(Yellow shaded text reflects changes based on comments)

1301:7-9-13 Petroleum UST Corrective Action

(A) Purpose and scope.

For the purpose of prescribing rules in accordance with division (A) of section 3737.88 and division (B) of section 3737.882 of the Revised Code, the state fire marshal hereby adopts this rule to establish release reporting and corrective action requirements for underground storage tanks containing petroleum products. This rule is adopted by the state fire marshal in accordance with Chapter 119 of the Revised Code and shall not be considered a part of the Ohio State Fire Code.

(B) Applicability.

(1) For releases reported on or after the effective date of this rule, owners and operators shall conduct corrective action in accordance with this rule.

(2) For releases reported prior to the effective date of this rule, owners and operators **~~may elect to conduct corrective action in accordance with this rule by submitting a letter to the state fire marshal stating their election to conduct corrective actions in accordance with this rule.~~** **may either:**

(a) Elect to conduct corrective action in accordance with this rule by submitting a letter to the state fire marshal stating their election to conduct corrective actions in accordance with this rule, or

(b) Continue to conduct corrective action in accordance with the previous version of OAC 1301:7-9-13 under which corrective actions are currently being conducted. If an owner or operator fails to meet a compliance deadline while conducting corrective action under a previous version of this rule, the state fire marshal may, in his sole discretion, transfer the release to the current version of this rule.

(3) An owner or operator may make the election described in paragraph (B)(2)(b) of this rule at any time. Once made, the election is permanent. **~~Owners and operators conducting corrective actions in accordance with a previous version of OAC 1301:7-9-13, may continue to conduct corrective actions in accordance with that version until October 1, 2012. Thereafter, owners and operators shall conduct corrective actions in accordance with this rule.~~**

~~(4) Owners and operators may request an extension of time pursuant to paragraph (Q) of this rule to continue corrective actions under a previous version of this rule where good cause exists as determined by the state fire marshal. The state fire marshal may grant, modify or deny any extension request at his sole discretion.~~

(C) Definitions.

(1) "Action levels" means non-site-specific concentrations for chemical(s) of concern that are protective of human health utilized during the tier 1 source investigation and delineation process specified in paragraphs (J)(2) and (J)(3) of this rule.

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(2) "Adjacent property" means a property or properties whose borders are contiguous or partially contiguous with that of an UST site, or would be contiguous or partially contiguous with that of an UST site but are separated by a street, road or other public thoroughfare.

(3) "Chemical(s) of concern" means the chemical or specific constituents of the petroleum released that are identified for evaluation during the corrective action process.

(4) "Delineation levels" means non-site specific concentrations of chemical(s) of concern that are designed to determine the most likely distribution of chemical(s) of concern in soil and ~~ground water~~ **groundwater**.

(5) "Drinking Water Source Protection Area" means the surface and subsurface area surrounding a public water supply well(s) supplying a community public water system, a non-community non-transient public water system, or a non-community transient public water system which will provide water from an aquifer to the well(s) within five years as delineated or endorsed by the Ohio Environmental Protection Agency under Ohio's Wellhead Protection and Source Water Assessment and Protection Programs.

(6) "Engineering controls" means physical modifications, (e.g., slurry walls, capping, vapor controls, point of use water treatment) that are recorded in an environmental covenant, for the purposes of reducing or eliminating the potential for exposure to a chemical(s) of concern.

(7) "Environmental media" includes, but is not limited to air, soil, ~~ground water~~ **groundwater** and surface water.

(8) "Exposure assessment" means the qualitative or quantitative determination or estimation of the magnitude, frequency, duration and route of exposure between a source area and a receptor.

(9) "Exposure pathway" means a mechanism by which an individual or population may be exposed to a chemical(s) of concern originating from an UST site. Each exposure pathway includes a source or release from a source, a point of exposure, and an exposure route. If the point of exposure is not at the source, a transport medium (e.g., air or water) also is included.

(10) "Exposure route" means the manner in which a chemical(s) of concern may come into contact with a receptor (e.g., ingestion, inhalation, dermal contact).

(11) "Free product" means a **regulated substance that is present as a non-aqueous phase** ~~separate~~ liquid**.** ~~hydrocarbon phase that has a measured thickness of greater than one one-hundredth of a foot~~.

(12) "~~Ground water~~ **Groundwater**" means water underlying an UST site in a saturated zone that:

(a) Is capable of yielding a minimum of one and one-half gallons of water within eight hours of purging; and

(b) Has an in situ hydraulic conductivity greater than 5.0×10^{-6} centimeters per second.

(13) "Institutional controls" means the restriction on use or access (e.g., engineering controls or environmental covenants) to an UST site to eliminate or minimize potential exposure to a chemical(s) of concern.

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(14) "Immediate Corrective Action" means the course of action to mitigate fire, explosion, vapor and safety hazards, including immediate or short-term abatement or containment measures to prevent the spread of a release.

(15) "Interim Response Action" means the course of action taken prior to implementation of a remedial action to reduce further migration of chemicals of concern in their vapor, dissolved, or liquid phase, to reduce or eliminate the concentration of chemical(s) of concern at a source area(s) and/or in soil requiring treatment, or to otherwise eliminate exposure pathways. Interim response actions are not immediate corrective actions or remedial actions. Examples of interim response actions include, but are not limited to, over-excavation of a former UST area, and short-term dual-phase extraction in a source area.

(16) "Natural attenuation" means the reduction in the concentration(s) of chemicals of concern in environmental media due to a combination of one or more naturally occurring physical, chemical or biological processes (e.g., diffusion, dispersion, absorption, chemical degradation and biodegradation).

(17) "Non-residential land use" means land use that does not meet the criteria for residential land use. Non-residential land use includes, but is not limited to, commercial and industrial land use.

(18) "Overfill" is a release that occurs when an UST is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment.

(19) "Petroleum contaminated soil" means soil that contains chemical(s) of concern that exceed one or more of the re-use levels set forth in paragraph (D) of rule 1301:7-9-16 of the Administrative Code.

(20) "Physical discovery" means:

(a) The presence of **measurable** free product discovered during removal of any portion of an UST system, in an excavation on an UST site or on a property nearby an UST site;

(b) The discovery of petroleum product or petroleum product vapors in any of the following locations on an UST site or on a property nearby an UST site:

(i) in a building;

(ii) within or along building foundations or other subsurface manmade structures such as basements, pedestrian tunnels, and utility vaults;

(iii) within or along sewer **and utility** lines; or

(iv) in a drinking water well.

(c) The presence of free product in a monitoring or observation well located on an UST site or on property nearby an UST site;

(d) The presence of petroleum products observed on a surface water body located on an UST site or on property nearby an UST site suspected to have arisen from a release from that UST system;

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(e) Laboratory analytical results which are above action levels set forth in paragraph (J) from a study or survey of an UST site or on property nearby other than from a site check conducted in accordance with paragraph (F)(3) of this rule or a Tier 1 Source Investigation conducted in accordance with paragraph (H)(1) of this rule;

(f) Evidence of petroleum product in soil or fill material or evidence of a component that has leaked or is leaking, observed during activities conducted pursuant to paragraph (I)(1)(c) of rule 1301:7-9-12 of the Administrative Code including, but is not limited to, observing petroleum liquid in or on the soil or fill material in the excavation/modification areas; or

(g) Evidence of petroleum product in soil or fill material or evidence of a component that has leaked or is leaking, observed during activities **conducted** pursuant to paragraph (I)(1)(c) of rule 1301:7-9-12 of the Administrative Code, including, but is not limited to, observing petroleum liquid leaking, emitting, discharging, or escaping from the UST system, or observing petroleum product residue on components of the UST system or below the UST system components.

(21) "Point(s) of demonstration" means a location(s) selected between the source area(s) and the potential point(s) of exposure where concentrations of chemical(s) of concern must be at or below a determined target level in environmental media that is protective of human health and the environment at the point of exposure.

(22) "Point(s) of exposure" means the point(s) at which a receptor may come in contact with a chemical(s) of concern originating from an UST site.

(23) "Reasonably anticipated future use" means future use of a UST site that can be predicted with a reasonably high degree of certainty given historical use, current use, and local government planning and zoning.

(24) "Receptors" means aquatic life populations in a surface water body or person(s) that are or may be exposed to chemical(s) of concern from the release.

(25) "Release" means any spilling, leaking, emitting, discharging, escaping, leaching or disposing of a petroleum product from an UST system into the ~~ground water~~ **groundwater**, a surface water body, subsurface soil or otherwise into the environment.

(26) "Residential land use" means land use where the current or intended use includes, but is not limited to, housing (single and multiple dwellings), educational facilities, day care, agricultural land, correctional facilities, custodial care or long term health care.

(27) "Saturated zone" means a part or layer of the earth's crust, excluding the capillary zone, in which all voids are filled with water.

(28) "Site conceptual exposure model" means the integrated representation of the complete and potentially complete exposure pathways at a UST site.

(29) "Site-specific target levels (SSTL)" means risk-based concentrations for chemical(s) of concern that are protective of human health and the environment developed for a particular UST site under the Tier 2 or Tier 3 evaluations.

(30) "Source area(s)" means the location of free product, the location of the highest measured soil and/or ~~ground water~~ **groundwater** concentrations of the chemical(s) of concern or the location

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where the petroleum product was released.

(31) "Spill" means the following:

(a) a release resulting from improper transfer practices to an UST system including, without limitation, the disconnecting of a delivery hose from a tank's fill pipe before the hose has drained completely, or

(b) any spilling, leaking, emitting, discharging, escaping, or disposal of a petroleum product into ~~ground water~~ **groundwater**, a surface water body, subsurface soil or otherwise into the environment while transferring or attempting to transfer petroleum products into an UST system.

