Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20*]26-[*10*]2.010 Applicability

PURPOSE: This rule defines the underground storage tanks that are subject to the requirements of this chapter. This rule contains the technical standards for underground storage tanks. This rule is designed specifically to protect the quality of groundwater in the state as well as to protect human health and the overall quality of the environment. This rule is promulgated on the authority of sections 319.100 and 319.137, RSMo and, as directed by this law, is based upon federal rules 40 CFR 280.10 and 40 CFR 280.74.

Editor's Note: The secretary of state has determined that the publication of this rule in its entirety would be unduly cumbersome or expensive. The entire text of the material referenced has been filed with the secretary of state. This material may be found at the Office of the Secretary of State or at the headquarters of the agency and is available to any interested person at a cost established by law.

(1) The requirements of this chapter apply to all owners and operators of an underground storage tank (UST) system as defined in 10 CSR [*20*]**26**-[*10*]**2**.012, except as otherwise provided in sections (2) – (4) of this rule. Any UST system listed in section (3) of this rule must meet the requirements of 10 CSR [*20*]**26**-[*10*]**2**.011.

(2) The following UST systems are excluded from the requirements of this chapter:

(A) Any UST system holding hazardous wastes listed or identified in the Missouri Hazardous Waste Management Law, sections 260.350 260.434, RSMo and the rules promulgated thereunder or a mixture of hazardous waste and other regulated substances, except for waste oil as defined in 10 CSR 25-11.279;

(B) Any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the Clean Water Act (33 U.S.C.A. 1251);

(C) Equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks;

(D) Any UST system whose capacity is one hundred ten (110) gallons or less;

(E) Any UST system that contains a de minimis concentration of regulated substances; and

(F) Any emergency spill or overflow containment UST system that is expeditiously emptied after use.

(3) Deferrals. Rules 10 CSR [*20*]**26**-[*10*]**2**.020 – 10 CSR [*20*]**26**-[*10*]**2**.053 and closure requirements in 10 CSR [*20*]**26**-[*10*]**2**.060 – 10 CSR [*20*]**26**-[*10*]**2**.064 do not apply to any of the following types of UST systems:

(A) Wastewater treatment tank systems;

(B) Any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 (42 U.S.C. 2011 and following);

(C) Any UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50 Appendix A;

(D) Airport hydrant fuel distribution systems; and

(E) UST systems with field-constructed tanks.

(4) Deferrals. The release detection requirements of rules 10 CSR [*20*]**26**-[*10*]**2**.040 – 10 CSR [*20*]**26**-[*10*]**2**.045 do not apply to any UST systems that store fuel solely for use by emergency power generators.

AUTHORITY: sections 319.100, 319.105, 319.107, 319.111 and 319.114, RSMo [*1994*] **2000** and **260.370**, 319.109, [*319.132*] and 319.137, RSMo Supp. [*1995*]**2007**.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Jan. 2, 1996, effective Aug. 30, 1996.

*Original authority: 319.100, RSMo 1989, amended 1991, 1993; 319.105, RSMo 1989; 319.107, RSMo 1989, amended 1994; 319.109, RSMo 1989, amended 1995; 319.111, RSMo 1989; 319.114, RSMo 1989; [*319.132, RSMo 1991, amended 1995;*] 319.137, RSMo 1989, amended 1993, 1995.

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10 CSR [*20*]26-[*10*]2.011 Interim Prohibition for Deferred Underground Storage Tank Systems

PURPOSE: This rule establishes minimum performance standards for the installation of deferred underground storage tanks.

(1) No person may install an underground storage tank (UST) system listed in 10 CSR [*20*]**26**-[*10*]**2.**010(3) for the purpose of storing regulated substances unless the UST system (whether of single- or double-wall construction)--

(A) Will prevent releases due to corrosion or structural failure for the operational life of the UST system;

(B) Is cathodically protected against corrosion, constructed of noncorrodible material, steel-clad with a noncorrodible material or designed in a manner to prevent the release or threatened release of any stored substance; and

(C) Is constructed or lined with material that is compatible with the stored substance.

(2) Notwithstanding section (1) of this rule, a UST system without corrosion protection may be installed at a [*site*] **facility** that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life. Owners and operators must maintain records that demonstrate compliance with the requirements of this section for the remaining life of the tank.

(3) The determination in section (2) of this rule should comply with the following recommended practice: The National Association of Corrosion Engineers Standard RP-02-85, Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems.

AUTHORITY: sections 319.105, RSMo [*Supp. 1989*] 2000***** and [*644.041, RSMo 1986*] **319.137 RSMo Supp. 2007**.[*] Original rule filed April 2, 1990, effective Sept. 28, 1990. *Original authority: 319.105, RSMo 1989 [*and 644.041, RSMo 1972, amended 1973*].

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10 CSR [*20*]26-[*10*]2.012 Definitions

PURPOSE: This rule defines specific words used in this chapter.

PUBLISHER'S NOTE: The publication of the full text of the material that the adopting agency has incorporated by reference in this rule would be unduly cumbersome or expensive. Therefore, the full text of that material will be made available to any interested person at both the Office of the Secretary of State and the office of the adopting agency, pursuant to section 536.031.4, RSMo. Such material will be provided at the cost established by state law.

(1) Many definitions relevant to this rule are set forth in the underground storage tank law in section 319.100, RSMo. The definitions set forth in 40 CFR 280.12, July 1, 1998, are incorporated by reference, subject to the following additions, modifications, substitutions or deletions in the subsections:

(A) Definitions beginning with the letter A. [*(Reserved)*]

1. "Activity and use limitation" means a complete physical barrier or mechanism, or an enforceable legal restriction or obligation with respect to real property, that will protect human health, public welfare and the environment from contamination present on the property for as long as the contamination may pose unacceptable risk. Examples include restrictive covenants and local ordinances accompanied by a memorandum of agreement between the local governmental body and the department.

2. "Age-adjusted individual" means a human that is continuously resident on a property from birth to thirty (30) years of age.

3. "Applicable target level" means one of the following for each chemical of concern:

A. Default target level as defined below;

B. Risk-based target level as defined below for Tier 1 purposes; or

C. Site-specific target level as defined below for Tier 2 or Tier 3 purposes.

(B) Definitions beginning with the letter B. (Reserved);

(C) Definitions beginning with the letter C.

1. "Cancer slope factor" means an upper bound estimate, approximating a 95% confidence limit, of the increased cancer risk from a lifetime exposure to a chemical expressed in units of proportion per unit dose (mg/kg-day).

[*1*]**2**. To the definition of "CERCLA" at 40 CFR 280.12, incorporated in this rule, add the words "by the Superfund Amendments and Reauthorization Act of 1986" after the words "as amended";

3. "Child" means a human that is continuously resident on a property from birth to six (6) years of age.

(D) Definitions beginning with the letter D.

1. "Deed notice" means information filed with the local recorder of deeds and recorded in the chain of title for an affected property, which describes the appropriate use and condition of the property.

2. "Default target level" means the concentration of a chemical of concern that is the lowest of the tier one risk-based target levels for all exposure pathways and below which human receptors are protected from all complete exposure pathways for residential or other unrestricted land use. For each contaminant of concern, the default target level shall be either:

A. The target level shown in Table 3-1 of the *Missouri Risk-Based Corrective Action (MRBCA) Process for Petroleum Storage Tanks* guidance document published by the Department of Natural Resources, P.O. Box 176, Jefferson City, Missouri 65102-1076, dated January 2009, which is hereby incorporated by reference; or

B. A different value if the department determines in writing that a deviation is appropriate based on changes in the scientific data used to calculate such default target level.

[*1.*] **2.** "De minimus" means--

A. Any volume of regulated substance(s) contained in a tank with a capacity of less than one hundred ten (110) gallons; or

B. A very low concentration of regulated substances; or

C. Any volume of regulated substance(s) contained in an emergency backup tank that holds regulated substances for only a short period of time and is expeditiously emptied after use. (Comment: De minimus tanks include: swimming pools, permitted wastewater treatment facilities and chlorinated, potable water storage tanks. An oil-water separator is not a de minimus system unless the tank has a less than one hundred ten (110) gallon capacity.)

[*2.*]**3.** "Department," unless otherwise stated, means the Missouri Department of Natural Resources;

(E) Definitions beginning with the letter E.

1. "Engineered control" means an engineered and constructed physical mechanism to prevent direct human or environmental exposure to chemicals of concern. Examples include surface and subsurface barriers and vapor collection and control systems.

[*1.*]**2.** In the definition for "existing tank system" in 40 CFR 280.12 incorporated in this rule, substitute the date "September 28, 1990" for the date "December 22, 1988";

3. "Exposure domain" means the area of environmental media that contributes to actual or potential exposure by a receptor to chemicals of concern at a site.

(F) Definitions beginning with the letter F. (Reserved);

(G) Definitions beginning with the letter G. (Reserved);

(H) Definitions beginning with the letter H.

1. This definition shall apply in lieu of the definition of "hazardous substance UST system" in 40 CFR 280.12 incorporated in this rule. "Hazardous substance UST system" means a UST system that contains a hazardous substance defined

in Section 101(14) of the CERCLA (but not including any substance regulated as a hazardous waste under the Missouri Hazardous Waste Management Law, sections 260.350-260.434, RSMo) or any mixture of these substances and petroleum, and which is not a petroleum UST system;

2. "Hazard quotient" means the ratio of an exposure level to a chemical to a non-carcinogenic toxicity value for that chemical;

(I) Definitions beginning with the letter I.

1. The definition for "implementing agency" in 40 CFR 280.12 is not incorporated into this rule.

2. "Individual excess lifetime cancer risk" means the increase over background in an individual's probability of developing cancer over a lifetime due to exposure to a chemical.

3. "Inhalation unit risk" means the increase in the lifetime risk of an individual who is exposed for a lifetime to one (1) microgram per cubic meter ($\mu g/m^3$) of a chemical in air.

[*2*]**4**. The terms "in-operation," "in-service," and "in-use" are equivalent and mean input or output that occurs on a regular basis for the tank's intended purpose. In determining the status of a tank, the department may consider factors including, but not limited to: routine input or outputs from the tank and the activity status of tank-related operations at the premises where the tank is located. A tank is considered to be in-operation, in-service, and in-use beginning with the first input of a regulated substance into the tank system;

(J) Definitions beginning with the letter J. (Reserved);

(K) Definitions beginning with the letter K. (Reserved);

(L) Definitions beginning with the letter L. [*(Reserved)*];

1. "Light non-aqueous phase liquids" (LNAPL) means liquids that are sparingly soluble in, immiscible with, and less dense than water. When released into the environment, LNAPL will exist in both mobile (or free) and immobile (or entrapped) states.

2. "Long-term stewardship measure" means department-approved legal or physical restrictions or limitations, as well as informational devices, designed to eliminate or minimize the risk of exposures to chemicals of concern associated with the use of, or access to, a tank system, site or facility, or to prevent activities that could interfere with the effectiveness of a response action, for the duration of time that the chemicals pose an elevated risk. All long-term stewardship measures are intended to ensure maintenance of a condition of acceptable risk to human health and the environment. Long-term stewardship measures include, but are not necessarily limited to, any one or more of the following upon approval by the department:

A. Activity and use limitations;

B. Engineered controls accompanied by activity and use limitations;

C. Informational devices, such as:

(I) Deed notices designed to alert actual and potential owners of a property of the environmental condition of the property and to describe property uses and activities associated with acceptable risk in light of those conditions; or

(II) Information management systems, if available and approved by the department.

(M) Definitions beginning with the letter M. [*(Reserved)*];

1. "Maximum contaminant level" means the maximum permissible level of a contaminant in drinking water.

(N) Definitions beginning with the letter N.

1. In the definition for "new tank system" in 40 CFR 280.12 incorporated in this rule, substitute the date "September 28, 1990" for the date "December 22, 1988";

(O) Definitions beginning with the letter O.

1. In the definition for "operational life" in 40 CFR 280.12 incorporated in this rule, substitute "10 CSR [*20-10.070*] **26-2.060** – 10 CSR [*20-10.074*]**26-2.064**" for "Subpart G."

2. The term "out-of-operation," "out-of-service," and "out-of-use" are equivalent and mean input or output activity no longer occurs on a regular basis for the tank's intended purpose.

3. The definition for "owner" in 40 CFR 280.12, is not incorporated in this rule and the definition in section 319.100(9), RSMo, shall be used instead;

(P) Definitions beginning with the letter P.

1. The definition for "person" in 40 CFR 280.12 is not incorporated in this rule and the definition in section 319.100(11), RSMo, shall be used instead;

(Q) Definitions beginning with the letter Q. (Reserved);

(R) Definitions beginning with the letter R.

1. "Reference concentration" means an estimate, with uncertainty spanning perhaps an order of magnitude, of a continuous inhalation exposure to the human population, including sensitive subgroups, that is likely to be without an appreciable risk of deleterious effects during a lifetime;

2. "Reference dose" means an estimate, with uncertainty spanning perhaps an order of magnitude, of a daily oral exposure to the human population, including sensitive subgroups, that is likely to be without an appreciable risk of deleterious effects during a lifetime;

[*1*]**3**. The definition for "regulated substance" in 40 CFR 280.12 is not incorporated in this rule, and the definition in section 319.100(14), RSMo, shall be used instead;

[*2*]**4**. The definition for "release" in 40 CFR 280.12 is not incorporated in this rule, and the definition in section 319.100(15), RSMo, shall be used instead;

5. "Restrictive covenant" means a servitude creating legal restrictions or obligations with respect to real property related to contamination resulting from a release from a petroleum storage tank as defined in section 319.100;

6. "Risk-based target level" means the pathway and chemical-specific concentration of a chemical of concern in an environmental medium that meets an acceptable human health risk level. Risk-based target levels are calculated by the department using standard models and default exposure factors, toxicity factors, physical and chemical properties, and contaminant fate and transport parameters and are applicable at Tier 1 of the risk-based corrective action process. For each contaminant of concern, the risk-based target level shall be either:

A. The risk-based target level shown in Tables 7-1(a) through 7-12 of the *Missouri Risk-Based Corrective Action (MRBCA) Process for Petroleum Storage Tanks* guidance document published by the Department of Natural Resources, P.O. Box 176, Jefferson City, Missouri 65102-1076, dated January 2009, which are hereby incorporated by reference; or

B. A different value if the department determines in writing that a deviation is appropriate based on changes in the scientific data used to calculate such risk-based target level.

(S) Definitions beginning with the letter S.

1. In lieu of the definition for "septic tank" in 40 CFR 280.12, the definition for "septic tank" shall be any watertight, covered receptacle designed and constructed to receive the discharge of sewage, separate solids from liquid, digest organic matter, store liquids through a period of detention and allow the clarified liquids to discharge to a soil treatment system;

2. "Site" means the current and future areal extent of contamination resulting from a petroleum release inclusive of contamination both on the property at which the contamination originated (i.e., the source property) and on all adjacent and neighboring properties onto which such contamination has or is likely to migrate;

3. "Site-Specific Target Level" means pathway and chemical specific calculated risk-based target levels that are based on site-specific data and an acceptable risk level considered protective of human health and the environment.

A. Site-specific target levels calculated at Tier 2 of the risk-based corrective action process using site-specific fate and transport data and the toxicity factors, physical and chemical properties, and exposure factors found in tables B-1, B-2, and B-3, respectively, and default models at Figures B.1 through B.30 found in appendix B of the January 2009 *Missouri Risk-Based Corrective Action (MRBCA) Process for Petroleum Storage Tanks* guidance document published by the Department of Natural Resources, P.O. Box 176, Jefferson City, Missouri 65102-0176, dated January 2009, which are hereby incorporated by reference and are applicable unless the department determines in writing that a deviation is appropriate based on changes in the scientific data used to calculate the site-specific target levels;

B. Site-specific target levels calculated at tier three of the risk-based corrective action process using default, literature-derived, and/or site-specific exposure factors, physical and chemical properties, toxicity factors, and fate and transport data and default, alternative or a combination of default and alternative models are applicable unless the department determines or has determined that a deviation is appropriate based on changes in the scientific data used to calculate the site-specific target levels;

4. "Soil horizon" means a layer of soil having distinct characteristics and varying from adjacent layers;

5. "Source property" means the property on which contamination from a petroleum storage tank originated;

6. "Subsurface soil" means soil and other geologic materials below a depth of thirty-six (36) inches from the ground surface;

7. "Surficial soil" means soil from the ground surface to a depth of thirty-six (36) inches;

(T) Definitions beginning with the letter T. (Reserved);

(U) Definitions beginning with the letter U.

1. In the definition of "upgrade" in 40 CFR 280.12 incorporated in this rule, substitute the words "regulated substance" for the word "product."

2. The definition for "underground storage tank" or "UST" found in 40 CFR 280.12 is not incorporated in this rule, and the definition in section 319.100(16), RSMo, shall be used instead;

3. "Underground storage tank facility" means a facility that has or had one or more petroleum underground storage tanks, as defined in Section 319.100, RSMo;

(V) Definitions beginning with the letter V. (Reserved);

(W) Definitions beginning with the letter W. (Reserved);

(X) Definitions beginning with the letter X. (Reserved);

(Y) Definitions beginning with the letter Y. (Reserved);

(Z) Definitions beginning with the letter Z. (Reserved).

AUTHORITY: sections **319.100,** 319.105, 319.107, 319.111 and 319.114, RSMo [*1994*] **2000** and [*319.100,*] 319.109[, *319.132*] and 319.137, RSMo Supp. [*1998*] **2007**.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Dec. 31, 1991, effective Aug. 6, 1992. Amended: Filed Jan. 2, 1996, effective Aug. 30, 1996. Amended: Filed Jan. 14, 1997, effective Sept. 30, 1997. Amended: Filed April 1, 1999, effective March 30, 2000.

*Original authority: 319.100, RSMo 1989, amended 1991, 1993, 1996, 1998; 319.105, RSMo 1989; 319.107, RSMo 1986, amended 1994; 319.109, RSMo 1989, amended 1995; 319.111, RSMo 1989; 319.114, RSMo 1989; 319.132, RSMo 1991, amended 1995, 1996, 1998; and 319.137, RSMo 1989, amended 1993, 1995.

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10 CSR [*20-10.020*] 26-2.020 Performance Standards for New Underground Storage Tank Systems

PURPOSE: This rule sets the standards for tanks, piping, spill and overfill prevention equipment, installation and certification of installation that new underground storage tanks must meet.

Editor's Note: The secretary of state has determined that the publication of this rule in its entirety would be unduly cumbersome or expensive. The entire text of the rule has been filed with the secretary of state. The entire text of the rule may be found at the headquarters of the agency and is available to any interested person at a cost established by state law. The form mentioned in this rule follows [*10 CSR 20-10.022*]***10 CSR 26-2.022***.

(1) In order to prevent releases due to structural failure, corrosion or spills and overfills for as long as the underground storage tank (UST) system is used to store regulated substances, all owners and operators of new UST systems must meet the following requirements:

(A) Tanks. Each tank must be properly designed and constructed, and any portion underground that routinely contains product must be protected from corrosion, in accordance with a code of practice developed by a nationally-recognized association or independent testing laboratory as follows:

1. The tank is constructed of fiberglass-reinforced plastic and complies with one (1) or more of the following industry codes:

A. Underwriters' Laboratories Standard 1316, Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products; or

B. American Society of Testing and Materials Standard D4021-86, Standard Specification for Glass-Fiber-Reinforced Polyester Underground Petroleum Storage Tanks; or

2. The tank is constructed of steel and cathodically protected in the following manner:

A. The tank is coated with a suitable dielectric material;

B. Field-installed cathodic protection systems are designed by a corrosion expert;

C. Impressed current systems are designed to allow determination of current operating status as required in 10 CSR [*20-10.031*]**26-2.031**(1)(C);

D. Cathodic protection systems are operated and maintained in accordance with 10 CSR [*20-10.031*]**26-2.031** or according to guidelines established by the department; and

E. The following codes and standards may be used to comply with paragraph (1)(A)2. of this rule:

(I) Steel Tank Institute Specification for STI-P3 System of External Corrosion Protection of Underground Steel Storage Tanks:

(II) Underwriters' Laboratories Standard 1746, Corrosion Protection Systems for Underground Storage Tanks;

(III) National Association of Corrosion Engineers Standard RP-02-85, Control of External Corrosion on Metallic Buried, Partially Buried or Submerged Liquid Storage Systems;

(IV) Underwriters' Laboratories Standard 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids;

3. The tank is constructed of a steel, fiberglass-reinforced plastic composite that complies with one (1) of the following industry codes:

A. Underwriters' Laboratories Standard 1746, Corrosion Protection Systems for Underground Storage Tanks; or

B. The Association for Composite Tanks ACT-100, Specification for the Fabrication of FRP Clad Underground Storage Tanks;

4. The tank is constructed of metal without additional corrosion protection measures provided that--

A. The tank is installed at a [*site*] **facility** that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life; and

B. Owners and operators maintain records that demonstrate compliance with the requirements of subparagraph (1)(B)4.A. of this rule for the remaining life of the tank; or

5. The tank construction and corrosion protection are determined by the department to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than paragraphs (1)(A)1.--4. of this rule;

(B) Piping. The piping that routinely contains regulated substances and is in contact with the ground must be properly designed, constructed and protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory as follows:

1. The piping is constructed of fiberglass-reinforced plastic;

2. The following codes and standards may be used to comply with paragraph (1)(B)1. of this rule:

A. Underwriters' Laboratories Subject 971, UL Listed Non-Metal Pipe; and

B. Underwriters' Laboratories Standard 567, Pipe Connectors for Flammable and Combustible and LP Gas;

3. The piping is constructed of steel and cathodically protected in the following manner:

A. The piping is coated with a suitable dielectric material;

B. Field-installed cathodic protection systems are designed by a corrosion expert;

C. Impressed current systems are designed to allow determination of current operating status as required in 10 CSR [*20-10.031*]**26-2.031**(1)(C);

D. Cathodic protection systems are operated and maintained in accordance with 10 CSR [*20-10.031*]**26-2.031**; and

E. The following codes and standards may be used to comply with paragraph (1)(B)3. of this rule:

(I) National Fire Protection Association Standard 30, Flammable and Combustible Liquids Code;

(II) American Petroleum Institute Publication 1615, Installation of Underground Petroleum Storage Systems;

(III) American Petroleum Institute Publication 1632, Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems; and

(IV) National Association of Corrosion Engineers Standard RP-01-69, Control of External Corrosion on Submerged Metallic Piping Systems;

4. The piping is constructed of metal without additional corrosion protection measures provided that--

A. The piping is installed at a [*site*] **facility** that is determined by a corrosion expert to not be corrosive enough to cause it to have a release due to corrosion during its operating life; and

B. Owners and operators maintain records that demonstrate compliance with the requirements of subparagraph (1)(A)4.A. of this rule for the remaining life of the tank;

5. The following codes may be used to comply with paragraph (1)(B)4. of this rule:

A. National Fire Protection Association Standard 30, Flammable and Combustible Liquids Code; and

B. National Association of Corrosion Engineers Standard RP-01-69, Control of External Corrosion on Submerged Metallic Piping Systems; or

6. The piping construction and corrosion protection are determined by the department to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than the requirements in paragraphs (1)(B)1.--5. of this rule;

(C) Spill and Overfill Prevention Equipment.

1. Except as provided in paragraph (1)(C)2. of this rule, to prevent spilling and overfilling associated with product transfer to the UST system, owners and operators must use the following spill and overfill prevention equipment:

A. Spill prevention equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe (for example, a spill catchment basin); and

B. Overfill prevention equipment that will--

(I) Automatically shut off flow into the tank when the tank is no more than ninety-five percent (95%) full;

(II) Alert the transfer operator when the tank is no more than ninety percent (90%) full by restricting the flow into the tank or triggering a high-level alarm; or

(III) Restrict flow thirty (30) minutes prior to overfilling, alert the operator with a high level alarm one (1) minute before overfilling or

automatically shut off flow into the tank so that none of the fittings located on top of the tank are exposed to product due to overfilling.

2. Owners and operators are not required to use the spill and overfill prevention equipment specified in paragraph (1)(C)1. of this rule if--

A. Alternative equipment is used that is determined by the department to be no less protective of human health and the environment than the equipment specified in subparagraph (1)(C)1.A. or B. of this rule; or

B. The UST system is filled by transfers of no more than twenty-five (25) gallons at one time;

(D) Installation. All tanks and piping must be properly installed in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with the manufacturer's instructions. Tank and piping system installation practices and procedures described in the following codes may be used to comply with the requirements of subsection (1)(D) of this rule:

1. American Petroleum Institute Publication 1615, Installation of Underground Petroleum Storage System; or

2. Petroleum Equipment Institute Publication RP100, Recommended Practices for Installation of Underground Liquid Storage Systems; and

(E) Certification of Installation. All owners and operators must ensure that one (1) or more of the following methods of certification, testing or inspection is used to demonstrate compliance with subsection (1)(D) of this rule by providing a certification of compliance on the UST notification form in accordance with 10 CSR [*20-10.022*]**26-2.022**:

1. The installer has been certified by the tank and piping manufacturers;

2. The installer has been certified or licensed by the department;

3. The installation has been inspected and certified by a registered professional engineer with education and experience in UST system installation;

4. The installation has been inspected and approved by the department;

5. All work listed in the manufacturer's installation checklists has been completed; or

6. The owner and operator have complied with another method for ensuring compliance with subsection (1)(D) of this rule that is determined by the department to be no less protective of human health and the environment.

AUTHORITY: sections 319.105[, *RSMo Supp. 1989,*] **and 319.107, RSMo 2000 and 319.137** [*and 644.041,*] RSMo [*1986*] **Supp. 2007**.* Original rule filed April 2, 1990, effective Sept. 28, 1990.

*Original authority: 319.105, RSMo 1989 [**and 644.041, RSMo 1972, amended 1973**].

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10 CSR [*20-10.021*]26-2.021 Upgrading of Existing Underground Storage Tank Systems

PURPOSE: This rule contains the options for upgrading existing underground storage tanks for continued operation after December 22, 1998.

(1) Alternatives Allowed. No later than December 22, 1998, all existing underground storage tank (UST) systems must comply with one (1) of the following requirements:

(A) New UST system performance standards in 10 CSR [*20-10.020*]**26-2.020**;

(B) The upgrading requirements in sections (2)--(4) of this rule; or

(C) Closure requirements in 10 CSR [*20-10.070*]**26-2.060**--10 CSR [*20-10.074*]**26-2.064**, including applicable requirements for corrective action in 10 CSR [*20-10.060*]**26-2.070**--10 CSR [*20-10.067*]**26-2.082**.

(2) Tank Upgrading Requirements. Steel tanks must be upgraded to meet one (1) of the following requirements in accordance with a code of practice developed by a nationally-recognized association or independent testing laboratory:

(A) Interior Lining. A tank may be upgraded by internal lining if--

1. The lining is installed in accordance with the requirements of 10 CSR [*20-10.033*]**26-2.033**; and

2. Within ten (10) years after lining, and every five (5) years after that, the lined tank is internally inspected and found to be structurally sound with the lining still performing in accordance with original design specifications;

(B) Cathodic Protection. A tank may be upgraded by cathodic protection if the cathodic protection system meets the requirements of the performance standards for new UST systems in 10 CSR [*20-10.020*]**26-2.020**(1)(A)2.B.--D. and the integrity of the tank is ensured using one (1) of the following methods:

1. The tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes prior to installing the cathodic protection system;

2. The tank has been installed for less than ten (10) years and is monitored monthly for releases in accordance with release detection methods 10 CSR [*20-10.043*]**26-2.043**(1)(D)--(H);

3. The tank has been installed for less than ten (10) years and is assessed for corrosion holes by conducting two (2) tightness tests that meet the requirements of release detection method 10 CSR [*20-10.043*]**26-2.043**(1)(C). The first tightness test must be conducted prior to installing the cathodic protection system. The second tightness test must be conducted between three and six (3--6) months following the first operation of the cathodic protection system; or

4. The tank is assessed for corrosion holes by a method that is determined by the department to prevent releases in a manner that is no less protective of human health and the environment than paragraphs (2)(B)1.--3. of this rule; and

(C) Internal Lining Combined With Cathodic Protection. A tank may be upgraded by both internal lining and cathodic protection if--

1. The lining is installed in accordance with the requirements of 10 CSR [*20-10.033*]**26-2.033**; and

2. The cathodic protection system meets the requirements of 10 CSR [*20-10.020*]**26-2.020**(1)(A)2.B.--D.

(3) Piping Upgrading Requirements. Metal piping that routinely contains regulated substances and is in contact with the ground must be cathodically protected in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and must meet the requirements of 10 CSR [*20-10.020*]**26-2.020**(1)(B)3.B.--D.

