RULES
OF
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF REMEDIATION

CHAPTER 0400-15-01
HAZARDOUS SUBSTANCE REMEDIAL ACTION

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0400-15-01-.01 INACTIVE HAZARDOUS SUBSTANCE SITE REMEDIAL ACTION PROGRAM: GENERAL.

(1) Purpose

The purpose of these rules is to set standards for regulating inactive hazardous substance sites located in the State of Tennessee. These rules are issued by the Solid Waste Board under the Authority of Part 2 of the "Hazardous Waste Management Act" (T.C.A. §68-212-201 et seq.) The rules shall apply to sites that are inactive and pose or may reasonably be anticipated to pose a danger to public health, safety, or the environment as a result of the presence of a hazardous substance(s).

(a) These rules address the following items:

1. Establishment of criteria, guidelines, limitations, and methodology for the effective investigation and remediation of hazardous substance sites.

2. Establishment of a system and schedule for the collection of fees.

3. Guidelines and methodology for the recovery of monies expended as a result of activities performed by the Department on inactive hazardous substance sites.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.02 DEFINITIONS.

(1) Unless otherwise defined in this rule, the definitions found in paragraph (2) of Rule 0400-12-01-.01, "Hazardous Waste Management System: General", shall apply when those terms are used in this chapter. In addition, when used in this chapter, the following terms have the meanings given below:

(a) "Act'' means the Tennessee Hazardous Waste Management Act of 1983 (T.C.A. Title 68, Chapter 212, Part 2; enacted as Chapter 423 of the Public Acts of 1983).

(b) "Acute Hazardous Waste" means those wastes defined in subpart (2)(b)1(ii) of Rule 0400-12-01-.02.

(Rule 0400-15-01-.02, continued)

(c) "Applicable Requirements" means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA or hazardous substance site.

(d) "Aquifer" means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

(e) "Area of Contamination" means the horizontal and vertical extent of contamination in air, soils, sediment, drinking water supply, surface water, ground water, subsurface strata, or on the land surface occurring or originating at a hazardous substance site.

(f) "CERCLA" is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. (42 USC).

(g) "Clean up" shall be defined as the clean up or removal of released hazardous substances from the environment, such actions as may be necessarily taken in the event of the release or threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health, or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, and temporary evacuation and housing of threatened individuals.

(h) "Contaminant" means pollutant.

(i) "Control Background" means the concentration of hazardous substances consistently present in the environment due to long term localized industrial or commercial activities.

(j) "Department" means the Department of Environment and Conservation.

(k) "Disposal" means the discharge, deposit, injection, dumping, spilling, leaking or placing of any hazardous substance into or on any land, water or air so that such hazardous substance or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

(l) "Feasibility Study" or "FS" means a study to develop and evaluate options for remedial action. The Feasibility Study emphasizes data analysis and is generally performed concurrently and in an interactive fashion with the Remedial Investigation using data gathered during the Remedial Investigation. The Remedial Investigation data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study.

(m) "Fund" means the Hazardous Waste Remedial Action Fund created by the Act.

(n) "Generator" means any person whose act or process produces hazardous substance or whose act first causes a hazardous substance to become subject to regulation.

(o) "Ground water" or "Groundwater" means water below the land surface in a zone of saturation.

(Rule 0400-15-01-.02, continued)

(p) "Hazardous Substance" is defined as such term is defined in Section 101 of Public Law 96-510.

(q) "Hazardous Substance Site" means any site or area where hazardous substance disposal has occurred.

(r) "Hazardous Waste Remedial Action Fund" (Fund) means that fund described in T.C.A. § 68-212-204.

(s) "Natural Background" means the concentration of hazardous substance consistently present in the environment which has not been influenced by localized human activities.

(t) "Person" means an individual, trust, firm, joint stock company , corporation (including a government corporation), partnership, association, state, municipality, commission, political subdivision of a state, any interstate body, and governmental agency of this state and any department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal government.

(u) "Pollutant" shall include, but not be limited to, any element, substance, compound, or mixture, including disease causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingesting through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction), or physical deformation in such organisms or their offspring.

(v) "Preliminary Remediation Goals" means a site specific standard based on Applicable Requirements, Relevant and Appropriate Requirements, and/or Background Concentrations for sites which do not require a feasibility study or for interim actions conducted prior to completion of the feasibility study. If the Department suspects background concentrations do not protect public health, safety, and the environment, the Department may require the assessment of risk posed by background concentrations of the hazardous substance(s) to be included in the determination of the preliminary remediation goals.

(w) "Promulgated List" is the List of Inactive Hazardous Substance Sites required by T.C.A. § 68-212-206(e).

(x) "Publicly Owned Treatment Works" or "POTW" means a treatment works as defined by Section 212 of the Clean Water Act, which is owned by a State or municipality (as defined by Section 502(4) of the Clean Water Act).

(y) "Record of Decision" or "ROD" is that document that provides the official decision on the final alternative for site cleanup. It includes an explanation of the reasons for choosing that alternative and details any conditions or standards that must be met.

(z) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant).

(aa) "Relevant and appropriate requirements" means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action,

(Rule 0400-15-01-.02, continued)

location, or other circumstance at a CERCLA or hazardous substance site, address as problems or situations sufficiently similar to those encountered at the hazardous substance or CERCLA site so that their use is well suited to the particular site.

(bb) "Remedial Investigation" or "RI" means a process to determine the nature and extent of the problem. The remedial investigation emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The remedial investigation includes sampling and monitoring, as necessary, and includes the gathering of sufficient information, to determine the necessity for remedial action and to support the evaluation of remedial alternatives.

(cc) "Remediation Goal" means a site specific standard based on applicable requirements, relevant and appropriate requirements, background concentrations and/or risk assessment for sites where a risk assessment and feasibility study have been completed.

(dd) "Remedy or Remedial Action" (RA) means those actions consistent with a permanent remedy taken instead of, or in addition to a removal action. The term includes, but is not limited to, such actions as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, on-site treatment or incineration, provision of alternative water supplies, any monitoring reasonably required to assure that such actions protect the public health, safety, and the environment and, where appropriate, post-removal site control activities. This term also includes, but is not necessarily limited to the off-site transport and off-site storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials.

(ee) "Removal" means the cleanup or removal of hazardous substances from the environment; such actions as may be necessarily taken in the event of the threat of release of hazardous substances into the environment; such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances; the disposal of removed material; or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health, safety, or environment which may otherwise result from a release or threat of release.

(ff) "Response" means a clean up, remedial action, remedy, remedial investigation, or any other action taken by the Department in furtherance of the purpose of the Act and/or these rules.

(gg) "Responsible party" means liable party.

(hh) "Risk Assessment" means a qualitative and quantitative process to characterize the nature and magnitude of risks to public health, safety, and the environment from exposure to hazardous substances released from specific sites.

(ii) "Solid Waste Disposal Control Board" or "Board" means the solid waste disposal control board as established by T.C.A. § 68-211-111, unless otherwise indicated.

(jj) "Surface water" means lakes, rivers, ponds, streams, inland water, and all surface waters and water courses within the State of Tennessee or under the jurisdiction of the State of Tennessee.

(Rule 0400-15-01-.02, continued)

(kk) "UAPA" or "Uniform Administrative Procedures Act" means that Act promulgated as T.C.A. § 4-5-201 et seq.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.03 REMEDIAL ACTION FUND.

(1) Fees

(a) General

1. Purpose

The purpose of this rule is to establish a system and schedule whereby certain fees are collected by the State for deposit in the Hazardous Waste Remedial Action Fund.

2. Applicability

This rule applies to the persons and facilities specified in subpart (i) through (vi) of this part. For purposes of this paragraph "Generator" as defined in T.C.A. § 68-212-203 means any person, by site, whose act or process produces hazardous waste waters or hazardous wastes identified or listed in Rule 0400-12-01-.02 or whose act first causes a hazardous waste or hazardous waste waters to become subject to regulation, and "generation" means the act or process of producing hazardous wastes and/or hazardous waste waters.

(i) Persons who have generated hazardous waste in quantities of 1200 kg or more during the prior calendar year.