(32) "Surrounding area" means an area within one thousand five hundred feet of an existing or previously removed UST system.

(33) "Surface water body" means a body of water greater than one acre in size or a river, creek or stream.

(34) "Suspected release" means evidence ~~of~~ **that** a release **may have occurred** ~~obtained~~ through one or more of the following events:

(a) Monitoring results**, including investigation of an alarm,** from a release detection method required by rule 1301:7-9-07 of the Administrative Code that indicate a release may have occurred unless:

(i) The monitoring device is found to be defective, and is immediately **repaired,** recalibrated or replaced, and additional monitoring does not confirm the initial result; ~~or~~

(ii) **The leak is contained in the secondary containment and:**

(*a*) Except as provided for in rule 1301:7-9-07 of the Administrative Code, any liquid in the interstitial space not used as part of the interstitial monitoring method is immediately removed,

(*b*) Any defective system equipment or component is immediately repaired or replaced;

(iii) In the case of **an** inventory control **discrepancy or inconclusive statistical inventory reconciliation (SIR) results**, **described in rule 1301:7-9-07 of the Administrative Code,** a second month of data does not confirm the initial result **or the evaluation of the discrepancy determines that no release has occurred**; **or**

(iv) The alarm was investigated and determined to be a non-release event (for example, from a power surge or caused by filling the tank during release detection testing);

(b) Unusual operating conditions ~~are~~ observed by the owners and operators **(such as erratic behavior of product dispensing equipment, the sudden loss of product from the UST system, an unexplained presence of water in the tank, or liquid in the interstitial space of secondarily contained systems), unless all of the following apply** ~~unless the system equipment is found to be defective but not leaking and is immediately repaired or~~

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~~**replaced. Such unusual operating conditions shall include, without limitation, the erratic behavior of petroleum dispensing equipment, the sudden loss of petroleum from an UST system or an unexplained presence of water in the tank**~~**;**

(i) The system equipment or component is found not to be releasing substances to the environment;

(ii) Any defective system equipment or component is immediately repaired or replaced; and

(iii) For secondarily contained systems, any liquid in the interstitial space not used as part of the interstitial monitoring method is immediately removed;

(c) The presence of free product discovered in the ~~**secondary**~~ containment **sump** or interstitial space of the UST system, other than spill prevention equipment, on an UST site; or

(d) Physical discovery.

(35) "Confirmed Release" means chemical(s) of concern in subsurface soil or ~~**ground water**~~ **groundwater** on an UST site found in concentrations above the action levels specified in paragraph (J) of this rule and confirmed through laboratory analysis of samples during:

(a) A closure assessment conducted pursuant to rule 1301:7-9-12 of the Administrative Code; or

(b) A Site Check conducted pursuant to paragraph (F)(3) of this rule.

(36) "Voluntary corrective action" means any and all corrective action undertaken by a person who is not an owner or operator, or otherwise potentially liable for the costs of corrective action pursuant to section 3737.89 of the Revised Code in response to a release or suspected release from a petroleum UST system for the purpose of meeting applicable standards established by this rule.

(D) Reporting of releases and suspected releases.

(1) Owners and operators shall report a suspected release to the state fire marshal and the local fire department within twenty-four hours of discovery by the owners or operators.

(2) Owners and operators shall report a release to the state fire marshal and the local fire department within twenty-four hours of discovery by the owners or operators.

(E) Reporting and cleanup of spills and overfills.

If a spill or overfill occurs while transferring or attempting to transfer petroleum product into an UST system, one of the following activities must be conducted:

(1) Spills and overfills of petroleum product that consist of more than twenty-five gallons of petroleum product shall be reported by the owners or operators to the state fire marshal and the local fire department within twenty-four hours of discovery. Owners and operators shall immediately contain to the extent practicable and immediately clean-up the spill or overfill. Owners and operators shall perform a Site Check in accordance with paragraph (F)(3) of this rule.

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(2) If the spill or overfill of petroleum products does not enter a nearby surface water body, stormwater system, monitoring well or observation well, and no more than twenty-five gallons of petroleum product has been released to the environment, owners and operators shall immediately contain and clean up the spill or overfill to pre-release conditions. If the clean-up is accomplished within twenty-four hours, then no further corrective action activities shall be required and the owner and operator do not need to report the spill or overfill to the state fire marshal. If the clean-up is not completed within twenty-four hours, owners and operators shall immediately notify the state fire marshal and the local fire department and perform a Site Check in accordance with paragraph (F)(3) of this rule.

(3) If the spill or overfill of petroleum product of any amount enters a nearby surface water body, stormwater system, monitoring well or observation well, owners and operators shall immediately contain to the extent practicable and immediately clean-up the spill or overfill, shall report the spill or overfill to the state fire marshal and the local fire department within twenty-four hours of discovery, and shall perform a Site Check in accordance with paragraph (F)(3) of this rule.

(F) Investigating releases and suspected releases.

The purpose of investigating releases and suspected releases is to determine if a closed-in-place, removed, or existing UST system is leaking or has leaked, to identify the source of a release, to determine whether free product exists, and to determine if concentrations of chemicals of concern in soil and/or groundwater are present above action levels. If concentrations of chemicals of concern in soil and/or groundwater are detected above action levels, the owner and operator shall perform a Tier 1 Source Investigation in accordance with paragraph (H) of this rule.

(1) UST system evaluation.

Owners and operators shall inspect for above ground releases or exposed below ground releases. If testing or other evidence confirms that a release has or continues to occur from an UST system, activities pursuant to paragraph (G)(1) of this rule shall be conducted to stop any further releases into the environment.

(2) Tightness test.

(a) For an existing UST system, where the owner and operator has not identified which component of the UST system has caused the release or suspected release, owners and operators shall conduct a tightness test of the entire UST system, as follows:

(i) The tightness test shall be performed before repairing the UST system.

(ii) The tightness test shall be conducted within seven days of the discovery of the release or suspected release in accordance with paragraph (F) of rule 1301:7-9-07 of the Administrative Code.

(iii) Within twenty-four hours of the receipt of the results, owners and operators shall notify the state fire marshal of the results of the test by telephone, electronic mail or facsimile.

(iv) Within seven days of performing the tightness test, owners and operators shall submit the test results and supporting data, to the state fire marshal on a form prescribed by the state fire marshal.

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(b) For an existing UST system where the owner and operator has identified which component of the UST system has caused the release or suspected release, a tightness test of the component shall be conducted. If the owner and operator elects to repair the UST system component before the tightness test is performed or if repairs to the UST system component are necessary in order to achieve a passing tightness test, a Site Check in accordance with section (F)(3) of this rule must be performed in addition to any repair(s) required to mitigate further release of petroleum from the UST system. The tightness test shall be performed as follows:

(i) The tightness test shall be conducted within seven days of the discovery of the release or suspected release in accordance with paragraph (F) of rule 1301:7-9-07 of the Administrative Code.

(ii) Within twenty-four hours of the receipt of the results, owners and operators shall notify the state fire marshal of the results of the test by telephone, electronic mail or facsimile.

(iii) Within seven days of performing the tightness test, owners and operators shall submit the test results and supporting data, to the state fire marshal on a form prescribed by the state fire marshal.

(c) If a release is suspected because of the presence of free product discovered in the ~~secondary~~ containment **sump** or interstitial space of the UST system on an UST site, owners and operators shall:

(i) Conduct a tightness test of the ~~secondary~~ containment **sump** or interstitial space of the UST system in accordance with paragraphs (F) of rule 1301:7-9-07 of the Administrative Code to demonstrate that the ~~secondary~~ containment **sump** or interstitial space of the UST system is tight **within seven days of the discovery of free product**.

(a) In the case of free product in a containment sump, ~~The~~ **the** test **may** ~~must~~ be conducted ~~before the secondary containment~~ **before or after the repair to the leaking component as long as no repairs or alterations were made to the containment sump prior to the hydrostatic test.** ~~or~~

(b) In the case of free product in the interstitial space, the test must be conducted before the UST system is repaired**.** ~~and within seven days of discovery of free product~~**.**

Within twenty-four hours of the receipt of the results **of the test**, owners and operators shall notify the state fire marshal of the results ~~of the test~~ by telephone, electronic mail or facsimile. Within seven days of performing the ~~tightness~~ test, **owners and operators shall** submit the results **to the state fire marshal**~~,~~ in writing on a form prescribed by the state fire marshal~~, to the state fire marshal~~, or

(ii) Conduct a Site Check pursuant to paragraph (F)(3) of this rule.

(3) Site Check.

(a) Requirements.

Owners and operators shall conduct a Site Check to determine whether subsurface soil or ~~ground water~~ **groundwater** on an UST site have concentrations of chemical(s) of concern

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above the action levels set forth in paragraph (J) of this rule and must submit a written report consistent with the requirements of one of the options described in paragraph (F)(3)(b) of this rule within ninety days of the following:

(i) **A**~~a~~ release to the environment as defined in paragraph (C)~~(25)~~ of this rule,

(ii) **A**~~a~~ failed tightness test,

(iii) **Repairing** ~~repairing~~ an UST system before conducting a tightness test as required by paragraph (F)(2) of this rule,

(iv) **Determining** ~~determining~~ that the ~~secondary~~ containment **sump** or interstitial space of the UST system is not tight,

(v) **Physical** ~~physical~~ discovery as defined in paragraph (C)(20) of this rule, or

(vi) **The** ~~the~~ occurrence of a spill or overfill requiring a Site Check pursuant to paragraph (E) of this rule.