(4) Spill and Overfill Prevention Equipment. To prevent spilling and overfilling associated with product transfer to the UST system, all existing UST systems must comply with new UST system spill and overfill prevention equipment requirements specified in 10 CSR [*20-10.020*]**26-2.020**(1)(C).

(5) The following codes and standards may be used to comply with this rule:

(A) American Petroleum Institute Publication 1631, Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks;

(B) National Association of Corrosion Engineers Standard RP-02-85, Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems; and

(C) American Petroleum Institute Publication 1632, Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems.

AUTHORITY: sections 319.105 **and 319.107**, RSMo [*Supp. 1989*] **2000,** and **319.137 RSMo. [***644.026, RSMo Supp. 1993*] **Supp. 2007**.* Original rule filed April 2, 1990, effective Sept. 28, 1990.

*Original authority: 319.105, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.022*] 26-2.022 Notification Requirements

PURPOSE: This rule specifies the registration procedures for underground storage tanks.

(1) Any owner who intends to install an underground storage tank (UST) system after October 28, 1990, must, at least thirty (30) days before installing the tank, notify the department by letter of the intent to install a UST. The letter must provide the owner's name, the name and location of the facility where the UST will be installed, the date that the installation is expected to commence and the date that the tank is expected to be brought in-use.

(2) Any owner who brings a UST system in-use after September 28, 1990, must, within thirty (30) days of bringing the tank in-use, register the completed UST system on forms provided by the department. Note: Owners and operators of UST systems that were in the ground on or after May 8, 1986, unless taken out-of-operation on or before January 1, 1974, were required to notify the state in accordance with the Hazardous and Solid Waste Amendments of 1984, P.L. 98-616, on a form published by Environmental Protection Agency (EPA) on November 8, 1985 (50 FR 46602), unless notice was given pursuant to section 103(c) of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Owners and operators who have not complied with the notification requirements may use forms provided by the department.

(3) Notices required to be submitted under section (2) of this rule must provide all of the information requested in the form provided by the department for each UST.

(4) All owners and operators of new UST systems must certify in the notification form compliance with the following requirements:

(A) Installation of tanks and piping in 10 CSR [*20-10.020*]**26-2.020**(1)(E);

(B) Cathodic protection of steel tanks and piping under 10 CSR [*20-10.020*]**26-2.020**(1)(A) and (B);

(C) Financial responsibility in 10 CSR 20-11.090 through 10 CSR 20-11.112; and

(D) Release detection in 10 CSR [*20-10.041*] **26-2.041** and 10 CSR [*20-10.042*]**26-2.042**.

(5) An owner/operator shall complete and file an updated registration form if the owner information or information regarding tank equipment and operation, as reported on the current registration with the department, changes.

(6) All owners and operators of new UST systems must ensure that the installer certifies in the notification form that the methods used to install the tanks and piping comply with the requirements in 10 CSR [*20-10.020*]**26-2.020**(1)(D).

(7) The department shall issue a Certificate of Registration for any tanks which meet the requirements in sections (1) through (5) of this rule and 10 CSR [*20-10.020*] **26-2.020** and 10 CSR [*20-10.021*]**26-2.021**. The Certificate of Registration shall be valid for five (5) years except as described in section (8) of this rule.

(8) The department shall establish effective dates and expiration dates for Certificates of Registration issued under this rule. These dates shall establish a period of from one to five (1-5) years for an initial Certificate of Registration and a period of five (5) years for subsequent Certificates of Registration.

(9) Information submitted to the department after January 1, 1990, under sections (1) through (6) of this rule for a tank brought into use before January 1, 1990, or for a tank brought into use after September 28, 1990, is an application for a Certificate of Registration and shall be accompanied by a fee as described in section (10), except as described in section (11).

(10) Fees required under section (9) of this rule shall be paid in one (1) payment of seventy-five dollars ($75). No fees shall be collected for registration of tanks which were permanently closed prior to August 28, 1989. No further fees shall be assessed upon registered USTs once permanent closure has been completed and any fees to date have been paid.

(11) The department may waive part of the thirty (30)-day prior notice required in section (1) for reasons including, but not limited to, weather, contractual arrangements, department inspection scheduling and availability of tank service vendors. A request for a waiver must accompany the information required under section (1) of this rule.

AUTHORITY: sections 319.103**, 319.105, 319.107, 319.111, 319.114,** and 319.123, RSMo [*1994*] **2000** and 319.137, RSMo Supp. [*1998*] **2007**.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed June 1, 1995, effective Jan. 30, 1996. Amended: Filed Jan. 2, 1996, effective Aug. 30, 1996. Amended: Filed Jan. 14, 1997, effective Sept. 30, 1997. Amended: Filed April 1, 1999, effective March 30, 2000. *Original authority: 319.103, RSMo 1989; 319.123, RSMo 1989; 319.137, RSMo 1989, amended 1993, 1995.

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Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.030*] 26-2.030 Spill and Overfill Control

PURPOSE: This rule is designed to prevent releases during routine filling of the underground storage tank with product.

(1) Owners and operators must ensure that releases due to spilling or overfilling do not occur. The owner and operator must ensure that the volume available in the tank is greater than the volume of product to be transferred to the tank before the transfer is made and that the transfer operation is monitored constantly to prevent overfilling and spilling.

(2) The owner and operator must report, investigate and cleanup any spills and overfills in accordance with 10 CSR [*20-10.053*]**26-2.053**.

(3) Guidance on spill and overfill prevention appears in the--

(A) American Petroleum Institute Publication 1621, Recommended Practice for Bulk Liquid Stock Control at Retail Outlets; and

(B) National Fire Protection Association Standard 30, Flammable and Combustible Liquids Code.

AUTHORITY: sections 319.105[,] **and 319.107 RSMo 2000, and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.041, RSMo 1986*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.105, RSMo 1989 [*and 644.041, RSMo 1972, amended 1973*].

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Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.031*] 26-2.031 Operation and Maintenance of Corrosion Protection

PURPOSE: This rule contains the requirements for corrosion protection systems.

(1) All owners and operators of steel underground storage tank (UST) systems with corrosion protection must comply with the following requirements to ensure that releases due to corrosion are prevented for as long as the UST system is used to store regulated substances.

(A) All corrosion protection systems must be operated and maintained to continuously provide corrosion protection to the metal components of that portion of the tank and piping that routinely contain regulated substances and are in contact with the ground.

(B) All UST systems equipped with cathodic protection systems must be inspected for proper operation by a qualified cathodic protection tester in accordance with the following requirements:

1. Frequency. All cathodic protection systems must be tested within six (6) months of installation and at least every three (3) years after that or according to another reasonable time frame established by the department; and

2. Inspection criteria. The criteria that are used to determine that cathodic protection is adequate as required by this section must be in accordance with a code of practice developed by a nationally recognized association listed in section (2) of this rule.

(C) UST systems with impressed current cathodic protection systems must also be inspected every sixty (60) days to ensure the equipment is running properly; and

(D) For UST systems using cathodic protection, records of the operation of the cathodic protection must be maintained (in accordance with 10 CSR [*20-10.034*]**25-25.034**) to demonstrate compliance with the performance standards in this rule. These records must provide the following:

1. The results of the last three (3) inspections required in subsection (1)(C) of this rule; and

2. The results of testing from the last two (2) inspections required in subsection (1)(B) of this rule.

(2) National Association of Corrosion Engineers Standard RP-02-85, Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems, may be used to comply with paragraph (1)(B)2. of this rule.

AUTHORITY: sections 319.105 **and 319.107**, RSMo **2000 and 319.137** Supp. **2007** **[***1989 and 644.041, RSMo 1986*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.105, RSMo 1989 and 644.041, RSMo 1972, amended 1973.

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10 CSR [*20-10.032*] 26-2.032 Compatibility

PURPOSE: This rule prevents releases caused by chemical action on the underground storage tank system by the stored product.

(1) Owners and operators must use an underground storage tank (UST) system made of or lined with materials that are compatible with the substance stored in the UST system.

(2) Owners and operators storing alcohol blends may use the following codes to comply with the requirements of this section:

(A) American Petroleum Institute Publication 1626, Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Service Stations; and

(B) American Petroleum Institute Publication 1627, Storage and Handling of Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and Service Stations.

AUTHORITY: sections 319.105 **RSMo 2000 and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.041, RSMo 1986*].* Original rule filed April 2, 1990, effective Sept. 28, 1990. *Original authority: 319.105, RSMo 1989 [*and 644.041, RSMo 1972, amended 1973*].

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Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.033*] 26-2.033 Repairs Allowed

PURPOSE: This rule describes methods for repair of underground storage tank systems.

(1) Owners and operators of underground storage tank (UST) systems must ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substances.

(2) The repairs must meet the following requirements:

(A) Repairs to UST systems must be properly conducted in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory.

1. The following codes and standards may be used to comply with subsection (2)(A) of this rule:

A. National Fire Protection Association Standard 30, Flammable and Combustible Liquids Code;

B. American Petroleum Institute Publication 2200, Repairing Crude Oil, Liquefied Petroleum Gas, and Product Pipelines;

C. American Petroleum Institute Publication 1631, Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks; and

D. National Leak Prevention Association Standard 631, Spill Prevention, Minimum 10 Year Life Extension of Existing Steel Underground Tanks by Lining Without the Addition of Cathodic Protection;

(B) Repairs to fiberglass-reinforced plastic tanks may be made by the manufacturer's authorized representatives or in accordance with a code of practice developed by a nationally-recognized association or an independent testing laboratory;

(C) Metal pipe sections and fittings that have released product as a result of corrosion or other damage must be replaced. Fiberglass pipes and fittings may be repaired in accordance with the manufacturer's specifications;

(D) Repaired tanks and piping must be tightness tested in accordance with release detection methods 10 CSR [*20-10.043*]**26-2.043**(1)(C) and 10 CSR [*20-10.044*]**26-2.044**(1)(B) within thirty (30) days following the date of the completion of the repair, except as provided in the following paragraphs--

1. The repaired tank is internally inspected in accordance with a code of practice developed by a nationally-recognized association or an independent testing laboratory;

2. The repaired portion of the UST system is monitored monthly for releases by one (1) of the release detection methods in 10 CSR [*20-10.043*]**26-2.043**(1)(D)--(H); or

3. Another test method is used that is determined by the department to be no less protective of human health and the environment than those listed in paragraphs (2)(D)1. and 2.;

(E) Within six (6) months following the repair of any cathodically protected UST system, the cathodic protection system must be tested with the methods for operation and maintenance of corrosion protection in 10 CSR [*20-10.031*]**26-2.031**(1)(B) and (C) to ensure that it is operating properly; and

(F) UST system owners and operators must maintain records of each repair for the remaining operating life of the UST system that demonstrate compliance with the requirements of this rule.

AUTHORITY: sections 319.105[,] **and 319.107 RSMo 2000, and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.041, RSMo 1986*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.105, RSMo 1989 [*and 644.041, RSMo 1972, amended 1973*].

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Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.034*] 26-2.034 Reporting and Recordkeeping

PURPOSE: This rule explains how the owner and operator must keep records demonstrating compliance with the requirements of this chapter. These records must be furnished to the department on request.

(1) Owners and operators of underground storage tank (UST) systems must cooperate fully with inspections, monitoring and testing conducted by the department, as well as requests for document submission, testing and monitoring by the owner or operator.

(A) Reporting. Owners and operators must submit the following information to the department:

1. Notification for all UST systems by the notification requirements in 10 CSR 20-10.022;

2. Reports of all releases including suspected releases (10 CSR [*20-10.050*]**26-2.050**), spills and overfills (10 CSR [*20-10.053*]**26-2.053**) and confirmed releases (10 CSR [*20-10.061*]**26-2.071**);

3. Corrective actions planned or taken including initial abatement measures (10 CSR [*20-10.062*]**26-2.072**), initial site characterization (10 CSR [*20-10.063*]**26-2.073**), free product removal (10 CSR [*20-10.064*]**26-2.074**), investigation of soil and groundwater cleanup (10 CSR [*20-10.065*]**26-2.076**) and corrective action plan (10 CSR [*20-10.066*]**26-2.079**); and

4. A notification before permanent closure or change in service (10 CSR [*20-10.071*]**26-2.061**).

(B) Recordkeeping. Owners and operators must maintain the following information:

1. A corrosion expert's analysis of [*site*] **facility** corrosion potential if corrosion protection equipment is not used (10 CSR [*20-10.020*]**26-2.020**(1)(A)4. and (B)4.);

2. Documentation of operation of corrosion protection equipment (10 CSR [*20-10.031*]2**6-2.031**);

3. Documentation of UST system repairs (10 CSR [*20-10.033*]**26-2.033**(2)(F));

4. Recent compliance with release detection requirements (10 CSR [*20-10.045*]**26-2.045**); and

5. Results of the site investigation conducted at permanent closure (10 CSR [*20-10.074*]**26-2.064**).

(C) Availability and Maintenance of Records. Owners and operators must keep the records required either--

1. At the UST [*site*] **facility** and immediately available for inspection by the department; or

2. At a readily available alternative [*site*] **location** and be provided for inspection to the department within three (3) working days or five (5) calendar days upon receipt of a written request. A written request shall be made in the following manner:

A. The department shall provide a written request at the time of inspection to [*site*] **facility** personnel; or

B. In the cases of unattended [*sites*] **facilities** or inspections conducted after normal business hours (8:00 a.m. to 5:00 p.m., local time, Monday through Friday), written notice shall be made by certified mail; or

3. If the owner or operator fails to meet the requirements of paragraph (1)(C)2., the department may order or otherwise require that owner or operator to maintain records [*on-site*] **at the facility** per paragraph (1)(C)1.; or

4. In the case of permanent closure records required under 10 CSR [*20-10.074*]**26-2.064**, owners and operators are also provided with the additional alternative of mailing closure records to the department if they cannot be kept at the [*site*] **facility** or an alternative [*site*] **location** as indicated in this section.

[*DEPARTMENT OF NATURAL RESOURCES*
DIVISION OF ENVIRONMENTAL QUALITY
WATER POLLUTION CONTROL PROGRAM

file:_____County
UT_____

REQUEST FOR RECORDS
UNDERGROUND STORAGE TANK
INSPECTION

Date:_____
Time:_____
*Pursuant to 10 CSR [20-10.034]**26-2.034**(1)(C)2. the Department of Natural Resources requests the records concerning the underground storage tanks facility located at:*

Facility name:_____
Facility address:_____
be provided to Missouri Department of Natural Resources_____
Office
Mailing address:_____
Street address:_____
(City) (State) (Zip Code)
within three (3) working days or five (5) calendar days of this notice.
This request was made on_____
(Date & Time)
by:_____
(Inspector name)

_____
(Inspector office)

_____

(Inspector phone)

and was given to:

_____

*([Site] **Facility** person name)*

Signed:

_____

(Inspector)]

AUTHORITY: sections 319.107[,] **and 319.111 RSMo 2000, and 319.137** RSMo Supp. [1989] **2007** [*and 644.021, RSMo 1986*].* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.
*Original authority: 319.107, RSMo 1989 [*and 644.021, RSMo 1972, amended 1973*].

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Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.040*]26-2.040 General Requirements for Release Detection for All Underground Storage Tank Systems

PURPOSE: This rule outlines the minimum requirements for leak and spill detection systems.

(1) Owners and operators of new and existing underground storage tank (UST) systems must provide a method, or combination of methods, of release detection that--

(A) Can detect a release from any portion of the tank and the connected underground piping that routinely contains product;

(B) Is installed, calibrated, operated and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition; and

(C) Meets the performance requirements for tanks in 10 CSR [*20-10.043*]**26-2.043** or for piping in 10 CSR [*20-10.044*]**26-2.044**, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer. In addition, methods used after December 22, 1990, except for methods permanently installed prior to that date, must be capable of detecting the leak rate or quantity specified for that tank method in 10 CSR [*20-10.043*]**26-2.043**(1)(B)--(D) or piping method in 10 CSR [*20-10.044*]**26-2.044**(1)(A) and (B) with a probability of detection of ninety-five percent (95%) and a probability of false alarm of five percent (5%).

(2) When a release detection method for tanks in 10 CSR [*20-10.043*]**26-2.043** or for piping in 10 CSR [*20-10.044*]**26-2.044** indicates a release may have occurred, owners and operators must notify the department in accordance with 10 CSR [*20-10.050*]**26-2.050**--10 CSR [*20-10.053*]**26-2.053**.

(3) Owners and operators of all UST systems must comply with the release detection requirements of 10 CSR [*20-10.040*]**26-2.040**--10 CSR [*20-10.045*]**26-2.045** by the following dates based on the year of installation:

(A) December 22, 1990 for all existing pressurized piping;

(B) September 28, 1990 for USTs installed before 1965, or of unknown age;

(C) December 22, 1990 for USTs installed during 1965--1969;

(D) December 22, 1991 for USTs installed during 1970--1974;

(E) December 22, 1992 for USTs installed during 1975--1979;

(F) December 22, 1993 for USTs installed during 1980--September 28, 1990; and

(G) Immediately upon installation for any USTs installed after September 28, 1990.

(4) Any existing UST system that cannot apply a method of release detection that complies with the requirements of 10 CSR [*20-10.040*]**26-2.040**--10 CSR [*20-10.045*]**26-2.045** must complete the closure procedures in 10 CSR [*20-10.070*]**26-2.060**--10 CSR [*20-10.074*]**26-2.064** by the date on which release detection is required for that UST system under section (3) of this rule.

AUTHORITY: sections **319.105,** 319.107 **and 319.111 RSMo 2000, and 319.137** Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994. *Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

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Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.041*] 26-2.041 Requirements for Petroleum Underground Storage Tank Systems

PURPOSE: This rule outlines the options for leak detection at petroleum underground storage tanks.

(1) Owners and operators of petroleum underground storage tanks (UST) systems must provide release detection for tanks and piping as follows:

(A) Tanks. Tanks must be monitored at least every thirty (30) days for releases using one (1) of the methods listed in 10 CSR *[20-10.043*]**26-2.043**(1)(D)--(H) except that--

1. UST systems that meet new or upgraded standards in 10 CSR [*20-10.020*]**26-2.020** or 10 CSR [*20-10.021*]**26-2.021** and the monthly inventory control requirements in 10 CSR [*20-10.043*]**26-2.043**(1) (A) or (B) may use tank tightness testing (10 CSR [*20-10.043*]**26-2.043**(1)(C)) at least every five (5) years until December 22, 1998 or until ten (10) years after the tank is installed or upgraded under 10 CSR [*20-10.021*]**26-2.021**(2), whichever is later;

2. UST systems that do not meet the performance standards in 10 CSR [*20-10.020*]**26-2.020** or 10 CSR [*20-10.021*]**26-2.021** may use monthly inventory controls (10 CSR [*20-10.043*]**26-2.043**(1)(A) or (B)) and annual tank tightness testing (10 CSR [*20-10.043*]**26-2.043**(1)(C)) until December 22, 1998, when the tank must be upgraded under 10 CSR [*20-10.021*]2**6-2.021** or permanently closed under 10 CSR [*20-10.071*]**26-2.061**; and

3. Tanks with capacity of five hundred fifty (550) gallons or less may use manual tank gauging (10 CSR [*20-10.043*]**26-2.043**(1)(B)); and

(B) Piping. Underground piping that routinely contains regulated substances must be monitored for releases in a manner that meets one (1) of the following requirements:

1. Pressurized piping. Underground piping that conveys regulated substances under pressure must--

A. Be equipped with an automatic line leak detector in 10 CSR [*20-10.044*]**26-2.044**(1)(A); and

B. Have an annual line tightness test conducted in accordance with 10 CSR [*20-10.044*]**26-2.044**(1)(B) or have monthly monitoring conducted in accordance with 10 CSR [*20-10.044*]**26-2.044**(1)(C); and

2. Suction piping. Underground piping that conveys regulated substances under suction must either have a line tightness test conducted at least every three (3) years and in accordance with 10 CSR [*20-10.044*]**26-2.044**(1)(B) or use a monthly monitoring method conducted in accordance with 10 CSR [*20-10.044*]**26-2.044**(1)(C). No release detection is required for suction piping that is designed and constructed to meet the following standards:

A. The below-grade piping operates at less than atmospheric pressure;

B. The below-grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released;

C. Only one (1) check valve is included in each suction line;

D. The check valve is located directly below and as close as practical to the suction pump; and

E. A method is provided that allows compliance with subparagraphs (1)(B)2.A.--D. of this rule to be readily determined (for example, the check valve can be visually inspected).

AUTHORITY: sections **319.105 and** 319.107 **RSMo 2000, and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.

*Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

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Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.042*]26-2.042 Requirements for Hazardous Substance Underground Storage Tank Systems

PURPOSE: This rule outlines the standards for leak detection on hazardous substance underground storage tanks.

(1) Owners and operators of hazardous substance underground storage tank (UST) systems must provide release detection that meets the following requirements:

(A) Release detection at existing UST systems must meet the requirements for petroleum UST systems in 10 CSR [*20-10.041*]**26-2.041**. By December 22, 1998, all hazardous substance UST systems must meet the release detection requirements for new systems in subsection (1)(B) of this rule;

(B) Release detection at new hazardous substance UST systems must meet the following requirements:

1. Secondary containment systems must be designed, constructed and installed to--

A. Contain regulated substances released from the tank system until they are detected and removed;

B. Prevent the release of regulated substances to the environment at any time during the operational life of the UST system; and

C. Be checked for evidence of a release at least every thirty (30) days;

2. Double-walled tanks must be designed, constructed and installed to--

A. Contain a release from any portion of the inner tank within the outer wall; and

B. Detect the failure of the inner wall;

3. External liners (including vaults) must be designed, constructed and installed to--

A. Contain one hundred percent (100%) of the capacity of the largest tank within its boundary;

B. Prevent the interference of precipitation or groundwater intrusion with the ability to contain or detect a release of regulated substances; and

C. Surround the tank completely (that is, it is capable of preventing lateral as well as vertical migration of regulated substances);

4. Underground piping must be equipped with secondary containment that satisfies the requirements of paragraph (1)(B)1. of this rule (for example, trench liners, jacketing of double-walled pipe). In addition, underground piping that conveys regulated substances under pressure must be equipped with an automatic line leak detector in 10 CSR [*20-10.044*]**26-2.044**(1)(A); and

5. Other methods of release detection may be used if owners and operators--

A. Demonstrate to the department that an alternate method can detect a release of the stored substance as effectively as any of the methods allowed in 10 CSR [*20-10.043*]**26-2.043**(1)(B)--(H) can detect a release of petroleum;

B. Provide information to the department on effective corrective action technologies, health risks and chemical and physical properties of the stored substance and the characteristics of the UST [*site*] **facility**; and

C. Obtain approval from the department to use the alternate release detection method before the installation and operation of the new UST system.

(2) The provisions of 10 CSR 25-7.265(2)(J) may be used to comply with this rule.

AUTHORITY: sections **319.105 and** 319.107 **RSMo 2000**, **and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.043*]26-2.043 Methods of Release Detection for Tanks

PURPOSE: This rule contains the requirements that specific underground storage tank leak detection methods must meet.

(1) Each method of release detection for underground storage tanks (UST) used to meet the requirements of petroleum UST leak detection in 10 CSR *[20-10.041]***26-2.041** must meet the following:

(A) Inventory Control. Product inventory control (or another test of equivalent performance) must be conducted monthly to detect a release of at least one percent (1%) of flow through plus one hundred thirty (130) gallons on a monthly basis in the following manner:

1. Inventory volume measurements for regulated substance inputs, withdrawals and the amount still remaining in the tank are recorded each operating day on forms provided by the department or on forms previously approved by the department;
2. The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth inch (1/8");
3. The regulated substance inputs are reconciled with delivery receipts by measurement of the tank inventory volume before and after delivery;
4. Deliveries are made through a drop tube that extends to within one foot (1') of the tank bottom;
5. Product dispensing is metered and recorded within the local standards for meter calibration or an accuracy of six (6) cubic inches for every five (5) gallons of product withdrawn;
6. The measurement of any water level in the bottom of the tank is made to the nearest one-eighth inch (1/8") at least once a month; and
7. The practices described in the American Petroleum Institute Publication 1621, Recommended Practice for Bulk Liquid Stock Control at Retail Outlets, may be used, where applicable, as guidance in meeting the requirements of this subsection;

(B) Manual Tank Gauging. Manual tank gauging must meet the following requirements:

1. Tank liquid level measurements are taken at the beginning and ending of a period of at least thirty-six (36) hours during which no liquid is added to or removed from the tank;
2. Level measurements are based on an average of two (2) consecutive stick readings at both the beginning and ending of the period;
3. The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth inch (1/8");
4. A leak is suspected and subject to the requirements of 10 CSR [*20-10.050*]**26-2.050** – 10 CSR [*20-10.053*]**26-2.053** if the variation between beginning and ending measurements exceeds the following weekly or monthly standards:

A. Tanks of five hundred fifty (550)-gallon capacity or less are allowed a weekly standard of ten (10) gallons per reading and a monthly average of five (5) gallons per reading;

B. Five hundred fifty-one to one thousand (551--1000)-gallon capacity tanks are allowed a difference of thirteen (13) gallons per week and a monthly average of seven (7) gallons;

C. One thousand one to two thousand (1001--2000)-gallon capacity tanks are allowed a difference of twenty-six (26) gallons per week and a monthly average of thirteen (13) gallons;

D. Five hundred fifty-one to one thousand (551--1000)-gallon capacity tanks with dimensions no greater than sixty-four inches by seventy-three inches (64" 73") are allowed a difference of none (9) gallons per week and monthly average of four (4) gallons, provided that a period of at least forty-four (44) hours during which no liquid is added to or removed from the tank is allowed to pass between tank liquid level measurements; and

E. One thousand (1000)-gallon capacity tanks with dimensions of forty-eight inches by one hundred twenty-eight inches (48" 128") are allowed a difference of twelve (12) gallons per week and a monthly average of six (6) gallons, provided that a period of at least fifty-eight (58) hours during which no liquid is added to or removed from the tank is allowed to pass between tank liquid level measurements; and

5. Use of manual tank gauging must comply with the following size restrictions:

A. Tanks of five hundred fifty (550) gallons or less nominal capacity may use this as the sole method of release detection;

B. Tanks of five hundred fifty-one to one thousand (551--1000)-gallon capacity with dimensions no greater than sixty-four inches by seventy-three inches (64"x73") and tanks of one thousand (1000)-gallon capacity with dimensions of forty-eight inches by one hundred twenty-eight inches (48"x128") may use this as the sole method of release detection;

C. Tanks of five hundred fifty-one to two thousand (551--2000) gallons may use the method in place of inventory control in 10 CSR *[20-10.043]***26-2.043**(1)(A); and

D. Tanks of greater than two thousand (2000) gallons nominal capacity may not use this method for release detection;

(C) Tank Tightness Testing. Tank tightness testing (or similar test) must be capable of detecting a one-tenth (0.1)-gallon-per-hour leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation and the location of the water table;

(D) Automatic Tank Gauging. Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control must meet the following requirements:

1. The automatic product level monitor test can detect a two-tenths (0.2)-gallon-per-hour leak rate from any portion of the tank that routinely contains product; and

2. Inventory control (or equivalent test) meeting the requirements in 10 CSR [*20-10.043*]**26-2.043**(1)(A) is conducted;

(E) Vapor Monitoring. Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:

1. The materials used as backfill are sufficiently porous and permeable (for example, gravel, sand or crushed rock) to readily allow diffusion of vapors from releases into the excavation area;

2. The stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (for example, gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank;

3. The measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall or soil moisture or other known interferences so that a release could go undetected for more than thirty (30) days;

4. The level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank;

5. The vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component(s) of that substance or a tracer compound placed in the tank system;

6. In the UST excavation zone, the [*site*] **area** is assessed to ensure compliance with the requirements in paragraphs (1)(E)1.--4. of this rule and to establish the number and positioning of monitoring wells that will detect releases within the excavation zone from any portion of the tank that routinely contains product; and

7. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;

(F) Groundwater Monitoring. Testing or monitoring for liquids on the groundwater must meet the following requirements:

1. The regulated substance stored is immiscible in water and has a specific gravity of less than one (1);

2. The groundwater is within twenty feet (20') from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is at least one hundredth centimeter per second (0.01 cm/sec) (for example, the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials);

3. The slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions;

4. Monitoring wells shall be sealed from the ground surface to the top of the filter pack;

5. Monitoring wells or devices shall intercept the excavation zone or are as close to it as is technically feasible;

6. The continuous monitoring devices or manual methods used can detect the presence of at least one-eighth inch (1/8") of free product on top of the groundwater in the monitoring wells;

7. The [*site*] **area** is assessed within and immediately below the UST system excavation zone to ensure compliance with the requirements in paragraphs (1)(F)1.--5. of this rule. The site assessment also establishes the number and positioning

of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product; and

8. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;

(G) Interstitial Monitoring. Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one (1) of the following requirements:

1. For double-walled UST systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product;

2. For UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier.

A. The secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (less than one millionth centimeter per second (10-6 cm/sec) for the regulated substance stored) to direct a release to the monitoring point and permit its detection.