(ii) Persons who are issued a hazardous waste transporter permit under the "Tennessee Hazardous Waste Management Act", T.C.A. § 68-212-101 et seq.

(iii) Persons who have shipped 1200 kg or more of hazardous waste off-site for treatment or disposal.

(iv) Out-of-state generators who treat or dispose of hazardous waste in Tennessee at a commercial facility. Such persons shall be subject to the off-site shipping fees as described in part (c)3 of this paragraph.

(v) Persons who ship hazardous wastewaters off-site for treatment or disposal.

(vi) Commercial facilities that receive wastes from out-of-state for treatment or disposal are responsible for collection of certain fees described in part (c)3 of this paragraph.

3. Payment of Fees

Any person assessed a fee under this rule must submit the fee in the specified amount to the State of Tennessee. The Department may, by notice to such persons prior to the date due, further specify the manner of payment. Checks are to be made payable to the State of Tennessee.

(Rule 0400-15-01-.03, continued)

(b) Generation Fee - Amount and Manner of Assessment

Generators subject to this rule shall pay a fee based on the total amount of hazardous waste generated in the previous calendar year calculated on an as-generated (wet weight) basis in accordance with the following:

Amount of Hazardous Waste Generated in 2010 and each year thereafter	Fee ($)
less than 2,645 lbs (less than 1,200 kg)	$0
2,645 – 7,334 lbs (1,200 – 3,326 kg)	$865
7,335 – 237,418 lbs (3,327 - 107,692 kg)	$0.117935 per lb ($.26 per kg)
237,419 lbs or more (107,693 kg or more)	$28,500

(c) Off-Site Shipment Fee

1. Hazardous Waste

Any generator of twelve hundred (1200) kg or greater per year who shipped hazardous waste (excluding hazardous wastewater) off-site for treatment or disposal during the calendar year is hereby assessed an off-site shipping fee in accordance with the following:

Amount of Hazardous Waste Shipped in 2010 and each year thereafter	Fee ($)
	$.0209437 per kg ($19.00 per ton)

For purposes of assessing this fee, any hazardous waste, excluding hazardous wastewater, which was shipped off-site, shall be considered to have been shipped off-site for treatment or disposal.

2. Hazardous Wastewater

Any generator of twelve hundred (1200) kg or greater per year who shipped “hazardous wastewater”, per T.C.A. § 68-212-203, off-site for treatment and disposal during the calendar year shall pay an off-site shipping fee in accordance with the following:

Amount of Hazardous Wastewater Shipped in 2010 and each year thereafter	Fee ($)
	$.01047185 per kg ($9.50 per ton)

3. Out-of-state generators who treat or dispose of hazardous wastes at any commercial facility located in Tennessee shall be subject to the off-site shipping fees levied by parts 1 and 2 of this subparagraph.

(i) The commercial facility to which the waste is shipped for treatment or disposal shall be responsible for collecting the off-site shipping fee and remitting it to the State by June 15th of each year.

(ii) For the purposes of compensating the commercial facility in accounting for and remitting this fee, the commercial facility shall be allowed a deduction of two percent (2%) of the total amount due the State. No deduction shall be allowed if any portion of the payment is delinquent.

(Rule 0400-15-01-.03, continued)

(iii) Commercial facilities shall collect off-site shipping fees from out-of-state generators beginning July 1, 1994.

(iv) Any out-of-state generator desiring to claim that they generated less than 1200 kg of hazardous wastes per year and that they are therefore excluded from payment of this fee or to claim that they have previously paid the maximum fee in accordance with part 4 of this subparagraph, shall so certify to all receiving Tennessee facilities.

4. The maximum annual off-site shipping fee levied by parts 1, 2, and 3 of this subparagraph due from any single generator shall be sixty-five thousand dollars ($65,000) for waste shipped in 2011, and each year thereafter.

(d) Excluded Waste

1. For purposes of determining the amount of waste generated under subparagraph (b) of this paragraph and the amount of waste shipped off-site for treatment and/or disposal under subparagraph (c) of this paragraph, the wastes listed below shall be excluded.

(i) Waste which is exempted from regulation under subparagraph (1)(a) of Rule 0400-12-01-.02, subparts (1)(d)2(xiii), (xiv), (xv), and (xvi) of Rule 0400-12-01-.02, part (1)(d)3 of Rule 0400-12-01-.02, subpart (1)(a)4(ii) of Rule 0400-12-01-.04, and wastes delisted in accordance with 40 CFR 260.22.

(ii) Waste which was discharged directly to any publicly owned treatment works (POTW), or any wastewater treatment plant permitted pursuant to Section 402 of the Federal Clean Water Act as amended (Public Law 92-500) or the Tennessee Water Quality Control Act, T.C.A. §69-3-101 et seq., (this includes permitted on-site wastewater treatment plants that discharge into the sewer system of a publicly owned treatment works). Wastes that generators transport off-site to a commercial facility which discharges to a publicly owned treatment works or a publicly owned wastewater treatment plant are not excluded from the amount of waste generated.

(iii) Sludge from any publicly owned treatment works located in the state.

(iv) Bottom boiler ash and flyash from incinerators which process solely municipal waste.

(v) Hazardous waste or hazardous waste sludges produced as a result of on-site treatment of hazardous waste if the waste being treated is subject to fees under this rule. If the waste being treated is excluded from fees under this rule, the sludge resulting from the treatment of said waste is not excluded from these fees.

(vi) Wastes which have been recycled on-site or transported off-site to be recycled, as the term “recycled” is defined in part (1)(a)3 of Rule 0400-12-01-.02.

(vii) Hazardous wastes resulting from a spill (e.g. by a transporter in transit) of a hazardous waste or other material which, when spilled, becomes a hazardous waste.

(Rule 0400-15-01-.03, continued)

(viii) Hazardous wastes generated from remediation or corrective actions required by the Tennessee Hazardous Waste management Act of 1977 and 1983; the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.); and the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. 9601 et seq.).

(ix) Hazardous wastes resulting from the removal and associated clean-up of an underground storage tank that previously contained a hazardous waste or other material which, when discarded, leaked or spilled, becomes a hazardous waste.

2. A person whose waste generation is excluded or reduced pursuant to part 1 of this subparagraph shall meet the generator annual reporting requirements of subparagraph (5)(b) of Rule 0400-12-01-.03.

(e) Hazardous Waste Transporter Fee

Each person issued a hazardous waste transporter permit pursuant to the Tennessee Hazardous Waste Management Act, T.C.A. § 68-212-101 et seq., is hereby assessed a fee of six hundred and fifty dollars ($650).

(f) Due Date of Fees, Reporting Requirements

1. All remedial action fees from in-state generators shall be paid to the Department on or before June 15th of each year.

2. Commercial facilities collecting off-site shipping fees from out-of-state generators shall pay such fees to the Department on or before June 15th of each year.

3. Transporters issued a transporter permit for any year prior to 1995 shall pay the assessed fee on or before the October 15th that immediately follows the issuance of the permit, if the fee was not paid upon issuance.

4. Hazardous waste transporters renewing permits shall pay the fee assessed by subparagraph (e) of this paragraph at the time the permit is issued.

5. If any part of any fee imposed pursuant to T.C.A. § 68-212-201 et seq. is not paid on or before the due date, the person or persons failing to pay such fee shall be subject to the following:

(i) The assessment of interest in an amount equal to that allowed in T.C.A. § 47-14-103(3); and/or

(ii) A civil penalty not to exceed ten thousand dollars ($10,000) for each day of violation or an amount equal to 5 percent (5%) per month of any unpaid balance, whichever is less.

6. The Remedial Action Fee Report and supporting documentation consisting of copies of the Hazardous Waste Stream Reports and Off-Site Shipping Reports must be submitted to the department by generators of hazardous waste and hazardous waste waters by March 1st of each year.

(i) Supporting documentation must be returned by all persons that generated and/or shipped 1200 kg or more of hazardous waste or hazardous wastewaters in the prior calendar year.