Notwithstanding paragraph (F)(3)(a)(ii), a Site Check is not required if a release was suspected because of the presence of free product discovered in the ~~secondary~~ containment **sump** or interstitial space of the UST system, the tests conducted pursuant to paragraph (F)(2)(c) of this rule indicate the ~~secondary~~ containment **sump** and/or interstitial space of the UST system meet the performance standards of paragraph (F) of rule 1301:7-9-07 of the Administrative Code, and the owner and operator demonstrate that all product was contained within the ~~secondary~~ containment **sump and/or interstitial space of the UST** system.

(b) Options.

A Site Check to determine the presence and concentrations of chemical(s) of concern in the source area(s) shall consist of one or more of the following:

(i) Conduct a Tier 1 Source Investigation pursuant to paragraph (H) of this rule.

(ii) Closure of an UST system or portion of an UST system that is the potential source of the suspected release in accordance with rule 1301:7-9-12 of the Administrative Code. At least one of the samples required under rule 1301:7-9-12 of the Administrative Code shall be biased towards the areas suspected to have the highest concentration of chemical(s) of concern resulting from the suspected release. The owners and operators shall obtain prior approval from the state fire marshal for the closure or removal of an UST system or any portion of an UST system if any of the following conditions exist:

(a) The ~~ground water~~ **groundwater** is known or suspected to contain concentrations of chemical(s) of concern;

(b) Free product is present;

(c) A receptor is known to be impacted by the release;

(d) A surface water body is known to be impacted by the release;

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(e) The UST site is in a **sole source aquifer** ~~**sensitive area as defined in rule 1301:7-9-09 of the Administrative Code**~~;

(*f)* The UST site is in a Drinking Water Source Protection Area; or

(g) A potable well is located on the UST site.

(iii) Collect a minimum of three samples from the native soil immediately below the source of the suspected release.

(a) Samples shall be biased towards the areas suspected to have the highest concentrations of chemical(s) of concern resulting from the suspected release. Samples from each soil boring or excavation shall be screened using headspace techniques and the sample with the highest field screening result from each location shall be submitted for laboratory analysis. If a saturated zone is encountered, a sample of the water shall be collected from that location and submitted for laboratory analysis. All laboratory samples must be analyzed for the appropriate chemical(s) of concern listed in paragraph (H)(1)(c) of this rule.

(b) Owners and operators shall prepare a site check report for the state fire marshal, which shall contain, at a minimum, a description of the nature and location of the suspected release, the type and location of samples collected, sampling methodologies and preservation techniques, soil boring logs, chain-of-custody(s) forms and laboratory analytical results. The letter report shall be submitted to the state fire marshal within ninety days of a failed tightness test, determining that the ~~**secondary**~~ containment **sump and/or the interstitial space of the UST** system is not tight, physical discovery or the occurrence of a spill or overfill as described in paragraph (E) of this rule.

(c) Owners and operators must obtain prior approval from the state fire marshal to conduct activities pursuant to this option, if any of the conditions in paragraphs (F)(3)(b)(ii)(*a*) to (F)(3)(b)(ii)(*g*) of this rule exist.

(c) Release determination.

As part of a Site Check conducted pursuant to paragraph (F)(3) of this rule, owners and operators shall determine the appropriate action levels for an UST site using the procedures set forth in paragraphs (H)(2) and (J) of this rule. If concentrations of chemical(s) of concern are at or below the appropriate action levels, then no further action is required. If concentrations of chemical(s) of concern at any location on an UST site, evaluated pursuant to paragraphs (F)(3)(b)(ii) and (F)(3)(b)(iii) of this rule, are above the action levels for an UST site, owners and operators shall conduct a Tier 1 Source Investigation pursuant to paragraph (H) of this rule.

(G) Immediate corrective actions.

(1) Mitigating releases from UST systems.

If testing or other evidence confirms that a release has occurred or continues to occur from an UST system, the owners and operators shall perform all of the following actions within twenty-four hours of discovery of the release:

(a) Take immediate action to prevent any further release of petroleum from an UST system into the

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environment, including removal of petroleum from an UST system as necessary to prevent further release into the environment;

(b) Inspect for above ground releases or exposed below ground releases and take steps to prevent further migration of such releases into surrounding soil, sewers, surface water, and ~~ground water~~ **groundwater** through the use of adsorbent pads, adsorbent booms, dikes, siphon dams and the like;

(c) Continue to monitor and mitigate any additional fire, health, and safety hazards posed by vapors or petroleum products that have migrated to subsurface structures, such as basements, sewers, or the like;

(d) Manage excavated soil containing concentrations of chemical(s) of concern in a manner that complies with applicable state and local requirements;

(e) If a receptor, as defined pursuant to paragraph (C) of this rule, is known to be impacted by a release, the owners and operators shall immediately identify and mitigate all fire, explosion, vapor and safety hazards and notify the state fire marshal within twenty-four hours, by telephone, electronic mail or facsimile, after starting such activities; and

(f) If a release is suspected to impact a drinking water well, owners and operators shall, within three days of discovery, have the drinking water well tested for the appropriate chemical(s) of concern listed in Table 1 of paragraph (H)(1)(c) of this rule. Within twenty-four hours of receipt of the test results, owners or operators shall notify the state fire marshal of the results by telephone, electronic mail or facsimile. Within seven days of receiving the analytical results, owners and operators shall, submit the written results to the state fire marshal.

(2) Immediate corrective action report.

Owners and operators shall submit a written report on a form prescribed by the state fire marshal within twenty days of starting any immediate corrective actions. At a minimum, the immediate corrective action report shall contain the following information:

(a) The date and time the release was discovered;

(b) The addresses and locations of buildings, sewers, surface water bodies and the like affected by the release;

(c) An overview of activities leading to the discovery of free product;

(d) The type and amount of product released;

(e) A description of the UST systems and operational status;

(f) A description of all completed and planned immediate corrective actions;

(g) The amount and disposition of any materials generated (e.g., soil and liquids), including any supporting documentation (e.g., copies of disposal receipts); and

(h) Copies of site maps, plans and photographs and other information that may assist in evaluating/investigating the release.

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(3) Free product removal and reporting.

Where free product is present, owners and operators shall perform all of the following activities:

(a) Immediately implement a free product recovery program that removes free product to the maximum extent practicable, at a minimum on a monthly basis, while continuing other actions required by this rule. In meeting the requirements of this paragraph, the owners and operators must use recovery techniques that:

(i) Remove free product in a manner that minimizes the spread of chemical(s) of concern into previously unimpacted zones and uses recovery techniques appropriate to the hydrogeologic conditions at an UST site. The owners and operators shall collect and dispose of recovered product in compliance with applicable federal, state and local laws; and

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

(b) Owners and operators shall notify the state fire marshal by telephone, electronic mail or facsimile within twenty-four hours of starting free product removal activities.

(c) Owners and operators shall submit a written report on a form prescribed by the state fire marshal, on a monthly basis until free product **recovery activities have been terminated in accordance with paragraph (G)(3)(f) of this rule** ~~**has been removed to the maximum extent practicable**~~. At a minimum, the free product recovery reports shall contain the following information:

(i) The name, address and facility identification number of an UST site;

(ii) Details of the free product recovery system (i.e. drawings, discharge locations, operations);

(iii) A scaled site map which accurately depicts the locations of all current and historical underground storage tank systems, property boundaries, street locations, above ground structures, underground utilities, and on-site potable wells, soil borings and monitoring wells;

(iv) Copies of installation, operation, treatment and discharge permits granted;

(v) A discussion of any free product recovery system malfunctions, if applicable;

(vi) The product thickness in wells, bore holes and excavations;

(vii) The gallons and type of free product recovered each month and to date;

(viii) The gallons of water recovered each month and to date;

(ix) The disposition of recovered free product and water; and

(x) A description of any changes or modifications to the free product recovery system.

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[Comment: Items (ii) through (iv) need only be submitted with the initial monthly free product recovery report]

(d) If a malfunction in a free product recovery system can not be repaired within twenty-four hours, owners and operators shall immediately report the malfunction to the state fire marshal by telephone, electronic mail or facsimile. The malfunction shall be corrected and the system placed back into service as soon as technically feasible.

(e) If free product is present one year after initiating free product recovery activities, the state fire marshal may require a written re-evaluation of recovery technique(s). The re-evaluation shall include a discussion of the reliability, effectiveness, cost and time needed for completing free product recovery.

(f) Free product removal activities may be terminated once free product **is a thickness of less than one one-hundredth of a foot for three consecutive months or as otherwise directed by the state fire marshal**~~, as defined in paragraph (C) of this rule, is no longer present on and off-site for three consecutive months~~. The state fire marshal shall be notified~~, in writing, within thirty days~~ of termination of free product recovery activities **on a form prescribed by the state fire marshal**.

(g) With prior approval from the state fire marshal, free product removal activities may be terminated once free product, as defined in paragraph (C) of this rule, has been removed to the maximum extent practicable **as determined by the state fire marshal**.

(h) With prior approval from the state fire marshal, owners and operators may submit the written report described in paragraph (G)(3)(c) of this rule to the state fire marshal on a quarterly basis ~~until free product has been removed to the maximum extent practicable~~.

(H) Tier 1 Source Investigation.

The purpose of the Tier 1 Source Investigation is to determine the concentrations of chemical(s) of concern in the source area(s) or to investigate a release or suspected release pursuant to paragraph (F)(3)(b)(i) of this rule or a confirmed release as defined in paragraph (C) of this rule. The Tier 1 Source Investigation shall consist of all of the following:

(1) Source Investigation.

(a) Potential source(s).

Identify the potential source(s). At minimum, the following potential source(s) located on an UST site shall be evaluated to determine the location of potential source area(s):

(i) Existing, abandoned or removed underground storage tanks;

(ii) Existing, abandoned or removed piping and dispenser areas; and

(iii) Areas of known or suspected surface spills of petroleum.