B. The barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected.

C. For cathodically protected tanks the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system.

D. The groundwater, soil moisture or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than thirty (30) days.

E. The [*site*] **area** is assessed to ensure that the secondary barrier is always above the groundwater and not in a twenty-five (25)-year flood plain, unless the barrier and monitoring designs are for use under these conditions.

F. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;

3. For tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner is compatible with the substance stored; and

4. The provisions outlined in the Steel Tank Institute's Standard for Dual Wall Underground Storage Tanks may be used as guidance for aspects of the design and construction of underground steel double-walled tanks; and

(H) Other Methods. Any other type of release detection method, or combination of methods, can be used if--

1. It can detect a two-tenths (0.2)-gallon-per- hour leak rate or a release of one hundred fifty (150) gallons within a month with a probability of detection of ninety-five percent (95%) and a probability of false alarm of five percent (5%); or

2. The department may approve another method if the owner and operator can demonstrate that the method can detect a release as effectively as any of the methods allowed in subsections (1)(C)--(H) of this rule. In comparing methods, the department

shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. If the method is approved, the owner and operator must comply with any conditions imposed by the department on its use to ensure the protection of human health and the environment.

AUTHORITY: sections **319.105 and** 319.107 **RSMo 2000**, **and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994. *Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.044*] 26-2.044 Methods of Release Detection for Piping

PURPOSE: This rule describes the requirements of leak detection for the piping on underground storage tanks.

(1) Each method of release detection for piping used to meet the requirements of release detection for underground storage tanks (UST) in 10 CSR [*20-10.041*]**26-2.041** must be conducted in the following manner:

(A) Automatic Line Leak Detectors. Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm may be used only if they detect leaks of three (3) gallons per hour at ten (10) pounds per square-inch line pressure within one (1) hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements;

(B) Line Tightness Testing. A periodic test of piping may be conducted only if it can detect a one-tenth (0.1)-gallon-per-hour leak rate at one and one-half (1.5) times the operating pressure; and

(C) Applicable Tank Methods. Any of the methods in 10 CSR [*20-10.043*]**26-2.043**(1)(E)--(H) may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

AUTHORITY: sections **319.105 and** 319.107 **RSMo 2000**, **and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

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Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.045*] 26-2.045 Release Detection Recordkeeping

PURPOSE: This rule describes the records that must be maintained for monthly release detection activity.

(1) All underground storage tank (UST) system owners and operators must maintain records in 10 CSR [*20-10.034*]**26-2.034** demonstrating compliance with applicable release detection requirements in 10 CSR [*20-10.040*]**26-2.040**--10 CSR [*20-10.045*]**26-2.045**. These records must include the following:

(A) All written performance claims of any release detection system used, and the manner in which these claims have been justified or tested by the equipment manufacturer or installer, must be maintained for five (5) years or for another reasonable period of time determined by the department from the date of installation;

(B) The results of any sampling, testing or monitoring must be maintained for at least one (1) year, or for another reasonable period of time determined by the department, except that the results of tank tightness testing conducted in accordance with 10 CSR [*20-10.043*]**26-2.043**(1)(C) must be retained until the next test is conducted; and

(C) Written documentation of all calibration, maintenance and repair of release detection equipment permanently located [*on-site*] **at the facility** must be maintained for at least one (1) year after the servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer must be retained for five (5) years from the date of installation.

AUTHORITY: sections **319.105 and** 319.107 **RSMo 2000**, **and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

10 CSR 2[*0*]6-[*10*]2.050 Release Reporting [*of Suspected Releases*]

PURPOSE: This rule describes the steps for reporting leaks and spills.

(1) The requirements of this rule are solely for the purposes of this chapter. Other reporting requirements under other local, state, and federal authorities and for other purposes might not be satisfied by meeting the requirements of this rule.

[*(1)*]**(2)** Owners and operators of underground storage tank (UST) systems must report to the department **by telephone at (573) 634-2436 as soon as is practical but no later than** [*within*] twenty-four (24) hours and follow the procedures for release investigation and confirmation in 10 CSR [*20-10.052*] **26-2.052 upon discovery of one or more [***for any*] of the following conditions:

(A) [*The discovery by owners and operators or others of*] [*r*]**R**eleased regulated substances **on the property on which a UST system is located, on an adjacent or nearby property, [***at the UST site*] or in the surrounding area. [*(such as the presence of free product or vapors in soils, basements, sewer and utility lines and nearby surface water)*] **Indications of released regulated substances might include, but are not limited to, the presence of petroleum or petroleum-related constituents in soil, groundwater, or surface water and the presence of petroleum or petroleum vapors in soil, basements, and within or adjacent to sewer and other utility lines**;

(B) Unusual **UST system** operating conditions observed by owners and operators**, including, but not limited to,** [*(such as the*] erratic behavior of product dispensing equipment, the sudden loss of product from the UST system **not accounted for by normal operations,** or an unexplained presence of water in [*the tank)*] **one or more USTs**, unless system equipment is found to be defective but not leaking and is immediately repaired or replaced; and

(C) Monitoring results from a release detection method required under 10 CSR [*20-10.041*]**26-2.041** and 10 CSR [*20-10.042*]**26-2.042** that indicate a release may have occurred unless[--]

[*1.*] [*The*] **the** monitoring device is found to be defective and is immediately repaired, recalibrated or replaced and additional monitoring does not confirm the initial result[*; and*]**. If inventory control is the method for release detection and**

[*2. In the case of inventory control,*] a second month of data does not confirm the initial result[.]**, owners and operators must contact the department within seven (7) days of the collection of the second month of data and need not continue release investigation and confirmation activities under 10 CSR 26-2.052 unless the results of the system test or site check indicate a release has occurred.**

(3) Owners and operators of underground storage tank (UST) systems must report to the department by telephone at (573) 634-2436 as soon as is practical but no later

than twenty-four (24) hours upon discovery of a spill or overfill of petroleum or a hazardous substance or substances from an UST system. Owners and operators must contain and immediately clean up the release and begin corrective action in accordance with 10 CSR 26-2.053.

(4) If a release of a hazardous substance equals or is in excess of its reportable quantity, owners and operators must immediately report the release to the National Response Center under Sections 102 and 103 of CERCLA (40 CFR 302.6) and to appropriate state and local authorities under Title III of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR 355.40) and begin corrective action in accordance with 10 CSR 26-2.053.

(5) Upon confirmation of a release in 10 CSR 26-2.052, or after a release from an UST system is identified in any other manner, owners or operators must report the release to the department by telephone at (573) 634-2436 as soon as is practical but no later than twenty-four (24) hours of confirmation or discovery and comply with 10 CSR 26-2.071.

AUTHORITY: Section 319.109 RSMo Supp. 2007. [*sections 319.107, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993.**] Original rule filed April 2, 1990, effective Sept. 28, 1990.
[**Original authority: 319.107, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.051*]26-2.051 Investigation Due to [*Off-Site*] Impacts *on Adjacent or Nearby Properties*

PURPOSE: This rule describes the requirements for [*off-site*] *investigations* ***on property or properties adjacent to or near a property on which a UST system is found*** *following reported or suspected releases.*

(1) When required by the department, owners and operators of underground storage tank (UST) systems must follow the steps for confirmation of a release in 10 CSR [*20-10.052*]**26-2.052** to determine if the UST system is the source of [*the off-site*] impacts **on property or properties adjacent to or near the property on which the UST system is found**. These impacts include**, but are not necessarily limited to,** the discovery of regulated substances such as the presence of **regulated substances or constituents of regulated substances in soil, groundwater, or surface water;** free product or vapors in soils, basements, sewer [*and*] **or other** utility lines [*and*]**, or** nearby surface [*and*] **or** drinking water[*s*] that have been **detected or otherwise** observed by the department or brought to its attention by another party.

AUTHORITY: sections **319.107 RSMo 2000 and** 319.109 **and 319.137** RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.109, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR [*20-10.052*]26-2.052 Release Investigation and Confirmation Steps

PURPOSE: This rule describes the steps needed to verify a release.

(1) Unless corrective action is initiated in **[***10 CSR 20-10.060--10 CSR 20-10.067***] 10 CSR 26-2.070 – 10 CSR 26-2.082**, owners and operators must immediately investigate and confirm all suspected releases of regulated substances requiring reporting under 10 CSR [*20-10.050*]**26-2.050** within seven (7) days or another reasonable time period specified by the department using either the following steps or another procedure approved by the department:

(A) System Test. Owners and operators must conduct tests (tightness testing of tanks in 10 CSR [*20-10.043*]**26-2.043**(1)(C) and piping in 10 CSR [*20-10.044*]**26-2.044**(1)(B)) to determine whether a leak exists in that portion of the tank that routinely contains product or the attached delivery piping, or both.

1. Owners and operators must repair, replace or upgrade the underground storage tank (UST) system, and begin corrective action in **[***10 CSR 20-10.060--10 CSR 20-10.067***] 10 CSR 26-2.070 – 10 CSR 26-2.082** if the test results for the system, tank or delivery piping indicate that a leak exists.

2. Further investigation is not required if the test results for the system, tank and delivery piping do not indicate that a leak exists and if environmental contamination is not the basis for suspecting a release.

3. Owners and operators must conduct a site check as described in subsection (1)(B) of this rule if the test results for the system, tank and delivery piping do not indicate that a leak exists but environmental contamination is the basis for suspecting a release; or

(B) Site Check. Owners and operators must measure for the presence of a release where contamination is most likely to be present [*at*] **in association with** the UST [*site*] **system**. In selecting sample types, sample locations and measurement methods, owners and operators must consider the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, **the type of soil,** the depth of groundwater and other factors appropriate for identifying the presence and source of the release.

1. If the site check indicates that a release has occurred, owners and operators must begin corrective action in accordance with **[***10 CSR 20-10.060--10 CSR 20-10.067***] 10 CSR 26-2.070 – 10 CSR 26-2.082**; or

2. If the results of the site check do not indicate that a release has occurred, the investigation may stop.

(2) Owners and operators shall follow a written procedure. To comply with this rule, the department's **[***Site Characterization Guidance Document***] Missouri Risk-Based Corrective Action (MRBCA) Process for Petroleum Storage Tanks guidance**

document may be used as a written procedure. Other written procedures may be used with prior written approval of the department.

AUTHORITY: sections **319.105 and 319.107 RSMo 2000 and** 319.109 **and 319.137** RSMo, Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994. *Original authority: 319.107, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

10 CSR 2[*0*]6-[*10*]2.053 Reporting and Cleanup of Spills and Overfills

PURPOSE: This rule describes the steps for reporting and cleanup of spills.

(1) Owners and operators of underground storage tank (UST) systems must contain and immediately cleanup a spill or overfill. The spill or overfill must be reported to the department [*within twenty-four (24) hours*] **in accordance with 10 CSR 26-2.050**.

(2) Owners and operators must begin corrective action in accordance with [*10 CSR 20-10.060--10 CSR 20-10.067*] **10 CSR 26-2.070 – 10 CSR 26-2.082** in the following cases:

(A) Spill or overfill of petroleum that results in a release to the environment that exceeds twenty-five (25) gallons**,** [*or*] that causes a sheen on nearby surface water**, or results in concentrations of petroleum chemicals of concern in the environment at concentrations exceeding the default target levels**; and

(B) Spill or overfill of a hazardous substance that results in a release to the environment that equals or exceeds its reportable quantity under **the** Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) (40 CFR 302).

[*(2)*]**(3)** Owners and operators of UST systems must contain and immediately clean up a spill or overfill of petroleum that is less than twenty-five (25) gallons or another reasonable amount specified by the department and a spill or overfill of a hazardous substance that is less than [*the*] **its** reportable quantity. If cleanup cannot be accomplished within twenty-four (24) hours, **or the volume of the spill is unknown,** owners and operators must immediately notify the department **in accordance with 10 CSR 26-2.050**.

[*(3) A release of a hazardous substance equal to or in excess of its reportable quantity must also be reported immediately (rather than within twenty-four (24) hours) to the National Response Center under Sections 102 and 103 of CERCLA (40 CFR 302.6) and to appropriate state and local authorities under Title III of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR 355.40).*]

AUTHORITY: section[*s*] 319.109, RSMo Supp. [*1989*] **2007** [*and 644.026, RSMo Supp. 1993*].* Original rule filed April 2, 1990, effective Sept. 28, 1990.
*Original authority: 319.109, RSMo 1989 [*and 644.026, RSMo 1972, amended 1973, 1987, 1993*].

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Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR 2[*0*]6-[*10*]2.060 [*Release Response and Corrective Action*] Temporary Closure

[*PURPOSE: This rule establishes general procedures for responding to leaks of spills at underground storage tanks.*

(1) Owners and operators of petroleum or hazardous substance underground storage tank (UST) systems must comply, in response to a confirmed release from the UST system, with the requirements of 10 CSR 20-10.060--10 CSR 20-10.067 except for USTs excluded under 10 CSR 20-10.010(2) and UST systems subject to the Resource Conservation and Recovery Act (RCRA), Subtitle C corrective action requirements under Section 3004(u).

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

PURPOSE: This rule contains the procedures for placing underground storage tanks out of service or temporarily closing underground storage tanks.

(1) When an underground storage tank (UST) system is temporarily closed, owners and operators must continue operation and maintenance of corrosion protection in 10 CSR 26-2.031 and release detection in 10 CSR 26-2.040 – 10 CSR 26-2.045. Release reporting, investigation and corrective action in 10 CSR 26-2.050 – 10 CSR 2-2.082 must be performed if a release is suspected or confirmed. If the UST system is empty, release detection is not required. The UST system is empty when all materials have been removed so that no more than one inch (1") (or two and one-half (2.5) centimeters) of residue or three-tenths percent (0.3%) by weight of the total capacity of the UST system remains.

(2) Owners and operators must also comply with the following requirements when a UST system is temporarily closed for three (3) months or more:

(A) Leave vent lines open and functioning; and

(B) Cap and secure all other lines, pumps, manways and ancillary equipment.

(3) When a UST system is temporarily closed for more than twelve (12) months, owners and operators must permanently close the UST system if it does not meet either performance standards in 10 CSR 26-2.020 for new UST systems or the upgrading requirements in 10 CSR 26-2.021 except that the spill and overfill

equipment requirements do not have to be met. Owners and operators must permanently close the substandard UST systems at the end of this twelve (12)-month period in accordance with 10 CSR 26-2.061 – 10 CSR 26-2.064, unless the department provides an extension of the twelve (12)-month temporary closure period. Owners and operators must complete a site assessment in accordance with 10 CSR 26-2.062 before such an extension can be applied for.

AUTHORITY: sections 319.015, 319.107 and 319.111 RSMo 2000, and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990. *Original authority: 319.111, RSMo 1989.

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR 2[*0*]6-[*10*]2.061 [*Initial Release Response*] Permanent Closure and Changes in Service

[*PURPOSE: This rule describes the immediate steps owners and operators of a leaking underground storage tank must take.*

(1) Upon confirmation of a release in 10 CSR 20-10.052, or after a release from the underground storage tank (UST) system is identified in any other manner, owners and operators must perform the following initial response actions within twenty-four (24) hours of a release:

(A) Report the release to the department (for example, by telephone or electronic mail);

(B) Take immediate action to prevent any further release of the regulated substance into the environment; and

(C) Identify and mitigate fire, explosion and vapor hazards.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993*.]

PURPOSE: This rule contains the requirements for permanent closure of underground storage tanks as well as for converting underground storage tanks to an unregulated use.

(1) Owners and operators must notify the department in writing, on forms provided by the department, at least thirty (30) days before beginning either permanent closure or a change in service of an underground storage tank (UST) in sections (2) and (3) of this rule or within another reasonable time period determined by the department, unless this action is in response to corrective action. The required assessment of the excavation zone under 10 CSR 26-2.062 must be performed after notifying the department but before completion of the permanent closure or a change in service.

(2) To permanently close a tank, owners and operators must empty and clean it by removing all liquids and accumulated sludges. Liquids and sludges shall be managed in accordance with state and federal regulations. All tanks taken out of service permanently must also be either removed from the ground or filled with an inert solid material.

(3) Continued use of a UST system to store a nonregulated substance is a change in service. Before a change in service, owners and operators must empty and clean the tank by removing all liquid and accumulated sludge and conduct a site assessment in 10 CSR 26-2.062.

(4) Owners and operators shall follow a written procedure. To comply with this rule, the department's Tanks Closure Guidance Document may be used as a written procedure. It may be supplemented with the following cleaning and closure procedures:

(A) American Petroleum Institute Recommended Practice 1604, Removal and Disposal of Used Underground Petroleum Storage Tanks;

(B) American Petroleum Institute Publication 2015, Cleaning Petroleum Storage Tanks;

(C) American Petroleum Institute Recommended Practice 1631, Interior Lining of Underground Storage Tanks; and

(D) Owners and operators may use other written procedures with prior written approval of the department.

AUTHORITY: sections 319.105, 319.107 and 319.111 RSMo 2000, and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994. Amended: Filed April 1, 1999, effective March 30, 2000.

***Original authority: 319.111, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

PURPOSE: This rule describes the requirements of a site assessment to determine whether there has been a release from the underground storage tank system.

10 CSR [*20*]26-[*10*]2.062 [*Initial Abatement Measures and Site Check*] Assessing the Property at Closure or Change in Service

[*PURPOSE: This rule describes the first steps to stop the spread of the release and finding the extent of the release.*

(1) Unless directed to do otherwise by the department, owners and operators must perform the following abatement measures:

(A) Remove as much of the regulated substance from the underground storage tank (UST) system as is necessary to prevent further release to the environment;

(B) Visually inspect any above-ground releases or exposed below-ground releases and prevent further migration of the released substance into surrounding soils and groundwater;

(C) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors or free product that have migrated from the UST excavation zone and entered into subsurface structures such as sewers or basements;

(D) Remedy hazards posed by contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement or corrective action activities. If these remedies include treatment or disposal of soils, the owner and operator must comply with applicable state and local requirements;

(E) Measure for the presence of a release where contamination is most likely to be present at the UST site, unless the presence and source of the release have been confirmed in accordance with the site check required by 10 CSR 20-10.052(1)(B) or the closure site assessment of 10 CSR 20-10.072(1). In selecting sample types, sample locations and measurement methods, the owner and operator must consider the nature of the stored substance, the type of backfill, depth to groundwater and other factors as appropriate for identifying the presence and source of the release; and

(F) Investigate to determine the possible presence of free product and begin free product removal as soon as practicable in 10 CSR 20-10.064.

(2) Within twenty (20) days after release confirmation, owners and operators must submit a report to the department summarizing the initial abatement steps taken under section (1) of this rule and any resulting information.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Before permanent closure or a change in service is completed, owners and operators must measure for the presence of a release where contamination is most likely to be present at and near the underground storage tank (UST) system. In selecting sample types, sample locations and measurement methods, owners and operators must consider the method of closure, the nature of the stored substance, the type of backfill, the depth to groundwater and other factors appropriate for identifying the presence of a release. The requirements of this section are satisfied if vapor monitoring or groundwater monitoring in compliance with 10 CSR 26-2.043(E) and (F) is operating at the time of closure and indicates no release has occurred.

(2) Unless vapor monitoring or groundwater monitoring conducted in accordance with 10 CSR 26-2.043(E) and (F) indicates no release has occurred, subsequent to the removal of a tank and system components or completion of a change in service, actions must be taken to determine whether the tank or any of the system components have released petroleum into the environment. Such actions include field screening and the collection of soil and, as warranted, groundwater samples for laboratory analysis.

(3) If contaminated soils, contaminated groundwater, vapors from contamination, or free product as a liquid or vapor is discovered under sections (1) or (2) of this rule, or by any other manner, owners and operators must begin release response and corrective action in 10 CSR 26-2.070 – 10 CSR 26-2.082.

(4) Owners and operators shall follow a written procedure governing tank closure activities. To comply with this rule, the department's Tanks Closure Guidance Document may be used as a written procedure. Other written procedures may be used with prior written approval of the department.

(5) Applicable target levels. The default target levels established by the department shall initially apply when assessing a UST system at closure or change in service. The tier one residential, soil type one risk-based target levels may be applied only when the conditions in section (7) of this rule are met.

(6) Default target levels. Owners and operators shall compare the maximum concentration of each chemical of concern detected in soil and groundwater samples obtained during UST closure or change in service with the default target levels.

(A) If the maximum concentration of one or more chemicals of concern in soil or groundwater samples obtained during UST closure or change in service exceeds a default target level, owners and operators shall:

1. Conduct corrective action to meet the default target levels;

2. Meet the conditions in section (7) of this rule to apply tier one residential, soil type one risk-based target levels; or

3. If the default target levels will not be applied to the site, begin release response and corrective action in accordance with the provisions of 10 CSR 26-2.070—10 CSR 26-2.082.

(B) If the maximum concentrations for all chemicals of concern in soil or groundwater samples obtained during UST closure or change in service are less than the default target levels or, if the conditions of section (7) of this rule are met, the tier one residential, soil type one risk-based target levels, owners and operators shall submit all required tank closure or change in service documentation as specified at section (10) of this rule and the department will make a determination of no further action documented in a letter to the owner, operator, or both.

(7) Conditions for using tier one residential, soil type one risk-based target levels. Tier one residential, soil type one risk-based target levels may be applied at closure or change in service without first fully characterizing the site only if each of the following conditions are met.

(A) A registered geologist or professional engineer has determined the groundwater domestic use pathway is incomplete under current and future site conditions in accordance with 10 CSR 26-2.075(10) and 10 CSR 26-2.075(16)(C).

(B) Samples obtained during UST closure or change in service are representative of the highest concentrations of chemicals of concern in soil and groundwater at the site.

1. If available information indicates that contamination associated with a tank system is beyond the immediate boundaries of the UST system or that soil and groundwater samples obtained during UST closure do not represent maximum concentrations for all chemicals of concern in soil or groundwater, the department may require site characterization before allowing tier one risk-based target levels to be applied at closure or change in service.

(8) Comparison to tier one residential, soil type one risk-based target levels. If the conditions of section (7) of this rule are met, owners and operators may compare the maximum concentration for each chemical of concern from soil and groundwater samples obtained during UST closure or change in service with the tier one residential, soil type one risk-based target levels.

(A) If the maximum concentration of one or more chemicals of concern in soil or groundwater samples obtained during UST closure or change in service exceeds the applicable tier one residential, soil type one risk-based target levels, owners and operators shall:

1. Conduct corrective action to meet the applicable tier one residential, soil type one risk-based target levels; or

2. Begin release response and corrective action in accordance with the provisions of 10 CSR 26-2.070—10 CSR 26-2.082.

(B) If the maximum concentration of each chemical of concern in soil or groundwater samples obtained during UST closure or change in service is less than the applicable tier one residential, soil type one risk-based target levels and the conditions of section (7) of this rule have been met, owners and operators shall submit all required tank closure documentation as specified at section (10)

of this rule and the department will make a determination of no further action documented in a letter to the owner, operator, or both.

(9) If the conditions of section (7) of this rule are met and tier one residential, soil type one risk-based target levels are determined to apply, all excavations associated with the tank pit, piping runs, and dispensers must be backfilled with a material having the characteristics of soil type one, two, or three. The material placed into the excavations must be compacted to meet or exceed the porosity and density of at least soil type one. If the excavations are filled with a granular material or material not having the same properties as soil type one, two, or three, tier one risk-based target levels for soil type one shall apply to the filled areas unless the department determines that the use of soil type one risk-based target levels is not adequately protective of human or ecological receptors, in which case the department may require the owner or operator to develop tier two site-specific target levels for the material.

(10) Documentation. A closure report signed by the tank owner or operator must be submitted to MDNR within 60 days of completion of closure or change in use activities, unless otherwise approved in writing by MDNR. The closure report shall use forms provided by the department as the basis of the report.

AUTHORITY: sections 319.111 RSMo 2000 and 319.137, RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.
***Original authority: 319.107, RSMo 1989.**

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR 2[*0*]6-[*10*]2.063 [*Initial Site Characterization*] Applicability to Previously Closed Underground Storage Tank Systems

[*PURPOSE: This rule describes the steps for investigation of a release.*

(1) Unless directed to do otherwise by the department, owners and operators must assemble information about the site and the nature of the release, including information gained while confirming the release or completing the initial abatement measures in 10 CSR 20-10.060 and 10 CSR 20-10.061. This information must include, but is not necessarily limited to, the following:

(A) Data on the nature and estimated quantity of release;

(B) Data from available sources or site investigations concerning the following factors: surrounding populations, water quality, use and approximate locations of wells potentially affected by the release, subsurface soil conditions, locations of subsurface sewers, climatological conditions and land use;

(C) Results of the site check required under 10 CSR 20-10.062(1)(E); and

(D) Results of the free product investigations required under 10 CSR 20-10.062(1)(F) to be used by owners and operators to determine whether free product must be recovered under 10 CSR 20-10.064.

(2) Within forty-five (45) days of release confirmation, owners and operators must submit the information collected in compliance with section (1) of this rule to the department or in a format and according to the schedule required by the department.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

PURPOSE: This rule describes the responsibilities of owners and operators of underground storage tanks closed before December 22, 1988.

(1) The department may require that the owner and operator of an underground storage tank (UST) system permanently closed before December 22, 1988, must assess the excavation zone and close the UST system in accordance with 10 CSR 26-2.060 – 10 CSR 26-2.064 if releases from the UST, in the judgment of the department, may pose a current or potential threat to human health and the environment.

AUTHORITY: sections 319.111 RSMo 2000 and 319.109 and 319.137 RSMo Supp. 2007. Original rule filed April 2, 1990, effective Sept. 28, 1990. *Original authority: 319.111, RSMo 1989.

