.) A key element of a selected remedy is the decision as to how wastes are to be managed during remediation. The CAMU, as promulgated in today's rule, is an important concept in implementing remediation waste management. Therefore, because the remedy selection standards and factors proposed in subpart S are not being finalized today, the Agency believes it is necessary to explicitly incorporate or to capture the intent of several of the proposed rule remedy selection factors in today's rule so as to guide CAMU designations. A number of commenters voiced support for the remedy selection standards and factors. One commenter stated that EPA should retain the factors in the final rule because they are a reasonable and comprehensive mix of considerations. The specific factors addressed in today's rule are discussed under each criterion as applicable.

Of the four CAMU decision factors presented in the July, 1990 proposal, three are not explicitly delineated in this final rule (only the second factor remains). (See proposed § 264.551(c)(3)(i), (iii), and (iv).) The first factor specified in the proposal was that the RA consider the nature, extent, and location of surficial contamination at the facility. As mentioned in today's preamble discussion of the CAMU definition, designation of a CAMU is not determined by the presence of contiguously contaminated areas at the facility. Rather, CAMUs will be designated according to where remediation waste management will occur at the facility. Therefore, although the existing contamination may in some cases be relevant to CAMU decisions (see discussion of the third CAMU decision criterion, § 264.552(c)(3)), there is no longer a need for a specific provision to dictate CAMU boundaries according to the presence of surficial contamination.

The third CAMU consideration in the proposal was that the RA would consider the practicability of alternative remedial approaches. This factor was originally included, because, in general, remedial alternatives which did not employ CAMUs would involve two basic choices—in situ remediation or excavation and treatment to best demonstrate available technology (BDAT) levels. In some cases, these alternatives might have been considered impracticable by the RA. However, given today's expanded CAMU definition, and the increased variety of remedial options that will be enabled under this final rule, EPA believes that CAMU decisions will be more focused on selecting the most appropriate

remedial alternative(s) for the facility from a wide range of potentially viable approaches, rather than choosing between CAMU vs. non-CAMU options. The decision criteria in today's rule provide a more comprehensive decision framework for CAMUs than the proposal; thus the third general factor proposed in § 264.551(c)(3)(iii) is unnecessary and has been deleted in today's rule.

The fourth factor presented in the July, 1990 proposal was to allow the RA to consider "other relevant factors" in designating a CAMU. Several commenters requested that the Agency clarify what will be considered by the Regional Administrator in the designation of a CAMU. They requested that the Agency provide more information on the specific criteria that will be used to determine a CAMU designation and that these criteria be promulgated in the final regulation. The Agency agrees that replacing this general catch-all consideration with the more focused criteria presented today will better guide the designation of CAMUs. The Agency is therefore promulgating, in § 264.552(c) of today's rule, the more specific criteria for designating CAMUs.

The RA will consider each of the decision criteria under § 264.552(c) in designating a CAMU. These decision criteria are intended to clarify the objectives that CAMUs should serve, and the limitations that apply to their scope and use. The RA will document the rationale for designating a CAMU and will explain the basis for such designation. Such rationale will be incorporated as part of the permit or order modification documentation, or in the remedy selection documentation under a new order for that facility and will be available to the public (§ 264.552(f)). Documentation of CAMU decisions is analogous to the documentation the Agency must currently make to support the selection of a remedy. Therefore, if a CAMU is selected as part of a final remedy, such an explanation would be incorporated into the Statement of Basis for that remedy (See OSWER Directive Number: 9902.6). The rationale for a CAMU decision will generally address only those criteria that are considered determinative for a given CAMU designation. For example, when a CAMU includes uncontaminated land on which remediation waste management will occur, the rationale supporting this inclusion will be specified. However, if remediation wastes will only be managed on contaminated land as defined by the CAMU, this criterion need not be addressed.

Section 264.552(c)(1): Facilitation of Reliable, Effective, Protective, and Cost-Effective Remedies.

The first decision criterion requires that the Regional Administrator determine that the CAMU will facilitate the implementation of a reliable, effective, protective, and cost-effective remedy. This factor was specified in the July, 1990 proposal as a CAMU determination factor. (§ 264.551(c)(3)(ii)(B), as proposed.) No comments were received specifically on this factor as proposed. Therefore, the Agency is finalizing this factor as a criterion. By including this criterion, the Agency is emphasizing that a CAMU is not intended as a mechanism that will undercut the protectiveness of remedies; rather, CAMUs will facilitate the implementation of more reliable, effective, protective, and cost-effective remedies. If an owner/operator cannot provide information to support that a CAMU will result in remediation activities with these qualities, it will not be designated by the Regional Administrator. The Agency does not intend that evaluation of this CAMU decision criterion will require a detailed cost/benefit or other quantitative analyses. Protectiveness, effectiveness, reliability and cost information provided by the owner/operator will be considered along with other relevant information in making CAMU decisions.

Section 264.552(c)(2): Risks During Remediation

The second decision criterion specifies that remediation waste management associated with CAMUs cannot create unacceptable risks to human health or the environment from exposure to hazardous wastes or hazardous constituents. The basis for this factor is the remedy selection decision factor addressing "short-term effectiveness" (§ 264.525(b)(3)) as presented in the July, 1990 proposal. Remedies will often involve management, including treatment, storage or disposal, of large volumes of wastes that could potentially lead to exposure from windblown particulates, air emissions during excavation and transportation, or other short-term risks due to the implementation of CAMUs in densely populated areas, or where waste characteristics are such that risks to workers are high and special protective measures are needed. Since CAMUs are likely to actually increase the amounts of wastes that are remediated, this provision is intended to ensure that remediation waste management activities are conducted so as to control short-term risks that could potentially occur from remedial activities. This factor will ensure that potential short-term risks from remediation activities will be carefully examined as part of any CAMU designation, and will be carefully controlled during remedy implementation.

In response to a commenter who requested clarification, consideration of this criterion does not require a quantitative risk assessment. As with the other criteria presented today, qualitative assessments will generally be sufficient unless the RA deems that more quantitative data are necessary.

Several commenters noted that the short-term effectiveness remedy decision factor in the proposal, and the proposed remedy selection standard of protectiveness of human health and the environment, are redundant. The first decision criterion in today's rule is meant to embody the general RCRA mandate of protection of human health and the environment by including the goal of facilitating protectiveness in CAMU designations. However, even though there may be some overlap between some of the other criteria finalized today and the general qualities of effectiveness, protectiveness, reliability and cost-effectiveness stated in the first criterion, both the general criterion and the clarification of particular aspects of CAMUs under the specific criteria are important and necessary. The general criterion specifies the critical objective of the decision, while the more specific criteria clarify the Agency's intent regarding particular important aspects of the decisionmaking process for CAMUs.

Section 264.552(c)(3): Uncontaminated Areas

The third decision criterion requires the Regional Administrator to ensure that any land area of a facility that is not already contaminated (i.e., where there is no soil contamination or where wastes are not already located) will be included within a CAMU only if remediation waste management at such an area will, in the RA's opinion, be more protective than management of such wastes at contaminated areas of the facility. As explained in the preamble to the proposed subpart S, EPA believes that it is generally inadvisable to extend a CAMU to include areas of facilities that have not been environmentally degraded by historic waste management practices. The proposed rule, in fact, prohibited the inclusion of uncontaminated land areas in CAMUs. Any waste management that occurred

on such land would have needed to meet all applicable subtitle C standards, including the LDRs. However, EPA received comments on this proposed CAMU provision that offered explanations as to why, in some circumstances, the effectiveness of a remedial action could be enhanced by including such areas in CAMUs. These comments fell into two main categories. First, commenters noted that the Agency was not being realistic in the proposal by requiring contiguous contamination, because this would mean that two SWMUs with similar wastes, if separated by a small strip of uncontaminated land, could not be considered one CAMU, thereby arbitrarily limiting effective remediation options. Second, commenters noted that the Agency should allow the inclusion of uncontaminated land areas within a CAMU if such areas are necessary to implement the remedial response.

The first category of comments has been largely addressed by the expanded definition of the CAMU being finalized today. That is, movement of wastes between CAMUs will not trigger the land disposal restrictions; therefore, either or both of the SWMUs, that are separated by a small amount of uncontaminated land area, could be designated as individual CAMUs. Thus, the transfer of waste from one CAMU (or a SWMU) into a CAMU would not be limited by application of RCRA disposal requirements. However, the Agency recognizes that the CAMU is a land-based unit that must be designated by actual physical boundaries identified in the permit or order (see § 264.552(e)(1)). EPA expects that it will not always be realistic to designate a CAMU as an area that is "completely" contaminated. Small areas of uncontaminated land may often exist within a broader area of contamination. In such cases, as one commenter suggested, the RA will generally include permit or order conditions preventing contamination of this uncontaminated land during remediation.

The second category of comments addressed situations where it may be desirable to include uncontaminated land within a CAMU for the purpose of using that land for remediation waste management. For example, a SWMU at a facility may be located within a flood plain. The remedial option which makes most sense could be to move this SWMU to higher ground at the facility. However, if the higher ground was not historically "contaminated" (e.g., because it had been used only for general commercial activities), it could not have been designated under the proposal as part of a CAMU. Today's rule would allow the facility owner/operator and the Regional Administrator to consider options that involve movement of wastes out of the flood plain, and management of such wastes in an uncontaminated area of the facility.

It might also be appropriate to include small portions of uncontaminated land within a CAMU when remediation activity cannot be conducted on or within the contaminated area itself. For example, remediation of a lagoon containing sludges may not be possible within the lagoon. If the Regional Administrator included the lagoon and a small portion of uncontaminated land immediately adjacent to the lagoon within the CAMU, remediation activities, such as staging of wastes or bioremediation, could take place. This scenario may be especially relevant to facilities composed of relatively small land areas, where there may be few options as to where remedial activities can be conducted.