(b) Potential source area(s).

Identify the location of the potential source area(s). Potential source area(s) shall be identified

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based on the knowledge of the known release, the location of identified potential source(s) through field screening methods or a combination of these.

(c) Chemical(s) of concern.

The chemical(s) of concern shall be identified based on Table 1 using the following five analytical groups:

(i) Analytical Group 1 is for light distillate products including unleaded gasoline, leaded gasoline**, gasoline blended with alcohol, racing fuel,** and aviation gasoline;

(ii) Analytical Group 2 is for middle distillate products including diesel, **biodiesel blended with diesel,** light fuel oils, stoddard solvents, mineral spirits, kerosene, and jet fuels;

(iii) Analytical Group 3 is for heavy petroleum distillate products including, but not limited to, lubricating and hydraulic oils;

(iv) Analytical Group 4 is for used oil; and

(v) Analytical Group 5 is for unknown petroleum products or petroleum products other than those listed in analytical groups 1, 2, 3 and 4. Additional chemical(s) of concern and analytical methods must be selected, as appropriate, based on reasonably available information related to the product stored, including additives, impurities and degradation products. In addition, chemical(s) of concern should be selected based on their toxicity, mobility, and persistence in the environment. The owners and operators shall consult with the state fire marshal for the appropriate chemical(s) of concern for products not in analytical group 1, 2, 3 and 4.

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Table 1
Selected Chemical(s) of Concern

	Analytical Group Number	1	2	3	4	5	Analytical Methods[7]	
		Light Distillates	Middle Distillates	Heavy Distillates	Used Oil	Unknowns & Others	Soil [4] ****	~~Ground Water~~ Groundwater
	Chemical							
Aromatics	Benzene	x	x		x		8021 or 8260	8021 or 8260
	Toluene	x	x		x			
	Ethylbenzene	x	x		x			
	o, m and p-Xylenes	x	x		x			
	Naphthalene	x			x			
	1,2,4 - Trimethylbenzene	x			x			
Additives	Methyl tertiary-butyl ether (MTBE)	x			x		8021 or 8260	8021 or 8260
	1,2 – Dibromoethane (EDB) [5,6]	x			x		8260	8011
	1,2 – Dichloroethane (EDC) [5,6]	x			x		8260	8260
Polynuclear Aromatics	Benzo(a)anthracene		x	x	x		8270, 8310	8270, 8310
	Benzo(a)pyrene		x	x	x			
	Benzo(b)fluoranthene		x	x	x			
	Benzo(k)fluoranthene		x	x	x			
	Chrysene		x	x	x			
	Dibenz(a,h)anthracene		x	x	x			
	Indeno(1,2,3-c,d)pyrene		x	x	x			
	Naphthalene		x	x	x			
Chlorinated Hydrocarbons	Volatile Organic Hydrocarbons				x		8260	8260
Total Petroleum Hydrocarbons [1*]	TPH (C6 – C12)	x			x		8015	N/A
	TPH (C10 – C20)		x		x			
	TPH (C20 – C34)			x	x			
	Varies based on UST contents [2 **]			x	x	[3 ***]		

1 * TPH analysis is not required for ~~ground water~~ groundwater samples.
2 ** Additional chemicals of concern should be based on Material Safety and Data Sheets (MSDS) and analyzed with an appropriate laboratory test method capable of meeting established target levels.
3 *** Refer to paragraph (H)(1)(c)(v).
4 **** -Soil analytical results shall be reported on a dry weight basis.
5 EDB and EDC shall be analyzed for automotive gasoline USTs that were in service prior to January 1, 1996.
6 EDB and EDC shall be analyzed for all USTs containing aviation gasoline, racing fuel, and used oil.
7 Alternate laboratory methods will be considered if the methods meet the quality control, performance and method detection level requirements.

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(d) Subsurface Investigation.

(i) Objectives.

The subsurface investigation shall be conducted to collect the data necessary to complete the Tier 1 Source Investigation and to:

(a) Determine the presence and concentrations of chemical(s) of concern in the source area(s) for comparison to action levels in accordance with paragraphs (J)(2) and (J)(3) of this rule; and

(b) Determine the geologic, hydrogeologic and physical characteristics of an UST site and the surrounding area that may influence the migration and transport of chemical(s) of concern. This determination shall include, at a minimum, the following information:

(i) The direction and gradient of ~~ground water~~ **groundwater** flow (if ~~ground water~~ **groundwater** is encountered);

(ii) A description of faults, fissures, fractures, or other geologic transport routes;

(iii) A description of the soil type(s);

(iv) The depth to ~~ground water~~ **groundwater**; and

(v) The location and influence of man-made structures (e.g., sewers, water lines, etc).

(ii) Investigation of source area(s).

The presence and concentrations of chemical(s) of concern in the source area(s) shall be determined in accordance with all of the following:

(a) A minimum of three soil borings shall be located in the source area(s) to determine the concentration of chemical(s) of concern in soil. If the soil borings cannot be located in the source area(s), the soil borings shall be biased to the area of highest suspected concentration of chemical(s) of concern.

(b) A minimum of three ~~ground water~~ **groundwater** monitoring wells shall be located in the source area(s) to determine the concentration of chemical(s) of concern in ~~ground water~~ **groundwater**. If the monitoring wells cannot be located in the source area(s), the monitoring wells shall be biased to the area of highest suspected concentration of chemical(s) of concern.

(c) Non-intrusive or indirect field testing may be used to assist in selecting soil boring or monitoring well locations, but these techniques shall not be used to demonstrate that concentrations of chemical(s) of concern are below applicable action levels. Data collection shall consider the likely distribution and temporal variations of the chemical(s) of concern in the environmental media and the physical parameters necessary to determine hydrologic and geologic properties of environmental media.

(d) Soil borings and ~~ground water~~ **groundwater** monitoring wells shall be installed as follows:

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(i) Soil borings shall extend to the upper saturated zone, bedrock, or fifty feet, whichever shall be encountered first. If ~~ground water~~ **groundwater** is known to contain concentrations of chemical(s) of concern, borings shall extend to such ~~ground water~~ **groundwater** regardless of depth. If bedrock is encountered then soil borings and monitoring wells shall be installed as follows:

(A) If chemical(s) of concern in soil exceed soil-to-drinking water leaching action levels, a minimum of one monitoring well must be installed in the source area(s) to a maximum depth of fifty feet;

(B) If the saturated zone is known to contain concentrations of chemical(s) of concern, a minimum of one monitoring well must be installed in the source area(s) regardless of depth; and

(C) If the bedrock is a known drinking water source within the surrounding area, the state fire marshal reserves the right to request a bedrock monitoring well at depths greater than fifty feet;

(ii) Soil borings shall be continuously sampled and boring logs shall be prepared describing the stratigraphy from each soil boring location;

(iii) Boring logs shall be prepared and soil encountered during drilling shall be characterized in accordance with American Society of Testing and Materials (ASTM) D2488-00 (Standard Practice for Description and Identification of Soils/Visual-Manual Procedures) or the Unified Soil Classification System (USCS);

(iv) Data collection for monitoring wells shall include the depth to free product, free product thickness, depth of water below the top of the casing, and the elevation of the top of the casing;

(v) ~~Ground water~~ **Groundwater** monitoring wells shall be extended to the bottom of the saturated zone or a minimum of five feet into the saturated zone, whichever is less. ~~Ground water~~ **Groundwater** monitoring wells shall be screened to accommodate seasonal fluctuations in the ~~ground water~~ **groundwater** table. If the chemical and/or physical properties indicate the potential for downward migration of chemical(s) of concern, the state fire marshal may require alternate monitoring well installation protocol; and

(vi) Monitoring wells shall be clearly labeled with an identification that corresponds to the identifications submitted on site maps.

(e) ~~Ground water~~ **Groundwater** samples shall be collected from each monitoring well and analyzed, in an accredited laboratory, for the appropriate chemical(s) of concern listed in Table 1 of paragraph (H)(1) (c) of this rule.

(f) Soil samples from soil borings shall be collected and analyzed, in an accredited laboratory and reported on a dry weight basis, for the appropriate chemical(s) of concern listed in Table 1 of paragraph (H)(1)(c) of this rule. Soil samples shall be screened using headspace techniques. Soil samples shall be submitted for laboratory

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analysis using the following criteria:

(i) If ~~ground water~~ **groundwater** is encountered, the sample above the soil/water interface exhibiting the highest headspace vapor concentration and the sample immediately above the soil/~~ground water~~ **groundwater** interface, as encountered during drilling, shall be submitted for laboratory analysis. If the highest headspace reading is the sample immediately above the soil/~~ground water~~ **groundwater** interface, the sample with the highest and the second highest headspace reading above the soil/~~ground water~~ **groundwater** interface shall be submitted for laboratory analysis.

(ii) If ~~ground water~~ **groundwater** is encountered and no soil samples exhibit headspace readings above background levels, a sample shall be taken from immediately above the soil/water interface, as encountered during drilling, and submitted for laboratory analysis.

(iii) If no ~~ground water~~ **groundwater** is encountered, the sample with the highest headspace readings and the sample from the bottom of the boring shall be submitted for laboratory analysis.

(iv) If no ~~ground water~~ **groundwater** is encountered and no soil samples exhibit headspace readings above background levels, a sample shall be taken from the bottom of the boring and submitted for laboratory analysis.

(iii) ~~Ground water~~ **Groundwater** determination.