(Rule 0400-15-01-.03, continued)

(ii) Any person generating and/or shipping 1200 kg or more of hazardous waste or hazardous wastewaters who fails to submit the Remedial Action Fee Report and supporting documentation by April 1st of each year shall be subject to the assessment of a civil penalty of not less than five hundred dollars ($500) and not more than ten thousand dollars ($10,000) per day.

(2) Cost Recovery

(a) T.C.A. § 68-212-207 provides for the recovery of costs incurred as a result of investigation, identification, containment and cleanup, including monitoring and maintenance, of a hazardous substance site from an identified liable party or parties.

(b) Liable parties, shall be responsible for their apportioned share of costs incurred by the State of Tennessee as a result of a response. Where costs are incurred by the State on any site, a liable party is subject to an action by the State for the recovery of direct, indirect and actual administrative/overhead expenses. Indirect and overhead charges shall be calculated and assessed on outstanding balances at the time of issuance for each billing. Monies received as payment on the part of a liable party shall be credited towards said party's share of the costs.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.04 RESERVED.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.05 IMMINENT, SUBSTANTIAL DANGER.

(1) Purpose

The purpose of this rule is to establish criteria to be used in determining when inactive hazardous substance sites constitute an imminent, substantial danger. This rule also establishes procedures to be followed when such a determination has been made.

(2) Definition

"Inactive hazardous substance sites that constitute an imminent, substantial danger" is an inactive hazardous substance site where there is a threat of danger to the public health, safety, or environment which is both real and presently existing. Such situations may include, but are not limited to one or more of the following: an immediate action is necessary to minimize an ongoing threat to the public health or pollution of the environment, an inactive hazardous substance site where there is an active release, where direct access to the hazardous substance is not controlled, or where incompatible hazardous substances are found in close proximity.

(3) Procedure

(a) When the Commissioner determines that an inactive hazardous substance site constitutes an imminent, substantial danger to the public health, safety, or environment, he may immediately undertake such actions as are necessary to abate the imminent and substantial danger.

(Rule 0400-15-01-.05, continued)

(b) Actions taken by the Commissioner to abate an imminent and substantial danger may be taken whether or not the site is listed in Rule 0400-15-01-.13 and whether or not a Commissioner's Order has been issued.

(c) As soon as practicable after an imminent and substantial danger has been abated, the Commissioner shall formalize his or her finding that the site constituted an imminent and substantial danger in a memorandum which sets forth, in a short and plain statement, the conditions which lead to his finding.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.06 RESERVED.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.07 SITE PROMULGATION PROCESS.

(1) Purpose

The purpose of this rule is to define the process for adding sites to and deleting sites from the List of Inactive Hazardous Substance Sites found in Rule 0400-15-01-.13.

(2) Criteria for Adding Sites to the List of Inactive Hazardous Substance Sites

In order for a site to be eligible for listing, the site shall:

(a) Be inactive;

(b) Have the presence of hazardous substances; and

(c) Pose or may reasonably be anticipated to pose a threat to public health, safety, or the environment.

(3) Criteria for Deleting Sites from the List of Inactive Hazardous Substance Sites

In order for a promulgated site to be removed from the List, the following shall have occurred:

(a) The hazardous substances which posed or may have posed a threat to human health or the environment have to the satisfaction of the Commissioner been removed/stabilized or determined to no longer pose a threat;

(b) All relevant site characteristics, including, but not limited to, migration pathways, have been evaluated and either no longer pose a threat to human health or the environment, or have been remediated or any such threat is being controlled by other means, such as institutional controls, to the satisfaction of the Commissioner;

(c) The site will require no long term monitoring and maintenance activities, or financial assurance for the costs of these activities has been established in a form, amount, and manner acceptable to the Commissioner;

(d) All monitoring wells, etc., that serve as potential sources or routes for future contamination have been properly abandoned, protected, or otherwise accounted for; and

(Rule 0400-15-01-.07, continued)

(e) All state cost recovery issues have been resolved to the satisfaction of the Commissioner.

(4) Frequency of Amendment of the List

Whenever necessary to protect the public health, safety or environment, but at least annually, the Commissioner shall propose and the Board shall promulgate any necessary revisions to the List of Inactive Hazardous Substance Sites.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.08 REMEDIATION GOALS.

(1) Purpose and Objectives

(a) Purpose

The purpose of this rule is to provide remediation goals for hazardous substance remediation under Chapter 0400-15-01.

(b) Objective

The objective of this rule is to develop consistent procedures for the development and usage of remediation goals.

(2) General

These rules provide two basic approaches for establishment of preliminary remediation goals associated with the remedial investigation in part (2)(a)2 of Rule 0400-15-01-.09. These approaches include the determination of Applicable or Relevant and Appropriate Requirements (ARARs) and Background Concentrations. Preliminary remediation goals may be used to determine whether the Department currently considers a specific concentration of a contaminant as an unreasonable risk to public health, safety, or the environment (e.g., water quality criteria based on protection of aquatic organisms in surface water) or to help evaluate whether an exposure pathway for a specific contaminant is of concern (e.g., whether a specific concentration of a contaminant in soil has potential to leach to ground water). Preliminary remediation goals developed through the review of ARARs and background concentrations may be used to determine if the concentrations of hazardous substances are a regulatory concern, or as remediation goals for interim actions. If a Feasibility Study is required for the evaluation of alternative clean-up actions under paragraph (3) of Rule 0400-15-01-.09, then a risk assessment as specified in paragraph (5) of this rule is to be included in the feasibility study. The detail of the risk assessment shall be commensurate to the potential exposure and risk to human health and the environment. These rules allow for final remediation goals to be established, subject to Department approval, using either ARARs, background concentrations, a site-specific risk assessment or a combination of ARARs, background concentrations, and a site specific risk assessment.

(3) Applicable or Relevant and Appropriate Requirements (ARARs)

Responsible parties shall perform a survey to identify all Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are categorized as follows:

(a) Chemical specific requirements

(Rule 0400-15-01-.08, continued)

These requirements define acceptable levels of hazardous substances for remediation planning purposes. Advisories, criteria, guidance, rules, or laws specified by the Department and the following shall be evaluated for applicability as chemical specific requirements. Where several chemical specific ARARs exist for the same compound by media, the ARARs with the smallest concentration shall apply.

1. For ground water contamination evaluate the following:

   (i) Ground water used or classified as drinking water, domestic or residential water supply:

      (I) Specific criteria for domestic water supply as promulgated by the Water Quality Control Board;

      (II) Maximum Contaminant Levels (MCL's) and action levels established under the Federal Safe Drinking Water Act in 40 C.F.R. §141 as amended. (See Table 8-1);

      (III) When MCL's are not available, Secondary Maximum Contaminant Levels (SMCL's) established under the Federal Safe Drinking Water Act in 40 C.F.R. §141 as amended. (See Table 8-1);

      (IV) When MCL's and SMCL's are not available, guidance such as concentrations meeting criteria for action levels under proposed 40 C.F.R. 264 Subpart S (Federal Register July 27, 1990) may be used;

      (V) Concentration limits listed in Table 1 of subparagraph (6)(e) of Rule 0400-12-01-.06; or

      (VI) Concentration Limits identified for the facility in a facility permit issued under Rule 0400-12-01-.07 requiring compliance with subparagraphs (6)(c) through (f) of Rule 0400-12-01-.06.

   (ii) Ground water not used or classified as drinking water, domestic, or residential water supply:

      (I) Water quality criteria for ground water as promulgated by the Water Quality Control Board; or

      (II) Concentration Limits identified for the facility in a facility permit issued under Rule 0400-12-01-.07 requiring compliance with subparagraphs (6)(c) through (f) of Rule 0400-12-01-.06.

   (iii) Ground water which recharges surface water:

      (I) Water quality criteria for ground water as promulgated by the Water Quality Control Board; or

      (II) Concentration limits identified for the facility in a facility permit issued under Rule 0400-12-01-.07 requiring compliance with subparagraphs (6)(c) through (f) of Rule 0400-12-01-.06.

2. For soil exemption criteria and preliminary remediation goals evaluate the following:

   Reserved.

(Rule 0400-15-01-.08, continued)

3. Sediment

Reserved.

4. Air - For air evaluate the following:

(i) Fugitive dust control as required under the "Tennessee Air Pollution Control Act" (TAPCA) and regulations.