The Agency agrees with commenters that the situations discussed above are realistic and today's rule allows the RA to consider such options on a case-by-case basis. To include previously uncontaminated land areas within a CAMU, for the purpose of remediation waste management, the Regional Administrator will be required to determine that such management in these areas is more protective than managing the remediation wastes in the flood plain (as in the above example) or in other areas of the facility that are "contaminated". In addition, the Agency may consider, as a part of this determination, that movement of wastes for remediation at contaminated areas of the facility could involve greater risks of exposure to human health and the environment than protective remediation options utilizing uncontaminated land directly adjacent to the contaminated area.

By specifying under this decision factor that uncontaminated areas of the facility may be included in a CAMU only when doing so is "more protective" than managing such wastes at contaminated areas of the facility, EPA does not intend that formal risk assessments or other quantitative analyses must be performed to support such decisions. As a general rule, EPA believes that more qualitative assessments of the relative protectiveness of remedial options will be sufficient to support such decisions. The Regional Administrator would have the authority, however, to require that more quantitative analyses be provided by the owner/operator, if necessary.

By clearly defining, under this decision factor, the circumstances in which uncontaminated areas of a facility may be included in a CAMU for remediation waste management purposes, EPA believes that the Agency has alleviated the concern raised in the July, 1990 proposal preamble, that uncontaminated land should not be included in a CAMU because it would frustrate the remedial purpose of the CAMU. Under today's rule, inclusion of such areas within CAMUs will be allowed only if doing so is consistent with the overall remedial objective of the CAMU and will, in fact, be more protective than management of such wastes at contaminated areas of the facility.

Section 264.552(c)(4): Minimizing Future Releases

The fourth decision criterion specifies that areas within a CAMU where wastes will remain in place after closure of the CAMU are to be managed and contained so as to minimize future releases, to the extent practicable. This is a logical outgrowth from the closure provisions that were proposed in subpart S for CAMUs. (See proposed § 264.551(c)(5)).

In the preamble to the proposed rule, the Agency stated that the closure and post-closure provisions were intended to ensure that adequate long-term controls are imposed for any wastes remaining within the CAMU. 55 FR 30844. This decision criterion is intended to make clear that the Regional Administrator must consider at the time of CAMU designation whether long-term reliability and effectiveness will be ensured through the implementation of a CAMU, particularly when it is necessary to leave wastes in place after implementation of remedial activities.

One commenter suggested that the Agency clarify the fact that final closure of the CAMU must be examined very carefully. Therefore, although this decision criterion closely parallels the closure provision for CAMUs, EPA believes that eventual closure of the CAMU is an important enough factor that it should be highlighted at the time the Regional Administrator is making the decision to designate a CAMU. Any CAMU decision must consider, as a primary objective, the long-term (i.e., post-closure) reliability and effectiveness of CAMU-related remedial actions.

Section 264.552(c)(5): Timing

The fifth decision criterion specifies that the CAMU will expedite the timing of remedy implementation, when appropriate and practicable. This criterion is an outgrowth of the

requirement in the proposed rule that, in designating a CAMU, the Regional Administrator consider whether the CAMU would benefit remediation at the facility by expediting the timing of the remedy implementation. (See proposed § 264.551(c)(3)(ii)(A)). No comments were received on this proposed CAMU decision factor. Therefore, the Agency is finalizing this factor as a CAMU designation criterion in today's rule.

The Regional Administrator is encouraged to utilize CAMUs if they will assist in eliminating unnecessary delays and will encourage a faster pace to remediation. However, it should be understood that CAMUs may not always result in remedies that take less time. By allowing for on-site waste management and use of innovative technologies, the resulting remedial actions may take longer to complete than, for example, excavating all wastes and transporting them to commercial treatment or disposal facilities. Thus, this decision criterion only requires that a CAMU expedite remedial timeframes when it is appropriate and practicable, in consideration of the other remedial objectives for the facility.

Section 264.552(c)(6): Enhancing Long-term Effectiveness

The sixth decision criterion requires the Regional Administrator to use, as appropriate, treatment technologies (including innovative technologies) to enhance the long-term effectiveness of the remedial actions at the facility by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU. This is an outgrowth from the remedy selection decision factors relating to reduction of toxicity, mobility and volume of wastes, and long-term reliability and effectiveness. (See proposed § 264.525(b)(1) and (b)(2)). It is also analogous to the preference under CERCLA for treatment-based remedies (55 FR 8666, Mar. 6, 1990). The proposed rule preamble discusses two Agency preferences supporting this criterion: (1) "As a general goal, remedies will be preferred that employ techniques, such as treatment technologies, that are capable of permanently reducing the overall degree of risk posed by the wastes and constituents at the facility;" and (2) "Source control technologies that involve treatment of wastes, or that otherwise do not rely on containment structures or systems to ensure against future releases, will be strongly preferred to those that offer more temporary or less reliable controls." (55 FR 30824). EPA believes as a general rule that long-term reliability and protectiveness of remedial activities is directly tied to effective treatment of wastes that pose future release threats.

EPA received comments requesting clarification as to whether under this decision factor, EPA was disallowing caps or other forms of containment, stabilization/fixation or other technically sound remedies. The Agency responds by stating that this criterion does not preclude remedial actions that do not employ treatment, as long as they are capable of ensuring long-term effectiveness. As a general rule, the Agency believes that treatment provides greater long-term effectiveness than containment alone, but that in certain circumstances, the Agency may consider containment to be sufficiently effective. A commenter also suggested that the Agency add a new remedy decision factor—the ability of the remedy to leave hazardous wastes in their least environmentally threatening state. EPA believes the objective of such a factor is consistent with this sixth criterion, and therefore an additional factor is not necessary.

Another commenter requested that EPA clarify that there is no relative preference between toxicity reduction, mobility reduction or volume reduction. The Agency agrees with this commenter because the decision as to which characteristic of the waste (i.e., toxicity, mobility, or volume) can be reduced will be a case-by-case determination. In some cases, for example, a reduction in volume will not be possible (e.g., with metals), however, mobility reduction may be possible. Therefore, any preference between such types of treatment will be determined by site and waste specific characteristics that will guide or limit remedial options.

One commenter stated that section 3004(u) provides no statutory basis to establish a preference for remedies that involve treatment or that otherwise do not rely on containment systems or structures. The Agency strongly disagrees with this comment. As noted in the preamble to the July 1990 proposal, EPA believes that long-term reliability of remedies is an essential element in ensuring that actions under sections 3004(u) and 3008(h) satisfy the fundamental mandate of RCRA to protect human health and the environment, and that the reduction of toxicity, mobility or volume is a primary means of achieving such long-term reliability. 55 FR 30824. Moreover, EPA's experience under the RCRA program, and the primary focus of Congress in enacting the 1984 amendments to RCRA, is that reliance on containment structures rather than treatment generally should be discouraged, since land disposal of untreated hazardous wastes cannot provide reliable protection of human health and the environment over the long term. See, e.g., RCRA section 1002(b)(7).

Another commenter noted that the factor addressing reduction in toxicity, mobility, and volume should not be applied to or should not be emphasized in situations which involve high volume, low toxicity wastes, e.g., broad area-wide contamination. As discussed earlier, the decision factor in the proposal that addressed reduction of toxicity, mobility, and volume was not intended to preclude remedial alternatives that did not employ treatment, so long as such options could ensure long-term effectiveness of the remedy. Given the example, therefore, of a situation involving large volumes of low concentration contaminated soils or other wastes, the RA would have the discretion to evaluate containment-based remedial approaches. However, the final decision as to whether treatment of such wastes is necessary and appropriate, and if so what kind of treatment should be done, will necessarily be made on a case-by-case basis.

EPA also encouraged, in the subpart S proposal, that facilities consider "utilizing emerging technologies not yet widely available which may offer significant advantages over currently available technologies." (55 FR 30825; proposed § 264.525(c)(4).) CAMUs may be particularly helpful to the implementation of effective innovative treatment technologies, which in the past have had limited application due to the waste management constraints imposed by the land disposal restrictions.

Several commenters were very supportive of EPA's encouragement of innovative technologies. One commenter, however, stated that the use of an emerging technology should not be compelled, because a particular technology may not have been field tested and may involve greater monetary and time commitment than is necessary to remediate a given facility. EPA did not intend that this criterion mandate the use of innovative technologies. However, an RA, in conjunction with the owner/operator, may decide to utilize the flexibility of the CAMU to implement an innovative technology that could not have been used given the waste management restrictions of subtitle C, most notably the LDRs. This criterion is intended to support and encourage the implementation of innovative technologies when they can

be utilized to reach the overall remediation goals at the facility.

Section 264.552(c)(7): Minimizing Land Areas Where Wastes Will Remain in Place

The seventh decision criterion requires the Regional Administrator to determine that the CAMU will minimize the land area of the facility upon which wastes will remain in place after closure, to the extent practicable. The CAMU, as presented in today's rule, will promote consolidation of remediation wastes into smaller, discrete areas of the facility, that are suitable as long-term repositories for the wastes, and which can be effectively managed and monitored over the long term.

EPA believes that the objective of minimizing the land area at which remediation wastes will remain in place at a facility after closure of the CAMU is consistent with the overall goal of achieving effective, protective remedies with long-term reliability. In some cases, broad areas of a facility (such as a series of large impoundments) could be capped without consolidation of the wastes. However, this approach could complicate monitoring for ground-water releases and could require an extensive maintenance program (e.g., for the cap and for other containment systems). In addition, as a practical matter development of the facility property (for future beneficial uses or by the owner/operator) may be less constrained if a relatively small area of the facility were dedicated to continued long-term containment of remediation wastes.