A determination of the existence of ~~ground water~~ **groundwater** shall be made by determining if a saturated zone has sufficient ~~ground water~~ **groundwater** yield to meet the minimum criteria for being ~~ground water~~ **groundwater**. For purposes of determining if the encountered saturated zone is ~~ground water~~ **groundwater**:

(a) Assume that the encountered saturated zone is ~~ground water~~ **groundwater**; or

(b) Demonstrate, through appropriate field methods, that the encountered saturated zone is not ~~ground water~~ **groundwater** as defined in paragraph (C) of this rule.

(2) Action level determination**.**

Upon completion of a Site Check pursuant to paragraph (F)(3) of this rule or a Tier 1 Source Investigation pursuant to paragraph (H) of this rule, owners and operators shall complete a site feature determination in accordance with paragraph (H)(2)(a) of this rule and a points of exposure determination in accordance with paragraph (H)(2)(b) of this rule to determine the appropriate action levels for an UST site pursuant to paragraphs (J)(2) and (J)(3) of this rule.

(a) Site feature determination.

(i) Identify the chemical(s) of concern in accordance with paragraph (H)(1)(c) of this rule.

(ii) For purposes of Site Check, Tier 1 Source Investigation and Tier 1 Delineation as described in paragraph (I) of this rule, the residential exposure scenario shall be used.

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(iii) Determine if the saturated zone is ~~ground water~~ **groundwater** in accordance with paragraph (H)(1)(d)(iii) of this rule. If a determination is not made in accordance with paragraph (H)(1)(d)(iii) of this rule or if a potable well exists on an UST site, then the saturated zone shall be assumed to be ~~ground water~~ **groundwater**.

(iv) Select a soil class using Table 2 that best represents each pathway to be evaluated utilizing the information obtained during the subsurface investigation conducted pursuant to paragraph (H)(1)(d)(ii)(*f*) of this rule.

(v) Action levels shall be determined by applying the ~~ground water~~ **groundwater** determination, depth-to-~~ground water~~ **groundwater** and soil class information to the action level tables in paragraph (J)(3) of this rule. An action level shall be identified for each environmental media and exposure pathway in accordance with paragraph (J)(2) of this rule.

Table 2
Soil Classification

Major Divisions			Letter Symbol	Typical Description	Soil Class
Coarse Grained Soils More than 50% of material is retained on #200 Sieve	Gravel and Gravelly Soils More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravels (Little or No Fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines	Class 1
			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines	
		Gravels with Fines (Appreciable Amount of Fines)	GM	Silty Gravels, Gravel-Sand-Silt Mixtures	
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures	
	Sand and Sandy Soils More than 50% of Coarse Fraction Passes thru No. 4 Sieve	Clean Sand (Little or No Fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines	
			SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines	
		Sands with Fines (Appreciable Amount of Fines)	SM	Silty-Sands, Sand-Silt Mixtures	
			SC	Clayey Sands, Sand-Clay Mixtures	Class 2
Fine Grained Soils More than 50% of material passes thru #200 Sieve	Silts and Clays Liquid Limit<50		ML	Inorganic Silt and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sand or Clayey Silts with Slight Plasticity	
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays	
			OL	Organic Silts and Organic Silty Clays of Low Plasticity	
	Silts and Clays Liquid Limit>50		MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soil	
			CH	Inorganic Clays of High Plasticity, Fat Clays	Class 3

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		OH	Organic Clays of Medium to Plasticity, Organic Silts	
Highly Organic Soils		PT	Peat, Humus, Swamp Soil with High Organic Contents	

(b) Point(s) of exposure.

For purposes of a Tier 1 Source Investigation, it is assumed that the point(s) of exposure will be located in the source area(s). Therefore, while movement of chemical(s) of concern outside the property lines of an UST site is not specifically evaluated in a Tier 1 Source Investigation, any identified current or potential future drinking water source in the surrounding area shall be assumed to be within the source area(s). The fate and transport of chemical(s) of concern in ~~ground water~~ **groundwater** will be evaluated under the Tier 2 Evaluation in paragraph (L) of this rule.

(3) Tier 1 Source Investigation reporting.

(a) Owners and operators shall prepare and submit on a form prescribed by the state fire marshal either a Tier 1 Evaluation report pursuant to paragraph (H)(3)(b) of this rule (if the concentrations of the chemical(s) of concern are below action levels) or a Tier 1 Notification pursuant to paragraph (H)(3)(c) of this rule (if the concentrations of the chemical(s) of concern are above action levels) within ninety days of the occurrence of any of the following:

(i) Receiving analytical results, which exceed action levels, pursuant to paragraph (F)(3)(c) of this rule;

(ii) Electing to conduct corrective actions pursuant to paragraph (B)(2)**(a)** of this rule;

(iii) Electing to conduct a Tier 1 Source Investigation pursuant to (F)(3)(b)(i) of this rule;

(iv) Receiving analytical results, which exceed action levels, from a closure assessment conducted pursuant to paragraph (I~~F~~) of rule 1301:7-9-12 of the Administrative Code; or

(v) ~~Conducting~~ **Receiving notice from the state fire marshal to conduct** corrective action activities pursuant to paragraph (B)~~(3)~~**(2)(b)** of this rule.

(b) If the concentrations of chemical(s) of concern are at or below action levels for all pathways, owners and operators shall submit a Tier 1 Evaluation report on a form prescribed by the state fire marshal limited to the information prescribed in paragraphs (I)(3)(b)(i) and (I)(3)(b)(ii) of this rule.

(c) If the concentrations of chemical(s) of concern are above the action level for one or more exposure pathways, owners and operators shall submit a Tier 1 Notification on a form prescribed by the state fire marshal and conduct a Tier 1 Delineation pursuant to paragraph (I) of this rule. The Tier 1 Notification shall include all of the following information:

(i) Owner and operator information including the following:

(a) Name of the owners and operators;

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(b) Address of an UST site; and

(c) Facility identification number.

(ii) A scaled site map which accurately depicts the locations of all known current and historical underground storage tank systems, property boundaries, street locations, above ground structures, underground utilities, on-site potable wells, and the following:

(a) Locations of all soil borings and associated analytical results, including depths at which samples were collected;

(b) Location of all monitoring wells and associated analytical results; and

(c) ~~Ground water~~ **Groundwater** flow gradient.

(iii) Attachments that include:

(a) Laboratory analytical sheets, including the chain-of-custody form(s);

(b) Soil boring logs/monitoring well construction diagrams that identify the location in decimal degrees accurate to within five feet of the actual location and reported to five decimal places; and

(c) A table which includes the appropriate soil class and action levels for each pathway.

(iv) A description of soil and ~~ground water~~ **groundwater** sampling procedures.

(I) Tier 1 Delineation.

The purpose of the Tier 1 Delineation is to define the vertical and horizontal extent of chemical(s) of concern in soil and ~~ground water~~ **groundwater** to the delineation levels (in all directions from the source areas(s)) and to determine the potential drinking water use at the site and surrounding area. A Tier 1 Delineation shall consist of the following:

(1) Assessment and delineation of chemical(s) of concern.

(a) Determine the distribution of chemical(s) of concern in accordance with the following:

(i) The distribution of chemical(s) of concern shall be defined to the delineation levels set forth in paragraph (J)(1) of this rule;

(ii) Soil borings and ~~ground water~~ **groundwater** monitoring wells shall be installed in accordance with paragraph (H)(1)(d)(ii) of this rule. If bedrock is encountered and concentrations of chemical(s) of concern in soil exceed soil-to-drinking water leaching action levels, a minimum of one monitoring well shall be installed in the source area(s) to ~~ground water~~ **groundwater**. The state fire marshal reserves the right to request a bedrock monitoring well at depths greater than fifty feet if the bedrock is a known drinking water source within the surrounding area. If any chemical(s) of concern are encountered in ~~ground water~~ **groundwater**, additional monitoring wells shall extend to such ~~ground~~

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~~water~~ **groundwater**:

(iii) Determine the geologic, hydrogeologic and physical characteristics of the UST site and the surrounding area that may influence the migration and transport of chemical(s) of concern. This determination shall include, at a minimum, the following information:

(a) The direction and gradient of ~~ground water~~ **groundwater** flow, if ~~ground water~~ **groundwater** is encountered;

(b) A description of faults, fissures, fractures, or other geologic transport routes;

(c) A description of the soil type(s);

(d) The depth to ~~ground water~~ **groundwater**; and

(e) The location and influence of man-made structures (e.g., sewers, water lines).

(iv) If the determination of the likely distribution of chemical(s) of concern requires off-site access, owners and operators shall use their best efforts to obtain permission to enter such off-site areas to complete the investigations required by this rule. If access cannot be obtained, the owners and operators shall submit notice to the state fire marshal within forty-five days after the owner and operator determines off-site access cannot be obtained. The notice shall describe the efforts taken by the owners and operators to obtain off-site access and the reasons why access could not be obtained. Owners and operators shall take additional action to obtain off-site access if required by the state fire marshal.

(b) Potable well locations.

Identify the source or sources of potable water for the UST site and the surrounding area, including the identification of all public and private drinking water wells and public water supply sources within the surrounding area. The evaluation of potable water supplies shall be based on reasonably available information including, but not limited to, information collected or maintained by the Ohio ~~Environmental Protection Agency~~ **environmental protection agency**, Ohio ~~Department of Natural Resources~~ **department of natural resources**, county health departments, and public water supply organizations.

(2) Potential drinking water use.

Determine if ~~ground water~~ **groundwater** is drinking or non-drinking water by utilizing the information obtained in the Tier 1 Source Investigation and the Tier 1 Delineation. The drinking water use determination shall be conducted in accordance with this paragraph. Evaluation of the drinking water exposure pathway may be conducted during the Tier 2 Evaluation to determine if the pathway is complete.