(ii) Visible standards as required under the TAPCA and regulations.

(iii) Volatile organic compound emission standards required under the TAPCA and regulations.

5. Surface Water - For surface water evaluate the following:

(i) Water quality criteria and highest beneficial use of receiving stream determined by the Water Quality Control Board. The contaminant or sediment load which a stream can carry as determined by the Division of Water Pollution Control. Likewise, for a specific site, the Division of Water Pollution Control may determine surface water runoff or effluent concentration standards or limits. Standards or limits established by the Division of Water Pollution Control shall be considered as ARARs.

(ii) Water quality criteria based on the protection of aquatic organisms (acute and chronic criteria) and human health published pursuant to section 304(a) of the Federal Water Pollution Control Act.

(iii) If the surface water is classified for drinking water, the following shall also be evaluated as ARARs:

(I) Maximum Contaminant Levels (MCL's) and action levels established under the Federal Safe Drinking Water Act in 40 C.F.R. §141, as amended. (See Table 8-1),

(II) When MCL's are not available, Secondary Maximum Contaminant Levels (SMCL's) established under the Federal Safe Drinking Water Act in 40 C.F.R. §141 as amended. (See Table 8-1),

(III) When MCL's and SMCL's are not available, guidance such as concentrations meeting criteria for action levels under proposed 40 C.F.R. §264 Subpart S (Federal Register July 27, 1990) may be used.

(b) Location specific requirements

Location specific requirements set restrictions on activities within specific locations such as flood plains or wetlands.

(c) Action specific requirements

Action specific requirements set restrictions for particular treatment and disposal activities.

(4) Background Concentrations

(Rule 0400-15-01-.08, continued)

Responsible parties shall establish background concentrations of the contaminants at the site. Background contaminant levels for the media of concern must be determined in a similar area, in close proximity, and, to the extent possible, in an area unaffected by a site or contamination. This background may be a natural background in relatively non-industrialized or non-commercial areas or control background in industrialized or commercial areas where natural background concentrations are not attainable due to long term industrial or commercial activities. Where background concentrations protect public health, safety, and the environment, remediation goals will not be established by the Department less than the corresponding natural background or control background levels. If the Department has reason to suspect background concentrations do not protect public health, safety, and the environment, the Department may require the liable party to assess the risk posed by background concentrations of the hazardous substance.

(a) Natural background levels shall be determined by one of the following methods or other methods approved by the Department:

1. Utilization of publicly available historical data where the contaminant of concern is at naturally occurring levels and quality assurance/quality control documentation is available which demonstrates sample reliability;

2. Establishment of the geometric mean of site background through sampling and analytical analysis; or

3. The medium-specific practical quantitation limit, if a background concentration is not quantifiable.

(b) Control background shall be determined by one of the following methods or other methods approved by the Department:

1. Establishment of the geometric mean of site background through sampling and analytical analysis; or

2. The medium-specific practical quantitation limit, if a background concentration is not quantifiable.

(5) Risk Assessment

Responsible parties shall propose for Departmental evaluation remediation goals based on human health and environmental risk assessment included in the feasibility study required in paragraph (3) of Rule 0400-15-01-.09.

The Human Health and Environmental Risk Assessment Method is a qualitative and quantitative process to characterize the nature and magnitude of risks to public health, safety, and the environment from exposure to hazardous substances, pollutants, or contaminants released from specific sites. This process may also characterize risks to the environment when the weight of evidence indicates that effects other than toxicity are significant.

(a) Human Health Risk Assessment Method

1. The Human Health Risk Assessment shall include detailed site specific analyses and logical summary of the following unless otherwise approved by the Department:

(i) Site History

(Rule 0400-15-01-.08, continued)

(ii) Data collection

(iii) Data evaluation and identification of chemicals of potential concern

(iv) Exposure assessment

(v) Toxicity assessment

(vi) Risk characterization and uncertainty analyses

(vii) Calculation of remediation goals for each chemical of concern based on the risk assessment and include in the summary all assumptions used in the calculations.

2. Guidance documents in conducting Human Health Risk Assessments include, but may not be limited to the following:

(i) Risk Assessment Guidance for Superfund: Volume 1 Human Health Evaluation Manual (Part A) Interim Final, December 1989; and

(ii) Risk Assessment Guidance for Superfund: Volume 1 Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals) OSWER Directive 9285.7-01B, Interim, December 1991.

3. Quantitative techniques of distributional analysis such as Monte Carlo simulations may be utilized in the risk assessment method provided that the reliability of the model and predictions are documented to the satisfaction of the Department. All risk assessments utilizing quantitative techniques shall include uncertainty analyses including, but not limited to the following:

(i) Parameter uncertainty analysis—Define and provide the rationale for the distribution of all input parameters and the degree of dependence (i.e., covariance) among parameters.

(ii) Identify and describe all assumptions and incomplete information which have not been taken into account in the quantitative uncertainty analysis.

(b) Environmental Risk Assessment Method

1. Fish and aquatic life

(i) Identify rare species, proposed and listed endangered or threatened species, and critical habitats which have been identified within a one mile radius of the site perimeter. This requirement is met by including rare species, proposed or listed endangered or threatened species, and critical habitats identified by the Tennessee Wildlife Resource Agency (TWRA), the Department's Division of Ecological Services, and the U.S. Department of Interior Fish and Wildlife Service. Determine if the area possibly impacted by the site contains critical habitats or habitats common to any rare species, or proposed or listed endangered or threatened species.

(ii) Where there is a release to surface water, evaluate the impact of the site on fish and aquatic life using methods or procedures such as benthic organism studies, toxicity testing, assessing tissue concentrations of

(Rule 0400-15-01-.08, continued)

chemicals with log of the octanol/water partition coefficient values greater than 3.5, or other methods or procedures approved by the Department to evaluate the impact on fish and aquatic life. Organize the information into a logical form and present both a detailed analysis and a summary of the results, assumptions, uncertainty, incomplete information, and impact.

2. Terrestrial Ecological Assessment

(i) Identify rare species, proposed or listed endangered or threatened species and critical habitats which have been identified within a one mile radius of the site perimeter. This requirement is met by including all rare species, proposed or listed endangered or threatened species, and critical habitats identified by the Tennessee Wildlife Resources Agency (TWRA), the Department's Division of Ecological Services, and the U.S. Department of Interior Fish and Wildlife Service.

(ii) Determine if the area possibly impacted by the site contains rare species, proposed or listed endangered or threatened species, or critical habitats.

(iii) Further assessment may be required by the Department if the Department suspects unacceptable impact or risks to critical habitats, proposed or listed endangered or threatened species habitats, or indicator species within the food web. Further assessment may also be required if contamination originating at the site impacts or potentially impacts public lands including, but not limited to, national parks, national forests, state parks, and state designated wildlife areas. Methods may include, but are not limited to, soil toxicity testing, ecological effects assessments, or determination of bioaccumulation of chemicals in site biota.

(6) Combination Approach

Remediation goals may be established by using a combination of approaches in paragraphs (3) through (5) [e.g., using MCL's for the ground water remediation goal and utilizing the human health and environmental risk assessment approach or the background approach to determine soil remediation goals.]

(7) Department Approval

Approval from the Department must be received before site specific standards or site specific remediation goals become effective.

(8) Points of Compliance

The remediation goal must be met at the appropriate points of compliance at the site as established by the Department after affording a liable party the opportunity to provide input and after undergoing a public participation process (e.g., Public Notice). The location of the points of compliance shall be based on factors including but not limited to the nature of the site and surrounding area, site access, and potential or actual points of exposure. The point of compliance for ground water monitoring at former waste management areas shall generally be a vertical surface located at the hydraulically downgradient limit of the former waste management area that extends down into the upper aquifer underlying the site. Certain site conditions will affect the point of compliance for ground water monitoring. This will vary if the site is located in karst terrain, the water table is located at or below the top of bedrock in an area where the contaminants may be migrating in fracture zones or other conduit flow, or dense nonaqueous phase liquids (DNAPL's) are present. In the valley and ridge province migration along geologic strike must be considered in the determination of what is considered

(Rule 0400-15-01-.08, continued)

hydraulically downgradient. Soils are normally sampled at locations selected because of site history, or actual or potential human exposure, or environmental receptors. Generally, points of compliance for soil shall include all areas which contain contaminants in excess of remediation goals.