EPA believes that the objective of minimizing the land-area in which wastes will remain in place is consistent with, and complements, the other objectives for CAMUs that are expressed in the other six CAMU decision factors. In particular, it is consistent with one of the important objectives stated in the proposed subpart S regulations, which stated that "[t]he Agency intends to place special emphasis in selecting remedies on the ability of any remedial approach to provide adequate protection of human health and the environment over the long-term."(55 FR 30824) The comments received regarding long-term reliability and effectiveness did not oppose this overall objective, but raised issues as to how the Agency meant to implement it. These comments were discussed under the above criteria. With regard to this criterion, reducing the land area of wastes remaining in place, in conjunction with a reduction in toxicity, mobility, and volume, is intended to clarify this means of improving long-term effectiveness and reliability.

4. Information Required To Support CAMU Designation (§ 264.552(d))

An owner/operator must provide, as a result of facility investigations, remedial studies, or other site-specific analyses, information sufficient for the Regional Administrator to assess the decision criteria specified in § 264.552(c) as they relate to the implementation of a CAMU at a given facility. This information can be requested under the authority the RA already possesses under § 264.101.

This requirement of today's rule was not explicitly provided for in the proposed rule; under the proposal such information was to have been furnished to the RA as part of the documentation of the remedial studies (e.g., RCRA Facility Investigations, Corrective Measures Studies) required under the subpart S proposal. Since today's rule finalizes only a portion of the proposal, a specific requirement relating to submission of information to support CAMU decisions is necessary. As such, this requirement is simply an expression of the general authority under 3004(u) and 3008(h) to require information from owner/operators to support corrective action implementation decisions.

5. CAMU Requirements To Be Specified in Permits or Orders (§ 264.552(e))

The proposed subpart S CAMU provisions outlined explicit requirements for closure and post-closure of CAMUs that the Regional Administrator would be required to include in the permit or order. Some commenters on the proposal suggested that the regulation should provide a more comprehensive listing of the requirements that would have to be specified in the permit (or order). EPA agrees that a more comprehensive listing of these requirements will clarify the specific requirements that must be addressed for CAMUs in permits and orders. Thus, § 264.522(d) outlines additional features of CAMUs that will be contained in permits or orders.

Section 264.552(e)(1) clarifies that in designating a CAMU at a facility, the Regional Administrator will specify in the permit or order the actual areal extent or configuration of the CAMU. This is a logical outgrowth of one of the fundamental issues involved with designating CAMUs; that is, determining where at the facility the CAMU is to be physically located, and the specific configuration of the CAMU. EPA expects that permits and orders will generally identify the physical boundaries of CAMUs on a facility map, together with a specific description of the physical boundaries or dimensions of the CAMU.

Section 264.552(e)(2) clarifies that the permit or order will specify how remediation wastes will actually be managed in or as part of a designated CAMU, including specification of design, operating and closure requirements. This is also a logical outgrowth from the proposal. The subpart S proposal anticipated that these types of requirements would be specified for CAMUs in a permit modification as part of the overall remedy selected for the facility. Since that portion of subpart S is not being finalized in today's rule, EPA believes that it is appropriate to clearly specify in this rule that these types of requirements must be delineated in permits or orders which establish CAMUs.

As specified in § 264.552(e)(2), requirements will generally be specified for those areas of a CAMU that are to be used for treatment or storage of remediation wastes. Thus, if wastes were to be excavated and bioremediated in an enclosure located within the CAMU, the permit or order would specify the requirements for the bioremediation technology, the design and operation of any structures used for the bioremediation process, the disposition of the treatment residuals, and other associated requirements for those wastes and the areas of the CAMU to be used in managing them. However, as the regulations specify, where a treatment or storage unit separate from a CAMU is already adequately regulated under a facility permit, it would not be necessary to repeat those requirements in the CAMU provisions of the permit.

Under § 264.552(e)(3), the permit or order must also establish the ground-water monitoring requirements for each CAMU. This requirement also derives generally from the subpart S proposal; under the proposal, ground-water monitoring requirements were to be specified as part of the overall facility remedy (see proposed § 264.525(e) and § 264.526). Given that today's rule finalizes only specific portions of the proposal, the Agency believes that it is useful to specify in this rule that ground-water monitoring requirements for CAMU must be specified in the permit or order.

EPA expects that CAMUs will typically be implemented following studies of surface and subsurface contamination at the facility, conducted as part of required remedial investigations. Thus, in most cases, ground-water monitoring systems will already have been installed to

characterize releases to ground water at the facility. Section 264.552(e)(3) is intended to clarify that there will be a continuing responsibility for owner/operators to monitor ground-water quality in the vicinity of the CAMU to ensure that any releases of contaminants from within the CAMU are detected.

This provision does not address the responsibilities of the owner/operator to continue monitoring of releases that are not associated with CAMUs; nor does it address the question of whether ground-water remediation is necessary. Due to the limited scope of today's final rule, those broader remedial requirements (i.e., that are not specifically associated with CAMUs) have not been addressed. EPA expects that those requirements will be included in the final, comprehensive subpart S rulemaking.

The ground-water monitoring requirements as specified in today's rule are not detailed, specific requirements addressing the numerous technical elements of installing and operating an effective ground-water monitoring system. Rather, they provide a general standard of performance for such systems; detailed specifications or performance standards for ground-water monitoring will be specified in the permit or order, based on site-specific information and conditions.

Today's rule promulgates the provisions of the proposed rule that specified closure and post-closure requirements for CAMUs that must be incorporated in permits or orders, with few changes from the proposal. (See § 264.552(e)(4).) This rule also finalizes the decision factors to be considered in making CAMU closure decisions, as proposed. The specific closure and post-closure provisions have been reorganized for the sake of clarity and to fit within the organization of this section of today's regulation.

The only significant difference between the final and proposed closure and post-closure provisions is that today's rule identifies certain specific requirements for CAMU closure to be included in permits or orders that were not explicitly identified in the proposal. (See 264.552(d)(4)(ii)). These requirements address such closure activities as excavation, removal, treatment, capping or containment of wastes, capping of areas where wastes will remain in place, and removal and decontamination of equipment, devices, and structures used for remediation waste management. These provisions specify activities that are normally part of closure for other types of land-based units, and that would, in any case, be incidental to implementing CAMU closure activities under today's rule. This new provision is, thus, intended to clarify the specific types of activities that should be included in the permit or order encompassing CAMU closure.

6. Documentation for CAMUs (§ 264.552(f))

This provision requires the RA to document the rationale for designating a CAMU, and to make the documentation available to the public. (See also section III.B.3.) This will typically be done in a Statement of Basis in a permit, permit modification, order, or order modification. Further explanation of public participation requirements for CAMUs (and TUs) designated under orders, is presented in section IV.A. of this preamble.

7. Permit or Order Modification for CAMUs (§ 264.552(g) and § 270.42)

As outlined in the subpart S proposal, remedies tentatively selected or approved by the Regional Administrator would be incorporated into the permit according to the Agency-initiated modification procedures of § 270.41, which provide for thorough public review and comment. Thus, under the proposal, designation of a CAMU was presumed to be implemented as part of the overall remedy selection process, and incorporation of specific CAMU provisions into the permit would be done under the overall modification for the remedy (see proposed § 264.526).

Several commenters on the proposal argued that there should be a provision for allowing CAMUs to be designated earlier in the corrective action process than at the time of the permit modification for final remedy selection. These commenters elaborated that in some cases remedial activities that may precede implementation of the final remedy could be facilitated by the use of a CAMU. EPA provided for and encouraged implementation of certain remedial activities prior to final remedy selection decisions under the proposed "interim measures" provisions of the subpart S proposal (§ 264.540). A number of comments were received regarding the appropriate permit modification provisions for interim measures, with several commenters suggesting that the Agency clarify the type of permit modification (i.e., Class I, II or III) that would be used to incorporate interim measures into permits.

EPA agrees with the commenters that the regulations should explicitly provide for situations where CAMUs may be appropriate for remediation waste management prior to final remedy implementation. This is consistent with EPA's current implementation strategy for the corrective action program, which emphasizes early implementation of interim or "stabilization" measures at RCRA facilities, with relatively lesser emphasis over the next several years on pursuing "final" cleanups at all facilities.[2] Certain stabilization actions may involve extensive waste management activities, for which CAMUs may be useful and appropriate.

To facilitate early use of CAMUs designated pursuant to permits, today's final rule specifies (in § 264.552(g)) that a CAMU may be approved under an Agency-initiated modification (§ 270.41), or according to the permit modification procedures of § 270.42, for owner/operator initiated modifications. As discussed elsewhere in today's preamble, EPA is amending appendix I of § 270.42 to specify that, when incorporation of a CAMU into a permit is initiated by an owner/operator, a CAMU will generally be approved (or disapproved) according to the Class III permit modification procedures. Class III permit modifications are similar to Agency-initiated modifications in terms of the amount and type of public review and comment that is provided. EPA believes that specifying Class III modifications for CAMUs under § 270.42 is therefore consistent with the proposal, and addresses commenters' concerns that there be an explicit provision for approval of CAMUs, when appropriate, early in the corrective action process.

CAMUs may also be implemented through the use of section 3008(h) orders. Such orders will generally require the same information as required in permits under § 264.552(e). The need to approve a CAMU early in the process (e.g., to support an interim measure or "stabilization" action) will pertain to facilities subject to section 3008(h) orders, as well as permitted facilities. Thus, to implement a CAMU under an existing section 3008(h) order, the order may need to be amended to reflect the addition of the CAMU. It is the Agency's current policy that order modifications regarding remedy selection VR/AP provide a level of public participation and comment comparable to that provided for permit modifications. Section IV.A. of this preamble provides further discussion of the public participation procedures that will be used for CAMU designation under orders.