(a) The current and potential future use of ~~ground water~~ **groundwater** underlying the UST site and surrounding area shall be used to determine if ~~ground water~~ **groundwater** underlying the UST site is either a drinking water source or not a drinking water source. During the Tier 1 Delineation, the following assumptions about ~~ground water~~ **groundwater** shall be made:

(i) The ~~ground water~~ **groundwater** use to be evaluated shall be the upper most saturated zone underlying the UST site. If any evidence suggests the chemical(s) of concern are

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present in the lower saturated zones, they must also be evaluated; and

(ii) Any identified current or potential future drinking water source in the surrounding area shall be assumed to be within the source area(s).

(b) The evaluation of ~~ground water~~ **groundwater** use underlying the UST site and surrounding area shall be based on reasonably available information including, but not limited to, information collected or maintained by the ~~Bureau of Underground Storage Tank Regulations~~ **bureau of underground storage tank regulations**, Ohio ~~Environmental Protection Agency~~ **environmental protection agency**, Ohio ~~Department of Natural Resources~~ **department of natural resources** (including located and unlocated potable well logs), county health departments, and public water supply organizations.

(c) The ~~ground water~~ **groundwater** underlying the UST site and surrounding area shall be considered a drinking water source if any of the following apply:

(i) The UST site or surrounding area is located in a Drinking Water Source Protection Area as defined by paragraph (C) of this rule.

(ii) The UST site **is located in, or** ~~is~~ **within three hundred feet of, a sole source aquifer** ~~in a Sensitive Area as defined by rule 1301:7-9-09 of the Administrative Code~~.

(iii) An existing drinking water source in the ~~ground water~~ **groundwater** is identified within the surrounding area, even if the source is completed into a lower saturated zone than the saturated zone to be evaluated on the UST site. This identification shall include the information required in paragraph (I)(1)(b).

(iv) A surface water body is located within three hundred feet of the UST system.

(d) If the UST site does not meet the drinking water requirements of paragraph (I)(2)(c) of this rule, then ~~ground water~~ **groundwater** underlying the UST site shall be considered non-drinking water if any of the following apply:

(i) ~~Ground water~~ **Groundwater** in the upper saturated zone yields less than three gallons per minute;

(ii) ~~Ground water~~ **Groundwater** in the upper saturated zone has a background level of total dissolved solids of three thousand milligrams per liter or greater;

(iii) The UST site is located in an area where an urban setting designation pursuant to Chapter 3746 of the Revised Code and rules adopted thereunder has been approved by the director of Ohio ~~Environmental Protection Agency~~ **environmental protection agency** and the owner and operator verifies that the urban setting designation remains protective of the potable use pathway in accordance with rule ~~3745-300-10(D)(3)(b)~~ **3745-300-10(C)(3)(b)** of the Administrative Code;

(iv) No potable wells are located within three hundred feet of the UST site based on a physical survey and an ordinance requires a mandatory tie-in to a municipal water system for all properties in the surrounding area;

(v) No potable wells are located within three hundred feet of the UST site based on a physical

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survey and an ordinance prohibits the installation of potable water wells at all properties within the surrounding area;

(vi) No potable wells are located within three hundred feet of the UST site based on a physical survey and ~~100~~ **one hundred** percent of the properties within three hundred feet of the UST site are connected to a municipal water source or a municipal source is readily available; or

(vii) The UST site is greater than five acres, and at least one of the conditions apply:

(a) No potable wells are located within three hundred feet of the UST system based on a physical survey and an ordinance requires a mandatory tie-in to a municipal water system for all properties in the surrounding area;

(b) No potable wells are located within three hundred feet of the UST system based on a physical survey and an ordinance prohibits the installation of potable water wells at all properties within the surrounding area; or

(c) No potable wells are located within three hundred feet of the UST system based on a physical survey and one hundred percent of the properties within three hundred feet of the UST system are connected to a municipal water source or a municipal source is readily available.

(e) If ~~ground water~~ **groundwater** is not drinking water pursuant to paragraph (I)(2)(c) of this rule and does not meet one of the criteria in paragraph (I)(2)(d) of this rule, then ~~ground water~~ **groundwater** shall be considered drinking water.

(f) Action levels shall be determined by applying the ~~ground water~~ **groundwater** determination, depth-to-~~ground water~~ **groundwater** and soil class information to the action level tables in paragraph (J)(3) of this rule. An action level shall be identified for each environmental media and exposure pathway in accordance with paragraph (J)(2) of this rule.

(3) Tier 1 Source Investigation and Delineation reporting (Tier 1 Investigation Report).

The purpose of the Tier 1 Investigation Report is to summarize the Tier 1 Source Investigation and Tier 1 Delineation activities conducted pursuant to paragraphs (H) and (I) of this rule.

(a) Owners and operators shall prepare and submit a Tier 1 Investigation Report on a form prescribed by the state fire marshal pursuant to paragraph (J) of this rule, within one year of the occurrence of any of the following:

(i) Receiving analytical results, which exceed action levels, while conducting investigations pursuant to paragraph (F)(3)(b) of this rule;

(ii) Electing to conduct corrective actions pursuant to paragraph (B)(2)**(a)** of this rule;

(iii) Receiving analytical results, which exceed action levels, from a closure assessment conducted pursuant to paragraph **(I)**~~(F)~~ of rule 1301:7-9-12 of the Administrative Code; or

(iv) ~~Conducting~~ **Receiving notice from the state fire marshal to conduct** corrective action activities pursuant to paragraph (B)~~(3)~~**(2)(b)** of this rule.

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(b) The Tier 1 Investigation Report shall include the following information:

(i) A brief summary of any immediate corrective actions, including free product removal, soil excavation, and any actions taken to abate vapors or address safety concerns, including date(s) of each action, methods and techniques used, amount of material recovered, and current or most recent UST site conditions.

(ii) A summary of the Tier 1 Source Investigation activities pursuant to paragraph (H) of this rule and the Tier 1 Delineation activities pursuant to (I)(1) of this rule which includes the following information:

(a) A brief description of the UST site and surrounding area, including:

(i) The applicable 7.5 minute United States Geological Survey (USGS) quadrangle map including:

(A) UST site location, map number, longitude and latitude; and

(B) Location of the USGS quadrangle within the state boundaries.

(b) Underground storage tank information that includes current and historical use of the UST system, age of the UST system, materials of construction, size, contents, location and available precision test results;

(c) A site map which accurately depicts the locations of ~~known~~ **known** current and historical underground storage tank system(s), property boundaries, street locations, above ground structures, underground utilities, on-site potable well(s) and soil boring(s) and/or monitoring well(s) locations; and

(d) A summary of the data collection activities which includes, at a minimum, the following information:

(i) A summary of the rationale for sampling and testing locations;

(ii) A description of the field methodologies employed including, instrument calibration techniques and the make and model of equipment used;

(iii) Drilling logs and well construction diagrams which include:

(A) Type of sampler used (e.g., Shelby tube, California sampler, split-spoon);

(B) The organic vapor concentrations as determined by field screening techniques;

(C) A description of the presence of free product and its characteristics;

(D) Depth at which saturated conditions were first encountered during drilling and the depth of the static water level;

(E) A complete description of the soil sample for each interval including;

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(1) The color and moisture content;

(2) The USCS classification;

(3) The gradation consistency;

(4) A description of horizontal and/or vertical fracturing of bedrock encountered while drilling;

(5) The type and description of bedrock with differentiation between weathered and competent bedrock;

(6) A description of any voids or significant pressure changes observed in bedrock drilling;

(7) A graphic illustration of each sample interval.

(8) A description of which soil sample interval(s) were sent to the laboratory for analysis; and

(9) Amount of sample recovery for each interval in units of feet; and

(F) Coordinates of the boring location in decimal degrees accurate to within five feet of the actual location and reported to five decimal places.

(iv) Monitoring well development and sampling logs. The number and quantity of well purging volumes, date, sample appearance, time and duration of collection and development shall be documented.

(v) Depth-to-fluid, depth-to-water, free product thickness measurements, and top-of-casing and ~~ground water~~ **groundwater** elevations in tabular form for each well. When available, include historical data in the table and reference the source(s) of all information presented.

(vi) A ~~ground water~~ **groundwater** elevation contour map using all relevant monitoring wells to establish ~~ground water~~ **groundwater** contour and flow direction, the date that ~~ground water~~ **groundwater** measurements were collected and justification for the exclusion of specific monitoring wells in determination of flow direction, if applicable.

(vii) Analytical laboratory results including all of the following:

(A) Laboratory analyses in tabular form, by environmental medium, including applicable action levels. Present current results along with historical results, when available. Indicate sample collection date(s) and reference source(s) of all information presented. All tables shall include the corresponding method detection limit for each analysis that was below detection limits;

(B) Analytical results, quality assurance/quality control (QA/QC) procedures and data quality objectives including, without limitation, all laboratory certificates of analysis (data sheets), completed chain-of-custody forms indicating soil

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boring and/or monitoring well numbers and laboratory sample numbers; and

(C) Laboratory analysis summary form as prescribed by the state fire marshal.

(viii) Chemical(s) of concern concentration maps for soil in units of milligrams per kilogram (mg/kg) and ~~ground water~~ **groundwater** in units of milligrams per liter (mg/l). Maps shall include the location of sampling points, the depth of each soil sample interval and the location of source area(s). Maps shall include historical soil and ~~ground water~~ **groundwater** results for the release being investigated. Maps that include ~~ground water~~ **groundwater** data may be limited to the most recent four sampling events unless directed by the state fire marshal.

(ix) Documentation used to determine if the saturated zone is ~~ground water~~ **groundwater**.

(iii) Documentation justifying the potential drinking water use determination made pursuant to paragraph (I)(2) of this rule.