Points of compliance different from those required by the Department can be established by a liable party, pending approval by the Department, after undergoing a public participation process.

(9) Containment

The Department recognizes that selected remedial actions may involve containment of hazardous substances. Any hazardous substance left on-site must be contained within a specified area and be protective of human health and the environment. A compliance monitoring program must be designed to insure the long-term integrity of the containment system. Unless otherwise approved by the Department, a ground water monitoring program approved by the Department shall be required for all areas where containment is a remedial action.

(10) Institutional Controls

Unless otherwise approved or determined by the Department, the following shall apply:

(a) Institutional controls shall be required whenever a remedial action does not address concentrations of hazardous substances which pose or may pose an unreasonable threat to the public health, safety, or the environment.

(b) Institutional controls shall be required for all areas where containment is a remedial action or the Department authorizes the discontinuance of pump and treat of ground water prior to attaining remediation goals.

(c) Institutional controls shall include, at a minimum, deed restrictions for sale and use of property, and securing the area to prevent human contact with hazardous substances which pose or may pose a threat to human health or safety.

(d) If an institutional control is required at a hazardous substance site as part of the clean up, remedy, or reclamation under TCA § 68-212-201 et seq. or these rules, then the current owner shall notify other liable parties and the Department of any change in use or proposed change in use. Said notification requirement shall be included in the deed notification.

(11) CERCLA Liability

Establishment of remediation goals under these rules and subsequent remediation to those goals may not relieve a liable party from liability under CERCLA including, but not limited to, liability under CERCLA §107(a)(4)(c) concerning damages for injury to, destruction of, or loss of natural resources.

(Rule 0400-15-01-.08, continued)

Table 8-1
Preliminary Remediation Goals

Chemical/Compound*	Goal	Chemical/Compound*	Goal
2,3,7,8-TCDD (dioxin)	3E-8	Dichloroethylene (1,1-)	0.007
2,4 D	0.07	Dichloroethylene (cis-1,2-)	0.07
2,4,5-TP	0.05	Dichloroethylene (trans-1,2-)	0.1
Alachlor	0.002	Dichloropropane (1,2-)	0.005
	…….	Ethylbenzene	
	…….	Ethylene dibromide (EDB)	0.00005
	…….	Fluoride	4.0
Aluminum	0.2**	Heptachlor	0.0004
Antimony	0.006	Heptachlor epoxide	
Arsenic	0.05	Iron	0.3
Asbestos	7 million fibers/liter	Lead	0.015***
Atrazine	0.003	Lindane	0.0002
Barium	2.0	Manganese	0.05**
Benzene	0.005	Mercury	0.002
Beryllium	0.004	Methoxychlor	0.04
Bromodichloromethane (THM)	0.1	Monochlorobenzene	0.1
Bromoform (THM)	0.1	Nickel	0.1
Cadmium	0.005	Nitrate	10.0
Carbofuran	0.04	Nitrate and Nitrite (total)	10.0
Carbon tetrachloride	0.005	Nitrite	1.0
Chlordane	0.002	Pentachlorophenol	0.001
Chlorodibromomethane (THM)	0.1	Polychlorinated biphenyls (PCB's)	0.0005
Chloroform (THM)	0.1	Selenium	0.05
Chromium	0.1	Silver	0.1**
Copper	1.3**	Styrene	0.1
Cyanide	0.2	Tetrachloroethylene	0.005
Di(2-ethylhexyl)phthalate	0.006	Thallium	0.002
Dichloromethane	0.005	Toluene	1.0
1,2,4-Trichlorobenzene	0.07	Toxaphene	0.003
1,1,2-Trichloroethane	0.005	Trichloroethane (1,1,1-)	0.2
Dalapon	0.2	Trichloroethylene	0.005
Dinoseb	0.007	Trihalomethanes (total)	0.1
Diquat	0.02	Vinyl chloride	0.002
Endothall	0.1	Xylenes (total)	10.0
Endrin	0.002	Zinc	5.0**
Glyphosate	0.7		
Hexachlorobenzene	0.001		
Hexachlorocyclopentadiene	0.05		
Oxamyl (vydate)	0.2		
Picloram	0.5		
Simazine	0.004		
Benzo(a) pyrene	0.0002		
Di(2-ethylhexyl)adipate	0.4		
Dibromochloropropane (DBCP)	0.0002		
Dichlorobenzene o-,m-	0.6		
Dichlorobenzene p-	0.075		
Dichloroethane (1,2-)	0.005		

* All levels in parts per million and are MCL's unless otherwise noted.

** These are SMCL's.

*** Lead is an action level rather than a MCL.

(Rule 0400-15-01-.08, continued)

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.09 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY.

(1) Purpose and Scope

The purpose of a remedial investigation and feasibility study (RI/FS) is to investigate, collect, develop and evaluate the required information regarding a site to support the selection of a remedy that protects human health, public welfare and the environment. The scope of the RI/FS is site specific and will depend on the amount and quality of available information. As new information becomes available, the scope may be reevaluated and, if appropriate, modified. Remedial Investigations and Feasibility Studies conducted pursuant to the requirements of CERCLA at 40 C.F.R. 300 will be deemed to meet the requirements of this rule.

(2) Remedial Investigation

(a) Initial Investigation

Initial planning of the RI process is required. Many of the initial planning steps are continued and refined in later phases of the RI. The plans in this rule shall be submitted to the Department by the responsible parties for review and approval prior to the implementation of the Site Characterization.

1. All pertinent data for the site shall be collected and analyzed. At a minimum, the following shall be included, or as otherwise determined by the Department.

(i) A site description including location, size, ownership, topography, geology, hydrogeology, ecology and other pertinent details. Deed descriptions and tax assessment property maps shall also be included for all parcels potentially contaminated by the site.

(ii) A site history, chronologically arranged, including site visits, investigations, disposal practices, sampling events, legal actions, regulatory violations, changes in ownership and previous clean-up actions.

(iii) All known and suspected sources of hazardous substances, potential routes of migration, and potential human and environmental concerns shall be identified.

2. Preliminary Remediation Goals

An initial survey shall be performed by the responsible parties of all Background contaminant levels and Applicable or Relevant and Appropriate Requirements (ARAR's) for the media of concern. ARAR requirements and Background requirements are detailed in paragraphs (3) and (4) of Rule 0400-15-01-.08 respectively.

3. RI Workplan

The workplan is a written document that summarizes the decisions and evaluations made during the data gathering phase and presents proposed activities, assigned responsibilities, project's schedule, and cost. The RI workplan shall be implemented by the responsible parties as approved by the

(Rule 0400-15-01-.09, continued)

Department unless the Department approves modification of the plan. The workplan shall contain but not be limited to the following, or as determined by the Department:

(i) Introduction

A general explanation of the reasons for the RI and the expected results and goals of the RI process.

(ii) Physical setting

The current understanding of the physical setting of the site, the site history, and the existing information of the condition of the site shall be described.

(iii) Initial evaluation

The information developed is presented, describing the potential migration and exposure pathways, and assessment of human health and environmental impacts.

(iv) Workplan rationale

Data requirements for the risk assessment, alternatives identified, and the workplan approach is presented to illustrate how the activities will satisfy data needs.

(v) RI tasks

The tasks to be performed during the RI are to be described. This description shall incorporate the RI site characterization tasks and the data evaluation methods to be used.

4. Health and Safety Plan

Before performing site activities a health and safety plan which complies with OSHA requirements shall be prepared and submitted by the responsible party(ies).

5. Sampling and Analysis Plan

A sampling and analysis plan shall be prepared by the responsible party for sampling activities which are part of the investigation and remedial action. The level of detail required in the sampling and analysis plan may vary with the scope and purpose of the sampling activity. The Sampling and Analysis plan shall be implemented as approved by the Department, unless the Department approves modification of the plan. The sampling and analysis plan shall specify procedures which ensure that sample collection, handling, and analysis will result in data of sufficient quality to plan and evaluate remedial actions at the site. References to standard protocols or procedures manuals may be used provided that the information referenced is readily available to the Department. The sampling and analysis plan shall contain but not be limited to the following, or as otherwise determined by the Department:

(i) A statement on the purpose and objectives of the data collection, including quality assurance and quality control requirements.