EPA notes that, in today's rule, the only mechanism for designating a

[2] Guidance on EPA's Stabilization Initiative for the RCRA Corrective Action program may be obtained by contacting the RCRA/Superfund Hotline at 1-800-424-9346.

CAMU at interim status facilities is a section 3008(h) order (or possibly a § 7003 order). The Agency recognizes that owner/operators of interim status facilities may prefer another mechanism (e.g., the closure plan approval process), which would allow accelerated cleanups to proceed outside the context of an enforcement order. While EPA acknowledges that there may be advantages to such an approach, it raises issues that are outside the scope of today's rulemaking. EPA will consider possible options as it develops the final subpart S rulemaking.

8. Effect of CAMU Designations on Other Remedy Selection Decisions (§ 264.552(h))

As is discussed earlier in this preamble, the designation of a CAMU does not change EPA's authority to address clean-up levels, media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions. This point is clarified in § 264.552(h).

C. Temporary Units (TUs) (§ 264.553)

The temporary unit provisions (§ 264.551(b)) as proposed in July, 1990, would have provided the Regional Administrator with the authority to modify 40 CFR part 264 or 265 regulatory design, operating, or closure standards for units (except incinerators and non-tank thermal treatment units) used for the storage or treatment of hazardous waste during corrective action, as long as those alternative standards were protective of human health and the environment and complied with statutory requirements. Under this proposal, the operation of such units would have been restricted to 180 days; however, the Regional Administrator could grant extensions to the operating life of such unit(s) in situations where unforeseen, temporary, and uncontrollable circumstances occurred, and where the owner/operator was actively seeking alternatives to continued use of the unit. See 55 FR 30842 (July 27, 1990). If the owner/operator failed to seek alternatives to the continued use of the temporary unit, the Agency would deny further extensions and require the owner/operator to retrofit the unit to meet applicable part 264 and part 265 standards, or remove the waste and close the unit.

In modifying 40 CFR part 264 and part 265 design, operating, and closure regulatory standards for temporary units, proposed § 264.551(b) required the Regional Administrator to consider certain factors relating to the length of time that the unit would be in place, the amount of wastes to be managed, the physical and chemical characteristics of the wastes, and the site characteristics that might influence the migration of any potential releases. The alternative standards developed based on these factors would be specified in the facility's permit or order.

Today's rule finalizes the temporary unit provisions in § 264.553, with minor changes. EPA believes that the temporary unit concept is both sensible and practical within the context of remediation, and will facilitate implementation of RCRA sections 3004(u), 3004(v), and 3008(h). EPA believes that the site-specific review and oversight that is provided in the context of investigating and making remedial decisions for corrective action allows the Agency to ensure protection of human health and the environment for short-term operation of units that may not meet the full set of standards specified for long-term use of such units under current RCRA regulations.

As a general matter, EPA believes that the flexibility provided for in today's rules for CAMUs and temporary units will also encourage the development of new and innovative treatment technologies. In particular, this rule will help further the Administrator's commitment to remove barriers to the use of bioremediation. Consistent with this goal, in the Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris proposed rule (57 FR 958, Jan. 9, 1992), the Agency solicited comment on a temporary version (57 FR 981) of the containment building (later promulgated in the final Debris Rule on 8/18/92). As proposed, these temporary containment buildings would have allowed for the treatment of hazardous waste in temporary structures that would not have been subject to the same stringent design and construction requirements of the containment building promulgated on August 18, 1992. (See 57 FR 37268). Comments on the proposal were almost universally favorable. However, EPA decided to defer a final rule on such buildings pending further analysis.

The CAMU provisions promulgated today achieve most of the objectives of the temporary containment building proposal (e.g., within a CAMU, structures may be used to implement bioremediation systems as an integral part of a remediation). The design and operating plans for such systems will be approved on a case-by-case basis within the context of other waste management activities that will take place within a CAMU. The use of bioremediation technologies as part of CAMUs should greatly expand the base of experience with the use of these treatment technologies. EPA will consider whether separate regulations for temporary containment buildings, as a distinct type of RCRA unit, should be developed in the future.

1. Scope and Applicability of Today's Rule (§ 264.553(a))

Today's rule narrows the applicability of the temporary unit provision. The proposed rule for temporary units would have allowed any unit (except incinerators and non-tank thermal treatment units) used for the treatment or storage of hazardous wastes during corrective action to be designated as a temporary unit. This would have included land-based units such as waste piles. Today's final rule specifies that only tanks and container storage units used for the treatment or storage of remediation wastes will be eligible for designation as temporary units.

EPA expects that land-based waste management activities are more effectively addressed under today's CAMU provisions. For example, under today's CAMU provisions, a waste pile could be designated as part of a CAMU. This would enable the Regional Administrator to specify protective liner requirements and other design/operating requirements for the pile that are appropriate to waste and site conditions, and the length of time the unit may operate. Further, remediation wastes could be placed into the pile without triggering LDRs, thereby enabling one of the most frequent uses of piles, the temporary staging of wastes prior to on-site treatment, or transportation to off-site disposal (in which case, the land disposal restrictions would apply). Thus, designating the pile as part of the CAMU will enable sensible and protective waste management actions to be implemented. Because the provisions already allow flexibility for waste management in land-based units, the temporary unit provisions for those units are unnecessary and thus have been omitted in the final rule.

In addition, the temporary unit provisions will not apply to subpart X units (e.g., "modu-tanks"). EPA believes that the subpart X standards already provide sufficient flexibility for the Regional Administrator to set conditions appropriate to short-term use of a miscellaneous unit at a remediation site. Also, some miscellaneous units involve land-based waste management activities; such activities could be addressed and included as part of a CAMU, in a manner similar to waste piles.

The temporary unit proposed rules specified that the Regional

Administrator could modify standards applicable to such units "solely by regulation." Since today's rules for temporary units are limited to tanks and container storage units, and since these units are not subject to the statutory MTR and LDR requirements, the phrase "solely by regulation" has been omitted from § 264.553(a) of today's final rule, as it is no longer applicable or necessary.

Several commenters requested clarification of the applicability of temporary units to corrective actions under 3008(h) orders. Section 264.553(a) of today's final rule clarifies that the temporary unit concept is applicable to these actions. This change parallels the clarifying change to the definition of CAMU, as discussed previously in this preamble.

2. Restrictions on Temporary Units (§ 264.553(b))

The proposed temporary units provisions specified that such units could only be used for treatment or storage of waste "* * * that [had] originated within the facility boundary." Commenters on the proposal requested that EPA clarify more explicitly the types of wastes that could be managed in temporary units and CAMUs. Accordingly, EPA is promulgating in today's rule a definition of remediation waste, and, in § 264.553(b)(2), a clarification that temporary units shall be used only for treatment or storage of remediation wastes. Although the definition of remediation wastes includes non-hazardous solid wastes, management of such wastes would not require the designation of a temporary unit, since subtitle C requirements would not apply to management of those wastes. The definition of remediation wastes is discussed in section II.A. of this preamble.

In addition, today's rule specifies that temporary units must be located at the facility. One individual who commented on the proposal, supported the restriction that temporary units not be allowed outside the facility, since the owner/operator would not have direct operational control over such units. EPA agrees with this commenter and believes that this requirement will ensure that the Agency maintains direct oversight control over the unit and that the alternate standards specified for the unit by the Regional Administrator are appropriate given the context of the site-specific assessment. EPA believes that allowing temporary units only within the facility is consistent with the overall intent of this provision and, thus, has finalized this requirement as proposed.

3. Temporary Unit Decision Factors (§ 264.553(c))

The proposed TU provisions specified seven factors that the Regional Administrator would consider in establishing standards for temporary units. These factors were:

(1) Length of time the unit will be in operation;

(2) Type of unit;

(3) Volumes of waste to be managed;

(4) Physical and chemical characteristics of the wastes to be managed;

(5) Potential for releases from the unit;

(6) Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential releases; and

(7) Potential for exposure of humans and environmental receptors if releases were to occur from the unit.

EPA did not receive any comment on these specific decision factors. The Agency believes that these factors are reasonable and will result in sound decisions for temporary units; these decision factors have, therefore, been finalized as proposed.

4. Permit or Order Specifications for Temporary Units (§ 264.553(d))

As required under § 264.553(d), the Regional Administrator will specify requirements for temporary units in the permit or order. These requirements will include the design, operating, and closure requirements for such units, as determined by the Regional Administrator in accordance with the decision factors described above.

This section also specifies operating time limits for temporary units. The proposed provisions for temporary units specified a 180-day time limit for the operation of temporary units, with allowance for EPA to extend that time period in certain circumstances. EPA expects that in many cases 180 days would be sufficient for a temporary unit. However, EPA also recognizes that in many other cases involving the storage or treatment of large volumes of wastes, units may need to be operated for periods longer than 180 days. As argued by a number of commenters on the proposal, remediation of facilities will often be a lengthy process, and a 180-day limit for temporary units could impose an unnecessary and artificial constraint on units whose operation beyond 180 days could nevertheless be protective of human health and the environment. An example of such a unit might be a tank that is brought to a remedial site for the treatment of inorganic sludges and that meets or exceeds all part 264 requirements, except for secondary containment. The operation of that tank could be protective for considerably longer than 180 days, given frequent inspections, sound operating procedures, and extensive Agency oversight.

Many commenters argued that there should be no time limit for the operation of temporary units, and that the Regional Administrator should have the discretion to establish operational time frames for temporary units on a case-by-case basis. Other commenters believed that one to two years would be a more reasonable time limit.