Title 10--DEPARTMENT OF NATURAL RESOURCES
Division [*20*]26 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 -- Underground Storage Tanks--Technical Regulations

10 CSR 2[*0*]6-[*10*]2.064 [*Free Product Removal*] Closure Records

[*PURPOSE: This rule requires spilled, free product to be collected immediately.*

(1) At sites where the investigation reveals free product under 10 CSR 20-10.062(1)(F), owners and operators must remove as much free product as practicable as determined by the department. Any actions initiated under 10 CSR 20-10.061--10 CSR 20-10.063 or preparation for actions required under 10 CSR 20-10.065--10 CSR 20-10.066 must also be continued. In meeting the requirements of this rule, owners and operators must--

(A) Remove free product to minimize the spread of contamination into previously uncontaminated zones. The recovery and disposal techniques must be appropriate to the hydrogeologic conditions at the site. Recovered by-products must be treated, discharged or disposed in compliance with applicable local, state and federal regulations;

(B) Use abatement of free-product migration as a minimum objective for free product removal;

(C) Handle any flammable products in a safe and competent manner to prevent fires or explosions; and

(D) Prepare and submit to the department a free-product removal report, within forty-five (45) days after confirming a release, unless otherwise directed by the department. The report shall provide at least the following information:

1. The name of the person(s) responsible for implementing the free product removal measures;

2. The estimated quantity, type and thickness of free product observed or measured in wells, boreholes and excavations;

3. The type of free-product recovery system used;

4. Whether any discharge will take place on-site or off-site during the recovery operation and the location of this discharge;

5. The type of treatment applied to, and the effluent quality expected from, any discharge;

6. The steps that have been or are being taken to obtain necessary permits for any discharge; and

7. The disposition of the recovered free product.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

PURPOSE: This rule requires the owner and the operator to keep records documenting the closure and site assessment of underground storage tank systems.

(1) Owners and operators must maintain records in accordance with 10 CSR 26-2.034 that are capable of demonstrating compliance with closure requirements in 10 CSR 26-2.060 – 10 CSR 26-2.064. The results of the site assessment in 10 CSR 26-2.062 must be maintained for at least three (3) years after completion of permanent closure or change in service in one (1) of the following ways:

(A) By the owners and operators who took the underground storage tank (UST) system out of service;

(B) By the current owners and operators of the UST system; or

(C) By mailing these records to the department if they cannot be maintained at the closed facility.

AUTHORITY: sections 319.111 RSMo 2000 and 319.107 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.111, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 – Underground Storage Tanks – Technical Regulations

PURPOSE: This rule establishes general procedures for responding to leaks of spills at underground storage tanks.

10 CSR [*20*]26-[*10*]2.070 [*Temporary Closure*] Release Response and Corrective Action

[*PURPOSE: This rule contains the procedures for placing underground storage tanks out of service or temporarily closing underground storage tanks.*

(1) When an underground storage tank (UST) system is temporarily closed, owners and operators must continue operation and maintenance of corrosion protection in 10 CSR 20-10.031 and release detection in 10 CSR 20-10.040--10 CSR 20-10.045. Release reporting, investigation and corrective action in 10 CSR 20-10.050--10 CSR 20-10.067 must be performed if a release is suspected or confirmed. If the UST system is empty, release detection is not required. The UST system is empty when all materials have been removed so that no more than one inch (1") (or two and one-half (2.5) centimeters) of residue or three-tenths percent (0.3%) by weight of the total capacity of the UST system remains.

(2) Owners and operators must also comply with the following requirements when a UST system is temporarily closed for three (3) months or more:

(A) Leave vent lines open and functioning; and

(B) Cap and secure all other lines, pumps, manways and ancillary equipment.

(3) When a UST system is temporarily closed for more than twelve (12) months, owners and operators must permanently close the UST system if it does not meet either performance standards in 10 CSR 20-10.020 for new UST systems or the upgrading requirements in 10 CSR 20-10.021 except that the spill and overfill equipment requirements do not have to be met. Owners and operators must permanently close the substandard UST systems at the end of this twelve (12)-month period in accordance with 10 CSR 20-10.071--10 CSR 20-10.074, unless the department provides an extension of the twelve (12)-month temporary closure period. Owners and operators must complete a site assessment in accordance with 10 CSR 20-10.072 before such an extension can be applied for.

AUTHORITY: sections 319.111, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.111, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Owners and operators of petroleum or hazardous substance underground storage tank (UST) systems must comply, in response to a confirmed release from the UST system, with the requirements of 10 CSR 26-2.070 – 10 CSR 26-2.082 except for USTs excluded under 10 CSR 26-2.010(2) and UST systems subject to the Resource Conservation and Recovery Act (RCRA), Subtitle C corrective action requirements under Section 3004(u).

AUTHORITY: sections 319.109 and 319.137, RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [Clean Water Commission] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 – Underground Storage Tanks – Technical Regulations

PURPOSE: This rule describes the immediate steps owners and operators of a leaking underground storage tank must take.

[*PURPOSE: This rule contains the requirements for permanent closure of underground storage tanks as well as for converting underground storage tanks to an unregulated use.*]

10 CSR 2[*0*]6-[*10*]2.071 [*Permanent Closure and Changes in Service*] Initial Release Response

[*(1) Owners and operators must notify the department in writing, on forms provided by the department, at least thirty (30) days before beginning either permanent closure or a change in service of an underground storage tank (UST) in sections (2) and (3) of this rule or within another reasonable time period determined by the department, unless this action is in response to corrective action. The required assessment of the excavation zone under 10 CSR 20-10.072 must be performed after notifying the department but before completion of the permanent closure or a change in service.*

(2) To permanently close a tank, owners and operators must empty and clean it by removing all liquids and accumulated sludges. Liquids and sludges shall be managed in accordance with state and federal regulations. All tanks taken out of service permanently must also be either removed from the ground or filled with an inert solid material.

(3) Continued use of a UST system to store a nonregulated substance is a change in service. Before a change in service, owners and operators must empty and clean the tank by removing all liquid and accumulated sludge and conduct a site assessment in 10 CSR 20-10.072.

(4) Owners and operators shall follow a written procedure. To comply with this rule, the department's UST Closure Guidance Document may be used as a written procedure. It may be supplemented with the following cleaning and closure procedures:

(A) American Petroleum Institute Recommended Practice 1604, Removal and Disposal of Used Underground Petroleum Storage Tanks;

(B) American Petroleum Institute Publication 2015, Cleaning Petroleum Storage Tanks;

(C) American Petroleum Institute Recommended Practice 1631, Interior Lining of Underground Storage Tanks; and

(D) Owners and operators may use other written procedures with prior written approval of the department.

AUTHORITY: sections 319.111, RSMo Supp. 1994 and 644.026, RSMo Supp. 1998. Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994. Amended: Filed April 1, 1999, effective March 30, 2000. *Original authority: 319.111, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993, 1995.*]

(1) (Reserved)

(2) Upon confirmation of a release in 10 CSR 26-2.052, or after a release from the underground storage tank (UST) system is identified in any other manner, owners and operators must perform the following initial response actions within twenty-four (24) hours of a release:

(A) Report the release to the department in accordance with 10 CSR 26-2.050;

(B) Take immediate action to prevent any further release of the regulated substance into the environment; and

(C) Identify and mitigate fire, explosion and vapor hazards.

1. At sites where LNAPL is present, vapor monitoring shall be conducted in the area immediately above and within at least one hundred (100) feet of the known extent of light non-aqueous phase liquid unless information is made available to the department that clearly demonstrates that such monitoring is not warranted. Vapor monitoring must include all utilities, subsurface and surface structures and any other enclosed spaces.

AUTHORITY: sections 319.109, RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

[*PURPOSE: This rule describes the requirements of a site assessment, that is determining whether there has been a release from the underground storage tank system.*]

PURPOSE: This rule describes the first steps to stop the spread of the release and finding the extent of the release.

10 CSR 2[*0*]6-[*10*]2.072 [*Assessing the Site at Closure or Change in Service*] Initial Abatement Measures, Site Check, and Comparison with Default Target Levels

[*(1) Before permanent closure or a change in service is completed, owners and operators must measure for the presence of a release where contamination is most likely to be present at the underground storage tank (UST) site. In selecting sample types, sample locations and measurement methods, owners and operators must consider the method of closure, the nature of the stored substance, the type of backfill, the depth to groundwater and other factors appropriate for identifying the presence of a release. The requirements of this section are satisfied if vapor monitoring or groundwater monitoring in 10 CSR 20-10.043(E) and (F) is operating at the time of closure and indicates no release has occurred.*

(2) If contaminated soils, contaminated groundwater or free product as a liquid or vapor is discovered under section (1) of this rule, or by any other manner, owners and operators must begin corrective action in 10 CSR 20-10.060--10 CSR 20-10.067.

(3) Owners and operators shall follow a written procedure. To comply with this rule, the department's UST Closure Guidance Document may be used as a written procedure. Other written procedures may be used with prior written approval of the department.

AUTHORITY: sections 319.111, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.*
**Original authority: 319.107, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Unless directed to do otherwise by the department, owners and operators must perform the following abatement measures:

(A) Remove as much of the regulated substance from the underground storage tank (UST) system as is necessary to prevent further release to the environment;

(B) Visually inspect any above-ground releases or exposed below-ground releases and prevent further migration of the released substance into surrounding soils and groundwater;

(C) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors or free product that have migrated from the UST excavation zone and entered into surface or subsurface structures such as buildings, sewers or basements;

(D) Remedy hazards posed by contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement or corrective action activities. If these remedies include treatment or disposal of soils, the owner and operator must comply with applicable state and local requirements;

(E) Measure for the presence of a release where contamination is most likely to be present at the UST site, unless the presence and source of the release have been confirmed in accordance with the site check required by 10 CSR 26-2.052(1)(B) or the closure site assessment in 10 CSR 26-2.062. In selecting sample types, sample locations and measurement methods, the owner and operator must consider the nature of the stored substance, the type of backfill, depth to groundwater and other factors as appropriate for identifying the presence and source of the release; and

(F) Investigate to determine the possible presence of light non-aqueous phase liquid and begin light non-aqueous phase liquid removal as soon as practicable in accordance with 10 CSR 26-2.074.

(2) Comparison with default target levels. Owners and operators shall compare the maximum soil and groundwater concentrations of chemicals of concern with the default target levels established by the department and complete an ecological screening assessment in accordance with the requirements of 10 CSR 26-2.075(17).

(A) If the maximum soil or groundwater concentrations of chemicals of concern at a site exceed the default target levels, the owner or operator shall either

1. Undertake corrective action to achieve the default target levels; or

2. Conduct a full site characterization and risk assessment in accordance with the requirements of 10 CSR 26-2.073 through 10 CSR 26-2.082.

If the maximum soil and groundwater concentrations do not exceed the default target levels, light non-aqueous phase liquid is not present, and no ecological risk is identified, owners and operators may petition the department for a determination of no further action.

(3) Within twenty (20) days after release confirmation, owners and operators must submit a report to the department summarizing the initial abatement steps taken under section (1) of this rule and any resulting information and documenting the comparison of maximum concentrations of chemicals of concern with the default target levels and the ecological screening assessment.

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.

***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[0]6 – [Clean Water Commission] Petroleum and Hazardous Substance Storage Tanks
Chapter [10] 2 – Underground Storage Tanks – Technical Regulations

PURPOSE: This rule describes the steps for initial investigation of a confirmed release.

[*PURPOSE: This rule describes the responsibilities of owners and operators of underground storage tanks closed before December 22, 1988.*]

10 CSR 2[0]6-[10]2.073 [*Applicability to Previously Closed Underground Storage Tank Systems*] Initial Site Characterization

[*The department may require that the owner and operator of an underground storage tank (UST) system permanently closed before December 22, 1988, must assess the excavation zone and close the UST system in accordance with 10 CSR 20-10.070--10 CSR 20-10.074 if releases from the UST, in the judgment of the department, may pose a current or potential threat to human health and the environment.*

AUTHORITY: sections 319.111, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.
**Original authority: 319.111, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Unless directed to do otherwise by the department, owners and operators must assemble information about the site and the nature of the release, including information gained while confirming the release or completing the initial abatement measures in 10 CSR 26-2.061 and 10 CSR 26-2.071. This information must include, but is not necessarily limited to, the following:

(A) Data on the nature and estimated quantity of release;

(B) Data from available sources or site investigations concerning the following factors:

1. Surrounding populations;

2. Water quality;

3. Use and approximate locations of wells potentially affected by the release;

4. Subsurface soil conditions;

5. Locations of subsurface sewers;

6. Climatological conditions; and

7. Land use.

(C) Results of the site check required under 10 CSR 26-2.072(1)(E); and

(D) Results of the light non-aqueous phase liquid investigations required under 10 CSR 26-2.072(1)(F) to be used by owners and operators to determine whether light non-aqueous phase liquid must be recovered under 10 CSR 26-2.074.

(2) Within forty-five (45) days of release confirmation, owners and operators shall document the results of the initial characterization, including the information collected in compliance with section (1) of this rule, in a report to the department or in a format and according to the schedule required by the department.

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

PURPOSE: This rule requires spilled, light non-aqueous phase liquid to be collected immediately.

[*PURPOSE: This rule requires the owner and the operator to keep records documenting the closure and site assessment of underground storage tank systems.*]

10 CSR 2[*0*]6-[*10*]2.074 [*Closure Records*] Light Non-Aqueous Phase Liquid (LNAPL) Removal

[*(1) Owners and operators must maintain records in accordance with 10 CSR 20-10.034 that are capable of demonstrating compliance with closure requirements in 10 CSR 20-10.070--10 CSR 20-10.074. The results of the site assessment in 10 CSR 20-10.072 must be maintained for at least three (3) years after completion of permanent closure or change in service in one (1) of the following ways:*

(A) By the owners and operators who took the underground storage tank (UST) system out of service;

(B) By the current owners and operators of the UST system site; or

(C) By mailing these records to the department if they cannot be maintained at the closed facility.

AUTHORITY: sections 319.111, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.111, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) At sites where the investigation reveals LNAPL under 10 CSR 26-2.072(1)(F), owners and operators must begin to remove free and mobile LNAPL from the environment within thirty (30) days of the discovery of the LNAPL or according to a schedule approved by the department. Initial removal efforts must continue until a work plan for LNAPL removal required at 10 CSR 26-2.079(5)(A) is submitted to and approved by the department. LNAPL must be removed to the extent practicable as determined by the department. Any actions initiated under 10 CSR 26-2.071 – 10 CSR 26-2.073 or preparation for actions required under 10 CSR 26-2.075 – 10 CSR 26-2.079 must also be continued. In meeting the requirements of this rule, owners and operators must:

(A) Remove LNAPL to minimize the spread of contamination (free and mobile LNAPL and associated dissolved-phase groundwater contamination) into previously uncontaminated zones and to mitigate fire, explosion, and acute human health risks associated with the non-aqueous phase liquid. The recovery and disposal techniques must be appropriate to the hydrogeologic conditions at

the site. Recovered by-products must be treated, discharged or disposed in compliance with applicable local, state and federal regulations;

(B) Use abatement of LNAPL migration and mitigation of acute risks as minimum objectives for LNAPL removal;

(C) Handle any flammable products in a safe and competent manner to prevent fires or explosions; and

(D) Prepare and submit to the department a LNAPL removal report, within forty five (45) days after confirming a release, unless otherwise directed by the department. The report shall provide at least the following information:

1. The name of the person(s) responsible for implementing the LNAPL removal measures;

2. The estimated quantity, type and thickness of LNAPL observed or measured in wells, boreholes and excavations;

3. The type of LNAPL recovery system used;

4. Whether any discharge will take place on-site or off-site during the recovery operation and the location of this discharge;

5. The type of treatment applied to, and the effluent quality expected from, any discharge;

6. The steps that have been or are being taken to obtain necessary permits for any discharge; and

7. **The disposition of the recovered LNAPL**.

(2) Owners and operators must collect information necessary to prepare the LNAPL work plan required by 10 CSR 26-2.079(5)(A). Removal actions initiated under section (1) of this rule must continue until the LNAPL work plan is submitted to and approved by the department.

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 26 – Petroleum and Hazardous Substance Storage Tanks
Chapter 2 – Underground Storage Tanks – Technical Regulations

PROPOSED RULE

PURPOSE: This rule establishes the general requirements for evaluating risks posed to human health, public welfare, and the environment by contamination resulting from a release of petroleum from a petroleum storage tank system.

10 CSR 26-2.075 Risk-Based Corrective Action Process

(1) If the maximum soil or groundwater concentrations for chemicals of concern at a site exceed the default target levels established by the department and the owners and operators choose not to undertake corrective action to achieve the default target levels, then the owners and operators shall conduct a risk-based evaluation and, as warranted, corrective action in accordance with this rule and 10 CSR 26-2.076 – 10 CSR 26.2-082.

(2) (Reserved)

(3) Owners and operators shall undertake the following actions to evaluate and determine appropriate corrective action to address risk posed by chemicals of concern at a site:

(A) Develop a conceptual model for the site based on site-specific data obtained through site characterization in accordance with 10 CSR 26-2.076;

(B) Determine applicable target levels for the chemicals of concern at the site using the tiered risk assessment process in 10 CSR 26-2.078;

(C) Compare concentrations of chemicals of concern to applicable target levels to determine whether an unacceptable risk is present; and

(D) Undertake corrective action necessary to eliminate or reduce risk to an acceptable level at a site.

(4) Owners and operators shall develop a conceptual model for the site that integrates available data and information into a coherent description of geologic and hydrogeologic characteristics and conditions, distribution of chemicals of concern in affected media, actual and potential human and ecological receptors under current and reasonably anticipated future conditions, and exposure pathways at a site. The conceptual model for the site shall consist of a narrative and graphical description of site characteristics and conditions.

(5) The conceptual model shall be used to identify data and information for the site that is missing or inadequate and as a guide for site characterization and corrective action. The conceptual model shall be revised and refined as additional or more detailed data or information is obtained to reflect current understanding of the site.

(6) The conceptual model shall be developed via the collection of site data pertaining to the source and distribution of chemicals of concern, geology and hydrogeology, human and ecological receptors, routes of exposure, exposure pathways, and chemical of

concern transport mechanisms. All aspects of the conceptual model shall rely on site-specific data, information obtained from approved literature sources, or both.

(7) Components of Conceptual Site Model. The conceptual site model shall include qualitative and quantitative information that describes the relevant site-specific factors that determine the risk that chemicals of concern pose to human health and the environment. The conceptual site model shall including the following key elements:

(A) The chemical release scenario, known and suspected source(s), and chemicals of concern;

(B) Affected media;

(C) Spatial and temporal distribution of chemicals of concern in the various affected media including presence and extent of light non-aqueous phase liquid;

(D) Nature, geometry and setting of light non-aqueous phase liquid;

(E) Description of any known existing or proposed land or water use restrictions;

(F) Current and reasonably anticipated future land and groundwater use;

(G) Description of site stratigraphy, geology, hydrogeology, meteorology, determination of the predominant vadose zone soil type, and identification of surface water bodies that may potentially be affected by site chemicals of concern;

(H) Remedial activities conducted to date; and

(I) An exposure model that identifies human and ecological receptors, exposure pathways and routes of exposure under current and reasonably anticipated future land use conditions.

(8) Identification of chemicals of concern. Potential chemicals of concern at the site shall be identified based on the nature of the petroleum product or products known or suspected to have been released as listed in Table 1 of this rule. Owners and operators shall determine the specific chemicals of concern at a site based on laboratory analytical data for samples collected at the site.

(A) Polycyclic aromatic hydrocarbons other than naphthalene shall be evaluated as chemicals of concern at sites where total petroleum hydrocarbons-diesel range organics or total petroleum hydrocarbons-oil range organics are detected in soil at a concentration at or above the required reporting limits.

(B) 1,2-Dibromoethane, 1,2-dichloroethane, and lead shall be considered potential chemicals of concern at sites where leaded gasoline may have been released.

(C) At sites where waste oil or used oil may have been released, potential chemicals of concern shall include arsenic, barium, cadmium, chromium, lead and selenium.

(9) Land use. Owners and operators shall evaluate land use for all properties affected or potentially affected by chemicals of concern from the release under current and reasonably anticipated future conditions. Land use shall be identified as either residential or nonresidential. Land use information shall be used in the identification of actual and potential receptors at the site.

(A) Determination of reasonably anticipated future land use. The department will make final decisions with respect to the reasonably anticipated future land use of each property that is a part of a site. The department will make such decisions in accordance with the following:

1. Decisions will be made in consideration of information relevant to the future use of a property provided to the department by owners and operators, the owner of an adjacent or nearby property affected by a release from the source property being evaluated, or either party's environmental consultant or other authorized designee.

2. The department may also consider information obtained from other sources, including but not limited to, local, county, state, and federal governmental entities and actual and prospective future purchasers, developers, tenants, and users of the property to which the decision pertains.

3. The department may request future land use information from the owner, or the owner's authorized designee, of an adjacent or nearby property affected by a release.

(10) Groundwater use. Owners and operators shall identify current and reasonably anticipated future use of groundwater in the vicinity of the site. All groundwater zones in the vicinity of the site that are, or may potentially be, targeted for installation of domestic water wells shall be identified and evaluated to determine whether and to what extent the zones are interconnected. Other non-domestic groundwater uses, if any, shall also be identified.

(A) Owners and operators shall determine whether existing wells are present on the site, whether private wells are present within one quarter (0.25) mile, and whether public wells are present within one (1) mile of the site. Any existing wells shall be evaluated to determine whether the wells or the groundwater zone they are situated in are or are reasonably likely to be affected by chemicals of concern associated with the site.

(B) Reasonably anticipated future use of groundwater for each identified groundwater zone shall be evaluated in accordance with the process shown in Figure 1 of this rule and the following criteria.

1. Activity and use limitations. Determine if an activity and use limitation is in place that minimizes or eliminates the potential that a specified groundwater zone will serve as a future source of domestic water. The sufficiency of an activity and use limitation to prevent groundwater use shall be determined by the department.

2. Groundwater quality and yield. Groundwater shall be considered suitable for consumptive use if both the following criteria are met:

A. The groundwater contains less than ten thousand milligrams per liter (10,000 mg/L) total dissolved solids; and

B. The groundwater zone is capable of producing a minimum of one quarter (0.25) gallon per minute or three hundred sixty (360) gallons per day on a sustained basis.

3. Sole source. A groundwater zone that is the only viable source of water at or in the vicinity of the site shall be considered to be a potential source of domestic water, irrespective of groundwater quality and yield considerations.

4. Reasonable probability of future groundwater use. The probability that a groundwater zone could be used as a future source of water for domestic use shall be a weight of evidence determination made by the department based on consideration of the criteria described in sections (10)(B)1 – 3 of this rule and the following factors:

A. Current groundwater use patterns in the vicinity of the site;

B. Availability of alternative water supplies, including consideration of other groundwater zones, municipal water supply systems, and surface water sources;

C. Urban development considerations for sites in areas of intensive historic industrial or commercial activity, having groundwater zones in hydraulic communication with industrial or commercial surface activity, and located within metropolitan areas with a population of at least 70,000 as established by the 1970 census; and

D. Aquifer capacity limitations that may affect the number of production wells that can be supported.

5. If the department determines that a groundwater zone has a reasonable probability of future use as a domestic water supply, the groundwater zone shall be evaluated to determine if there is a reasonable probability that the groundwater zone is or could be affected by chemicals of concern associated with the site.

A. The evaluation shall consider the nature and extent of contamination at the site, site hydrogeology including the potential presence of karst features, contaminant fate and transport factors and mechanisms, and other pertinent variables.

(11) Surface water and sediment. Owners and operators shall identify any streams or other surface water bodies that are or potentially may be affected by the release or by chemicals of concern at the site. The characteristics of the surface water body shall be identified.

(A) Actual and potential impacts to streams and other surface water bodies from a release shall be evaluated and surface water quality protected in accordance with the requirements of 10 CSR 20-7.031.

(12) Utilities. Owners and operators shall identify and evaluate underground utilities within a site and their ability to serve as conduits for migration of light non-aqueous phase liquid and chemicals of concern. In addition, owners and operators shall determine whether and to what extent chemicals of concern pose risk due to infiltration or permeation of the utility lines themselves, in particular water lines.

(13) Exposure Model. Owners and operators shall develop an exposure model that identifies the environmental media affected by the release, actual and potential receptors, exposure pathways linking the affected media to a receptor, and routes of exposure for all contaminated media at a site under current and reasonably anticipated future land use conditions. If chemicals of concern have migrated from the property at which the release occurred on to adjacent or nearby property or properties, exposure pathways at the affected adjacent or nearby property must be considered independent of the exposure pathways on the property at which the contamination originated.

(A) If the exposure model developed demonstrates that no exposure pathways are complete at the site under current and reasonably anticipated future land use conditions, owners and operators may request that the department make a no further remedial action determination subject to the conditions in section 10 CSR 26-2.082(4).

(14) The exposure model shall identify:

(A) All complete exposure pathways for current and reasonably anticipated future land use;

(B) The exposure domain for each exposure pathway found to be complete; and

(C) The point of exposure for each exposure pathway.

(15) Receptors. Owners and operators shall identify actual and potential human and ecological receptors at the site.

(A) All actual and potential human receptors shall be identified. At a minimum, the following receptors shall be considered at all sites:

1. Resident, including a child, adult and age-adjusted individual.

2. Non-resident adult worker.

3. Adult construction worker.

(B) Actual or potential ecological receptors and habitats shall be identified. The screening process in section (17) of this rule shall be used to determine the presence of ecological receptors to be considered.

(16) Exposure pathways. Owners and operators shall identify exposure pathways linking the affected media to a receptor and routes of exposure at the site and determine which exposure pathways are complete and which are incomplete under current and reasonably anticipated future conditions. All exposure pathways shall be included in the exposure model for the site and owners and operators shall clearly explain which pathways are complete and why an exposure pathway is or is not complete and support that conclusion with site-specific data.

(A) An exposure pathway shall be considered complete where there is an affected environmental media, a mechanism by which chemicals of concern in the environmental media can result in exposure to a receptor, and an actual or potential receptor is identified under current or reasonably anticipated future land use conditions. The specific concentration of chemicals of concern in an environmental

media shall not be considered in determining whether an exposure pathway is complete.

(B) At a minimum, owners and operators shall evaluate the following exposure pathways for human exposure for inclusion in the exposure model for the site.

1. Surficial soil. Exposure pathways applicable to surficial soil shall include, at a minimum:

A. Ingestion of soil, dermal contact with soil, and outdoor inhalation of vapors and particulates from surficial soils;

B. Indoor inhalation of vapor emissions from surficial soil;

C. Leaching of chemicals of concern from soil to groundwater and domestic use of groundwater;

D. Leaching of chemicals of concern from soil to groundwater followed by migration of vapors from groundwater to indoor air; and

E. Leaching of chemicals of concern from soil to groundwater and subsequent migration to a surface water body.

2. Subsurface soil. Exposure pathways applicable to subsurface soil shall include, at a minimum:

A. Indoor inhalation of vapor emissions from subsurface soil;

B. Leaching of chemicals of concern from soil to groundwater and domestic use of groundwater;

C. Leaching of chemicals of concern from soil to groundwater followed by migration of vapors from groundwater to indoor air;

D. Leaching of chemicals of concern from soil to groundwater and subsequent migration to a surface water body.

3. Groundwater. Exposure pathways applicable to groundwater shall include, at a minimum:

A. Indoor inhalation of vapor emissions from groundwater;

B. Ingestion of water, dermal contact with water, and inhalation of vapors from water if the domestic use of groundwater pathway is complete; and

C. Migration to a surface water body and potential impacts to surface waters.

4. The following pathways shall be evaluated up to the depth of construction for the construction worker receptor:

A. Ingestion, dermal contact with, and inhalation of vapor emissions and particulates from soil from the surface up to the depth of construction;

B. Outdoor inhalation of vapor emissions from groundwater;

C. Outdoor inhalation of vapor emissions from light non-aqueous phase liquid;

D. Dermal contact with groundwater, if the depth to groundwater is or will be less than the depth of construction; and

E. Direct contact with light non-aqueous phase liquid constitutes an acute hazard and shall be evaluated qualitatively based on the depth of the light non-aqueous phase liquid and depth of construction.