(ii) Procedures and responsibilities for the sampling and analysis activities.

(iii) Identification and justification of the location and frequency of sampling.

(iv) Identification and justification of the parameters to be analyzed.

(v) Procedures for installation of the sampling devices.

(vi) Procedures for sample collection and handling, including procedures for personnel and equipment decontamination.

(vii) Procedures, protective of human health and the environment, for the management of wastes generated by sampling activities, including installation of monitoring devices.

(viii) Description and number of quality assurance and quality control samples, including blanks and spikes.

(ix) Protocols for sampling, labeling and chain of custody.

(x) Provisions for splitting samples, where appropriate.

(xi) Reporting of detection or quantification limits.

(xii) Analytical techniques and procedures.

(xiii) Quality assurance and quality control procedures.

(xiv) Data reporting procedures, and where appropriate, validation procedures.

(xv) Other items specified by the project manager.

(xvi) Design specifications of monitoring well construction if monitoring wells are to be constructed.

(b) Site Characterization

A site characterization is an investigation conducted by the responsible party that identifies and documents the extent of contamination. Based on the findings of the Initial Investigation, the site characterization investigations shall focus on potentially contaminated media, potential routes of migration, and potential human health and environmental concerns. Such investigations will include as appropriate, the following:

1. Surface Water and Sediments

Investigate the surface water and sediments to characterize significant hydrologic features such as surface drainage patterns and quantities; areas of erosion and sediment deposition; floodplains; and actual or potential hazardous substances migration routes toward and within these features. Sufficient surface water and sediment sampling shall be performed to adequately characterize the areal and vertical extent and concentrations of hazardous substances. Properties of surface and subsurface sediments which are likely to influence the type and rate of migration shall be identified.

2. Soils and Bedrock

Investigate the areal and vertical distribution and concentration of hazardous substances in the soil. Identify properties of surface and subsurface soils which are likely to influence the type and rate of hazardous substance migration. Determine if the site is underlain by bedrock and if so, determine the type of bedrock underlaying the area of contamination. Evaluate the potential for hazardous substance migration at the soil-bedrock contact and below the top of bedrock along bedding planes, joints, faults and solutionally enlarged features.

3. Groundwater System

Investigate site geology and concentrations of hazardous substances in the groundwater, the physical and chemical characteristics of the hazardous substance, potential future uses of the ground water, the persistence and permanence of the contaminant. This shall include, but not be limited to, the description, physical properties and distribution of bedrock and unconsolidated materials; groundwater flow rate and gradient for affected and potentially affected aquifers; ground-water divides; areas of groundwater recharge and discharge; location of public and private production wells; and groundwater quality data. In karst terrains, the Department may require additional investigative techniques to determine groundwater flow and the extent of contamination. If site contamination is shown to be limited to the soils, a site specific decision will be made by the Department concerning ground water monitoring.

4. Air

Evaluate air quality impacts, including sampling, and information regarding local and regional climatological characteristics which are likely to affect the hazardous substance migration.

5. Human Population and Land Use

Determine the impact or potential impact of the hazardous substance on the human population and land use, such as sensitive environments, plant and animal species, and number of people in the area.

6. Nature and Extent of Contamination

Define the location, quantity, concentration, and areal and vertical extent of the hazardous substance at the site.

(c) Interim actions

At anytime during the RI/FS, an interim action may be required.

1. Purpose

The purpose of this rule is to describe how certain interim actions can occur prior to completion of a remedial action. An interim action is:

(i) An action that is necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways of exposure from a hazardous substance; or

(ii) An action that corrects a problem that may become substantially worse or cost substantially more to address if the action is delayed; or

(Rule 0400-15-01-.09, continued)

(iii) An action that is needed to provide for completion of the remedial investigation and feasibility study or design of a cleanup action; or

(iv) An action that achieves the remediation goals for a portion of the site; or

(v) An action that provides a partial cleanup, and provides information on how to achieve the remediation goals; or

(vi) An action that is consistent with the final cleanup action; or

(vii) An action that is followed by additional remedial actions unless compliance with the remediation goals has been confirmed at the site.

2. Public notification

Public notice may be required on an interim action as directed by the Department.

3. Submittal requirements

Unless otherwise directed by the Department, a report shall be submitted prior to conducting an interim action. Reports shall be of a scope and detail commensurate with the work to be performed and site-specific characteristics, and shall include, as appropriate:

(i) The necessity for the action.

(ii) A description of the interim action and how it will be accomplished.

(iii) A description of existing site conditions and a summary of all available data related to the interim action.

(iv) A health and safety plan.

(v) A sampling and analysis plan.

(3) Feasibility Study

An evaluation of alternative cleanup actions that protect human health and the environment, by reducing or otherwise controlling risks posed through each exposure pathway and migration route, shall be conducted by the responsible party. The number and types of alternatives to be evaluated shall take into account the characteristics and complexity of the site. A phased approach for evaluation of alternatives may be required for certain sites, including an initial screening of alternatives to reduce the number of potential remedies for the final detailed evaluation. The final evaluation of cleanup action alternatives that pass the initial screening shall consider the following factors:

(a) Overall protection of human health and the environment, including the degree to which existing risks are reduced, time required to reduce risks, and on-site and off-site risks resulting from implementing the alternative. The Department will determine the need for remediation based upon a human health and environmental risk assessment. Such an assessment shall include a consideration of the potential for human populations and sensitive ecosystems to be exposed to the hazardous materials of concern.

(Rule 0400-15-01-.09, continued)

(b) Attainment of the remediation goals and compliance with applicable state and federal laws.

(c) Short-term effectiveness, including protection of human health and the environment during construction and implementation of the alternative prior to attainment of the remediation goals.

(d) Long-term effectiveness, including degree of certainty that the alternative will be successful, long-term reliability, magnitude of residual risks, and effectiveness of controls required to manage treatment residues of remaining waste.

(e) Permanent reduction of toxicity, mobility and volume through treatment, including adequacy of the alternative in treating and managing the hazardous materials, reduction and elimination of hazardous material releases, sources of releases, degree of irreversibility of waste treatment process, and the characteristics and quantity of treatment residuals generated.

(f) The ability to be implemented including consideration of whether the alternative is technically feasible, availability of needed off-site facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction, operations and monitoring, and integration with existing facility operations and other current or potential remedial actions.

(g) Cost, including consideration of present and future direct and indirect capital, operation, maintenance and other foreseeable costs.

(h) The degree to which community concerns are addressed.

(i) The degree to which recycling, residue, and waste minimization are employed.

(4) Reporting Requirements

A report consistent with paragraphs (2) and (3) of this rule shall be prepared and submitted to the Department by the responsible party for review and approval at the completion of the RI/FS. Additionally, the Department may require reports to be submitted following discrete elements of the remedial investigation and feasibility study. The report shall systematically summarize all information gathered during the RI/FS phase and shall include all sampling data, tables, graphs, and other information requested by the Department.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.10 REMEDIAL DESIGN.

(1) Purpose

The purpose of the remedial design documents is to present the specific details of the selected remedial alternative based on the feasibility study and supporting documents. The design documents shall be stamped by a registered Professional Engineer licensed in the State of Tennessee. Records of Decision and Remedial Design at sites being investigated and remediated pursuant to CERCLA requirements at 40 C.F.R. §300 will be deemed to meet the requirements of this rule.

(2) Initial Remedial Design

(Rule 0400-15-01-.10, continued)

The Initial Remedial Design report is the process design of the selected alternative. The report must demonstrate quantitatively that the selected alternative will perform as intended. The level of complexity in the report will usually be intermediate between that of a general design in the feasibility study and the detailed design in the final plans and specifications. An Initial Remedial Design report shall be first submitted by the responsible party and approved before the remedial design contractor finalizes the plans and specifications. The following items shall be included in the report:

(a) A summary of the remedial alternative selected during the Feasibility Study and as defined in the Departments Record of Decision.