EPA agrees with the commenters who argued that the proposed 180-day limit for temporary units may be unnecessarily restrictive in many cases, and would complicate the use of temporary units for potentially beneficial waste management activities, such as certain treatment systems that often require timeframes longer than 180 days. Today's rule, therefore, specifies a one-year time limit for operation of temporary units. Based on an evaluation of the comments to the proposal, EPA believes that a one-year limit for temporary units is reasonable and appropriate. Such a time limit will allow the use of temporary tanks and containers for somewhat lengthier treatment technologies (e.g., bioremediation) while assuring the protectiveness of such units. In addition, the one-year time limit confirms EPA's intent that the alternate standards only be applied to units which are truly "temporary" in this context.

At the end of the specified time limit for a temporary unit, or at the end of an extension if granted by the Regional Administrator, the owner/operator will be required to cease management of remediation wastes in the temporary unit and to initiate the closure requirements prescribed for the unit under § 264.553(d). In cases where it is necessary or desirable to continue the waste management activity that was conducted in the temporary unit, the owner/operator will be required to retrofit the unit to meet applicable part 264 or part 265 standards for that type of unit, arrange for an alternative unit in which to continue conducting the activity, or otherwise modify the remedial practices so that the unit is not used in the remediation at the facility. If the owner/operator chooses to retrofit the unit, but such changes to the unit cannot be made before the end of the extension period, the owner/operator will be required to cease management of the waste until the retrofitting has been completed. Changes to temporary units (e.g., retrofitting) or to other remedial

operations at the end of the operating time limit for a temporary unit will be subject to approval through modifications to the permit or order.

5. Time Limit Extensions for Temporary Units (§ 264.553(e))

Section 264.553(e) specifies the criteria the RA must consider prior to approving an extension to the time limit originally specified for a temporary unit.

EPA recognizes that in some cases a temporary unit may have to remain in service beyond the limit originally specified in the permit or order by the Regional Administrator due to unexpected circumstances. Today's rule finalizes the provisions for extensions as proposed in § 264.551(b)(3), with minor changes. Proposed § 264.551(b)(3) specified that an extension to the operating period originally specified for the unit could only be granted if hazardous wastes had to remain in the unit due to "unforeseen, temporary, and uncontrollable" circumstances. One commenter who suggested that the 180-day time limit was too restrictive also suggested that the regulation be revised to eliminate these criteria as a condition for approving an extension for a temporary unit. Today's final rule does not specify these criteria for the approval of an extension. EPA believes that decisions as to whether or not certain circumstances were unforeseen and uncontrollable could be difficult and contentious, could put the Agency in the position of having to speculate as to whether or not the owner/operator might have seen or might have controlled a circumstance relating to a temporary unit, and are ultimately irrelevant to the issue of the protectiveness of the unit.

Accordingly, § 264.553(e) of today's rule specifies new criteria for approval of time extensions for temporary units. These new criteria are based on an evaluation of the comments received on the proposal. One commenter expressed concern that the standards applied to temporary units may be based on the time limit originally specified for the unit and therefore may not be adequately protective of human health and the environment if the operating life of the unit were extended. EPA agrees with this comment and has specified in § 264.553(e)(1) of today's final rule that in order to grant an extension, the Regional Administrator must determine that continued operation of the unit will not pose a threat to human health and the environment. In addition, § 264.553(e)(2) specifies that the Regional Administrator must also determine that continued use of the unit is necessary to ensure the timely and efficient implementation of remedial actions at the facility. This criterion is essentially a restatement of the overall objective of temporary units and a clarification that the overall objective should be a condition for the approval of an extension. Upon approval of an extension the Regional Administrator will identify the specific time limit for the extension in the permit or order or modification to the permit or order.

Proposed § 264.551(b)(3) did not specify limits as to the time allowed under an extension or the number of extensions that could be approved. Under today's rule § 264.553(e), the Regional Administrator has the authority to grant up to a one-year time extension beyond the time limit originally specified for the unit, in cases where it is necessary to ensure timely and efficient implementation of remedial actions at the facility, and where the continued operation of the unit will not pose a threat to human health and the environment. The Regional Administrator may grant only one extension of up to one year. Based on the comments received on the proposal, EPA believes that these limits are both reasonable and appropriate, and are consistent with the Agency's intent to allow alternative standards under this provision only for truly "temporary" units. In addition, given the increased operational time limit for temporary units provided under today's rule, the need for an extension of more than one year should be eliminated. The Agency also believes that this limit to extensions will reduce the potential administrative burden that could be created by owner/operators seeking multiple extensions for temporary unit operations.

6. Permit and Order Modification Procedures (§ 264.553(f))

In the subpart S proposal EPA expected that in cases where a temporary unit is part of a selected remedy, the approval for that unit would normally be a part of the Agency-initiated major permit modification for the remedy. Similarly, in cases where a temporary unit is a part of a stabilization action or interim measure which requires a Class III modification or an Agency-initiated permit modification, the approval for that unit would also be included in the modification for that action. Thus, the language in the proposal concerning permit modifications only addressed the situation where approval for a temporary unit was included under a Class III or Agency-initiated permit modification for an overall remedy, or interim measure or stabilization action for a facility. EPA recognizes that there may be cases in which a temporary unit is not part of a larger permit modification procedure for a selected remedy, or interim measure or stabilization action (i.e., the unit will be used prior to remedy selection to handle investigation-derived waste or remediation waste generated from remedial activities that do not require a Class III or Agency-initiated permit modification). In such cases, the Agency believes that given the longer timeframes for temporary units provided for in today's rule, opportunity should be provided for the public to be informed of and participate in decisions that affect them and their communities. Thus the owner/operator of a permitted facility will be expected to request approval for a temporary unit as a Class II permit modification according to the procedures under § 270.42. EPA also recognizes, however, that there may be cases where operation of the temporary unit is necessary to contain releases or otherwise protect human health and the environment, before action is likely to be taken on a modification request. In such cases, the Regional Administrator may approve a 180-day temporary authorization for the unit upon request by the owner/operator according to the procedures under § 270.42. Today's rule modifies § 270.42 to classify permit modifications for temporary units as Class II modifications (unless otherwise addressed under a Class III or Agency-initiated permit modification).

The proposed temporary unit provision(s) specified that any extension to the operating period originally specified for a temporary unit would be processed as a Class I permit modification. One commenter suggested that such extensions should be given more thorough public review and comment than is provided by Class I permit modifications. EPA agrees, since temporary units may in some cases be used to manage large volumes of wastes, and could be a key feature of a selected remedy. In addition, the longer timeframes for temporary units allowed in today's rule support the idea of providing somewhat greater public review and comment of temporary unit decisions. Therefore, today's rule specifies that approval for extensions for temporary units that are not addressed under a Class III permit modification or are not part of an Agency-initiated permit modification, will be processed as Class II permit modifications. Section IV of this preamble provides further information regarding public participation procedures that will be used for approval of temporary units

and time extensions for temporary units pursuant to corrective action orders.

7. Documentation of Temporary Unit Designations and Time Extensions (§ 264.553(g))

Section 264.553(g) requires the Regional Administrator to document the rationale for designating a temporary unit or time extension for a temporary unit and to explain the basis for such designation. This new requirement in § 264.553(g) is intended simply to clarify and emphasize that temporary unit decisions must be documented and explained as part of the notice and comment procedures for orders and permits. The rationale for such decisions will be incorporated as part of the Statement of Basis in a permit or order modification. Documentation of temporary unit decisions is analogous to the documentation the Agency must currently make to support the selection of a remedy. Therefore, if a temporary unit is incorporated as part of a final remedy, such an explanation would be incorporated into the Statement of Basis for the remedy under a permit modification or under a new order.

IV. CAMU and TU Implementation

A. Public Participation in CAMU/TU Designations and TU Time Extensions Under Orders

The Agency is committed to providing a meaningful opportunity for the public to be informed of and participate in cleanup decisions that affect them and their communities. Public input on proposed facility-specific corrective action decisions at permitted facilities is obtained through the permit issuance and modification procedures prescribed in 40 CFR parts 124 and 270. Current Agency policy for final remedy selections at interim status facilities under corrective action orders outlines public participation procedures similar to those detailed in 40 CFR part 124. In conjunction with this rulemaking, the Agency is expanding its public participation requirements for corrective action decisions made under corrective action orders to address the proposed designation of CAMUs and temporary units.

Pursuant to this rulemaking, CAMU designations made through the permit process will generally be approved (or disapproved) according to Agency-initiated permit modifications (§ 270.41) or the Class III permit modification procedures under § 270.42 (see section III.B.7.). The designation of CAMUs or temporary units, or the granting of a time extension for a temporary unit made pursuant to a corrective action order, will follow similar public participation procedures, although modified to suit the corrective action order process. Prior to designating a CAMU or temporary unit, or approving a time extension for a temporary unit in a corrective action order, the Agency will prepare draft CAMU and/or temporary unit specifications. The Agency will then notify and provide the public with an opportunity to comment on the CAMU, temporary unit, or time extension for a temporary unit. If a public hearing is requested, the Agency will hold a hearing and provide the public with a notice of the hearing. The Agency will also consider and respond to all significant comments received by the public on the CAMU or temporary unit.

As required in the permit process, the Regional Administrator will document the rationale used to designate CAMUs (§ 264.552(f)), temporary units (§ 264.553(g)), or time extensions for temporary units (§ 264.553(g)), when such designations are made through corrective action orders. A brief discussion of the applicable decision factors used to support the creation of a CAMU or temporary unit will be included in the documentation. If the CAMU or temporary unit is proposed as part of a final remedy, such documentation can be incorporated into the Statement of Basis presenting the Agency's justification for a proposed comprehensive remedy proposal.