(iv) Documentation regarding off-site access pursuant to paragraph (I)(1)(a)(iv) of this rule, as appropriate.

(v) Documentation regarding the determination of action levels by applying the information on the potential drinking water use determination and soil class to the appropriate tables in paragraph (J)(3) of this rule.

(4) Tier 1 Investigation decision.

Upon submission of the Tier 1 Investigation report, the state fire marshal will evaluate the submitted information for completeness.

(a) If the concentrations of all chemical(s) of concern are at or below action levels determined in accordance with paragraph (I)(2)(f) of this rule for all applicable pathways, then no further action is required.

(b) If the concentrations of a particular chemical(s) of concern are at or below the action level(s) determined in accordance with paragraph (I)(2)(f) of this rule, then no further evaluation is necessary for that chemical of concern and for the corresponding exposure pathway.

(c) If the concentrations of chemical(s) of concern are above applicable action level(s) determined in accordance with paragraph (I)(2)(f) of this rule, and upon approval of the completeness of the Tier 1 Delineation, the owners and operators shall conduct one or a combination of the following:

(i) Conduct an Interim Response Action pursuant to paragraph (K) of this rule;

(ii) Conduct a Tier 2 Evaluation pursuant to paragraph (L) of this rule; or

(iii) Submit a Remedial Action Plan pursuant to paragraph (N) of this rule.

(J) Action and delineation levels.

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(1) Delineation levels.

The delineation levels in soil and ~~ground water~~ groundwater for chemical(s) of concern shall be as follows:

Chemicals of Concern	Groundwater (mg/l)	Soil (mg/kg)
Benzene	0.417	1.67
Toluene	217	1,240
Ethylbenzene	41.6	406
o, m and p-xylenes	10	42.7
Naphthalene	1.68	52.7
1,2,4 - Trimethylbenzene	0.417	5.35
Methyl tertiary-butyl ether (MTBE)	134	150
1,2 – Dibromoethane (EDB)	0.09	0.154
1,2 – Dichloroethane (EDC)	0.59	1.01
Benzo(a)anthracene	20.6	12
Benzo(a)pyrene	18.3	1.2
Benzo(b)fluoranthene	162	12
Benzo(k)fluoranthene	169	120
Chrysene	681	1,200
Dibenz(a,h)anthracene	22.5	1.2
Indeno(1,2,3 –c,d)pyrene	112	12
Light Distillate Fraction (C6-C12)	N\A	1,000
Middle Distillate Fraction (C10-20)	N\A	2,000
Heavy Distillate Fraction (C20-C34)	N\A	5,000

~~Chemicals of Concern~~	~~Ground water (mg/l)~~	~~Soil (mg/kg)~~
~~Benzene~~	~~0.428~~	~~1.04~~
~~Toluene~~	~~15.5~~	~~61.3~~
~~Ethylbenzene~~	~~38.1~~	~~199~~
~~o, m and p-xylenes~~	~~10~~	~~15.7~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~1,240~~	~~1,240~~
~~Benzo(a)anthracene~~	~~66.7~~	~~11~~
~~Benzo(a)pyrene~~	~~12.7~~	~~1.1~~
~~Benzo(b)fluoranthene~~	~~6.72~~	~~11~~
~~Benzo(k)fluoranthene~~	~~2380~~	~~110~~
~~Chrysene~~	~~715~~	~~1,100~~
~~Dibenz(a,h)anthracene~~	~~35.3~~	~~1.1~~
~~Indeno(1,2,3 –c,d)pyrene~~	~~202~~	~~11~~
~~Naphthalene~~	~~2.22~~	~~54~~

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(2) Action levels.

(a) If ~~ground water~~ **groundwater** is determined to be a drinking water source in accordance with paragraph (I)(2)(c) or (I)(2)(e) of this rule, then the maximum concentrations of each chemical of concern in soil and ~~ground water~~ **groundwater**, for the corresponding soil type, shall be compared to the applicable action levels in paragraph (J)(3) of this rule, for the following pathways:

(i) ~~Ground water~~ **Groundwater** ingestion;

(ii) Direct contact with soil;

(iii) Soil to drinking water leaching;

(iv) Soil to indoor air;

(v) ~~Ground water~~ **Groundwater** to indoor air;

(vi) ~~Ground water~~ **Groundwater** to outdoor air; and

(vii) Soil to outdoor air.

(b) If ~~ground water~~ **groundwater** is determined to be non-drinking water in accordance with paragraph (I)(2)(d), then the maximum concentrations of each chemical of concern in soil and ~~ground water~~ **groundwater**, for the corresponding soil class, shall be compared to the applicable action levels in paragraph (J)(3) of this rule, for the following tables:

(i) Direct contact with soil;

(ii) Soil to non-drinking water leaching;

(iii) Soil to indoor air;

(iv) ~~Ground water~~ **Groundwater** to indoor air;

(v) ~~Ground water~~ **Groundwater** to outdoor air; and

(vi) Soil to outdoor air.

(c) If no ~~ground water~~ **groundwater** has been encountered as defined in paragraph (C)~~(12)~~ of this rule, then the maximum concentrations of each chemical of concern in soil, for the corresponding soil class, shall be compared to the applicable action levels in paragraph (J)(3) of this rule, for the following pathways:

(i) Direct contact with soil;

(ii) Soil to indoor air; and

(iii) Soil to outdoor air.

(3) Action level look-up tables.

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(a)The action levels in ~~ground water~~ groundwater for the ~~ground water~~ groundwater ingestion pathway for chemical(s) of concern shall be as follows:

~~Ground Water~~ Groundwater Ingestion Action Levels

Chemicals of Concern	Action Levels
Benzene	0.005
Toluene	1
Ethylbenzene	0.7
o, m and p-Xylenes	10
Naphthalene	0.0014
1,2,4 - Trimethylbenzene	0.015
Methyl tertiary-butyl ether (MTBE)	0.120
1,2 – Dibromoethane (EDB)	0.00005
1,2 – Dichloroethane (EDC)	0.005
Benzo(a)anthracene	0.00092
Benzo(a)pyrene	0.0002
Benzo(b)fluoranthene	0.00092
Benzo(k)fluoranthene	0.0092
Chrysene	0.092
Dibenz(a,h)anthracene	0.000092
Indeno(1,2,3-c,d)pyrene	0.00092

~~Chemicals of Concern~~	~~Action Levels~~
~~Benzene~~	~~0.005~~
~~Toluene~~	~~1~~
~~Ethylbenzene~~	~~0.7~~
~~o, m and p-Xylenes~~	~~10~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~0.04~~
~~Benzo(a)anthracene~~	~~0.00026~~
~~Benzo(a)pyrene~~	~~0.0002~~
~~Benzo(b)fluoranthene~~	~~0.00017~~
~~Benzo(k)fluoranthene~~	~~0.0017~~
~~Chrysene~~	~~.047~~
~~Dibenz(a,h)anthracene~~	~~0.0002~~
~~Indeno(1,2,3-c,d)pyrene~~	~~0.00022~~
~~Naphthalene~~	~~0.14~~

All chemical concentrations expressed in milligrams per liter (mg/L).

(b) The action levels in ~~ground water~~ groundwater for the ~~ground water~~ groundwater to indoor air pathway for chemical(s) of concern shall be as follows for the applicable soil type and depth to ~~ground water~~ groundwater:

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Soil Class 1

Chemicals of Concern	Groundwater to Indoor Air							
	<15 Feet		15-30 Feet		31-50 Feet		>50 Feet	
	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.
Benzene	4.17	26.1	4.18	26.1	4.24	26.5	4.31	27.0
Toluene	2,170	35,200	2,170	35,300	2,210	35,800	2,240	36,400
Ethylbenzene	416	6,760	417	6,760	423	6,860	430	6,980
o, m and p-Xylenes	50.7	822	50.7	823	51.5	835	52.4	849
Naphthalene	16.8	105	16.8	105	17.1	107	17.4	109
1,2,4 - Trimethylbenzene	4.17	67.6	4.17	67.6	4.23	68.7	4.31	69.8
MTBE*	1,340	8,360	1,340	8,370	1,360	8,500	1,380	8,660
1,2 – Dibromoethane (EDB)	0.908	5.68	0.909	5.69	0.923	5.78	0.940	5.88
1,2 – Dichloroethane (EDC)	5.90	36.9	5.91	37.0	6.00	37.6	6.11	38.2
Benzo(a)anthracene	206	1,290	206	1,290	210	1,310	214	1,340
Benzo(a)pyrene	183	1,140	183	1,150	191	1,190	200	1,250
Benzo(b)fluoranthene	1,620	10,100	1,620	10,200	1,680	10,500	1,750	11,000
Benzo(k)fluoranthene	1,690	10,600	1,690	10,600	1,760	11,000	1,830	11,500
Chrysene	6,810	42,600	6,820	42,700	6,970	43,600	7,150	44,700
Dibenz(a,h)anthracene	225	1,410	226	1,420	244	1,520	264	1,650
Indeno(1,2,3-c,d)pyrene	1,120	7,030	1,130	7,040	1,150	7,220	1,190	7,430