(b) A list of the objectives of the remedial action. The objectives shall include identifying and quantifying the contaminants to be remediated, and the concentration before and after the remedial action.

(c) Performance standards to be used in the design of the treatment units or processes.

(d) Site topographic map and preliminary layouts.

(e) Sizes of the treatment units that are specified on the basis of appropriate design calculations.

(f) All the discharges or emissions expected as a result of the remedial action; the ARAR's and the types of treatment necessary to meet those requirements; and mass balance calculations for the major units.

(g) Cost estimates and a schedule of implementation.

(h) Additional studies required for on-site treatment or disposal of contaminated waste. These studies could include field work, bench test, and pilot scale studies.

(3) Final Remedial Design

The final Design shall include specific and detailed steps that describe how the project will be constructed and/or remediated. The final Design shall be prepared by the responsible party and shall include:

(a) Quality assurance and quality control measures for sampling or monitoring activities.

The plan shall include a precise description of the project and scope of work.

(b) Treatment unit specifications.

Complete detailed plans and specifications including size, capacity, treatment efficiency, and other design considerations that apply to the specific site.

(c) Treatment/removal processes.

Treatment and removal processes detailing waste to be removed or treated; transportation required; disposal location; and other supporting data.

(d) Schedule of implementation.

A schedule that details significant milestones for the entire project.

(e) Remediation Goals.

(Rule 0400-15-01-.10, continued)

A listing of cleanup standards as required in the ROD.

(f) Equipment start-up and operator training procedures.

Requirements for providing service visits by experienced personnel; adjustments; startup and operation of the treatment systems; and appropriate operational procedures training.

(g) Disposal, transportation and other permit requirements.

(h) Estimated cost.

An estimate and estimate summary sheet that details all associated cost of the project.

(i) Public awareness process and schedule.

A summary of the public awareness schedule that describes the method and frequency of notifying the public of the remedial action.

(j) Health and Safety Plan.

Before performing site activities a health and safety plan which complies with OSHA requirements shall be prepared and submitted by the responsible party(ies).

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.11 REMEDIAL ACTION.

(1) Purpose

The purpose of the remedial action is to initiate a cleanup that will meet the objectives and standards of the chosen alternative as developed in the feasibility study and detailed in the remedial design. The remedial action will be implemented by the remedial contractor according to the approved remedial design documents. Remedial Actions conducted pursuant to the requirements of CERCLA at 40 C.F.R. §300 will be deemed to meet the requirements of this rule.

(2) Monitoring and Reporting Requirements

Records and reports shall be generated and submitted by the responsible party according to a schedule and format approved by the Department. These records and reports shall include, as appropriate:

(a) Progress report of the remedial action.

(b) Compliance with the approved schedule of events.

(c) Air quality and emissions records.

(d) Waste disposal records.

(e) Community relations activities.

(f) Change orders.

(Rule 0400-15-01-.11, continued)

(g) Cost to date.

(h) Problems or potential problems encountered.

(i) Anticipated activities and schedule for the next reporting period.

(j) Water quality and discharge records.

(k) Other information as required by the Department.

(3) Confirmation Sampling

Analytical sampling shall be performed by the responsible party to document the results of the remedial action. The sampling shall be in accordance with the remedial design and shall include the contaminants found during the remedial investigation. A report shall be generated that shows a comparison of the required standards and the final cleanup results. The Department shall be notified of the sampling activity prior to the sampling event.

(4) Final Inspection

At the completion of the remedial action, a final inspection shall be made. This inspection will consist of a walk-through of the entire site by the Department, the responsible party, and the prime contractor. Any outstanding construction items and actions required to resolve these items will be noted. A completion date for these items will be prepared and submitted to the Department for approval.

(5) Remedial Action Report

Upon satisfactory completion of the final inspection, a remedial action report shall be prepared by the responsible party and submitted to the Department. The report shall include the following:

(a) A description of the work performed and any variances from the approved plan.

(b) The volume and description of material removed and/or treated.

(c) Final location of any removed or treated material.

(d) Total itemized cost of the entire project from the remedial investigation planning through the remedial action.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.12 FINAL OPERATION AND MAINTENANCE PLAN.

(1) Purpose

The purpose of the O & M process is to provide funds and activities that will ensure the long term treatment and/or maintenance of a site that is required based on the Remedial Investigation /Feasibility Study and the Remedial Action.

(2) Description of O & M Activities

(Rule 0400-15-01-.12, continued)

A plan shall be submitted by the responsible party which details the activities that will occur during the operation and maintenance period. A reporting schedule and review cycle shall be established. The reporting schedule shall detail the reporting requirements for the proposed activities and the review cycle will establish a review of the O & M process. Below are items that shall be included, as appropriate, in the plan. The plan and schedule shall be submitted to the Department for review and approval prior to the implementation:

(a) Description of tasks for operation.

(b) Description of tasks for maintenance.

(c) Description of prescribed treatment.

(d) Description of monitoring tasks.

(e) Description of required laboratory testing.

(f) Equipment necessary to operate, maintain, and monitor the site for tasks identified in subparagraphs (a) through (e) of this paragraph.

(g) Schedule of the frequency of the required tasks identified in subparagraphs (a) through (e) of this paragraph.

(h) Contingency plan for emergencies and unforeseen deviations from the O & M plan.

(i) Other items as deemed necessary by the Department.

(3) Financial assurance may be required by the Commissioner to insure the O & M costs. This financial assurance shall be provided in a form, amount, and in the manner approved by the Commissioner.

(4) Reporting

A reporting schedule and review cycle shall be established. The schedule shall detail the requirements for the proposed activities with associated costs. The schedule will establish a periodic review of the O & M.

(5) Petition to Discontinue Pump and Treat of Ground Water

The Department realizes that in some cases pump and treat methods of ground water remediation may fail to achieve ground water remediation goals established under Rule 0400-15-01-.08. Unless otherwise determined by the Department, the following shall apply:

(a) After a responsible party has treated ground water for an extended period of time and the concentration of the hazardous substances in the ground water has reached asymptotic levels for contaminant removal, then the party responsible may petition the Department to discontinue pump and treat of ground water. Granting a petition to discontinue pump and treat does not abrogate any responsible party's liability or responsibility due to release or discharge of hazardous substance. The petition must include, at a minimum, the following:

1. A statement signed and sealed by a Professional Engineer licensed in Tennessee that the system was designed, constructed, and operated to recover the maximum quantity of hazardous substance contamination from the plume and to minimize the risk to human health, safety, and the environment posed by the hazardous substance. This certification shall further state what, if anything,

(Rule 0400-15-01-.12, continued)

can be done to further reduce the concentration of hazardous substance in ground water.

2. Documentation of the type of treatment used at the site, including, but not limited to, as built diagrams of sufficient detail to demonstrate that the recovery system was properly designed, engineered, and constructed, and a description of the length of treatment and the maintenance schedule.

3. The existing hydrogeologic characteristics of the site and the surrounding land.

4. The physical and chemical characteristics of the hazardous substances, including their toxicity, persistence, and potential for migration.

5. Site specific analysis of the source area(s) which determines whether or not the ground water is continuing to be contaminated by leachate from the sources. This analysis must also include specifics about the extent and volume of remaining sources and an evaluation of the costs, technologies and affects of possible source reduction.

6. Identification of all human and sensitive environmental receptors and potential receptors which are impacted by the contaminated ground water or have a potential to be impacted in the event the pump and treat is discontinued.

7. Documentation of the vertical and areal extent of contaminated ground water, sampling locations, sampling dates, results of analytical sampling, well elevations, and water level data.

8. Description of the proposed alternate option for remediation and the monitoring activities.

9. Detail contingency plans describing actions the liable party will take in the event receptors are contaminated by the hazardous substances.

10. Other information requested by the Department.

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13.*

0400-15-01-.13 LIST OF INACTIVE HAZARDOUS SUBSTANCE SITES.