Under orders, a 30–45-day public comment period generally will be provided to the public to comment on the designation of a CAMU, temporary unit, or time extension for a temporary unit. However, because corrective action orders may be issued to address immediate threats, the public comment period may be reduced or eliminated if the Regional Administrator determines that even a short delay in the designation of a CAMU or temporary unit would adversely impact human health or the environment. The Agency anticipates needing to use this discretion in rare circumstances.

The Agency will provide additional guidance on public participation procedures for the designation of CAMUs and temporary units under orders. While guidance is pending, EPA will continue to use the guidance provided in RCRA Corrective Action Decisions Documents: The Statement of Basis and Response to Comments (Directive #9902.6).

B. Continuation of Permits for Corrective Action Purposes

Although EPA today is not finalizing most portions of the comprehensive proposed Subpart S rule, several issues have arisen in connection with that rule that deserve further discussion pending its completion. First, the proposed rule reflects Agency policy concerning facility-wide corrective action at RCRA facilities. As a result, EPA's Regional offices are following the proposal, where appropriate, as guidance pending development of the final rule. Several aspects of that proposal, however, require rule changes for implementation; those aspects of the proposal cannot be implemented even as guidance pending development of the final rule. Many of these rule changes are made through today's rulemaking and thus can now be implemented.

One important aspect of the proposal that EPA now believes is a clarification rather than a necessary rule change concerns the scope of the permit requirement. EPA had proposed to revise 40 CFR § 270.1 specifically to require RCRA permittees to have permits during the course of any corrective action required under the permit. Upon further review, EPA believes that this rule change, while a desirable clarification, is not absolutely necessary and that section 3004(u) of RCRA and 40 CFR 264.101(b) and 270.33 already require that RCRA facilities complete any corrective action schedule of compliance prior to termination of permit responsibilities.

The clear intent of Congress in enacting Section 3004(u) was that the price for obtaining a RCRA permit for hazardous waste management is cleanup of the entire property at which the permitted activity occurs. (See HSWA Conference Report, H. Rep. 1133, 98th Cong., 2d Sess. at 92 (1984). See also definition of facility as defined in today's rule.) Congress allowed such cleanup to occur under a schedule of compliance only where such cleanup could not be completed prior to permit issuance. As a result, section 3004(u) of RCRA (and 40 CFR 264.101) clearly require that a facility that obtains a schedule of compliance for corrective action must complete the corrective action prior to termination of permit responsibilities. Similarly, EPA's general regulations concerning schedules of compliance specify that a facility may not simply terminate its operations and thereby avoid compliance with applicable requirements (40 CFR 270.33; see also 45 FR 33310 (May 19, 1980)), including corrective action.

This means that a RCRA permitted facility that is undergoing corrective action under a schedule of compliance and that wishes to cease operations has two choices with respect to its

corrective action responsibilities. First, the facility may choose to accelerate corrective action so that it is completed at the same time as hazardous waste operations at the facility cease, § 270.33(b)(1)(i). Alternatively, where the regulated activities cease prior to termination of a permit which includes corrective action, the facility may complete corrective action under a permit schedule of compliance that extends beyond the date of cessation of hazardous waste operations, § 270.33(b)(2). In the latter case, the facility must continue to comply with applicable permit conditions and requirements, including permit renewal requirements, even though hazardous waste activities at the facility have ceased. See 45 FR 33310–11 (May 19, 1980).

As part of the comprehensive final subpart S rule, EPA will determine whether further regulatory clarification of this issue is necessary. At that time, EPA will respond to comments received on the proposed regulatory changes addressing this issue, and the related issues discussed in the preamble. See 55 FR 30846–49.

In the meantime, EPA, on a case-by-case basis, can improve the clarity of the applicability of this requirement to maintain a permit through the completion of corrective action activities at a specific facility in several ways. First, at the time of permit issuance or when the CAMU or temporary unit is incorporated into the HSWA permit, EPA can establish a schedule of compliance that reflects the responsibility of the permittee to complete corrective action under the permit, even if the permit does not specifically identify the nature or timing of the corrective actions to be required. In addition, the permit as issued or modified could include an express condition requiring the facility owner/operator to submit a permit reapplication prior to permit expiration unless and until all corrective action obligations for the facility have been completed.

C. State and Federal Implementation

1. State Authorization

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized States have primary enforcement authority.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), EPA administered the RCRA hazardous waste program in individual States until the States were formally authorized by the Agency to implement their own programs. Once a State had final authorization, it administered its hazardous waste programs entirely in lieu of EPA. The Federal RCRA requirements no longer applied in the authorized State, and EPA could not issue permits in the State for any facilities that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent and consistent authority within specified timeframes. However, the new Federal requirements did not take effect in authorized States until the States adopted them as State law.

The HSWA amendments, however, altered this system. Under section 3006(g)(l) of RCRA as amended by HSWA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed under HSWA authority take effect in authorized States at the same time that they take effect in unauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. To retain final authorization, States must still adopt HSWA-related provisions that increase the stringency of the RCRA program. However, such HSWA provisions apply in authorized States and are implemented Federally in the interim.

Today's rule is promulgated pursuant to section 3004(u), section 3004(v), and section 3005(c) of RCRA, all of which are provisions added through HSWA. (EPA will also use the standards of today's rule in implementing section 3008(h).) Therefore, the Agency is adding today's rule to Table l in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA. Because, in EPA's view, today's rule is integral to the HSWA corrective action program, EPA intends to implement it immediately in all States and territories in which the Agency now administers the HSWA section 3004(u) and (v) corrective action authorities. Thus, the rule takes effect immediately in (l) States that are unauthorized for the RCRA base program, and (2) States that are authorized for the RCRA base program, but are not yet authorized for the HSWA corrective action program. (The issue of more stringent State standards in these States is discussed in the following section.)

Today's rule does not apply in States that are authorized for the HSWA corrective action requirements. (Fifteen States now fall into this category.) Under section 3009 of RCRA, States may impose more stringent or broader regulations than the Federal program. Because the regulations promulgated today reduce regulatory requirements for certain types of waste management conducted during corrective action, EPA considers them to be less stringent than or reduce the scope of the existing Federal corrective action requirements.[3] Therefore, they will not apply in States authorized for corrective action until those States have adopted comparable provisions under their own State law. Furthermore, because today's rule is less stringent than existing corrective action requirements, authorized States are not required to adopt the rule, and States not yet authorized for corrective action are not required to include its provisions in their programs when they seek authorization.

Even though States are not required to adopt today's rulemaking, EPA strongly encourages them to do so. As already explained elsewhere in this preamble, today's rule is needed to expedite hazardous waste remediation at RCRA corrective action facilities. States are therefore urged to adopt today's rule and to submit to EPA the modification for approval on the schedule for mandatory program revisions, according to 40 CFR 271.21(e).

States are also encouraged to use existing authorities, where available, to allow comparable remedial activities prior to adopting and receiving authorization for today's rule. Some States may have authority comparable to section 7003, which allows EPA to order response action in the case of imminent and substantial endangerment to health or the environment "notwithstanding any other provision in this Act." An authorized State may use a comparable section 7003 authority to authorize activities consistent with today's rulemaking. Other States may have comparable authority under State Superfund programs or may have comparable flexibility for cleanups under their own hazardous waste regulations. EPA encourages States to make use of such flexibility to expedite cleanups. In addition, States with comparable authorities may be eligible to receive interim authorization and to

[3] EPA is considering whether the concept of stringency should be reevaluated with respect to remediation wastes and will address this approach in a separate rulemaking.

implement their provisions under 40 CFR 271.24.

2. Implementation of Rules in Unauthorized and Authorized States

The implementation of today's rule will vary, depending on the authorization status of the State in which a particular facility subject to cleanup requirements is located. Regardless of the situation in individual States, however, EPA's major goals in implementing today's rule are: (1) To enable the use of the CAMU and TU concepts as rapidly as possible for specific RCRA corrective actions, consistent with State requirements, (2) to encourage States to adopt these concepts promptly in their own cleanup programs and regulations, and (3) to work cooperatively with individual States, regardless of their authorization status, to promote the flexible approaches in today's rule. This section briefly discusses implementation of the rule in States at different stages of the authorization process.

A few States and territories have not yet been authorized for either the "base" (i.e., non-HSWA) RCRA program, or the RCRA section 3004(u) and (v) corrective action program under § 264.101. In these States, permits and orders are issued by EPA under the Federal statute and implementing regulations. Any modifications to permits or orders to allow the use of CAMUs or TUs would also be the responsibility of EPA. Of course, it is possible that an unauthorized State has adopted standards addressing CAMUs or TUs that have independent effect. The possibility for a dual program always exists in States that have not applied for or obtained authorization. Although EPA's permit would establish the Federal RCRA standards applying to such a unit, State law might impose additional requirements.

Most States have been authorized for the RCRA base program, but are not yet authorized for HSWA corrective action. In these States, permits are generally issued jointly; that is, the State issues the portion of the permit that addresses compliance with base-program requirements, while the EPA Region issues the HSWA portion of the permit, including corrective action requirements. Together, the base-program and HSWA portions make up the RCRA permit for the facility.

Under this arrangement, EPA is responsible for implementing the HSWA corrective action requirements for permitted facilities. This includes the responsibility of requiring or approving modifications of the HSWA portion of the permit to incorporate new units (including CAMUs and TUs) that are necessary to implement corrective action at the facility. In this case, the new unit would be permitted under the modification to the HSWA portion of the permit, and a separate State action would not be necessary. The process would work similarly for section 3008(h) orders, although procedures for changes in interim status, rather than for permit modifications, would apply. Thus, facility modifications to allow corrective action would not require State approval or use of State permit modification or interim status modification procedures. Rather, under section 3006(g), Congress authorized EPA to implement the corrective action program in each State prior to State authorization. If permit modification or interim status changes are necessary to implement corrective action in States not authorized for corrective action, the Federal rather than the State procedural requirements apply to the changes.