5. Surface water and sediment. Exposure pathways applicable to surface water and sediment shall include, at a minimum:

A. Ingestion of surface water;

B. Contact with surface water during recreational activities (ingestion, inhalation of vapors, and dermal contact);

C. Contact with sediments (ingestion and dermal contact); and

D. Ingestion of fish or other aquatic organisms that have accumulated chemicals of concern as a result of surface water or sediment contamination

6. Other pathways that may need to be considered if relevant to the site include, but are not necessarily limited to, the following:

A. Ingestion of produce grown in impacted soils;

B. Use of groundwater for irrigation purposes; and

C. Use of groundwater for industrial purposes.

(C) Groundwater use pathway. Owners and operators shall identify the point of exposure for domestic groundwater use. The point of exposure shall be an existing well or hypothetical well at the nearest down-gradient location that could reasonably be considered for installation of a water supply well regardless of the presence of chemicals of concern. The point of exposure might be on the site itself.

1. The current groundwater domestic use pathway shall be considered complete if existing wells or the groundwater zones they intersect are or may be affected by chemicals of concern associated with the site.

2. For each groundwater zone, the future groundwater use pathway shall be considered complete unless one or more of the following conditions are met:

A. An ordinance is in place that prohibits water well drilling on and near the site and the ordinance is the subject of a Memorandum of Agreement between the department and the governing body that issued the ordinance, or some other activity and use limitation is in place, as determined by the department, that prohibits the installation of water wells on and near the site;

B. The groundwater zone is not suitable for use as determined in compliance with section (10)(B)2 of this rule and the groundwater zone is not the only viable source of future water supply as determined in accordance with section (10)(B)3 of this rule;

C. Future use of the groundwater is not reasonably probable as determined in accordance with section (10)(B)4 of this rule; or

D. The department determines there is no reasonable probability that the groundwater zone is or could be affected by chemicals of concern associated with the site.

(D) Exposure domain. Owners and operators shall determine the exposure domain for each complete exposure pathway. Owners and operators shall use concentrations of chemicals of concern measured from sample points within each exposure domain to determine the maximum and representative concentrations for each complete exposure pathway.

(17) Ecological screening assessment. Owners and operators shall use the conceptual site model and the qualitative screening assessment described below to identify whether any ecological receptors or habitats exist at or near the site and evaluate actual and potential exposure.

(A) Owners and operators must qualitatively assess, to the satisfaction of the department, the existence of ecological receptors on and near the site and whether any actual or potential exposure pathways to such receptors are or will be complete. Owners and operators may use checklists developed by the department for this purpose.

(B) If the qualitative assessment conducted at section (17)(A) of this rule determines that ecological receptors exist on or near the site and actual or potential exposure pathways to such receptors are or will be complete, owners and operators shall conduct a level two or three ecological risk assessment in accordance with section 10 CSR 26-2.078(5) to determine whether contamination at the site poses an unacceptable risk to ecological receptors.

(18) Determination of applicable target levels. Owners and operators shall determine applicable target levels for chemicals of concern in environmental media for all exposure pathways identified as complete in the exposure model for the site. Applicable target levels shall be determined for each complete exposure pathway using the process in 10 CSR 26-2.077.

(A) Determination of applicable target levels shall be consistent with the risk assessment tier being applied under 10 CSR 26-2.078 and may include:

1. Default target levels;

2. Tier one risk-based target levels;

3. Tier two site-specific target levels; or

4. Tier three site-specific target levels.

(B) Groundwater use. Applicable target levels for groundwater use shall be the United States Environmental Protection Agency maximum contaminant level if one exists for a chemical of concern or a tier one risk-based target level or tier two or tier three site-specific target level if a maximum contaminant level is not available.

1. The owner and operator shall identify one or more point of demonstration wells located between the source and the point of exposure identified in subsection (16)(C) of this rule unless the point of exposure is located within the

groundwater solute plume at the site. Tier one risk-based target levels or tier two or tier three site-specified target levels shall be developed and used or applicable maximum contaminant levels shall be used as target levels for the point of demonstration wells to protect against applicable target levels being exceeded at the point of exposure.

(C) Surface water. Target levels for surface water shall be water quality criteria based on the classification and beneficial use designations of the surface water body in accordance with 10 CSR 20-7.031. If water quality criteria do not exist for a chemical of concern, an applicable target level shall be developed using methodology approved by the department.

(D) Sediment. Owners and operators shall compare sediment sample data with sediment criteria available from literature that are protective of human health and ecological receptors or develop tier two site-specific target levels. Sediment contamination shall be delineated based on the criteria determined to be applicable. When developed, tier two site-specific target levels must be developed using methodology approved by the department.

(19) Application of applicable target levels. Owners and operators shall compare applicable target levels to measured concentrations of chemicals of concern from samples of environmental media at the site. The concentration used for comparison to applicable target levels shall be a representative concentration or the maximum concentration appropriate for the complete exposure pathway based on the exposure domain.

(A) For surficial soil in a residential setting, owners and operators shall compare applicable target levels to the maximum concentration within the exposure domain.

(B) Representative concentrations. Owners and operators shall determine, subject to department approval, the representative concentration of each chemical of concern in an environmental media appropriate for each complete exposure pathway at the site, unless the maximum concentration does not exceed the applicable target level for the exposure pathway. The representative concentration for an exposure pathway shall be the concentration of a chemical of concern in an environmental media that reflects an average exposure concentration for a receptor in the exposure domain over the duration of exposure. The representative concentration for an exposure pathway shall be determined using a methodology established by the department or other appropriate method approved by the department.

(20) Evaluation of light non-aqueous phase liquid (LNAPL). At sites where LNAPL is present, owners and operators shall determine concentrations for chemicals of concern associated with the LNAPL using values for the effective solubility and vapor pressure or another method approved by the department. The equilibrium dissolved and vapor-phase concentrations for chemicals of concern in LNAPL shall be used to evaluate the risks posed by the LNAPL and to develop representative concentrations for use in the risk assessment.

(A) For tier one and tier two risk assessments, the default composition values for petroleum product or products determined by the department may be used to calculate dissolved and vapor phase concentrations associated with LNAPL at a site.

(B) For a tier three risk assessment, owners and operators may determine LNAPL physical properties and composition using analytical methods approved by the department. The equilibrium dissolved and vapor-phase concentrations for chemicals of concern shall be determined based on the mole fraction of each chemical of concern in the LNAPL.

(21) Nuisance conditions. Owners and operators shall document and report to the department any nuisance conditions that exist at a site including, but not limited to, objectionable taste or odor in groundwater, aesthetic problems with discharging groundwater, and odor from soils remaining in place.

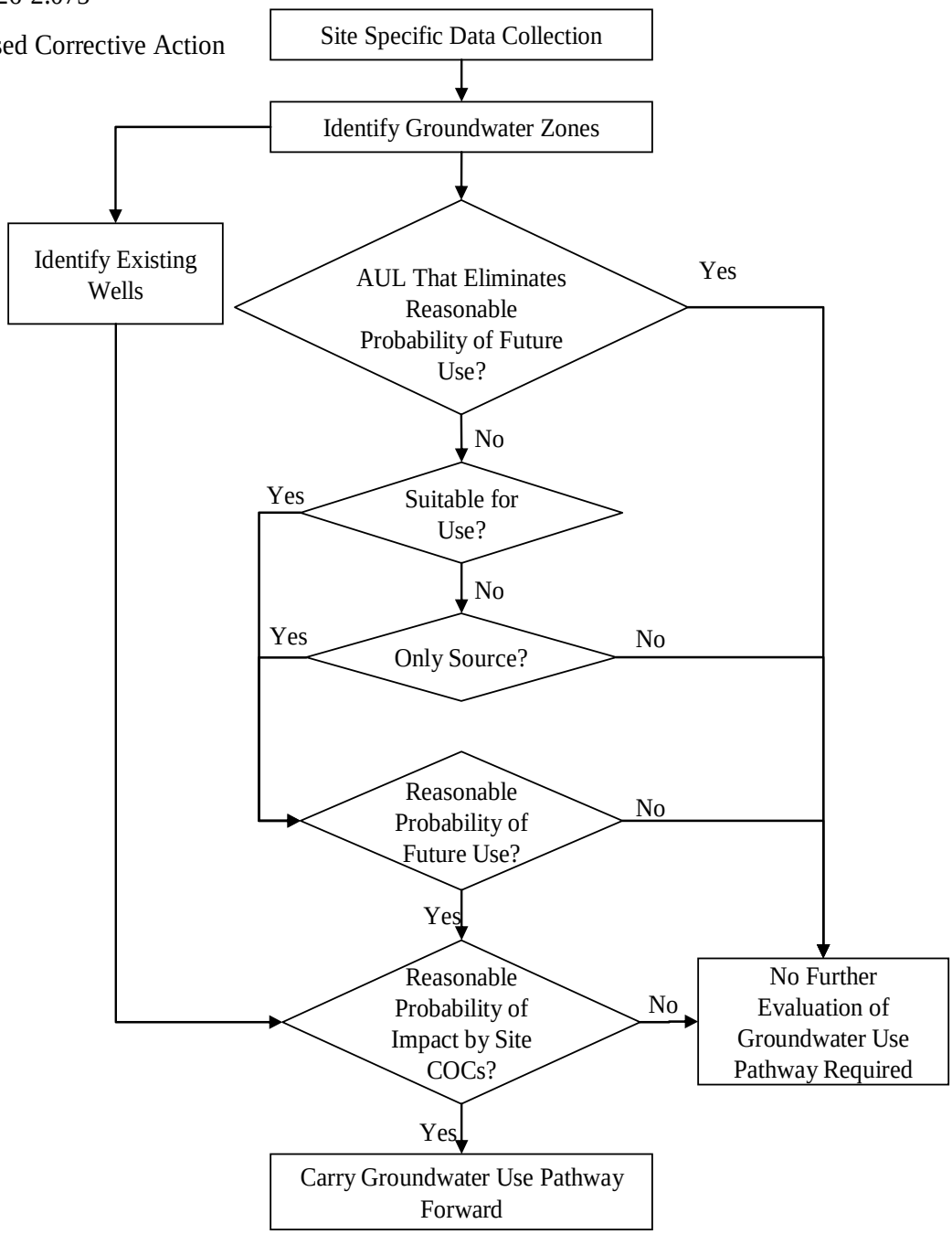
AUTHORITY: 319.109 and 319.137 RSMo Supp. 2007.

Table 1. Chemicals of concern associated with petroleum release types.

Chemical of Concern	Gasoline	Diesel/ Light Fuel Oils	Jet Fuel	Kerosene	Heavy Fuel Oils	Waste/ Used Oil
VOLATILES						
Benzene	X	X	X	X	NC	X
Toluene	X	X	X	X	NC	X
Ethylbenzene	X	X	X	X	NC	X
Xylenes (total)	X	X	X	X	NC	X
1,2-Dibromoethane / Ethylene dibromide (EDB)	X[1]	NC	NC	NC	NC	NC
1,2-Dichloroethane / Ethylene dichloride (EDC)	X[1]	NC	NC	NC	NC	NC
OXYGENATES						
Methyl-*tert*-butyl-ether (MTBE)	X	NC	NC	NC	NC	NC
Tertiary amyl methyl ether (TAME)	X	NC	NC	NC	NC	NC
Tertiary butyl alcohol (TBA)	X	NC	NC	NC	NC	NC
Ethyl-*tert*-butyl-ether (ETBE)	X	NC	NC	NC	NC	NC
Diisopropyl ether (DIPE)	X	NC	NC	NC	NC	NC
Ethanol	X	NC	NC	NC	NC	NC
Methanol	X	NC	NC	NC	NC	NC
TPH						
TPH-GRO	X	NC	NC	NC	NC	X
TPH-DRO	NC	X	X	X	X	X
TPH-ORO	NC	NC	X	X	X	X

PAHs[2]						
Acenaphthene	NC	X	X	X	X	X
Anthracene	NC	X	X	X	X	X
Benz(*a*)anthracene	NC	X	X	X	X	X
Benzo(*a*)pyrene	NC	X	X	X	X	X
Benzo(*b*)fluoranthene	NC	X	X	X	X	X
Benzo(*k*)fluoranthene	NC	X	X	X	X	X
Chrysene	NC	X	X	X	X	X
Dibenz(*a,h*)anthracene	NC	X	X	X	X	X
Fluoranthene	NC	X	X	X	X	X
Fluorene	NC	X	X	X	X	X
Naphthalene	X	X	X	X	X	X
Pyrene	NC	X	X	X	X	X
METALS						
Arsenic	NC	NC	NC	NC	NC	X
Barium	NC	NC	NC	NC	NC	X
Cadmium	NC	NC	NC	NC	NC	X
Chromium	NC	NC	NC	NC	NC	X
Lead	X[1]	NC	NC	NC	NC	X
Selenium	NC	NC	NC	NC	NC	X

Notes:
X = Chemical of concern
NC = Not a chemical of concern
TPH = Total petroleum hydrocarbons
GRO = Gasoline range organics
DRO = Diesel range organics
ORO = Oil range organics
PAHs = Polycyclic aromatic hydrocarbons
[1] Chemical of concern for leaded gasoline
[2] Chemicals of concern when TPH-DRO or TPH-ORO are detected in soil or groundwater at a concentration at or above the required reporting limits



NOTE:

1. In this chart, "use" refers to domestic consumption.
2. The analysis embodied in the chart is performed for each groundwater zone of interest. The conclusion of the analysis (the groundwater use pathway is either carried forward for additional consideration, or no further evaluation of the pathway is required) applies to the individual groundwater zone under analysis. Different conclusions may apply to different groundwater zones at a given site.
3. The attributes of an AUL must be sufficient to "eliminate reasonable probability of future use", and, by that, allow a conclusion that "no further evaluation of groundwater use pathway required."

Figure 1. Site Conceptual Model for Domestic Consumption of Groundwater Exposure Pathway Analysis

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 – Underground Storage Tanks – Technical Regulations

10 CSR [*20*]26-[*10.065*] 2.076 [*Investigations for Soil and Groundwater Cleanup*] Site Characterization and Data Requirements

PURPOSE: This rule presents requirements for conducting site investigations to characterize contamination resulting from releases from petroleum storage tank systems.

[*PURPOSE: This rule describes the procedures for soil and groundwater investigations.*

(1) Owners and operators must conduct investigations of the release, the release site and the surrounding area to determine the full extent and location of soils contaminated by the release and the presence and concentrations of dissolved product contamination in the groundwater if any of the following conditions exist:

(A) There is evidence that groundwater wells have been affected by the release (for example, as found during release confirmation or previous corrective action measures);

(B) Free product is found to need recovery in compliance with 10 CSR 20-10.064;

(C) There is evidence that contaminated soils may be in contact with groundwater as found during the initial response measures or investigations required under 10 CSR 20-10.060--10 CSR 20-10.064; or

(D) The department requests an investigation based on the potential effects of contaminated soil or groundwater on nearby surface and ground water resources.

(2) Owners and operators must submit the information collected under section (1) of this rule as soon as practicable or in accordance with a schedule established by the department.

(3) Owners and operators shall follow a written procedure. To comply with this rule, the department's Site Characterization Guidance Document may be used as a written procedure. Other written procedures may be used with prior written approval of the department.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.*
**Original authority: 319.107, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Owners and operators shall perform site characterization to obtain data and information for a site in order to assess risks posed by the release and to support corrective action in accordance with this rule. Prior to initiating site

characterization, owners and operators shall develop a detailed technical work plan that shall be submitted to the department for review and approval.

(2) (Reserved)

(3) To adequately characterize a site to determine and assess risks, owners and operators shall collect relevant data and information for the following categories. This information shall be included in the site characterization report. If any categories of data are not included, the site characterization report shall document the reason(s) for the omission.

(A) Chronology of site events;

(B) Description and magnitude of the release;

(C) General site information and physical setting;

(D) Existing activity and use limitations;

(E) Current and future land use and receptor information;

(F) Analysis of current and reasonably anticipated future groundwater use;

(G) Vadose zone soil characteristics including determination of soil type;

(H) Characteristics of saturated zones;

(I) Surface water body characteristics;

(J) Distribution of chemicals of concern in soil;

(K) Distribution of chemicals of concern in bedrock;

(L) Distribution of chemicals of concern in groundwater;

(M) Distribution and characteristics of light non-aqueous phase liquid (LNAPL); and

(N) Information about corrective action measures or risk management activities that have been conducted and are planned.

(4) Additional data and information necessary to develop a corrective action plan, design a remediation system or complete a risk assessment may be required at a site and shall be determined by the department on a site-specific basis.

(5) Chronology of site events. Owners and operators shall compile a comprehensive chronology of events regarding the release, release response activities, site investigations, monitoring events, system removal activities, and remediation activities that may have occurred at the site in order to develop a clear understanding of historic site activities influencing site conditions and current and potential future risk. The chronology specifically shall include information regarding the following events as appropriate:

(A) Tank installations, removals, and upgrades, including dates for each;

(B) Amounts of any contaminated soil that has been excavated, how the excavated soil was managed, and when the excavations occurred;

(C) Monitoring well drilling, sampling and gauging;

(D) As applicable, the date or dates on which LNAPL was discovered and the location or locations at which it was discovered;

(E) Soil sample collection and analysis, including when and where samples were collected and how and when they were analyzed; and

(F) Interim corrective actions or remedial activities, including purpose, scope, and dates of all such activities.

(6) Nature, magnitude and location of release. Owners and operators shall collect as much of the following information as is available for each release that has occurred at the source property:

(A) Based on the chronology, owners and operators shall review the operational history of the source property to determine the location, date, and magnitude of any and all releases that may have occurred at the site.

1. At sites where the date of the release(s) is not known with certainty, the date of each release shall be assumed to have been prior to 1980 and therefore involving leaded gasoline, unless site information demonstrates otherwise.

2. At sites where the exact location of the release(s) is not known with certainty, the likely location and extent of each release in soil and groundwater shall be determined from soil and groundwater sampling, field screening and visual observations.

(B) Owners and operators shall determine or estimate the magnitude of the release(s) based on available information, such as inventory records or other operational information, where possible.

(C) Owners and operators shall identify the type or types of petroleum released at the site where possible.

(7) Chemicals of concern. Soil and groundwater samples from a site shall be analyzed for the chemicals of concern indicated in 10 CSR 26-2.075 Table 1 based on knowledge of the type or types of petroleum released at the site. Soil and groundwater samples shall be analyzed for chemicals of concern using analytical methods specified by the department or alternative analytical methods approved by the department.

(A) If the release can be identified as consisting of one or more specific types of petroleum based on release reports, product analysis, or location of impacts, only the chemicals of concern for that type of petroleum need be included in the initial laboratory analysis. If the type of petroleum cannot be conclusively identified based on these methods, chemicals of concern corresponding to all types of petroleum known or suspected to have been stored at the property where the release occurred shall be included in the initial analysis. The chemicals of concern for the site may be identified based on the initial laboratory results and the list of analytes for which samples are analyzed in subsequent sampling rounds may be modified accordingly with approval of the department.

(B) For releases other than gasoline or where the type of petroleum is not known, samples with detectable levels of total petroleum hydrocarbon-diesel range organics or total petroleum hydrocarbon-oil range organics shall also be analyzed for the polycyclic aromatic hydrocarbons listed in 10 CSR 26-2.075 Table 1.

1. Unless otherwise directed by the department, owners and operators shall analyze surface and subsurface soil and groundwater samples for the polycyclic aromatic hydrocarbons other than naphthalene from a minimum of twenty five percent (25%), and not less than two (2), of samples from each media and each soil zone that contain the highest concentrations of total petroleum hydrocarbon-diesel range organics or total petroleum hydrocarbon-oil range organics

(C) Ethanol and methanol. Groundwater samples need only be analyzed for ethanol and methanol when the domestic groundwater use pathway is complete and there is a reasonable probability that petroleum containing ethanol or methanol was released. Soil samples need not be analyzed for ethanol and methanol.

(D) If laboratory analytical data from previously collected samples do not include all suspected chemicals of concern at a site, the department may require additional sampling to evaluate the chemicals of concern that were not included.

(8) General site information. Owners and operators shall collect and evaluate available information relevant to the site, including but not necessarily limited to, location information, ground surface conditions, location(s) of utilities on and adjacent to the site, soil types and geologic setting, regional hydrogeology and aquifer characteristics, surface water characteristics and groundwater use at all properties within the site. Owners and operators shall also prepare site maps. This information shall be included in the site characterization report.

(A) Site maps. Owners and operators shall prepare a site area map and a detailed site map. The maps shall be made to scale, with a bar scale, and a north arrow.

1. The site area map shall be prepared using United States geological survey seven and one-half (7.5) minute topographic maps as a base. The site location should be centered on the topographic map with the site's location clearly marked. Contour lines and all other features on the topographic map shall be legible upon delivery to the department.

2. The detailed map of the site shall be prepared to legibly depict site features and all boundaries of properties within the site. Multiple maps showing these features may be prepared, as appropriate. The site map shall show the layout of past and current source property features including, but not limited to, underground storage tanks, above ground storage tanks, piping, dispenser islands, sumps, paved and unpaved areas, utilities (above and below ground), canopies, and buildings. At a minimum, the map shall show the locations of the following:

A. Source property monitoring wells, including those that have been abandoned, lost or destroyed;

B. Public and private water wells on and near the site;

C. Above and below ground utilities;

D. Soil borings;

E. Any soil vapor extraction wells and other remediation system components and features;

F. Soil excavation areas; and

G. The point and area of release.

(B) Ground surface conditions. Owners and operators shall evaluate ground surface conditions at the site, including general topography, direction in which the surface is sloping and relevant topographic site features related to surface drainage. The portion of each property within the site that is paved, unpaved, or landscaped shall be determined. The type, extent, and general condition of the pavement shall be described and for unpaved or landscaped areas, the nature and condition of the surface shall be described.

(C) Location of utilities. Owners and operators shall identify and locate underground utility lines and conduits on and near the site including, but not limited to, phone lines, water lines, sanitary sewers, storm sewers, and natural gas lines. Owners and operators shall prepare a thorough assessment of the potential for preferential flow of LNAPL, impacted groundwater, and vapors through any utility trenches or conduits. If water lines are present, owners and operators shall determine the materials of construction of the main lines and service lines and the joints and gaskets of both.

(D) Regional hydrogeology and aquifer characteristics. Owners and operators shall review available information and compile new information to determine regional hydrogeology, soil types and aquifer characteristics. This information shall be used to determine the type and depth of aquifers in the area, whether the aquifers are confined, semi-confined, or unconfined, and obtain general aquifer characteristics, including yield and total dissolved solids.

(E) Seeps, springs, surface water and karst features. Owners and operators shall identify seeps, springs, karst features and all surface water bodies within five hundred (500) feet of the outer edge of the area of release (at which concentrations of chemicals of concern return to background or non-detect levels), unless a different distance is required by the department based on site conditions. In karst areas, the department may require that the minimum search area radius be increased. The seeps, springs, karst features and all surface water bodies identified at a site shall be identified on the site area map and, if appropriate, included on the detailed site map.

1. If a surface water body is identified and investigations determine that it may be or is impacted by contamination arising at the site, owners and

operators shall collect information regarding the type, flow rate, flow direction, depth, width, and use of the surface water body.

(F) Groundwater use. Owners and operators shall identify any existing wells located on or near the site and determine whether a water well is or was located on the source property in accordance with section (9)(C) of this rule.

1. If an existing or former water well is identified on the source property, well construction details shall be obtained to the extent such are available. At a minimum, the total depth of the well, casing and screen intervals, materials of construction, and past and current use shall be determined.

2. For all wells identified on or near the site, the total depth of each well, casing and screen (if present) intervals, materials of construction, and past and current use shall be determined.

3. If a well is identified on the source property that is not currently used or likely to be used in the future, it shall be abandoned in accordance with department requirements, unless it is to be used as part of site characterization or corrective action activities at the site.

(9) Land use and receptors. Owners and operators shall conduct a land use and receptor survey covering a radius of five hundred (500) feet from the outer perimeter of the area of release, unless a different distance is required by the department based on site conditions. The results of the land use and receptor survey shall be used to identify location(s) and type(s) of receptors, routes of exposure, and the presence of any activity and use limitations pertaining to one or more properties within the site.

(A) Current land use. Owners and operators shall conduct a visual inspection survey to unambiguously describe current land use of properties within the site. The survey shall clearly identify the use characteristics of each property, such as, but not necessarily limited to, schools, hospitals, apartments, single-family homes, buildings with basements, day care centers, churches, nursing homes, and types of businesses. The survey shall also identify ecological and sensitive areas such as surface water bodies, parks, recreational areas, wildlife sanctuaries, wetlands, karst features, and agricultural areas.

1. The results of the survey shall be accurately documented on a land use map drawn to scale or approximate scale with a north arrow and the use and boundaries of each parcel shall be identified.

(B) Future land use. Owners and operators shall evaluate potential future land use for properties by obtaining such information as is practically available, including local ordinances and restrictions that affect land use or the presence of any other activity and use limitations pertaining to one or more properties.

1. The department will make final decisions with respect to the reasonably anticipated future land use of all properties within a site in accordance with 10 CSR 26-2.075(9)(A). When future land use cannot be

reasonably predicted, the department will consider future land use to be residential.

(C) Water well survey. Owners and operators shall conduct a water well survey to locate all public water supply wells within an approximately one (1) mile radius of the outside edge of the area of release (at which concentrations of chemicals of concern return to background or non-detect levels) and all private water wells within an approximately quarter (0.25) mile radius of the outside edge of the area of release, unless a different distance is required by the department based on site conditions. Wells within the area of release shall also be identified. In areas where private wells are likely to be present, the department may require that owners and operators conduct a door-to-door survey of businesses and residences. Wells within the survey boundaries shall be evaluated to determine well characteristics including age, depth to water and total well depth, water use, screen interval, construction, depth of casing, and mode of operation.

(D) Ecological receptors and habitats. Owners and operators shall use the screening process in 10 CSR 26-2.075(17) to evaluate the presence of ecological receptors or habitats that require characterization. If the screening process indicates the presence of one or more ecological receptors or habitats, owners and operators shall proceed in accordance with 10 CSR 26-2.078(5).

(10) Vadose zone characterization. Owners and operators shall characterize soil and other geological media in the vadose zone to determine the thickness of the vadose zone and depth to groundwater, the nature and distribution of soil types and soil horizons, and relevant characteristics of soils and other geological media.

(A) Soil borings and probes shall be advanced to the water table or, if groundwater is not encountered and contamination is not observed, to a depth of not less than twenty (20) feet below ground surface, unless refusal is encountered at a shallower depth.

1. Unless a permanent monitoring well is installed, all boreholes and probes greater than ten (10) feet in depth shall be abandoned in accordance with 10 CSR 23-4.080(6). Boreholes and probes less than 10 feet in depth shall be plugged by returning uncontaminated native material into the hole from which it was removed or by grouting.

(B) Soil borings and probes shall be continuously sampled and logged in accordance with methods approved by the department.

(C) The depth to groundwater shall be determined from boring logs and water levels in monitoring wells at the site. The vertical range of water table fluctuations shall be determined and available water level data shall be evaluated to determine whether the water level variations are seasonal or represent a consistent upward or downward regional trend.

1. At sites with seasonal water table fluctuations, the average depth to groundwater and the average thickness of the vadose zone will be used as determined by soil chemical of concern distribution data and water level

measurements obtained on at least a quarterly basis over at least one year. Other information may be used to supplement the distribution and measurement data.

2. At sites with a consistent upward or downward water level trend, the most recent data shall be used to estimate the depth to groundwater.

(11) Vadose zone soil type determination. Owners and operators shall determine a vadose zone soil type or types for the site that is or are representative of and applicable to the entire horizontal and vertical extent of vadose zone soils at the site for use in the tier one risk assessment. The number and distribution of soil samples used in the determination shall be sufficient, subject to approval by the department, to account for soil heterogeneity to ensure that all relevant soil types at a site are accurately identified.