Promulgated List

SITE NUMBER	SITE NAME
	ANDERSON (01)
01504	D.O.E Oak Ridge Oak Ridge, TN
01579	Dupont Smith/Atomic City Oak Ridge, TN
01580	Anderson County Landfill Clinton, TN

SITE NUMBER	SITE NAME
	BLOUNT (05)

(Rule 0400-15-01-.13, continued)

05501	Aluminum Co. of America Alcoa, TN
05503	Aluminum Co. of America Alcoa, TN

SITE NUMBER	SITE NAME

BRADLEY (06)

06505	Duracell Inc. Cleveland, TN

SITE NUMBER	SITE NAME

CARTER (10)

10502	American Bemberg Plant Elizabethtown, TN
10508	Old Bemberg Bldg. Elizabethtown, TN

SITE NUMBER	SITE NAME

COCKE (15)

15504	Arapahoe/Rock Hill Labs Newport, TN
15505	Newport Dump Newport, TN
15508	Wall Tube and Metal Newport, TN

SITE NUMBER	SITE NAME

DAVIDSON (19)

19511	Stauffer Chemical Nashville, TN
19524	Municipal Landfill Nashville, TN

SITE NUMBER	SITE NAME

FAYETTE (24)

24501	Ross Metals Rossville, TN
24503	Gallaway Pits Gallaway, TN

SITE NUMBER	SITE NAME

FRANKLIN (26)

26501	AEDC

(Rule 0400-15-01-.13, continued)

	Arnold Air Force Station, TN

SITE NUMBER	SITE NAME
	GIBSON (27)
27512	ITT Telecommunications Milan, TN

SITE NUMBER	SITE NAME
	HAMBLEN (32)
32506	BASF/Stauffer Chemical Co. Morristown, TN
32514	Old Morristown-Hamblen Co. Landfill Morristown, TN
32517	Neblett Road Dump Morristown, TN
32518	Pine Brook Road Dumb Morristown, TN

SITE NUMBER	SITE NAME
	HAMILTON (33)
33527	Velsicol/Residue Hill Chattanooga, TN
33540	Montague Park Chattanooga, TN
33543	Hamill Road Dump #3 Chattanooga, TN
33547	Chattanooga Coke Chattanooga, TN
33550	North Hawthorne Dump Chattanooga, TN
33557	USVAAP Chattanooga, TN
33584	Chattanooga Creek Chattanooga, TN
33596	Mor-Flo Industries, Inc. Chattanooga, TN
33618	Morningside Chemicals Chattanooga, TN
33620	National Microdynamics (Lutex Chemical) Chattanooga, TN
33635	Tennessee Transformer Chattanooga, TN
33660	Electro-Lite Battery Chattanooga, TN

SITE NUMBER	SITE NAME
	HARDEMAN (35)
35506	Velsicol Chemical

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	Toone, TN
SITE NUMBER	SITE NAME
	HENRY (40)
40506	Henry County Boneyard Paris, TN
SITE NUMBER	SITE NAME
	HICKMAN (41)
41504	Wrigley Charcoal Wrigley, TN
SITE NUMBER	SITE NAME
	JEFFERSON (45)
45503	Hodgson, Hollis Jefferson City, TN
SITE NUMBER	SITE NAME
	KNOX (47)
47514	Witherspoon Landfill Knoxville, TN
47518	Badgett Road Landfill Knoxville, TN
47521	Southern Rail/Coster Shop Knoxville, TN
47523	Foote Mineral/Cas Walker (Dante) Knoxville, TN
47530	Screen Art, Inc. Knoxville, TN
47541	Witherspoon Recycling Knoxville, TN
47545	Sanitary Laundry & Dry Cleaning Knoxville, TN
47547	Roscoe Fields Property Knoxville, TN
47559	Smokey Mountain Smelters Knoxville, TN
47573	Dixie Barrel & Drum Co. Knoxville, TN
SITE NUMBER	SITE NAME
	LAWRENCE (50)
50502	Murray-Ohio Landfill Lawrenceburg, TN
50505	Lawrenceburg Horseshoe Bend Lawrenceburg, TN

(Rule 0400-15-01-.13, continued)

50509	Former Murray Ohio Plant Lawrenceburg, TN

SITE NUMBER	SITE NAME
	LOUDON (53)
53502	Greenback Industries Greenback, TN
53503	Lenoir City Car Works Lenoir City, TN

SITE NUMBER	SITE NAME
	MADISON (57)
57508	American Creosote Works Jackson, TN
57510	Porter Cable Jackson, TN
57517	Boone Dry Cleaners Jackson, TN

SITE NUMBER	SITE NAME
	MARION (58)
58502	North American Environmental Whitwell, TN

SITE NUMBER	SITE NAME
	MARSHALL (59)
59502	Heil Quaker Corp. Lewisburg, TN
59503	Lewisburg Dump Lewisburg, TN

SITE NUMBER	SITE NAME
	MAURY (60)
60501	Stauffer Chemical Co. Mt. Pleasant, TN
60534	Monsanto Columbia, TN

SITE NUMBER	SITE NAME
	MONROE (62)
62505	Red Ridge Landfill

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	Madisonville, TN
SITE NUMBER	SITE NAME
	POLK (70)
70502	Apache Blast Copperhill, TN
SITE NUMBER	SITE NAME
	PUTNAM (71)
71502	Putnam County Landfill Cookeville, TN
SITE NUMBER	SITE NAME
	ROANE (73)
73504	Roane Alloys Rockwood, TN
73506	Rockwood Iron & Metal Rockwood, TN
73512	Joyner Scrap Yard Rockwood, TN
SITE NUMBER	SITE NAME
	RUTHERFORD (75)
75522	Old Murfreesboro City Dump Murfreesboro, TN
SITE NUMBER	SITE NAME
	SHELBY (79)
79503	Arlington Blending Arlington, TN
79517	Bellevue Avenue Landfill Memphis, TN
79518	Cypress Creek Memphis, TN
79525	International Harvester Memphis, TN
79536	W. R. Grace & Co. Memphis, TN
79549	Chickasaw Ordinance Works Memphis, TN
79552	Carrier Corporation Collierville, TN
79561	Nilok Chemical Company Memphis, TN
79569	Chapman Chemical Co.

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	Memphis, TN
79582	Diesel Recon Co. Memphis, TN
79598	North Hollywood Dump Memphis, TN
79604	Memphis Public Works/Jackson Pits Memphis, TN
79676	Smalley-Piper Collierville, TN
79742	Pulvair Corporation Millington, TN
79758	Old Osmose Chemical Memphis, TN
79781	John Little/Drum Memphis, TN
79798	61 Industrial Park Site Memphis, TN
79799	Tennessee Air National Guard Memphis, TN
79800	Creotox Chemical Company Memphis, TN
79805	Fiberfine of Memphis Memphis, TN
79843	Warfield Place/Pulvair Memphis, TN

SITE NUMBER	SITE NAME
	SULLIVAN (82)
82514	Sperry/Unisys Bristol, TN
82516	Earhart Bristol, TN

SITE NUMBER	SITE NAME
	UNICOI (86)
86501	Bumpass Cove Landfill Embreeville, TN
86502	Bumpass Cove – Fowler Erwin, TN
86505	Morrell Electric, Inc. Erwin, TN

SITE NUMBER	SITE NAME
	WARREN (89)
89504	Century Electric Facility McMinnville, TN

SITE NUMBER	SITE NAME
	WASHINGTON (90)

(Rule 0400-15-01-.13, continued)

90510	Cash Hollow Dump Johnson City, TN

SITE NUMBER	SITE NAME
	WAYNE (91)
91501	Mallory Capacitor Co. Waynesboro, TN
91502	Waynesboro City Dump Waynesboro, TN

SITE NUMBER	SITE NAME
	WILSON (95)
95501	TRW/Ross Gear Division Lebanon, TN

Authority: *T.C.A. §§ 68-212-201 et seq. and 4-5-201 et seq.* ***Administrative History:*** *Original rule filed June 19, 2012; effective September 17, 2012. Rule was renumbered from 1200-01-13. Amendment filed October 30, 2012; effective January 28, 2013. Amendment filed February 5, 2015; effective May 6, 2015.*