In some cases, a land-based regulated unit already subject to State interim status or permit conditions may be incorporated into a CAMU. In such cases, today's rule provides that the subpart F, G, and H requirements and the unit-specific requirements of 40 CFR part 264 or 265 previously applying to the regulated unit would continue to apply after designation of the CAMU. Authority for implementing and enforcing these requirements could fall either to EPA or to the State. Generally, EPA anticipates that the State would retain direct implementation authority, since it had previously been regulating the unit. However, in some cases it might be more efficient for EPA to assume overall authority over the entire cleanup.[4] In either case, EPA would seek to work out oversight authority with the State through formal or informal agreement. Because the State would retain authority over the regulated unit through its own permit or interim status requirements, unless it modified the permit or allowed a change in interim status, State agreement with EPA's approach to corrective action would be necessary.

As in the case of unauthorized States, States authorized for the base program may have more stringent requirements (e.g., State land ban provisions) that would affect a particular remedy that EPA wished to implement under today's rule. In this case, EPA might modify the remedy so that it was consistent with State law, or structure it so that it mirrored an existing State waiver provision (e.g., waiver of land ban provisions for contaminated media); alternatively, the State might use a waiver authority under its own laws or enforcement discretion to allow the remedy to proceed.

In any case, EPA emphasizes that its goal in implementing the CAMU and TU concepts in States not authorized for corrective action is to facilitate prompt and protective cleanups at RCRA facilities. This rule does not preempt existing State authorities, nor does EPA intend to impose cleanup requirements at specific sites under this rule that the State considers to be unprotective, inadequate, or inconsistent with the State's regulatory requirements. Rather, today's rule provides EPA (and States) greater flexibility in making use of a new type of remediation unit created during the course of corrective action. If a State not yet authorized for corrective action believed a different approach was preferable, either as a general rule or at a specific site, EPA would work with the State—for example, through a Memorandum of Understanding, joint order, or an informal agreement—to ensure that any remedies required were acceptable to the State.

As of October 1992, fifteen States were authorized for corrective action under § 264.101. Until these States develop their own CAMU and TU regulations, these provisions would generally not be available to them in implementing their corrective action program. It is possible, however, that a State authorized for corrective action may wish to have a CAMU or a temporary unit approved for a facility cleanup. In some cases, the State may have a general waiver authority under its own State law, or State enforcement or State Superfund authorities that provide it some flexibility. If the State were to exercise this authority in a way that is consistent with today's rule, EPA would not consider the State's program to be less stringent than the Federal program. Alternatively, the State could request EPA to issue an order under RCRA section 7003, which could be used to override specific Federal or authorized State authorities where necessary to implement a cleanup. In any case, however, these approaches should be used only to cover the transition period during which the State amends its regulations and obtains formal authorization for today's rule.

Even though a State is authorized for § 264.101 or (in the future) subpart S corrective action, EPA retains the authority to issue section 3008(h) orders at interim status facilities. If EPA were

[4] In this case, the State might choose to modify the State permit or the facility Part A to remove the unit as a State-regulated unit. Alternatively, the unit could remain on the State permit or Part A, but EPA could be given lead oversight over the unit through a State-Regional agreement.

to issue such an order in a State authorized for corrective action, it would have the authority to require and approve modifications of the facility part A to accommodate a new CAMU or TU. EPA's authority in this case is analogous to its authority in States not yet authorized for corrective action. Just as in that case, however, EPA emphasizes once again that its goal is to expedite cleanup, and it does not claim the authority to preempt existing State requirements.

D. Effective Date

RCRA section 3010(b)(1) allows EPA to promulgate an immediately effective rule where the Administrator finds that the regulated community does not need additional time to come into compliance with the rule. Similarly, the Administrative Procedures Act (APA) provides for an immediate effective date for rules which relieve a restriction. 5 U.S.C. 553(d)(1). Today's rule provides additional flexibility for facilities undergoing corrective action. As a result, the regulated community does not need significant additional time to come into compliance. In order to allow near term use of the less restrictive rules promulgated today, and yet to provide effective communication regarding the purpose and implementation of this rule, EPA has set an effective date of 60 days from today.

V. Relationship to Other Programs

A. CERCLA

The substantive requirements of today's regulations for CAMUs and temporary units are expected to be applicable or relevant and appropriate requirements (ARARs) for the remediation of many CERCLA sites, especially those sites where CERCLA remediation involves the management of RCRA hazardous wastes. In the CERCLA context, CAMU and temporary unit requirements that are designated to be ARARs would be incorporated into CERCLA decision documents, rather than RCRA permits or orders. Based on EPA's experience in managing the Superfund program, it is anticipated that the increased flexibility provided in today's rule will have an important and positive impact on the Agency's ability to expeditiously implement protective and cost-effective remedies at CERCLA sites. This would include remediation under CERCLA of RCRA hazardous wastes at Federal facilities that are listed on the National Priorities List.

B. State Remedial Programs

Many States have enacted remedial laws and programs to address environmental problems that may not be addressed under RCRA or CERCLA authorities. State remedial programs typically follow a process similar to RCRA and CERCLA for investigating releases, and selecting and implementing remedial measures. As a general rule, since CAMUs are defined as units to be used in connection with § 264.101 or 3008(h) actions, they can be employed only at a facility regulated under subtitle C of RCRA, or at CERCLA sites where determined to be ARARs. However, some states may have enforcement authorities analogous to RCRA section 7003 which provide an implied or explicit waiver from otherwise applicable State RCRA requirements. Thus, in such a State, where cleanup is being compelled at a non-RCRA or CERCLA facility, such enforcement authority could be used to approve and designate a CAMU or a TU in a manner consistent with today's final rules. Note, that a State cannot waive applicable federal requirements; thus, if a State is not authorized to implement the LDR program in the State, for example, then a CAMU will not operate to affect the scope of the LDRs at that site, when implemented under a State remedial program. However, if a State is authorized for LDRs, it may be able to waive such requirements under State law (as indicated above).

C. RCRA Section 7003

CAMUs and temporary units may be available, at the Regional Administrator's discretion, for the purpose of remediation under RCRA section 7003 authority, even if the remediation is not at a RCRA subtitle C regulated facility. Under section 7003, EPA has the discretion to waive any RCRA requirements at a site where appropriate to implementing remedial actions. Thus, the order could provide for and designate a CAMU with or without the use of today's rules, and regardless of the permit status of the facility. As mentioned previously, some States may have enforcement authorities analogous to RCRA section 7003 that would provide similar relief from administrative requirements in implementing cleanups.

D. Corrective Actions at Facilities not Currently Remediating Under Federal RCRA/CERCLA or State Authorities

Since a CAMU or a TU is a RCRA subtitle C unit, it can be utilized only at a facility that is regulated under subtitle C. Therefore, in order to manage hazardous remediation wastes in CAMUs or TUs, a responsible party would have to voluntarily seek regulation by subtitle C by obtaining either a corrective action order issued by the Agency (or by a State—see above), or a RCRA permit, which contains the necessary approvals from the Regional Administrator.

E. RCRA Section 3004(n) Air Emission Standards

EPA is currently developing a comprehensive set of air emission regulations for RCRA hazardous waste management units, as mandated under section 3004(n) of RCRA. Phase I air emission standards for process vents and equipment leaks were promulgated on June 21, 1990. Phase II unit-specific standards are expected to be promulgated in 1993.

If remediation waste management activities associated with CAMUs will involve the use of non-land-based equipment or units for which air emission standards have been promulgated (e.g., air strippers or other treatment devices), such equipment or unit(s) would have to comply with those applicable standards. These requirements will be specified in the permit or order. However, EPA does not intend to promulgate air emission standards specific to CAMUs. EPA believes that the decision criteria for CAMUs in today's rule, and the site-specific oversight provided under the corrective action process, will ensure that adequate air emission controls are imposed on remediation waste management activities.

VI. Regulatory Impact Analysis

A. Executive Order Requirements

Under Executive Order 12291 (issued February 17, 1981), a Regulatory Impact Analysis (RIA) is required for every major Federal regulation. Executive Order 12291 defines a major rule as one that is likely to result in: (1) An annual effect on the economy of $100 million or more; (2) a major increase in costs or prices for consumers, individual industries, Federal, state, or local government agencies, or geographic regions; or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets. The Agency has determined that this rule is not a major rule because the rule does not negatively impact the economy, increase costs or prices, or adversely impact businesses. Nevertheless, EPA recognizes that this rule may have significant positive economic impacts and therefore, at the request of the Office of Management and

Budget, has prepared a Regulatory Impact Analysis (RIA).

B. Background

In preparation for the final subpart S rulemaking, EPA is currently conducting a revised RIA that includes a comprehensive evaluation of the costs and benefits of regulatory alternatives for RCRA Corrective Action. As part of this comprehensive analysis, EPA has conducted a preliminary evaluation of the costs and benefits of the proposed rule provisions concerning CAMUs, and has evaluated several alternatives to the proposed rule CAMU provisions. On October 22, 1992, EPA published a notice of data availability in the Federal Register announcing the availability of a report, "Supplemental Information on Corrective Action Management Units," which summarized the preliminary results of EPA's analyses of the costs (expressed as cost savings) and expected environmental benefits of regulatory alternatives for the CAMU. The RIA prepared for this rulemaking provides additional detail on EPA's evaluation of the cost savings of key regulatory alternatives for the CAMU and the expected impacts of the alternatives on the human health and environmental benefits derived from cleanup under the Subpart S framework. (See sections II and III of this preamble for further discussion of the subpart S rule, the CAMU and temporary unit rule, and the notice of data availability.) Both the report summarizing preliminary results and the RIA for today's rule are available in the RCRA docket.