(A) Sampling locations for soil type determination. Soil borings or probes shall be advanced to a depth at least ten (10) feet below the vertical extent of soil contamination or, if groundwater contamination is present, to the top of the saturated zone. Sampling locations may be outside the area of petroleum contamination if the soil types at the sampling locations are representative of the area of contamination. Each boring or probe shall be comprehensively logged at intervals sufficient to identify all soil horizons and a soil sample shall be collected from each horizon identified for identification of soil type. The department may require the advancement of borings or probes into the saturated zone to ensure accurate identification of all soil types at a given site.

(B) The soil type(s) for soil samples collected from the site shall be identified by grain size analysis conducted using methods approved by the department. The results shall be plotted on the United States Department of Agriculture soil textural classification chart.

(C) The vadose zone soil type(s) shall be determined based on the following groups of United States department of agriculture soil textural classes:

1. Type one. Type one soils consist of sandy soils and include sand, sandy loam and loamy sand.

2. Type two. Type two soils consist of silty soils and include silt, loam, silt loam, silty clay loam, sandy clay loam and clay loam.

3. Type three. Type three soils consist of clayey soils and include clay, silty clay and sandy clay.

(D) At sites where more than one soil type exists in approximately the same amounts, the most conservative of the soil type groups shall be used in the tier one risk assessment. For this purpose, soil type one shall be the most conservative and soil type three shall be the least conservative.

(E) At sites where vadose zone soil cannot be accurately assigned to one or more of the soil type groups, or where the department determines that the vadose zone is comprised of significant volumes of non-soil fill materials (e.g., sand, gravel, rock, concrete, bricks, metal, asphalt, etc.), soil type one shall be used in the tier

one risk assessment. However, if the department determines that soil type one is not representative of the vadose zone at the site, the department may direct owners and operators to evaluate soil properties site-specifically under tier two in accordance with 10 CSR 26-2.077(10) and 10 CSR 26-2.078(3)(B).

(F) Previously characterized sites. For sites where site characterization activities were complete prior to March 1, 2005, owners and operators may determine the vadose zone soil type(s) using existing site characterization data without grain size analyses provided that the existing site characterization data is sufficient to allow owners and operators to accurately determine soil type. The department may determine that the existing site characterization data is not adequate to support the determination and require additional soil type characterization, including the collection of soil samples for grain size analysis.

(G) Owners and operators shall submit a report that documents the vadose zone soil type determination for approval by the department. The report may be submitted independently, as an appendix or attachment to the site characterization report, or as an appendix or attachment to the tier one or tier two risk assessment report as appropriate.

(12) Vadose zone soil characteristics. Owners and operators may determine site-specific values for soil properties including, but not limited to, dry bulk density, porosity, volumetric water content, and fractional organic carbon content, and use these values in a tier two or tier three risk assessment.

(A) Owners and operators shall determine site-specific values for soil properties based on data collected at the site. Samples and data for soil properties shall be obtained using field procedures, sampling protocols and laboratory methods specified by the department or alternative procedures, protocols or methods approved by the department.

(B) Owners and operators shall collect samples from the site from sufficient locations and in sufficient number, subject to approval by the department, to adequately account for soil heterogeneity and sample locations shall be distributed to account for both vertical and horizontal variations in soil properties.

(C) In the event that site-specific values for the soil properties cannot be determined because of sampling limitations, owners and operators shall use either the default values for the properties established by the department or appropriate literature values that can be justified as representative of site conditions with the approval of the department.

(13) Saturated zone characteristics. As appropriate in consideration of site conditions and release characteristics, owners and operators shall characterize the saturated zone to determine information relevant to transport and fate of chemicals of concern including, but not limited to, hydraulic conductivity, hydraulic gradients, saturated zone soil properties, and the type and rate of biodegradation. Owners and operators may quantify these properties and characteristics for use in a tier two or tier three risk assessment. Owners and operators shall collect samples from, and

conduct testing at, sufficient locations and in sufficient number, subject to approval by the department, to adequately account for heterogeneity. Sample and testing locations shall be distributed to account for both vertical and horizontal variations in saturated zone properties and characteristics. Saturated zone characteristics shall be determined based on field procedures, sampling and testing protocols, and lab methods specified by the department or alternative procedures, protocols, or methods approved by the department. Literature values may be used to quantify saturated zone properties and characteristics with the approval of the department.

(A) Hydraulic conductivity. Owners and operators shall estimate hydraulic conductivity based on aquifer tests, grain size distribution or literature values corresponding to the type of soil in the saturated zone. If a literature value is used, owners and operators shall determine an appropriate hydraulic conductivity value or values based on all predominant soil types composing the saturated zone and provide adequate reference and justification for the value or values selected.

(B) Hydraulic gradients. Owners and operators shall determine hydraulic gradients based on measured water levels in monitoring wells at the site. A water level contour map shall be prepared based on water level data from monitoring wells screened in the same interval or hydrologic unit. For sites where wells are screened in multiple groundwater zones, a contour map for each zone shall be developed. For sites that have seasonal variation in hydraulic gradients or predominant flow direction, the average hydraulic gradient for each season and each flow direction shall be determined.

(14) Delineation criteria. All chemicals of concern in all environmental media at a site shall be delineated to the default target levels, or other risk-based target levels for residential exposure if approved by the department. If the default target level or other risk-based target level for a chemical of concern is less than the required reporting limit established by the department, the detection limit shall be used as the delineation criterion. For laboratory analytical data to be accepted by the department, the laboratory detection limits shall not exceed the required reporting limits established by the department for any soil or water samples except in situations where the applicable target levels for all chemicals of concern exceed the required reporting limits established by the department, in which cases detection limits must not exceed the applicable target levels.

(15) Degree and extent of contamination. Owners and operators shall collect soil and groundwater data to determine:

(A) Potential exposure pathways to human and ecological receptors under current and reasonably anticipated future conditions;

(B) The extent of chemicals of concern at concentrations above the default target levels or risk-based target levels for the identified exposure pathways; and

(C) Exposure domains for each complete exposure pathway and associated maximum or representative concentrations for chemicals of concern.

(16) Distribution of chemicals of concern in soil. Owners and operators shall collect an adequate number of soil samples, as determined by the department, from surface and subsurface soils, including fill material, to meet the objectives listed in sections (14) and (15) of this rule.

(A) All soil sampling for chemicals of concern shall comply with the following provisions.

1. Soil samples from soil borings or probes shall be collected for field screening at each 2 ft or 5 ft interval, as appropriate.

2. Soil samples for laboratory analysis shall be collected in accordance with methods approved by the department. All soil samples shall be adequately preserved according to the requirements of the laboratory analyses and extracted within the holding times of each particular analytical method.

3. A chain of custody form must be completed for and accompany all samples. A copy of a completed chain of custody must be submitted with all laboratory analytical reports.

A. For samples requiring preservation by refrigeration, the chain of custody form for the samples shall indicate the temperature at which the samples were received by the laboratory. The department may reject data for samples received by the laboratory at temperatures above 6˚C (+/- 2˚C) or for which the temperature upon receipt at the laboratory is not recorded on the chain of custody

4. Adequate quality assurance and quality control procedures shall be utilized to ensure sample quality and integrity. Quality assurance and quality control samples shall include surrogate and spike recovery and trip blanks. Samples shall not be cross-contaminated by drilling fluid or by the drilling and sampling procedures. All sampling equipment must be decontaminated utilizing United States Environmental Protection Agency and standard industry protocols.

(B) Soil borings or probes shall be located so as to define, and characterize concentrations of chemicals of concern in, the area of release at the site. Each soil boring or probe shall be continuously field screened and advanced until field screening at two consecutive sampling intervals indicates chemicals of concern are at or below background levels.

1. At least one soil boring or probe shall be located at the point of release or, if the point of release cannot be determined, near the center of the release area. For each boring or probe, at least one surface soil sample shall be collected for laboratory analysis of chemicals of concern from the location or locations indicating the highest level or levels of contamination. If the release is known to have occurred below a depth of three (3) feet below ground surface, a surface soil sample need not be collected. Samples of soil below a depth of three (3) feet shall be collected at the point of release as described at section (16)(C)2, 3, and 4 of this rule.

(C) Soil samples for laboratory analysis shall be collected from each soil boring or probe in the area of release based on the following criteria:

1. For each boring or probe, at least one soil sample shall be collected from surface soil if field screening indicates the presence of contamination.

2. For each boring or probe, at least one soil sample shall be collected for the interval between three (3) feet below ground surface and the water table from the sample interval or intervals where field screening indicates the highest level or levels of contamination.

3. For each boring or probe, one soil sample shall be collected at the interface of the vadose and saturated zones.

4. For each boring or probe, at least one soil sample shall be collected below the water table from the interval or intervals where field screening indicates the highest level or levels of contamination.

(D) Soil samples for laboratory analysis shall be collected from each soil boring or probe outside the area of release based on the following criteria:

1. For each boring or probe, at least one soil sample shall be collected for the interval between three (3) feet below ground surface and the water table if field screening indicates the presence of contamination. The soil sample or samples shall be collected from the sample interval or intervals where field screening indicates the highest level or levels of contamination.

2. For each boring or probe, one soil sample shall be collected at the interface of the vadose and saturated zones.

3. For each boring or probe, at least one soil sample shall be collected below the water table from the interval or intervals where field screening indicates the highest level or levels of contamination.

(E) For each boring or probe, at least one soil sample shall be collected at the bedrock interface in soil borings or probes where bedrock is encountered before reaching the water table.

(17) Distribution of chemicals of concern in groundwater. Owners and operators shall collect an adequate number of groundwater samples, subject to approval by the department, to meet the objectives listed in sections (14), (15) and (16)(C) of this rule. An adequate number of monitoring wells, subject to approval by the department, shall be installed at the site to delineate the horizontal and vertical extent of the groundwater solute plume and determine the direction of groundwater flow at the site. Owners and operators may use temporary sampling points to screen for groundwater contamination and to assist in determining the optimal location of permanent monitoring wells. Chemicals of concern concentration data from temporary groundwater sampling points shall not be used in the risk assessments described in 10 CSR 26-2.078 except with the permission of the department.

(A) Monitoring wells must be installed in accordance with state rules and the following requirements:

1. Monitoring well placement and design shall consider the concentrations of chemicals of concern in the source area and the occurrence of light non-aqueous phase liquid (LNAPL) at the site.

2. Monitoring well casing and screen materials shall be properly selected. The top of the screened interval shall be set at no less than two (2) feet, and preferably five (5) feet, above the water table, unless the water table is within three (3) feet of the ground surface. If the water table varies over time by more than two (2) feet, the screened interval shall be set sufficiently above the water table so that it intersects the water table at all times.

3. Monitoring wells shall be properly developed and gauged after installation.

4. A survey shall be conducted to establish monitoring well locations and elevations. Based on the groundwater elevations, groundwater flow direction and gradient shall be determined and plotted on a map of the site.

(B) All groundwater sampling for chemicals of concern shall comply with the following provisions.

1. Monitoring wells shall be purged using a purging strategy appropriate in consideration of the characteristics of the well and groundwater formation. The use of no-purge or low purge sampling techniques requires the prior approval of the department.

2. Groundwater samples for laboratory analysis shall be collected and analyzed in accordance with the methods approved by the department. Samples shall be adequately preserved according to the requirements of the laboratory analyses and extracted within the holding times of each particular analysis. Water samples to be analyzed for the fuel oxygenates listed in 10 CSR 26-2.075 Table 1 shall be preserved with tri-sodium phosphate dodecahydrate unless the analyzing laboratory purges samples at a temperature less than 80 degrees Celsius, in which case the samples may be acid-preserved.

3. A chain of custody form shall be completed for and accompany all samples. A copy of a completed chain of custody shall be submitted with all laboratory analytical reports.

A. For samples requiring preservation by refrigeration, the chain of custody form for the samples shall indicate the temperature at which the samples were received by the laboratory. The department may reject data for samples received by the laboratory at temperatures above 6˚C (+/- 2˚C) or for which the temperature upon receipt at the laboratory is not recorded on the chain of custody.

4. Adequate quality assurance and quality control procedures shall be utilized to ensure sample quality and integrity. Quality assurance and quality control samples shall include surrogate, spike recovery, field blanks, and trip

blanks. All sampling equipment shall be decontaminated using US EPA and industry standard protocols.

(C) Solute plume behavior. Owners and operators shall conduct groundwater monitoring on a quarterly basis for a minimum of two years or, with the written approval of the department, for a different period of time and on a basis other than quarterly, and for a period of time sufficient to document that the areal extent of and concentrations for chemicals of concern in the groundwater solute plume are not increasing. Owners and operators shall evaluate groundwater monitoring data using appropriate methodologies including, but not limited to, plots and maps of concentration data for chemicals of concern, statistical methods, and mass balance calculations, as approved by the department.

(18) Light non-aqueous phase liquid (LNAPL). If LNAPL is encountered in soil or groundwater at a site, owners and operators shall take appropriate actions to mitigate acute risks and hazards in accordance with 10 CSR 26-2.071, begin removal of LNAPL in accordance with 10 CSR 26-2.074, and develop a work plan for characterization of the LNAPL. Owners and operators shall submit the work plan to the department for approval prior to implementation. Owners and operators shall implement the work plan within forty five (45) days of approval by the department.

(A) The work plan for characterization of LNAPL shall be designed to obtain data to determine the following:

1. The full vertical and horizontal extent of the LNAPL and whether and to what extent the LNAPL is migrating;

2. The extent to which LNAPL removal is practicable;

3. The most appropriate LNAPL removal method; and

4. The extent to which LNAPL removal is warranted based on the risks the LNAPL poses to human and ecological receptors.

(B) A sufficient number of investigation points, subject to approval by the department, including, but not limited to, probes, soil borings, monitoring wells, and soil gas sampling points shall be installed to ensure full characterization of mobile and immobile fractions of the LNAPL and associated dissolved and vapor-phase concentrations of chemicals of concern.

(C) The distribution of the LNAPL shall be determined and layers or seams of relatively high permeability materials that may act as pathways of LNAPL migration identified.

(D) Owners and operators shall conduct LNAPL monitoring on a quarterly basis for a minimum of two years, or, with the written approval of the department, for a different period of time and on a basis other than quarterly, and for a period of time sufficient to document that the areal extent of the LNAPL is not increasing. Owners and operators shall evaluate LNAPL and groundwater monitoring data using appropriate methodologies approved by the department including, but not limited to, plots and maps of LNAPL thickness

and concentration data for chemicals of concern. LNAPL thickness shall be evaluated in comparison to water level data.

(E) Owners and operators may determine LNAPL physical properties and composition using analytical methods approved by the department to allow site-specific determination of effective solubility and vapor pressure for chemicals of concern.

(19) Surface water and sediment sampling. When a discharge of contaminated groundwater to a surface water body is suspected or known at a site, or when chemicals of concern from a release are suspected or known to have otherwise entered into a surface water body, the department may require that water and sediment samples be collected at and upstream and downstream of each point of discharge or entry. If one or more discrete discharge or entry points cannot be identified, the point of discharge or entry shall be determined based on data pertaining to groundwater flow direction, the cross-sectional area of the groundwater solute plume, and release characteristics and conditions.

(A) The following information shall be collected for any surface water that is or potentially may be affected by the release or by chemicals of concern at the site:

1. Distance to the surface water body. If the body is impacted, the distance is zero; if the body might be impacted, the distance is measured from the leading edge of the groundwater plume or the down gradient edge of the area of release to the water body;

2. The location or likely location where chemicals of concern from the site would discharge into a surface water body;

3. Flow direction and depth of any groundwater contamination plume(s) in relation to the water body;

4. Lake or stream classification as found in 10 CSR 20-7.031, Table G and Table H respectively;

5. Lake or pond acreage or stream 7Q10 flow rate;

6. Determination of the beneficial uses of the lake or stream as found in 10 CSR 20-7.031, Table G and Table H respectively; and

7. Water quality criteria based upon the beneficial uses of the lake or stream as found in 10 CSR 20-7.031, Table A. If a water quality criterion for a COC is not available, contact the department project manager.

(20) Soil gas sampling. Soil gas sampling shall be performed using a methodology established by the department or other appropriate methodology approved by the department.

(A) Owners and operators shall develop a work plan for soil gas sampling. If the work plan is based on a methodology other than that established by the department, the work plan shall be submitted to the department and the work plan shall not be implemented until approved by the department. The work plan shall include either a copy of the other appropriate methodology on which the

work plan is based as an attachment or a clear, detailed reference for the other appropriate methodology.

(B) The department may require that owners and operators conduct soil gas sampling when the department believes an acute risk from vapor-phase chemicals of concern exists or might exist or develop at a site. The department may require such sampling at any time, including prior to the completion of a risk assessment.

(21) Laboratory analytical data. Laboratory analysis for chemicals of concern shall be performed using analytical methods required by the department, or alternative analytical methods approved by the department.

(A) Required reporting limits. All laboratory analytical data for chemicals of concern shall meet the minimum required reporting limits established by the department for soil and groundwater samples to the extent practicable, unless the applicable target level for a chemical of concern exceeds the required reporting limit for that chemical. Laboratories should achieve reporting limits lower than the required reporting limits where practical. Laboratory analytical reports shall include both the reporting limit and method detection limit for the analytes.

1. Where achieving a reporting limit that is equal to or less than an applicable target level is not possible due to practical constraints of the analytical method or particular sample, the laboratory shall strive to achieve the lowest practical reporting limit.

(B) A copy of a completed chain of custody shall accompany all laboratory analytical reports. The department will not accept laboratory data that is not accompanied by a corresponding chain of custody. The laboratory must ensure that the portions of the chain of custody form relevant to the laboratory are completed and the temperature at which samples preserved by refrigeration are received at the laboratory must be noted on the chain of custody.

(C) Laboratory analytical data shall be accompanied by quality assurance and quality control sample results. The following shall be considered in laboratory quality assurance and quality control planning and documentation, if applicable:

1. If the published analytical method used specifies quality assurance and quality control requirements within the method, those requirements shall be met and the quality assurance and quality control data reported with the sample results.

2. At a minimum, quality assurance and quality control samples shall consist of the following items, where applicable:

A. Method/instrument blank;

B. Extraction/digestion blank;

C. Laboratory control samples;

D. Duplicates;

E. Matrix spikes/matrix spike duplicates; and

F. Documentation of appropriate instrument performance data such as internal standard and surrogate recovery.

(22) Access to Adjacent and Nearby Property. Owners and operators shall make reasonable attempts to extend investigation onto an adjacent or nearby property to meet delineation criteria in all directions and media if concentrations of one or more chemicals of concern in any media exceed or are likely to exceed delineation criteria at or near one or more of the boundaries of the source property, unless the department determines that such access is not required.

(A) If owners and operators are unable to gain access to an adjacent or nearby property from the owner of the property or the owner's authorized representative, owners and operators shall notify the department and comply with the following provisions.

1. Owners and operators shall adequately document all unsuccessful attempts to gain access to adjacent and nearby properties in a manner acceptable to the department. Owners and operators shall provide the documentation of unsuccessful attempts to gain access to the department and obtain concurrence from the department that the attempts to gain access were legitimate and reasonable and that further attempts by the owners and operators need not be made.

2. In accordance with 10 CSR 26-2.080, owners and operators shall provide written notice of the contamination to the owner or the owner's authorized representative of the adjacent or nearby property to which access has been denied and document such notice to the department.

3. Owners and operators shall comply with 10 CSR 26-2.079(3)(D).

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.
***Original authority: 319.107, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*]2 – Underground Storage Tanks – Technical Regulations

10 CSR 2[*0*]6-[10.068] 2.077 Risk-Based [*Clean-Up*] Target Levels

PURPOSE: This rule sets forth the procedures and requirements for developing risk-based target levels at petroleum storage tank release sites.

[*PURPOSE: This rule sets clean-up levels for underground storage tank corrective actions and for site assessment, site characterization, and workplan development, which are all stages in developing clean-up levels. The rule also sets deed notice language to assure that the site is not used in a manner which would pose unacceptable risk or exposure. The rule requires that sites be ranked and that the ranking be used to allocate staff and funds.*

PUBLISHER'S NOTE: The publication of the full text of the material that the adopting agency has incorporated by reference in this rule would be unduly cumbersome or expensive. Therefore, the full text of that material will be made available to any interested person at both the Office of the Secretary of State and the office of the adopting agency, pursuant to section 536.031.4, RSMo. Such material will be provided at the cost established by state law.

(1) Applicability. This rule applies to all cleanups of petroleum releases from underground storage tanks (USTs).

(2) Upon being so directed by the department, the UST remediator shall conduct a preliminary assessment of the site.

(A) The requirement for a preliminary assessment is waived if permanent closure is being conducted, or significant contamination is known to exist at the site, and the department has been notified of a release as required in 10 CSR 24-3.010(1).

(B)The preliminary assessment shall be conducted according to department guidance.

(3) The department will evaluate the results of the preliminary assessment to rank the site relative to other sites for further characterization and/or corrective action.

(A) If the preliminary assessment shows contamination levels below the action levels outlined in the department's underground storage tank closure guidance document, the department will require no further action at the site.

(B) If, in accordance with subsection (3)(A) of this rule, the department determines that no further action is required at a site, and if subsequent information becomes available to indicate that contamination may be present at the site at levels which may threaten human health or the environment, the department may require additional investigation or site characterization and/or corrective action.

(4) If full site characterization is required by the department, due to known contamination or in accordance with subsection (3)(B) of this rule, the UST remediator shall conduct the site characterization according to department guidance.

(5) The department will review the site characterization and rank the site relative to other sites based on site conditions as reflected in the site characterization and the potential risk to human health and/or the environment.

(A) The rank assigned to the site will be used to prioritize department actions, including, but not limited to review of documents, pre-approval of costs and reimbursement of costs, in regard to the site.

(B) The department will not require further action at sites that the department deems not to pose a risk to human health and/or the environment, unless there is a change in known conditions at the site that would upgrade its priority, as determined by the department.

(6) Except as provided in section (8) of this rule, site clean-up objectives will be set as follows:

(A) Site clean-up objectives for the cleanup of petroleum released from underground storage tanks will be set by using the scoring matrix and the groundwater clean-up standards as outlined in the department's underground storage tank closure guidance document.

(B) (Reserved) (Note: The soil scoring matrix is a site-specific risk-based method which accounts for future land use and other considerations. Upon further development and review, this method or another which also meets statutory requirements, will be set forth in this section.)

(7) Site clean-up objectives and workplans are subject to approval by the department. Such approval must be granted in writing prior to implementation of the workplan.

(8) For all sites which are cleaned up to meet levels less stringent than (higher than) those set according to section (6) of this rule, the UST remediator shall file a document in the chain of title of the property. The document shall state that the contaminant levels were deemed acceptable by the department, based on the land use and other considerations, at the time of cleanup.

(A) If the UST remediator is a person other than the landowner, the UST remediator shall provide a copy of the document which is to be filed in the chain of title for the property, by certified mail to the landowner.

(B) The language of the document to be filed in the chain of title shall include the following:

NOTICE OF ACCEPTABLE LAND USE(S) OF UNDERGROUND STORAGE TANK SITE
Owner of Record: (Landowner's Name)
Site Description: (Site Name And Legal Description)
The above-described real property, owned by (Landowner's Name) and located in the County of (County Name) and State of Missouri, is the site of an underground storage

tank which was (Removed/Closed) on (Date). The site cleanup was accepted as complete by the Missouri Department of Natural Resources on (Date), in accordance with the applicable requirements of Title 10, Division 25, Chapters 10 through 12 of the Code of State Regulations which were in effect at the time of cleanup. The contaminant levels remaining on the site are suitable for (Commercial/Light Industrial/Heavy Industrial/ Other Specified) use.
In witness whereof I hereunto set my hand this _____ day of ___, 19___.

_____
(Office)

_____
(Name)

_____
(Title)

(C) No person may substantially change the manner in which a site with a document filed in the chain of title under this section is used without the prior written approval of the director or the director's designee.

1. Requests for approval of change in use of real property must be submitted in writing to the director's office no less than sixty (60) days prior to the planned change in use of real property. In the event the director does not respond within sixty (60) days after the request is received, the request will be considered to be approved as submitted.

2. The director will evaluate the request to determine whether the change in use of real property is likely to result in increased exposure of persons or the environment or spread of contamination.

3. If the change in use of real property is not likely to result in increased exposure of persons or the environment or spread of contamination, the director shall provide written approval.

(D) When the director finds that a site which has had a document filed in the chain of title under this section has been further cleaned up to meet or exceed (lower levels than) the standards described in section (6) of this rule, the director shall direct the UST remediator to file a second document in the chain of title. The document shall include the language in subsection (8)(B) of this rule, and shall describe the land uses for which the new contaminant levels are suitable.

AUTHORITY: sections 319.111, RSMo 1994 and 319.109 and 319.137, RSMo Supp. 1996. Original rule filed Jan. 2, 1996, effective Aug. 30, 1996. Amended: Filed Jan. 14, 1997, effective Sept. 30, 1997.*
**Original authority: 319.109, RSMo 1989, amended 1995; 319.111, RSMo 1984; and 319.127, RSMo 1989, amended 1992, 1993.*]

(1) Risk-based target levels shall be determined for chemicals of concern in accordance with the requirements of this rule.

(2) (Reserved)

(3) Determination of applicable target levels shall be consistent with the risk assessment tier being evaluated under 10 CSR 26-2.078 and may include:

(A) Default Target Levels.

(B) Tier one risk-based target levels;

(C) Tier two site-specific target levels; or

(D) Tier three site-specific target levels.

(4) Target risk level. Risk-based target levels shall be calculated for chemicals of concern using the following target risk levels.

(A) For chemicals of concern that are carcinogenic, the target risk level for each chemical of concern and route of exposure shall be an individual excess lifetime cancer risk of one in one hundred thousand ($1x10^{-5}$).

(B) For chemicals of concern that are non-carcinogenic, the target risk level for each chemical of concern and route of exposure shall be a hazard quotient of one (1).

(C) Additive risk due to multiple chemicals and multiple routes of exposure is not considered.

(5) Toxicity factors. Risk-based target levels shall be determined for chemicals of concern using the most recent values for the cancer slope factor, inhalation unit risk, reference dose or reference concentration recommended by the United States Environmental Protection Agency or other values determined by the department, except as provided for in section (11) of this rule.

(A) Dermal toxicity values shall be determined using a methodology approved by the department.

(6) Physical and chemical properties. Risk-based target levels shall be determined for chemicals of concern using values for physical and chemical properties established by the department, except as provided in section (11) of this rule.

(7) Exposure factors. Risk-based target levels shall be determined for chemicals of concern using values for exposure factors specific to a receptor and exposure pathway established by the department, except as provided in section (11) of this rule.

(8) Mathematical models. Risk-based target levels shall be determined for chemicals of concern using models for determining uptake and transport and fate established by the department, except as provided in section (11) of this rule.

(9) Tier one risk-based target levels. Risk-based target levels for a tier one risk assessment shall be determined by the department using models and default values established by the department.

(10) Tier two site-specific target levels. Owners and operators shall determine tier two site-specific target levels using models and equations established by the department and representative values for fate and transport parameters appropriate to the site derived from site-specific data and information subject to approval by the department.

(A) The values for fate and transport parameters shall be technically defensible and justifiable as representative of the site.

(B) Owners and operators shall use the dilution-attenuation factor values for the vadose zone based on depth to groundwater at the site listed in Table 1 to account for reduction in concentration during leaching through the vadose zone.

(C) Lead. Owners and operators shall not determine tier two site-specific target levels for lead and the tier one risk-based target levels shall be used. Site-specific target levels for lead may be determined by owners and operators as part of a tier three risk assessment if appropriate.

(11) Tier three target levels. Owners and operators shall determine tier three site-specific target levels using values for fate and transport parameters appropriate to the site derived from site-specific data and information, subject to approval by the department.

(A) The values for fate and transport parameters shall be technically defensible and justifiable as appropriate for the site, exposure pathways being evaluated and models being employed.

(B) Owners and operators may use an alternative value or values for toxicity factors, physical and chemical properties, and exposure factors if the value can be adequately justified by the responsible party and is approved by the department.