The Agency conducted the CAMU RIA in order to assess the costs and benefits of certain alternative approaches to regulating remedial waste management at facilities subject to RCRA corrective action. Discussion of the RIA is organized as follows: The CAMU regulatory alternatives that were analyzed are presented first, followed by the general methodology for the analysis, cost results, and finally a qualitative analysis of benefits.

Temporary units (TUs) were not addressed in the CAMU RIA. Based on the preliminary analyses conducted for the RIA, EPA believes that TUs will not be used with great frequency, and the resulting cost and benefit impacts of TUs are expected to be relatively minor compared to CAMUs.

C. Regulatory Alternatives

This RIA evaluates three CAMU regulatory alternatives: The Proposed subpart S CAMU, the Expanded CAMU (the CAMU alternative which EPA has decided to finalize), and, the No CAMU alternative. (The Proposed subpart S CAMU and the Expanded CAMU are defined and discussed further in section II of this preamble.) Based on the results of the analysis presented here and the anticipated remedial benefits of the expanded CAMU option, the Agency has decided to finalize the expanded CAMU option.

The analysis of the No CAMU alternative was conducted using two different sets of assumptions. This means that the cost savings and effects on benefits associated with the Proposed and Expanded CAMU options are presented relative to a range of "baseline" No CAMU outcomes. EPA evaluated the No CAMU alternative in this manner because EPA recognized that under the No CAMU alternative remedial decisionmakers could either choose to maximize removal and treatment of hazardous wastes to LDR standards, or, alternatively, choose to minimize the extent to which wastes would be required to be removed from SWMUs and therefore treated to LDR standards prior to land disposal.

D. Approach to Analysis

To estimate the costs and benefits associated with the various aspects of the subpart S final rule, including the CAMU provisions, EPA selected a random sample of 79 facilities potentially subject to corrective action. The sampling frame was stratified and sampled in order to accurately reflect the composition of the potentially affected universe and to over-sample facilities likely to require corrective action.

As proposed, the subpart S rule provides a regulatory framework to guide site-specific remedial decisionmaking at RCRA facilities. The proposed rule provisions are not, however, overly prescriptive; EPA recognized the site-specific nature of remedial decisionmaking and sought to strike an appropriate balance in the proposed regulations between explicit regulatory standards and requirements and site-specific flexibility and discretion. To develop estimates of the costs and benefits of cleanup under the proposed rule and under different regulatory alternatives, EPA simulated remedy selection at the sampled facilities.

In order to simulate remedy selection at the sample facilities, EPA first collected facility-specific data from a wide variety of sources, including RCRA Facility Assessments (RFAs) and RCRA Facility Investigations (RFIs). RFAs and RFIs provided EPA with the following information: General facility descriptions; SWMU- and waste-specific characteristics; details about the environmental setting; and human exposure information. When facility sampling data were not available for a particular facility, an EPA contaminant fate and transport model, MMSOILS, was used to simulate releases to ground water, surface water, air, and off-site soils. EPA also used the MMSOILS model to simulate releases into the future in order to determine the nature and extent of contamination over time, in the absence of corrective action.

Next, the available data on the nature and extent of contamination (present and future) and facility characteristics were presented to expert panels convened by EPA and comprised of regional EPA staff, state representatives, and experts in the fields of hydrogeology, geology, geophysics, soil science, engineering, and chemistry. Based on their evaluation of the data and their experience in making remedial policy decisions at the state and regional levels, the policy expert panel (made up of regional and state program policy representatives) developed remedial objectives under the proposed subpart S rule framework for each facility in the sample. Accordingly, the policy panel used the proposed subpart S CAMU definition and provisions and, where appropriate, designated areas of facilities as CAMUs.

The remedial objectives, including the policy decision on the use of a CAMU, were then transmitted to the technical expert panel, which was responsible for defining and determining specific remedial activities to meet these objectives. Where more than one alternative was available to meet the policy panel objectives, options were presented and the policy panel made their choice of preferred approach.

The remedial activities identified/selected by the expert panels, for the facilities in the sample that required corrective action, were the foundation for analyses of the proposed CAMU regulatory alternative. To assess the two other CAMU RIA regulatory alternatives (the Expanded CAMU and the No CAMU options), a CAMU expert panel (consisting of civil, chemical, and environmental engineers, risk assessors, RCRA policy analysts, and ecologists) was convened to determine objectives and select remedies.

E. Cost Analysis

In addition to defining and determining remedial activities to meet remedial objectives, the technical experts convened by EPA were also responsible for providing remedial cost estimates which served as the basis for calculating facility-level costs. As discussed above, the expert panels

reviewed each facility in the RIA sample and selected remedies to address releases at the sample facilities. The panels then estimated a cost for each remedial activity at each SWMU addressed. The Agency compiled remedial costs at the SWMU and facility level under each of the three CAMU regulatory alternatives. After the total costs were adjusted to include design, oversight, and contingencies, the costs were discounted to account for the timing of remediation.

On a national basis, a total of approximately 5,800 facilities are potentially subject to RCRA subpart S corrective action requirements. Under the Proposed CAMU alternative, CAMUs would be expected to be used at a total of 200 facilities in the course of remediating 1,360 SWMUs. Under the Expanded CAMU alternative, CAMUs would be expected to be used at 1,500 facilities in the course of remediating 6,000 SWMUs.

The use of CAMUs under the proposed CAMU option results in total present value cost savings of $15.2 billion to $25.2 billion (the range reflects the use of two different assumptions regarding the degree of waste removal and treatment to LDR standards under the No-CAMU option). The present value cost savings of the expanded CAMU option ranges from $16.6 to $26.6 billion. The cost savings under both of the CAMU options are primarily attributable to avoided costs of off-site incineration and disposal. The proposed CAMU option allows for protective management of waste on-site, possibly combined with in-situ treatment. The expanded CAMU option promotes even more protective on-site management by allowing ex-situ treatment of hazardous waste combined with protective on-site management.

F. Qualitative Analysis of Effects on Benefits

Several criteria can be used to qualitatively analyze the relative benefits of the CAMU regulatory alternatives: Expectations regarding the long-term effectiveness of remedies; short-term impacts of implementing the remedies; and, effects on corrective action program implementation.

1. Expectations Regarding Long-Term Effectiveness

Under either the proposed CAMU or the Expanded CAMU alternatives CAMUs may be permitted by the Regional Administrator only if the RA decides that designation of a CAMU would be protective of human health and the environment. However, the types of remedies selected under the different CAMU regulatory alternatives may differ with regard to expectations of long-term effectiveness.

For example, ex-situ treatments (which were selected much more frequently under the Expanded CAMU alternative than under the proposed CAMU alternative) generally provide greater certainty of long-term effectiveness than do in-situ treatments or management without treatment. Treatments, such as stabilization for wastes or media containing inorganic constituents, are employed much more effectively ex-situ than in-situ due to improved mixing and the ability to ensure through sampling that all waste and contaminated media are thoroughly treated. Incineration (which was used much more frequently under the No CAMU alternative than under the CAMU alternatives) provides a high degree of long-term effectiveness for remediation of wastes or media containing organic constituents.

In contrast, containment of wastes without treatment (e.g., by capping the unit) is generally viewed as providing less certainty of long-term effectiveness than alternatives which involve actual removal from the unit and/or treatment. Although EPA believes that engineered containment structures can be highly effective, assuming adequate monitoring and maintenance, few would dispute the general conclusion that there is less certainty regarding long-term effectiveness with remedies which rely solely on containment in contrast to those which involve some degree of removal and/or treatment.

As shown in Exhibit 1, the Expanded CAMU alternative is expected to employ ex-situ treatment at more SWMUs and to employ in-situ treatment or no treatment at fewer SWMUs than is the case for the two other CAMU regulatory alternatives. As a result, the Expanded CAMU alternative appears likely, in actual implementation, to provide greater long-term certainty of remedy effectiveness.

EXHIBIT 1.—NATIONAL ESTIMATES OF THE NUMBER OF SWMUS BY TYPE OF TREATMENT UNDER CAMU REGULATORY ALTERNATIVES

Type of treatment	No. of SWMUs affected			
	Expanded CAMU	Proposed CAMU	No CAMU-(assumes more LDR treatment)	No CAMU-(assumes more management in place)
Ex-Situ	4,400	2,800	2,800	2,200
In-Situ	700	1,700	1,400	1,900
Ex-Situ and In-Situ	130	570	920	920
No Treatment	730	1,000	910	1,000
Total	6,000	6,000	6,000	6,000

Notes:
- Numbers may not total due to rounding.
- CAMU regulatory alternatives discussed in text.
- There are 6,000 SWMUs affected by expanded CAMUs under the Expanded CAMU alternative. The same group of SWMUs was examined under the other CAMU alternatives for comparability.

The Agency developed more detailed comparisons of remedies selected under the three CAMU regulatory options. These comparisons are presented in the document "Supplemental Information on Corrective Action Management Units" and in the Regulatory Impact Analysis for today's final rule; both documents are available in the RCRA docket. A few key findings are discussed in the sections below.

Incineration is estimated to be employed most often (at 3,100 SWMUs) under the No CAMU alternative, when EPA assumes that LDR treatment is required and occurs; least often (at 1,400 SWMUs) under the Expanded CAMU alternative; and in between (at 1,900 SWMUs) under the Proposed CAMU alternative. Incineration is employed at 2,300 SWMUs under the No CAMU alternative when EPA assumes that less LDR treatment occurs and more wastes are left in place and contained.