(C) Owners and operators may use an alternative model or models to evaluate transport and fate of chemicals of concern and exposure pathways if the model can be adequately justified by the responsible party and is approved by the department.

(D) Lead. Owners and operators may determine tier three site-specific target levels for lead using an appropriate model approved by the department.

(12) Deviation from risk-based and site-specific target levels. The department may require the application of target levels other than those referenced at sections (3)(A) – (D) of this rule and 10 CSR 26-2.012(1)(A)3.A – C if the department determines in writing that a deviation is appropriate based on changes in the scientific data used to calculate the target levels listed in sections (3)(A) – (D) of this rule and 10 CSR 26-2.012(A)3.A. – C.

Table 2 – Dilution-attenuation factors for vadose zone transport.

Depth to groundwater	Dilution-attenuation factor
Less than 20 feet	1
20 – 50 feet	2
Greater than 50 feet	4

AUTHORITY: sections 319.111, RSMo 2000 and 319.109 and 319.137, RSMo Supp. 2007.* Original rule filed Jan. 2, 1996, effective Aug. 30, 1996. Amended: Filed Jan. 14, 1997, effective Sept. 30, 1997.
***Original authority: 319.109, RSMo 1989, amended 1995; 319.111, RSMo 1984; and 319.127, RSMo 1989, amended 1992, 1993**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 26 – Petroleum and Hazardous Substance Storage Tanks
Chapter 2 – Underground Storage Tanks – Technical Regulations

PROPOSED RULE

PURPOSE: This rule presents requirements regarding assessing human health and environmental risk posed by chemicals of concern associated with releases from petroleum storage tank systems.

10 CSR 26-2.078 Tiered Risk Assessment Process

(1) If the maximum soil or groundwater concentrations for chemicals of concern at a site exceed the default target levels established by the department and owners and operators choose not to undertake corrective action to achieve the default target levels, then the owners and operators shall evaluate risk for the chemicals of concern at the site in accordance with this rule and, as warranted, take corrective action in accordance with the requirements of 10 CSR 26-2.079 – 10 CSR 26-2.082.

(2) Tier one risk assessment. Owners and operators shall assess risks posed by chemicals of concern at the site based on the conceptual model for the site developed in accordance with 10 CSR 26-2.075.

(A) Owners and operators shall use the conceptual site model to identify any missing or inadequate data and information and conduct necessary site characterization in accordance with 10 CSR 26-2.076.

(B) Owners and operators shall determine the vadose zone soil type or types in accordance with the provisions in section 10 CSR 26-2.076(11). Owners and operators may use soil type one as a default in lieu of the determination or the department may require such use.

(C) Owners and operators shall determine maximum and representative concentrations for chemicals of concern in each affected environmental media and exposure domain appropriate for each complete exposure pathway in accordance with the provisions in section 10 CSR 26-2.075(19).

(D) Owners and operators shall compare maximum or representative concentrations for chemicals of concern to tier one risk-based target levels established by the department for each complete exposure pathway at the site. If the maximum concentration for a chemical of concern does not exceed the tier one risk-based target level, calculation of the representative concentrations shall not be necessary.

(E) At sites where tier one risk-based target levels applicable to one or more of the indoor air inhalation pathways are exceeded, owners and operators may perform soil gas sampling in accordance with section 10 CSR 26-2.076(20). If owners and operators choose to conduct soil gas sampling, the department recommends that a work plan be submitted to, and approved by, the department prior to conducting such sampling, regardless of whether the work plan is required to be submitted in accordance with 10 CSR 26-2.076(20).

1. Owners and operators shall determine maximum and representative concentrations for chemicals of concern in soil gas in accordance with 10 CSR 26-2.075(19) based on more than one round of soil gas sampling, with the total number of sampling events as approved by the department.

2. Owners and operators shall compare maximum and representative concentrations for chemicals of concern in soil gas to the tier one risk-based target levels for soil gas. The results of the comparison shall be used to determine whether tier one risk-based target levels for the indoor inhalation pathway are exceeded.

(F) If one or more representative concentrations for chemicals of concern exceed the tier one risk-based target levels, owners and operators shall:

1. Develop a corrective action plan based on default target levels or tier one risk-based target levels; or

2. Conduct a tier two risk assessment.

(G) Owners and operators shall submit a risk assessment report for approval by the department that documents the tier one risk assessment and recommendations. If a tier two risk assessment is to be conducted, the results for both the tier one and tier two risk assessments may be submitted in a single report.

1. Based on the results of the tier one risk assessment, the department may require that owners and operators conduct a tier two risk assessment.

(H) Owners and operators may request that the department make a no further remedial action determination for the site if the maximum or representative concentrations for all chemicals of concern and all complete exposure pathways are below the tier one risk-based target levels subject to the conditions in section 10 CSR 26-2.082(4). If a no further remedial action determination is requested based on the results of the tier one risk assessment, the risk assessment report shall include documentation necessary to support the determination.

(3) Tier two risk assessment. Owners and operators shall assess risks posed by chemicals of concern at the site based on the conceptual model for the site developed in accordance with 10 CSR 26-2.075. The department may require that owners and operators conduct a tier two risk assessment if the site-specific fate and transport parameters or other site conditions are different from the default assumptions used to develop tier one risk-based target levels. A tier one risk assessment need not necessarily be conducted prior to conducting a tier two risk assessment.

(A) Prior to conducting a tier two risk assessment, owners and operators shall use the conceptual site model to identify any missing or inadequate data and information and conduct necessary site characterization in accordance with 10 CSR 26-2.076. Information specific to site characterization may be provided to the department in a report separate from the risk assessment report.

(B) Owners and operators shall determine and evaluate site-specific values for fate and transport parameters and select representative values, subject to approval by the department, to be used in developing tier two site-specific target levels.

1. Site-specific values for fate and transport parameters shall be:

A. Measured on site at appropriate locations using approved methods;

B. Literature values justified as being representative of site conditions; or

C. Default values justified as representative of current conditions at the site or shown to be conservative based on site conditions.

2. Owners and operators shall provide a justification for selecting the representative value for each fate and transport parameter explaining why the value is appropriate for the site.

A. At sites where site-specific fate and transport parameter values show considerable spatial or temporal variability, the department may require that a sensitivity analysis be performed.

(C) Owners and operators shall determine revised representative concentrations if additional data is available.

(D) Owners and operators shall use the representative site-specific fate and transport parameter values to develop tier two site-specific target levels for chemicals of concern and all complete exposure pathways, including exposure pathways for which representative concentrations did not exceed tier one risk-based target levels, at the site in accordance with Section 10 CSR 26-2.077(10).

(E) Owners and operators shall compare maximum or representative concentrations for chemicals of concern to the tier two site-specific target levels for each complete exposure pathway at the site.

(F) At sites where tier two site-specific target levels applicable to one or more of the indoor inhalation pathways are exceeded, owners and operators may perform soil gas sampling in accordance with section 10 CSR 26-2.076(20). If owners and operators choose to conduct soil gas sampling, the department recommends that a work plan be submitted to, and approved by, the department prior to conducting such sampling, regardless of whether the work plan is required to be submitted in accordance with 10 CSR 26-2.076(20).

1. Owners and operators shall determine maximum or representative concentrations for chemicals of concern in soil gas in accordance with section 10 CSR 26-2.075(19)(B) based on more than one round of soil gas sampling, with the total number of sampling events as approved by the department..

2. Owners and operators shall develop tier two site-specific target levels for soil gas for the indoor inhalation exposure pathway using representative site-specific fate and transport parameter values, subject to approval by the department, in accordance with section 10 CSR 26-2.077(10).

3. Owners and operators shall compare maximum or representative concentrations for chemicals of concern in soil gas to the tier two site-specific target levels for soil gas. The results of the comparison shall be used to determine whether tier two site-specific target levels for the indoor inhalation exposure pathway are exceeded.

(G) If one or more representative concentrations for chemicals of concern exceed the tier two site-specific target levels, owners and operators shall:

1. Develop a corrective action plan based on the DTLs, tier one risk-based target levels, or tier two site-specific target levels; or

2. Conduct a tier three risk assessment.

(H) Owners and operators shall submit a risk assessment report for approval by the department that documents the tier two risk assessment and recommendations. If a tier one risk assessment report was not previously submitted, the results for both the tier one and tier two risk assessments may be submitted in a single report.

(I) Owners and operators may request that the department make a no further remedial action determination for the site if the maximum or representative concentration for all chemicals of concern and all complete exposure pathways are below the tier two site-specific target levels subject to the conditions in section 10 CSR 26-2.082(4). If a no further remedial action determination is requested based on the results of the tier two risk assessment, the risk assessment report shall include documentation necessary to support the determination.

(4) Tier three risk assessment. A tier three risk assessment is a detailed, site-specific evaluation that owners and operators may conduct only after receiving approval of a tier three risk assessment work plan from the department. Owners and operators shall assess risks posed by chemicals of concern at the site based on the conceptual model for the site developed in accordance with 10 CSR 26-2.075. The tier three risk assessment may use the most recent toxicity factors and physical and chemical properties data, alternative fate and transport and risk assessment models, and site-specific fate and transport and exposure factors. The tier three risk assessment shall consider only the complete exposure pathways for which representative concentrations of chemicals of concern at the site exceed the tier two site-specific target levels, and any additional receptors and exposure pathways identified, unless the resulting tier three site-specific target levels are or are likely to be more conservative than the tier two site-specific target levels in which case the tier two risk assessment findings shall be re-evaluated and the department may require that tier three site-specific target levels be developed for those pathways.

(A) Tier three risk assessment work plan. Owners and operators shall develop a detailed technical work plan that shall be submitted to and approved by the department prior to being implemented. The work plan shall include, at a minimum, the following:

1. An explanation of the chemicals of concern and complete exposure pathways at the site to be evaluated in the tier three risk assessment.

2. A detailed explanation of the fate and transport models to be used. Owners and operators may propose the use of a model or models different than those used to develop tier one risk-based target levels and tier two site-specific target levels. At a minimum, the proposed model shall be peer reviewed, publicly available, have a history of use on similar projects, and be technically defensible. In certain cases where specific computer software is used to conduct the tier three

risk assessment, the department may require that owners and operators provide a copy of the software to the department to facilitate review of the assessment.

3. An explanation of the input parameters required to determine tier three site-specific target levels and how the necessary data for each parameter will be obtained. For each input parameter, owners and operators shall provide justification for the selected value to be used.

4. An explanation of missing or inadequate data that require additional fieldwork and a detailed scope of work for the collection of this data.

(B) Upon approval of the tier three risk assessment work plan by the department, owners and operators shall implement the approved work plan. Any changes to the work plan made subsequent to the department's approval shall be documented in writing and submitted to and approved by the department.

(C) Owners and operators shall determine revised representative concentrations for relevant chemicals of concern and exposure pathways if additional data is available.

(D) Owners and operators shall determine human health risk or develop tier three site-specific target levels, or both, for the complete exposure pathways using the models and data in accordance with the approved work plan.

1. Human health risk. Owners and operators shall determine human health risk in accordance with section 10 CSR 26-2.077(11) and compare estimated human health risk to target risk levels in 10 CSR 26-2.077(4).

2. Tier three site-specific target levels. Owners and operators shall develop tier three site-specific target levels in accordance with section 10 CSR 26-2.077(11) and compare representative concentrations for chemicals of concern to the tier three site-specific target levels for each complete exposure pathway at the site.

3. If lead is a chemical of concern at the site, owners and operators may evaluate human health risk or develop tier three site-specific target levels for lead using the United States Environmental Protection Agency's Integrated Exposure Uptake Biokenetic Model for Lead in Children or another model approved by the department.

(E) If one or more representative concentrations for chemicals of concern exceed the tier three site-specific target levels or the estimated human health risks exceed the target risk levels, owners and operators shall develop a corrective action plan based on the default target levels, tier one risk-based target levels, tier two site-specific target levels, or tier three site-specific target levels or target risk levels.

(F) Owners and operators shall submit a risk assessment report for approval by the department that documents the tier three risk assessment and clearly describes the data and methodology used, key assumptions and results. Any deviation from the approved work plan, the rationale for the deviation, and approval by the department shall be clearly documented in the risk assessment report.

(G) Subject to the conditions in section 10 CSR 26-2.082(4), owners and operators may request that the department make a no further remedial action determination for

the site if the representative concentration for all chemicals of concern and all complete exposure pathways are less than the tier three site-specific target levels or the estimated human health risks are less than target risk levels. If a no further remedial action determination is requested based on the results of the tier three risk assessment, the risk assessment report shall include documentation necessary to support the determination.

(5) Ecological risk assessment. Owners and operators shall assess risks posed by chemicals of concern at the site to ecological receptors in accordance with 10 CSR 26-2.075(17).

(A) Level two ecological risk assessment. Owners and operators shall compare maximum or representative concentrations for chemicals of concern in soil, groundwater, surface water or sediment with applicable standards or criteria protective of ecological receptors available in literature and approved by the department or to site-specific target levels developed using an appropriate methodology approved by the department.

1. If one or more maximum or representative concentrations for chemicals of concern in soil, groundwater, surface water or sediment exceed the applicable standards or criteria, or the level two site-specific target levels if applicable, owners and operators shall:

A. Develop a corrective action plan based on the applicable standards or criteria, or the level two site-specific target levels if applicable; or

B. Conduct a level three ecological risk assessment.

(B) Level three ecological risk assessment. Owners and operators shall conduct a detailed site-specific evaluation as per current United States Environmental Protection Agency guidance for ecological risk assessment. Owners and operators shall develop a detailed technical work plan that shall be submitted to and approved by the department prior to initiating the level three ecological risk assessment.

1. If the level three ecological risk assessment determines that the risk to ecological receptors at the site exceeds levels deemed acceptable by the department, owners and operators shall develop a corrective action plan to protect ecological receptors.

AUTHORITY: 319.109 and 319.137 RSMo Supp. 2007.

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

10 CSR [*20*]26-[*10.066*] 2.079 Corrective Action Plan

PURPOSE: This rule explains when a corrective action plan is required and sets forth requirements regarding what the plan must contain and how risk-based target levels are determined when corrective action is by excavation.

[*PURPOSE: This rule lists the requirements for corrective action plans for cleanup of releases from underground storage tank sites.*

(1) Owners and operators are responsible for submitting a plan that provides for adequate protection of human health and the environment, as determined by the department, after fulfilling the requirements for release reporting and investigation in 10 CSR 20-10.061--10 CSR 20-10.063. Owners and operators must modify their plan as necessary to meet this standard.

(A) The department may require owners and operators to submit additional information or to develop and submit a corrective action plan for responding to contaminated soils and groundwater at any point after reviewing the information submitted for release reporting and investigation in 10 CSR 20-10.061--10 CSR 20-10.063. If a plan is required, owners and operators must submit the plan according to a schedule and format established by the department.

(B) Owners and operators may choose to submit a corrective action plan for responding to contaminated soil and groundwater after fulfilling the requirements of 10 CSR 20-10.061--10 CSR 20-10.063.

(2) The department will approve the corrective action plan only after ensuring that implementation of the plan will adequately protect human health, safety and the environment. In making this determination the department should consider the following factors as appropriate:

(A) The physical and chemical characteristics of the regulated substance, including its toxicity, persistence and potential for migration;

(B) The hydrogeologic characteristics of the facility and the surrounding area;

(C) The proximity, quality and current and future uses of nearby surface and ground water;

(D) The potential effects of residual contamination on nearby surface and ground water;

(E) An exposure assessment; and

(F) Any information assembled in 10 CSR 20-10.060--10 CSR 20-10.067.

(3) Upon approval of the corrective action plan, or as directed by the department, owners and operators must implement the plan including modifications to the plan made by the department. Owners and operators must monitor, evaluate and report the results of

implementing the plan in accordance with a schedule and in a format established by the department.

(4) Owners and operators, in the interest of minimizing environmental contamination and promoting more effective clean-up, may begin clean-up of soil and groundwater before the corrective action plan is approved provided that they--

(A) Notify the department of their intention to begin clean-up;

(B) Comply with any conditions imposed by the department, including halting clean-up or mitigating adverse consequences from clean-up activities; and

(C) Incorporate these self-initiated clean-up measures in the corrective action plan that is submitted to the department for approval.

(5) Owners and operators shall follow a written procedure. To comply with this rule, the department's Corrective Action Guidance Document may be used as a written procedure. Other written procedures may be used with prior written approval of the department.

AUTHORITY: sections 319.109, Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) Owners and operators shall undertake corrective actions necessary to manage risk posed by chemicals of concern to human health, public welfare and the environment at a site. The corrective actions shall prevent or reduce exposure to chemicals of concern so that acceptable risk levels are not exceeded under current and reasonably anticipated future land use conditions. Corrective actions shall manage risk at a site by achieving the following goals, either individually or in combination as appropriate:

(A) Reduce concentrations of chemicals of concern in affected media.

(B) Prevent transport of chemicals of concern from affected media to receptors.

(C) Preclude the presence of a receptor at a site.

(D) Restrict certain receptor activities at a site.

(E) Ensure the presence of contamination above residential target levels and all related activity and use limitations are disclosed to future owners and users of the property on which the contamination is found and to which the activity and use limitations pertain.

(2) Owners and operators shall develop a corrective action plan if one or more of the following conditions apply to a site.

(A) The maximum or representative concentration of one or more chemicals of concern for one or more complete exposure pathways exceed applicable target levels;

(B) The risk level of a chemical of concern exceeds acceptable risk levels specified at 10 CSR 26-2.077(4);

(C) The maximum or representative concentration of one or more chemicals of concern for each complete route of exposure do not exceed applicable target levels, but the risk assessment was based on site-specific assumptions that must be preserved via the application of long-term stewardship measures in accordance with 10 CSR 26-2.081; or

(D) One or more chemicals of concern will remain on a property at concentrations above residential target levels and the property does not include active petroleum USTs.

(3) Adjacent or nearby properties. At sites where chemicals of concern have migrated onto one or more adjacent or nearby properties at concentrations above default target levels or other residential levels approved by the department, owners and operators shall either:

(A) Reduce concentrations of chemicals of concern in soil or groundwater on the adjacent or nearby property or properties to below default target levels or other residential target levels approved by the department; or

(B) Based on the department's reasonably anticipated future use decision for the adjacent or nearby property or properties, either:

1. Reduce concentrations of chemicals of concern in soil or groundwater on the adjacent or nearby property or properties to below residential or non-residential target levels and, if residential target levels are not met, mitigate remaining and contingent risk through the application of long-term stewardship measures; or

2. With the approval of the department, take no remedial action on the adjacent or nearby property or properties but mitigate risks solely through the application of long-term stewardship measures.

(C) Owners and operators shall obtain the approval of the owner of the adjacent or nearby property for any actions to be taken on their property and implementation of long-term stewardship measures that pertain to or affect their property.

(D) If denied access by the owner of the adjacent or nearby property, owners and operators shall document to the department that all applicable target or risk levels have been met at or near the boundary of the source property and that actions have been taken to ensure that further migration off the source property of chemicals of concern at concentrations exceeding the default target levels or other residential target levels approved by the department will not occur in the future.

(4) Corrective action plan. Owners and operators shall develop a corrective action plan that encompasses all activities necessary to manage risk to human health, public welfare and the environment at a site. The corrective action plan shall be submitted for approval by the department.

(A) The corrective action plan shall be designed to ensure that:

1. Site conditions relative to chemicals of concern are protective of human health and the environment under current and reasonably anticipated future conditions;

2. Assumptions made in the estimation of risk and development of applicable target levels are not violated in the future, and that concentrations of chemicals of concern in groundwater and the extent of groundwater contamination are stable or decreasing; and

3. Recoverable light non-aqueous phase liquid (LNAPL) is not present in the soil or groundwater in volumes that will result in any of the following conditions:

A. Expansion of the area of the LNAPL in soil or groundwater;

B. An expanding groundwater solute plume;

C. An increase in concentrations of one or more chemicals of concern in groundwater to levels above applicable target levels;

D. Unacceptable risk to human health or the environment; or

E. Explosive, fire, or other acute hazards.

(B) The corrective action plan shall include, but need not necessarily be limited to, one or a combination of the following:

1. Active remedial actions to reduce concentrations of chemicals of concern to meet applicable target levels.

2. Use of monitored natural attenuation to reduce concentrations of chemicals of concern to meet applicable target levels and contain the groundwater solute plume.

3. The installation of engineered controls to limit access to or migration of chemicals of concern in soil or groundwater.

4. Application of long-term stewardship measures to eliminate certain exposure pathways or receptors or to ensure that exposure pathways remain incomplete under current and reasonably anticipated future uses and conditions.

(C) The corrective action plan submitted to the department shall address each of the following elements, including a detailed explanation for each element, or an explanation of why such element is not necessary to protect human health and the environment:

1. Why the corrective action plan was prepared and the specific objectives of the corrective action plan.

2. The findings, conclusions, and recommendations of the department-accepted risk assessment report.

3. The technologies or approaches to be used to reduce mass, concentration, or mobility of chemicals of concern to meet the applicable target levels for the site or the specific engineered activities to be used to mitigate excess risks.

4. Monitoring to demonstrate plume stability and, if applicable, the effectiveness of monitored natural attenuation.

5. Data to be collected, the purposes for which the data will be collected, and procedures for collection, documentation, analysis and reporting during the implementation of the corrective action plan.

6. The type of long-term stewardship measure or measures that will be used, its intended purpose, and how and when it will be executed; the long-term viability of the long-term stewardship measure; any actions necessary to ensure such long-term viability; and the type of documentation that will be provided to demonstrate that the long-term stewardship measure is and will remain in effect.

7. A schedule for implementation of the corrective action plan, including all major milestones and all deliverables to the department.

8. The specific criteria to be measured or otherwise used to determine whether corrective actions are effective and the corrective action plan has been successfully implemented.

9. Contingency plans that will be implemented if the selected remedy fails to meet the overall objectives of the corrective action plan in a timely manner.

10. The public participation and notice requirements in 10 CSR 26-2.080 or an explanation of how such requirements have been met.

(D) The department will approve the corrective action plan as submitted or provide comments. Owners and operators shall address the department's comments and, upon receipt of approval, shall implement the corrective action plan.

(5) Management of LNAPL. Owners and operators shall comply with the requirements of 10 CSR 26-2.074. LNAPL removal initiated under 10 CSR 26-2.074 shall continue until a work plan for LNAPL recovery is approved by the department and implemented by the owner and/or operator.

(A) LNAPL recovery work plan. Owners and operators shall develop a work plan for LNAPL recovery at the site based on the information developed in accordance with 10 CSR 26-2.076(18). Owners and operators shall submit the work plan to the department for approval prior to implementation. Owners and operators shall implement the work plan within forty five (45) days of approval by the department. The LNAPL recovery work plan developed by owners and operators shall:

1. Explain which method of LNAPL removal is most appropriate given site-specific conditions and how the method will be implemented at the site;

2. Explain the extent to which removal is believed to be practicable given the chosen method;

3. Explain the extent to which LNAPL removal is believed to be warranted based on risks posed by the LNAPL to human and ecological receptors;

4. Identify the metrics to be used to assess removal system effectiveness and explain the type and scope of monitoring that will be conducted to assess removal system effectiveness; and

5. Include a schedule for implementation and operation of the removal system and for monitoring system effectiveness.

(B) LNAPL recovery. The extent of LNAPL recovery required at a site shall be determined by the department based on practicability of LNAPL recovery and the actual and potential risk posed by chemicals of concern in the LNAPL to human and ecological receptors.

1. Once all acute risks related to the LNAPL have been mitigated in accordance with 10 CSR 26-2.071 and 10 CSR 26-2.074, owners and operators shall remove LNAPL to the extent that:

A. The LNAPL and associated dissolved and vapor-phase plumes are stable or decreasing with respect to both area and concentrations of chemicals of concern; and

B. The LNAPL and associated dissolved and vapor-phase plumes do not pose unacceptable risk to human or ecological receptors.

2. The department will consider information provided by owners and operators regarding the practicability of LNAPL recovery and actual and potential risk the LNAPL poses to human and ecological receptors in determining the extent to which LNAPL recovery is required by 10 CSR 26-2.074.

3. LNAPL recovery in accordance with the provisions of the approved LNAPL recovery work plan shall continue until the goals of the work plan, as approved by the department, have been attained, unless the department determines based on a review of monitoring or other information, and informs owners and operators in writing, that the method employed will not achieve the goals or will not do so in a timely manner, in which case owners and operators shall evaluate the situation and propose an alternative recovery method in a work plan submitted to the department. The alternative remedy shall not be implemented until approved by the department. Owners and operators shall submit LNAPL recovery status reports to the department on a quarterly basis or other schedule as approved by the department, beginning three months after implementation of the approved LNAPL recovery work plan.

4. Once LNAPL removal limits or goals have been reached, owners and operators shall submit a final LNAPL removal report to the department.

The final report must include conclusions and recommendations regarding any remaining LNAPL, including the type of long-term stewardship measure that will be used to provide information about and control risks associated with remaining LNAPL.

(C) At sites where concentrations of chemicals of concern in excess of residential target levels will remain in place following the department-approved cessation of LNAPL removal activities, a long-term stewardship measure approved by the department shall be recorded in the chain of title of the property on which the concentrations of chemicals of concern in excess of residential target levels will remain.

(6) Application of risk-based target levels to excavated areas. At sites where contaminated soils are to be removed by excavation and replaced with dissimilar fill material, owners and operators shall evaluate the type of fill that will be used and determine the target levels that will apply to the floor of the excavation prior to initiating excavation activities.

(A) The target levels for the area to be excavated and the process and methods by which they were developed shall be explained in the corrective action plan submitted to the department for review and approval prior to beginning corrective action activities.

(B) If the excavation is to be filled with granular material such as gravel or sand, the tier one risk-based target levels for soil type one shall apply to the floor of the excavated area, unless the department determines that soil type one is not representative of the fill to be used in which case owners and operators shall develop site-specific target levels for the fill and obtain the approval of the department for such site-specific target levels prior to placement of the fill.

(C) If the excavation is to be filled with soil, target levels for the excavated area may be determined by one of the following methods:

1. Perform a soil type determination for the fill soil in accordance with 10 CSR 26-2.076(11) and identify the tier one risk-based target levels applicable to the excavated and backfilled area based on the results of the soil type determination. The soil used as fill shall be compacted upon placement and the moisture content managed to ensure that, upon placement, the properties of the soil remain consistent with the corresponding soil type properties.

2. Develop tier two site-specific target levels for the soil to be used as fill and the floor of the excavated area based on analysis of specific soil properties for the soil to be used as fill in accordance with 10 CSR 26-2.076(12). The soil used as fill shall be compacted upon placement and the moisture content managed to ensure that, upon placement, the properties of the soil remain consistent with the corresponding soil properties determined by analysis.

(7) Completion of corrective action. Upon successful implementation and completion of corrective actions required by the approved corrective action plan,

owners and operators shall submit a corrective action plan completion report to the department for approval.

(A) The corrective action plan completion report shall include:

1. Documentation of completion of all elements of the corrective action plan listed in section (4)(C) of this rule;

2. A request for a determination of no further remedial action for the site by the department subject to the conditions in 10 CSR 26-2.082(4); and

3. If applicable, a request to plug and abandon all nonessential monitoring wells related to the environmental activities at the site.

(B) Corrective action activities shall continue until the department issues a no further remedial action determination for the site or provides written authorization to terminate the corrective action plan.

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990. Amended: Filed Aug. 3, 1993, effective April 9, 1994.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 2[*0*]6 – [*Clean Water Commission*] Petroleum and Hazardous Substance Storage Tanks
Chapter [*10*] 2 – Underground Storage Tanks – Technical Regulations

10 CSR 2[*0*]6-[10.067] 2.080 Public Participation and Notice

PURPOSE: This rule establishes procedures for public participation intended to allow parties affected by a petroleum tank release to provide comments to the department regarding the contamination and planned corrective action activities.

[*PURPOSE: This rule establishes procedures for public participation during corrective action plans.*

(1) For each confirmed release that requires a corrective action plan, the department must provide notice to the public by means designed to reach those members of the public directly affected by the release and the planned corrective action. This notice may include, but is not limited to, public notice in local newspapers, block advertisements, public service announcements, publication in a state register, letters to individual households or personal contacts by field staff.

(2) Site release information and decisions by the department concerning the corrective action plan are available to the public for inspection upon request.

(3) Before approving any corrective action plan, the department may hold a public meeting to consider comments on the proposed corrective action plan if there is sufficient public interest or for any other reason.

(4) The department must give public notice in section (1) of this rule if implementation of an approved corrective action plan does not achieve the established clean-up levels in the plan and termination of that plan is under consideration by the department.

AUTHORITY: sections 319.109, RSMo Supp. 1989 and 644.026, RSMo Supp. 1993. Original rule filed April 2, 1990, effective Sept. 28, 1990.*
**Original authority: 319.109, RSMo 1989 and 644.026, RSMo 1972, amended 1973, 1987, 1993.*]

(1) The department will provide for public notice and participation when a release from a petroleum tank system requires a corrective action plan under 10 CSR 26-2.079. The department shall provide, or allow owners and operators to provide, public notice by means designed to reach those members of the public directly affected by the release and the planned corrective action.

(2) Public notice shall be provided to those members of the public directly affected by the release and the planned corrective action in either of the following circumstances.

(A) When contamination from petroleum released from a regulated underground storage tank (UST) system in any media at concentrations exceeding default target levels or, with the approval of the department, other target levels applicable to residential land use has migrated or is likely to migrate beyond one or more boundaries of the property on which the contamination originated and onto one or more adjacent or nearby properties; or

(B) If the department determines that implementation of an approved corrective action plan has failed to achieve applicable target levels or otherwise successfully mitigate unacceptable risks associated with contamination, and the department has terminated or is considering terminating the corrective action plan.

(3) Those members of the public directly affected shall include owners and occupants of adjacent and nearby property onto which contamination has migrated or is likely to migrate regardless of the media through which migration has occurred. When contamination has migrated or is likely to migrate onto multiple properties or affects, or potentially affects, groundwater that is or is likely to be used for domestic or other uses that will or could result in human exposure to chemicals of concern in groundwater, particularly when such groundwater is used as a public water supply, the department may consider other members of the public as being directly affected and require broad public notice. In determining whether multiple properties have been or are likely to be affected and the need for broad public notice, the department will consider the number, size and ownership of the properties.

(4) Public notice may be made via one or more of the following means or other means determined appropriate by the department:

(A) Notice in newspapers having circulation in the area in which the site is located;

(B) Block advertisements;

(C) Public service announcements;

(D) Publication in the state register;

(E) Letters to individual households;

(F) Letters to property owners;

(G) Personal contacts by field staff.

(5) Public notice shall be made at least forty-five (45) days prior to the planned implementation of the corrective action plan and shall occur prior to the department's approval of the proposed corrective action plan so that the department can receive and consider public comment when determining whether to approve the corrective action plan.

(6) Each public notice occurrence shall allow for a public comment period of at least thirty (30) days after notice has been made and shall specify how those who wish to

comment may provide their comments to the department. The notice shall request that all comments be directed to the department.

(7) In each instance in which the department determines that public notice as per section (2) of this rule is required, before providing the public notice, the department will give owners and operators an opportunity to provide the required public notice in lieu of the department. If owners and operators decline, fail to meet notification deadlines as prescribed by the department, or provide notice the department believes to be inadequate, then the department will provide the public notice.

(8) The department may undertake, or allow owners and operators to undertake, public participation activities beyond simple notification of owners and occupants of adjacent and nearby properties if, as determined by the department, contamination is widespread, sufficient public interest exists regarding the corrective action plan or risk assessment, or if deemed necessary by the department for other reasons. The department may gauge public interest based on the response it receives from the initial public notice.

(9) Limited public notice. Where members of the public directly affected is limited to owners and occupants of adjacent and nearby property the following provisions shall apply.

(A) Where public notice is required in accordance with subsection (2)(A) of this rule, owners and occupants of adjacent and nearby property shall be notified no later than forty-five (45) days after the department has determined that contamination has or is likely to migrate onto adjacent or nearby property.

1. The department, or owners and operators in lieu of the department, may provide notification by certified letter to the affected property owners and occupants. The letter shall include, at a minimum:

A. The name and address of the UST owners and operators and the address of the source property.

B. If different from that of the UST owners and operators, the name and address of the owner of the property on which the contamination originated.

C. The name and mailing address of the affected property owner or occupant being notified and the physical address of their property.

D. The name, address, and telephone number of the department's project manager for the site.

E. A description of the contamination and an explanation of how migration onto the adjacent or nearby property is known, suspected, or anticipated.

F. A statement directing the owner or occupant to direct comments to the department's project manager and specifying a comment deadline as established in section (6) of this rule.

G. A statement that information pertaining to the release and the department's decisions regarding the corrective action plan and other matters is or will be available from the department upon request.

H. If available at the time, a description of the actions proposed in owners and operator's corrective action plan to mitigate unacceptable risks associated with the contamination. A copy of the corrective action plan shall be made available to the neighboring owner or occupant at his/her request.

I. If the corrective action plan has not yet been developed at the time notice is made, the letter must explain the expected scope and type of corrective action activities that will be used and provide a schedule for corrective action plan development. If the corrective action plan has been developed at the time notice is made, a copy of the plan shall be provided to the party being notified.

2. If owners and operators provide notification by certified letter to the affected property owners or occupants, a copy of each notification letter, including any enclosures or attachments, and a copy of the certified mail receipt or other documentation showing that the owner or occupant of the adjacent or nearby property received the letter shall be submitted to the department within thirty (30) days of the date on which the letter was received by the affected property owner.

3. If the corrective action plan has not yet been developed at the time the initial notice is made, a second letter shall be sent to each party initially notified once the corrective action plan has been developed. The second letter must explain the actual scope and type of corrective action activities to be used and include an implementation schedule. The second letter shall provide the affected owner or occupant a minimum of thirty (30) days from receipt of the letter in which to provide comments to the department regarding the proposed corrective action activities.

4. Owners and operators may provide notification to the affected property owner or occupant in person or by telephone, either in addition to or instead of notification by certified letter. The notice must include the information specified at section (9)(A)1.A through I not including section (9)(A)1.C. If notification is made in person or by telephone in lieu of a certified letter, then owners and operators shall provide the department with an affidavit documenting the notification. The affidavit shall be dated, submitted to the department within thirty (30) days of the day on which notification was made, and include the following information:

A. The name and address of UST owners and operators and the source property address.

B. If different from that of the UST owners and operators, the name and address of the owner of the property on which the contamination originated.

C. The name, telephone number, and mailing address of the owner or occupant of the adjacent or nearby property being notified and the physical address of their property.

D. A summary of the in person or telephone discussion.

E. A statement that the owner or occupant of the adjacent or nearby property was or will be provided a copy of the corrective action plan either by certified mail (a copy of the certified mail receipt must be provided to the department) or in person.

F. The outcome of the meeting or call and any issues raised by the person being notified that will or could hinder implementation of the corrective action plan.

G. The owners and operator's or authorized designee's signature.

5. Documentation of response received. When owners and operators provide notification in lieu of the department, owners and operators shall inform each party being notified that the party's comments should be directed to the department. Owners and operators shall provide the party being notified with a mailing address, electronic mail address, and fax and phone numbers for the department's project manager for the site. If the party being notified submits their comments to the owner or operator, the owner or operator must forward the comments to the department within fifteen (15) days of receipt as follows:

A. If the response is in writing, a copy shall be submitted to the department.

B. If the response is in-person or by telephone, a dated affidavit fully explaining the notified party's response and bearing the owner and operator's signature or that of their authorized representative must be submitted to the department.

(B) Where public notice is required in accordance with subsection (2)(B) of this rule, owners and occupants of adjacent and nearby property shall be notified by the department, or owners and operators in lieu of the department, in a manner consistent with section 9(A) of this rule and with the following provisions.

1. The notice shall specifically pertain to implementation of the corrective action plan and the plan's failure to meet applicable target levels or otherwise successfully mitigate unacceptable risks associated with contamination.

2. The notice shall explain that, because implementation of the corrective action plan was not successful, the department has terminated or is considering terminating the corrective action plan.

3. The notice shall explain that a new corrective action plan will be developed and that a copy of the new corrective action plan will be provided to the department and to each party previously notified.

4. Once a new corrective action plan has been developed, public notice as provided for in this rule shall be undertaken by the department or, in lieu of the department, by owners and operators.

(10) Notice other than by letter, in person, or by telephone – work plan required. Where public notice is required under section (2)(A) of this rule and the department or, in lieu of the department, owners and operators, provides notice by means other than certified letter, in person, or by telephone, the content of the notice must include the information specified at section (9)(A)1.A through I not including section (9)(A)1.C. If the notice is to be provided by the owner or operator, the owner or operator must first submit a work plan to the department explaining the means by which the notice will be provided, the content of the notice, and a schedule for providing such notice. The work plan shall not be implemented until approved in writing by the department.

(A) Owners and operators shall, within thirty (30) days of providing the notice under this section, submit documentation to the department that the notice has been adequately provided in accordance with the approved work plan.

(11) Broad public notice. Where the department determines that members of the public directly affected by a release or planned corrective action is not limited to owners and occupants of adjacent and nearby property, the department, or owners and operators in lieu of the department, shall provide broad public notice subject to the following provisions.

(A) The department will determine the means by which such notice is provided by considering site-specific demographics as well as locally available media by which notice might be provided, local government capabilities, and other considerations.

(B) Where public notice is required in accordance with subsection (2)(A) of this rule, the broad public notice shall be made no later than one hundred and twenty (120) days after the department makes the determination under section (3) of this rule and at least forty-five (45) days prior to the planned implementation of the corrective action plan and prior to the department's approval of the plan.

(C) If owners and operators choose to provide broad public notice in lieu of the department, the owners and operators shall consult with the department to determine the best means for providing such notice. After consultation with the department, owners and operators shall develop a public participation plan for the department's review explaining how and when the notice is to be provided and allowing for a public comment period of at least thirty (30) days. Owners and operators shall submit the plan to the department within thirty (30) days of the department determining as specified under section (3) of this rule that broad public notice is required. Owners and operators shall not conduct broad public notice activities until the plan has been approved by the department. The department shall review the public participation plan and respond to the owner and operator within thirty (30) days of receipt. If the department rejects the public participation plan, the department will allow owners and operators thirty

(30) days in which to modify and resubmit the public participation plan to the department. The department shall review and either approve or reject the modified public participation plan within thirty (30) days of receipt. If the department rejects the modified public participation plan, the department will provide the broad public notice.

(12) Consideration and management of comments received. If the department receives comments from the public, either directly or through an owner or operator, regarding the migration of contamination off a source property, proposed corrective action activities, the failure of a corrective action plan to achieve target levels or otherwise adequately mitigate risks associated with contamination, or other related matters, then the department will:

(A) Review each comment received;

(B) Consider each comment when reviewing and either approving or rejecting the owner and operator's proposed corrective action plan;

(C) Respond to comments as appropriate under the circumstances. The department will not necessarily accept or respond to each comment received;

(D) Evaluate the comments as a whole in order to determine whether sufficient public interest exists regarding the contamination, the corrective action plan or the risk assessment such that the department should conduct further public participation activities; and

(E) Keep records of all comments received in the department's file for the subject site.

AUTHORITY: sections 319.109 and 319.137 RSMo Supp. 2007.* Original rule filed April 2, 1990, effective Sept. 28, 1990.
***Original authority: 319.109, RSMo 1989.**

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 26 – Petroleum and Hazardous Substance Storage Tanks
Chapter 2 – Underground Storage Tanks – Technical Regulations

PROPOSED RULE

PURPOSE: This rule provides requirements and procedures for long-term stewardship to manage risks at sites where contamination in excess of applicable residential target levels will remain. The requirements in this rule accommodate situations where cleanup to higher levels is appropriate while ensuring that human health, public welfare, and the environment are protected by restricting changes in site conditions.

10 CSR 26-2.081 Long-Term Stewardship

(1) (Reserved).

(2) Long-term stewardship measures shall be employed at any site where, following completion of corrective action activities, concentrations of chemicals of concern in soil or groundwater exceed applicable target levels for residential land use.

(A) At a minimum, long-term stewardship measures must be designed to ensure disclosure so that appropriate information reaches current and future owners, operators and other users of the property or properties to which the measures apply. The information shall include the location and concentration of chemical(s) of concern on the property and a statement that, without further action, the property is suitable for non-residential uses only.

(B) An enforceable long-term stewardship measure shall be used in the following circumstances:

1. Where reasonably foreseeable and otherwise lawful actions on a property could cause an exposure pathway to become complete (such as the construction of a building or the installation of a water well);

2. Where failure to adequately inspect or maintain an engineered control might allow an exposure pathway to become complete; or

3. Where the department or owners and operators otherwise determine that activity and use limitations are necessary to ensure remaining contaminants do not pose unacceptable risk.

(C) Any required long-term stewardship measures shall be maintained and shall ensure exposure pathways remain incomplete for the period of time during which chemical(s) of concern remain at a concentration(s) that could pose an unacceptable risk to human health, public welfare or the environment.

(D) Long-term stewardship measures shall be readily accessible, durable, reliable, and consistent with the risk posed by the chemical(s) of concern.

(3) Exception. Long-term stewardship is not required for a property containing an operating underground storage tank (UST) facility where, following the completion of corrective action activities, concentrations of one or more chemicals of concern on the

property are below applicable non-residential risk-based target levels. Long-term stewardship measures will be required at the facility after the USTs have been permanently closed if residential target levels are not attained and the site is or may be used for purposes other than as an UST facility. If a release at an operating UST facility results in the migration of chemical(s) of concern onto a neighboring property, corrective action and/or long-term stewardship may be required with respect to the neighboring property in accordance with 10 CSR 26-2.079(3).

(4) To reduce risks posed by chemicals of concern to human health, public welfare, or the environment, with the approval of the department, owners and operators may use long-term stewardship measures as an alternative to, or in conjunction with, reducing concentrations of chemical(s) of concern in environmental media. Owners and operators may use one or more long-term stewardship measures to mitigate risk as part of a corrective action plan.

(5) Long-term stewardship measures shall be fully developed and proposed as part of the corrective action plan and shall be consistent with this rule and any other controls or limitations that are required by the department. The corrective action plan shall use one or more of the measures identified in sections (6) through (10) of this rule or other alternative measures if approved by the department.

(6) Deed notice or other informational device. A deed notice or other informational device may be applied as a long-term stewardship measure to convey information about conditions at and appropriate use of a property, if the department determines such notification is appropriate. The deed notice or other informational device shall remain in-place, accessible and viable for the period of time that chemical(s) of concern may pose an unacceptable risk to human health, public welfare or the environment.

(A) A deed notice or other informational device may not be used to impose restrictions or obligations at a property. If such restrictions or obligations are necessary to ensure a condition of risk management, an enforceable long-term stewardship measure shall be applied instead of or in addition to the deed notice or other informational device.

(B) The deed notice shall be recorded in the chain of title of the real property to which the deed notice pertains, be legally precise, contain summary information, and be written in language a lay person can understand. Recording shall be in accordance with the provisions of Section 59.310 Revised Statutes of Missouri. Once filed, the owner or operator shall submit to the department a copy of the notice as filed and as stamped filed by the recorder's office. The deed notice shall include at least the following information:

1. Identification by common address and legal description of the property to which the deed notice applies;

2. The name of the property owner(s) and declaration of property ownership;

3. Contact information for the department and a statement that any information regarding the investigation, risk assessment, and corrective action performed on the property may be obtained from the department; and

4. A description of the type, concentration and location of petroleum-related contamination on the property;

5. An explanation and description of all corrective actions taken at the property, if any, and the cleanup target levels applied;

6. Identification of the exposure pathway or pathways of concern;

7. Identification and explanation of any and all other long-term stewardship measures affecting the property;

8. A statement that the property is suitable for non-residential use but is not suitable for residential use;

9. A statement using substantially the following language: "Any person may request in writing, at any time, that the Missouri Department of Natural Resources allow modification of this Deed Notice due to the performance of subsequent corrective actions, a change in conditions at the property, or the adoption of revised remediation standards;" and

10. One or more site maps showing:

A. The location and legal boundary of the property to which the deed notice pertains; and

B. The location of petroleum contamination on the property.

(C) With the approval of the department, owners and operators may use an informational device other than a deed notice as a long-term stewardship measure. To be approved, any such informational device must include, provide, and convey at least the information described at section (6)(B)1 – 8 of this rule and be at least as reliable, durable, and accessible as a deed notice.

(7) Restrictive Covenant. A restrictive covenant may be used to impose restrictions or obligations needed to protect current or future users from environmental contamination present on a property. A restrictive covenant acceptable to the department as a long-term stewardship measure shall be durable, enforceable by the state, and run with the property.

(A) The restrictive covenant shall be recorded in accordance with the requirements of section 59.310 RSMo. in the chain of title of the property to which it applies. The restrictive covenant shall contain the elements described at section (6)(B)2 through 8 of this rule and the following:

1. Identification by common address and legal description of the property to which the restrictive covenant applies;

2. An explanation of the restrictions and obligations imposed by the restrictive covenant that apply to the property and the reason for their application;

3. Language instituting such restrictions and obligations, and granting access to the department or its designee to inspect the condition of the property, the integrity of controls, or other matters related to the contamination remaining on the property;

4. A statement that the restrictions and obligations apply to the current owners, occupants, and all heirs, successors, assigns, and lessees;

5. A statement that all restrictions and obligations apply in perpetuity, or until the department issues a new determination of no further remedial action approving modification or removal of the restrictions and obligations, and the release or modification of the restrictive covenant issued by the department is filed in the chain of title for the property;

6. The dated, notarized signatures of the property owners or authorized agent; and

7. One or more scaled site maps showing:

A. The location and legal boundary of the property to which the restrictive covenant applies;

B. The estimated horizontal and vertical extent of concentrations of chemical(s) of concern in soil and/or groundwater to which the restrictive covenant applies;

C. If applicable, specific areas within the property where specific activities or uses are restricted by the restrictive covenant (for example, areas where building construction is restricted or the installation of water wells is restricted);

D. All engineered features and monitoring points to which the restrictive covenant applies;

E. The location of the contamination source, if known and relevant to the purposes of the restrictive covenant; and

F. The direction(s) of groundwater movement in subsurface zone(s) affected by site-related chemical(s) of concern.

(B) A copy of the recorded restrictive covenant that references the book and page of recording shall be submitted to the department as part of the corrective action plan completion report.

(C) The use of a property shall be consistent with the terms of the restrictive covenant imposed on the property unless the department approves a change in the terms of the restrictive covenant. In such case, documentation of the change shall be recorded in the chain of title of the property and a copy of the materials recorded provided to the department program under which the restrictive covenant was first imposed.

(8) Ordinances and supporting memoranda of agreement. An ordinance adopted by a local government may be used as a land use control or, if the ordinance is applicable to a specific exposure pathway, to prevent exposures via that pathway. In either case, the ordinance may be used only if it is supported by a memorandum of agreement between the local government and the department.

(9) Engineered controls. Engineered controls or barriers, including access controls, may be used as a long-term stewardship measure as part of the corrective action plan to prevent direct human or environmental exposure to contaminants. An engineered control

or barrier may be used only if a restrictive covenant as described in section (7) of this rule is applied to the property to ensure long-term monitoring and maintenance of the engineered control or barrier. Inspection, maintenance and integrity certification requirements for the engineered control or barrier shall be included in the corrective action plan and restrictive covenant. The corrective action plan and the restrictive covenant shall include contingencies to address temporary breaches of an engineered control or barrier. Absent such a provision, temporary breaches of the control or barrier, unless caused by an unanticipated act of nature, are prohibited unless approved by the department. Any breach caused by an unanticipated act of nature shall be repaired in a timely manner.

(10) Well location and construction restriction rules, including but not limited to those in 10 CSR 23-3, may be used as a long-term stewardship measure to the extent that they restrict access to certain groundwaters and prevent exposure to contaminants.

(11) Applicability. Owners and operators shall use long-term stewardship measures that are appropriate for the exposure pathway or condition the measures are intended to address as part of the corrective action plan, with approval by the department, in accordance with the following provisions.

(A) Groundwater domestic use pathway. If following completion of corrective action activities concentrations of chemical(s) of concern exceed target levels applicable to the groundwater domestic use pathway and the pathway is complete under current or future conditions, one or more of the following long-term stewardship measures shall be used:

1. A restrictive covenant;

2. A local ordinance and supporting memorandum of agreement;

3. An engineered control including monitoring, maintenance, and periodic integrity certification accompanied by a restrictive covenant; or

4. Well location and construction requirements in 10 CSR 23-3.

(B) Vapor intrusion pathway. If following the completion of corrective action activities concentrations of chemical(s) of concern exceed target levels applicable to the indoor inhalation of vapor emissions from soil or groundwater exposure pathway for the future land use the department has determined applies to the property in accordance with 10 CSR 26-2.075(9)(A) and the pathway is complete under current or future conditions, one or more of the following long-term stewardship measures shall be used:

1. A restrictive covenant; or

2. An engineered control including monitoring, maintenance, and periodic integrity certification accompanied by a restrictive covenant.

(C) Other exposure pathways. For any other complete exposure pathway for which, following the completion of corrective action activities, concentrations of chemicals of concern exceed applicable target levels for the future land use the department has determined applies to the property in accordance with 10 CSR 26-2.075(9)(A), owners and operators may manage related risk, in whole or in part, through the

application of specific long-term stewardship measures if approved by the department. All such measures shall be proposed as part of the corrective action plan.

(D) Regardless of the exposure pathway, even where not required by the department, owners and operators may utilize a deed notice or other informational device or a restrictive covenant as an additional precaution at their discretion. If an owner or operator intends to use a deed notice or other informational device, a restrictive covenant, or any other additional long-term stewardship method or measure, the owner or operator may propose such as part of the corrective action plan.

AUTHORITY: 319.109 and 319.137 RSMo Supp. 2007.

Title 10 – DEPARMENT OF NATURAL RESOURCES
Division 26 – Petroleum and Hazardous Substance Storage Tanks
Chapter 2 – Underground Storage Tanks – Technical Regulations

PROPOSED RULE

PURPOSE: This rule explains when the department will make a no further remedial action determination, conditions applicable to such determination, content of the no further remedial action determination letter, and conditions under which the department may void such determination.

10 CSR 26-2.082 No Further Remedial Action Determinations

(1) The department will make a determination that no further remedial action is required at a site when the requirements of 10 CSR 26-2.070 through 10 CSR 26-2.082 are met to the satisfaction of the department.

(2) Owners and operators may request that the department make a determination of no further remedial action for a site when a risk assessment has been performed and the results approved by the department and, if a corrective action plan is required, the approved corrective action plan has been successfully implemented.

(3) The department will make a determination of no further remedial action for the site if the concentrations of chemicals of concern on the site do not pose an unacceptable level of risk to human health, public welfare and the environment for the current and reasonably anticipated future land use and all requirements of the approved corrective action plan have been satisfied, including implementation of approved long-term stewardship measures.

(4) The department's determination of no further remedial action for a site and issuance of a no further remedial action letter shall be contingent on the following conditions being met for a site:

(A) If relevant, the groundwater solute plume is stable or decreasing. If this condition is not satisfied, owners and operators shall continue groundwater monitoring on a schedule approved by the department until the plume is demonstrably stable, take actions to hasten stabilization of the solute plume, or conduct further evaluation to demonstrate that the lack of demonstrated solute plume stability will not result in excessive risk.

(B) The maximum concentration of any chemical of concern in any sample used in developing a representative concentration is less than ten times the representative concentration of that chemical of concern for any exposure pathway. This condition can be met if the high concentration can be explained by any of the following, appropriate action is taken to address the condition, and the department approves the risk assessment with this explanation:

1. The maximum concentration is an outlier;

2. The representative concentration was inaccurately calculated and is replaced with an accurately calculated representative concentration; or

3. Other explanation satisfactory to the department.

(C) Pursuant to 10 CSR 26-2.081, long-term stewardship is established if the concentration of any contaminant of concern exceeds applicable target levels for residential land use.

(D) There are no ecological concerns at the site, as determined by completion of the ecological risk assessment or confirmation that the maximum or representative concentrations of chemicals of concern are below levels protective of ecological receptors.

(5) A determination of no further remedial action for a site by the department will be documented in a letter provided to owners and operators and other such parties as may be appropriate.

(A) The department will include all of the following in the letter:

1. A statement that, based on the information available, the concentrations of chemicals of concern on the site do not pose an unacceptable level of risk to human health, public welfare and the environment for the current and reasonably anticipated future land use as long as all applicable long-term stewardship requirements, if any, are met now and in the future;

2. A description of the site by legal description, by reference to a plat showing the boundaries, or by other means the department determines sufficient to identify site location, any of which may be an attachment to the letter;

3. An acknowledgement that the requirements of the corrective action plan were satisfied, including reference to the administrative record supporting completion of the site work, and acknowledging continuing requirements of the corrective action plan, if any;

4. A statement regarding applicable property use in light of remediation objectives and specification of any long-term stewardship requirements imposed as part of the remediation efforts;

5. A statement that, based upon a review of reports pertaining to the site that were submitted to the department, no further remedial action is required regarding the specific release or releases at the site as long as continuing requirements, if any, of the approved corrective action plan are met now and in the future;

6. A statement, if relevant, prohibiting use of the site in a manner inconsistent with any activity and use limitation imposed as a result of the corrective action efforts without additional appropriate corrective action activities;

7. A description of any preventive, engineered or institutional controls or monitoring, including long-term monitoring of wells, required in the approved corrective action plan or a reference identifying where corrective action plan information can be found;

8. A statement, if relevant, describing any denial of access to adjacent and nearby property and the property to which access was denied and any resulting

limitations in conducting site characterization, risk assessment, or corrective action;

9. Notification that further information regarding the site can be obtained from the department through a request under the Missouri Sunshine Law (Chapter 610, RSMo.);

10. A standard department reservation of rights clause for previously unknown or changing site conditions; and

11. Notification that the determination of no further remedial action may be voided for reasons listed in 10 CSR 26-2.082(7).

(6) No site with an activity and use limitation or other long-term stewardship requirements may be used in a manner inconsistent with such activity and use limitation or other requirements unless further evaluation demonstrates, or corrective action results in, the attainment of objectives appropriate for the new land use or activity. If the department approves modified long-term stewardship requirements, an updated letter reflecting the new site conditions and requirements may be obtained and recorded as described above.

(7) The department may void a determination of no further remedial action if site use and activities are not managed in full compliance with the approved corrective action plan.

(A) Specific acts or omissions that may result in voiding of the determination include and are not limited to:

1. Failure to adhere to the terms of an activity and use limitation;

2. Failure to adhere to any other applicable long-term stewardship measure or environmental limitation;

3. The failure of owners and operators or any subsequent transferee to operate and maintain preventive or engineered controls, to comply with any monitoring plan, or to disturb the site contrary to the established limitations;

4. Disturbance or removal of contamination that has been left in place if such disturbance or removal is not in accordance with the corrective action plan;

5. Failure to comply with the recording requirements or to complete them in a timely manner; or

6. Obtaining the determination of no further remedial action by fraud or misrepresentation.

(B) The department may void the determination of no further remedial action if information becomes available to indicate that contaminants, releases, or other site-specific conditions are present at a site and were not accounted for in the risk assessment and corrective action plan and pose or may pose a threat to human health, public welfare or the environment.

(C) If the department voids a determination of no further remedial action, it may provide a letter to the party or parties to whom the no further remedial action determination letter was originally provided and to other involved or affected parties

explaining that the no further remedial action determination is void and why, place a notice to that effect in the chain of title, pursue enforcement action, declare an environmental emergency, or take other actions to protect human health, public welfare or the environment.

AUTHORITY: 319.109 and 319.137 RSMo Supp. 2007.