~~Chemicals of Concern~~	~~Ground Water~~Groundwater ~~to Indoor Air~~							
	~~<15 Feet~~		~~15-30 Feet~~		~~31-50 Feet~~		~~>50 Feet~~	
	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~
~~Benzene~~	~~4.28~~	~~26.80~~	~~4.28~~	~~26.80~~	~~4.34~~	~~27.20~~	~~4.42~~	~~27.70~~
~~Toluene~~	~~155.00~~	~~2,510.00~~	~~155.00~~	~~2,520.00~~	~~157.00~~	~~2,550.00~~	~~160.00~~	~~2,600.00~~
~~Ethylbenzene~~	~~381.00~~	~~6,180.00~~	~~381.00~~	~~6,180.00~~	~~387.00~~	~~6,270.00~~	~~393.00~~	~~6,380.00~~
~~o, m and p-Xylenes~~	~~41.30~~	~~670.00~~	~~41.30~~	~~671.00~~	~~41.90~~	~~681.00~~	~~42.70~~	~~692.00~~
~~MTBE*~~	~~12,400.00~~	~~200,000.00~~	~~12,400.00~~	~~201,000.00~~	~~12,600.00~~	~~204,000.00~~	~~12,800.00~~	~~208,000.00~~
~~Benzo(a)anthracene~~	~~667.00~~	~~4,170.00~~	~~668.00~~	~~4,180.00~~	~~683.00~~	~~4,270.00~~	~~701.00~~	~~4,390.00~~
~~Benzo(a)pyrene~~	~~127.00~~	~~794.00~~	~~127.00~~	~~796.00~~	~~132.00~~	~~825.00~~	~~137.00~~	~~860.00~~
~~Benzo(b)fluoranthene~~	~~67.20~~	~~421.00~~	~~67.30~~	~~421.00~~	~~68.40~~	~~428.00~~	~~69.60~~	~~436.00~~
~~Benzo(k)fluoranthene~~	~~23,800.00~~	~~149,000.00~~	~~23,900.00~~	~~149,000.00~~	~~25,000.00~~	~~156,000.00~~	~~26,300.00~~	~~164,000.00~~
~~Chrysene~~	~~7,150.00~~	~~44,700.00~~	~~7,160.00~~	~~44,800.00~~	~~7,270.00~~	~~45,500.00~~	~~7,410.00~~	~~46,400.00~~
~~Dibenz(a,h)anthracene~~	~~353.00~~	~~2,210.00~~	~~356.00~~	~~2,230.00~~	~~404.00~~	~~2,530.00~~	~~461.00~~	~~2,890.00~~
~~Indeno(1,2,3-c,d)pyrene~~	~~2,020.00~~	~~12,600.00~~	~~2,030.00~~	~~12,700.00~~	~~2,100.00~~	~~13,100.00~~	~~2,190.00~~	~~13,700.00~~
~~Naphthalene~~	~~22.20~~	~~359.00~~	~~22.20~~	~~360.00~~	~~22.50~~	~~365.00~~	~~22.90~~	~~372.00~~

* Methyl tertiary-butyl ether
All chemical concentrations expressed in milligrams per liter (mg/L).

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Soil Class 2

Chemicals of Concern	Groundwater to Indoor Air							
	<15 Feet		15-30 Feet		31-50 Feet		>50 Feet	
	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.
Benzene	4.18	26.2	4.19	26.2	4.27	26.7	4.38	27.4
Toluene	2,180	35,300	2,180	35,300	2,220	36,100	2,280	36,900
Ethylbenzene	417	6,770	418	6,780	426	6,920	437	7,080
o, m and p-Xylenes	50.8	824	50.8	825	51.9	842	53.2	862
Naphthalene	16.9	106	16.9	106	17.3	108	17.7	111
1,2,4 - Trimethylbenzene	4.18	67.7	4.18	67.8	4.27	69.2	4.37	70.9
MTBE*	1,340	8,380	1,340	8,390	1,370	8,580	1,410	8,800
1,2 – Dibromoethane (EDB)	0.910	5.69	0.911	5.70	0.931	5.83	0.955	5.98
1,2 – Dichloroethane (EDC)	5.92	37.0	5.93	37.1	6.05	37.9	6.21	38.8
Benzo(a)anthracene	207	1,290	207	1,300	212	1,330	218	1,360
Benzo(a)pyrene	183	1,140	183	1,150	191	1,190	200	1,250
Benzo(b)fluoranthene	1,620	10,100	1,620	10,200	1,690	10,600	1,760	11,000
Benzo(k)fluoranthene	1,690	10,600	1,690	10,600	1,760	11,000	1,840	11,500
Chrysene	6,830	42,700	6,840	42,800	7,030	44,000	7,260	45,400
Dibenz(a,h)anthracene	224	1,400	225	1,400	237	1,480	252	1,580
Indeno(1,2,3-c,d)pyrene	1,130	7,050	1,130	7,060	1,160	7,280	1,200	7,540

~~Chemicals of Concern~~	~~Ground WaterGroundwater to Indoor Air~~							
	~~<15 Feet~~		~~15-30 Feet~~		~~31-50 Feet~~		~~>50 Feet~~	
	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~
~~Benzene~~	~~4.29~~	~~26.80~~	~~4.29~~	~~26.90~~	~~4.38~~	~~27.40~~	~~4.49~~	~~28.10~~
~~Toluene~~	~~155.00~~	~~2,520.00~~	~~155.00~~	~~2,520.00~~	~~159.00~~	~~2,570.00~~	~~162.00~~	~~2,640.00~~
~~Ethylbenzene~~	~~382.00~~	~~6,190.00~~	~~382.00~~	~~6,200.00~~	~~390.00~~	~~6,330.00~~	~~399.00~~	~~6,480.00~~
~~o, m and p-Xylenes~~	~~41.40~~	~~672.00~~	~~41.40~~	~~672.00~~	~~42.30~~	~~686.00~~	~~43.30~~	~~703.00~~
~~MTBE*~~	~~12,400.00~~	~~201,000.00~~	~~12,400.00~~	~~201,000.00~~	~~12,700.00~~	~~206,000.00~~	~~13,000.00~~	~~211,000.00~~
~~Benzo(a)anthracene~~	~~669.00~~	~~4,180.00~~	~~670.00~~	~~4,190.00~~	~~689.00~~	~~4,310.00~~	~~712.00~~	~~4,450.00~~
~~Benzo(a)pyrene~~	~~127.00~~	~~795.00~~	~~127.00~~	~~797.00~~	~~132.00~~	~~828.00~~	~~138.00~~	~~865.00~~
~~Benzo(b)fluoranthene~~	~~67.40~~	~~422.00~~	~~67.50~~	~~422.00~~	~~69.00~~	~~432.00~~	~~70.80~~	~~443.00~~
~~Benzo(k)fluoranthene~~	~~23,800.00~~	~~149,000.00~~	~~23,800.00~~	~~149,000.00~~	~~24,900.00~~	~~156,000.00~~	~~26,200.00~~	~~164,000.00~~
~~Chrysene~~	~~7,170.00~~	~~44,900.00~~	~~7,180.00~~	~~44,900.00~~	~~7,340.00~~	~~45,900.00~~	~~7,530.00~~	~~47,100.00~~
~~Dibenz(a,h)anthracene~~	~~344.00~~	~~2,150.00~~	~~346.00~~	~~2,160.00~~	~~369.00~~	~~2,310.00~~	~~397.00~~	~~2,490.00~~
~~Indeno(1,2,3-c,d)pyrene~~	~~2,020.00~~	~~12,700.00~~	~~2,030.00~~	~~12,700.00~~	~~2,110.00~~	~~13,200.00~~	~~2,200.00~~	~~13,800.00~~
~~Naphthalene~~	~~22.20~~	~~360.00~~	~~22.20~~	~~361.00~~	~~22.70~~	~~369.00~~	~~23.30~~	~~378.00~~

* Methyl tertiary-butyl ether
All chemical concentrations expressed in milligrams per liter (mg/L).

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Soil Class 3

Chemicals of Concern	Groundwater to Indoor Air							
	<15 Feet		15-30 Feet		31-50 Feet		>50 Feet	
	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.	Residential	Non-Resid.
Benzene	4.29	26.8	4.31	27.0	4.69	29.3	5.14	32.1
Toluene	2,230	36,200	2,240	36,400	2,440	39,600	2,670	43,300
Ethylbenzene	428	6,940	430	6,980	468	7,590	512	8,310
o, m and p-Xylenes	52.1	845	52.4	849	56.9	924	62.4	1,010
Naphthalene	17.3	108	17.4	109	19.0	119	20.9	130
1,2,4 - Trimethylbenzene	4.28	69.5	4.30	69.8	4.68	75.9	5.13	83.2
MTBE*	1,370	8,600	1,380	8,650	1,510	9,440	1,660	10,400
1,2 – Dibromoethane (EDB)	0.934	5.84	0.939	5.88	1.02	6.41	1.12	7.04
1,2 – Dichloroethane (EDC)	6.07	38.0	6.11	38.2	6.66	41.7	7.32	45.8
Benzo(a)anthracene	210	1,310	210	1,320	223	1,400	238	1,490
Benzo(a)pyrene	181	1,130	181	1,130	184	1,150	188	1,180
Benzo(b)fluoranthene	1,610	10,100	1,610	10,100	1,640	10,300	1,680	10,500
Benzo(k)fluoranthene	1,680	10,500	1,680	10,500	1,710	10,700	1,740	10,900
Chrysene	6,830	42,700	6,840	42,800	7,060	44,200	7,310	45,700
Dibenz(a,h)anthracene	220	1,380	220	1,380	224	1,400	227	1,420
Indeno(1,2,3-c,d)pyrene	1,120	7,040	1,130	7,050	1,160	7,230	1,190	7,450

~~Chemicals of Concern~~	~~Ground Water~~Groundwater to Indoor Air							
	~~<15 Feet~~		~~15-30 Feet~~		~~31-50 Feet~~		~~>50 Feet~~	
	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~	~~Residential~~	~~Non-Resid.~~
~~Benzene~~	~~4.39~~	~~27.50~~	~~4.42~~	~~27.60~~	~~4.80~~	~~30.10~~	~~5.26~~	~~32.90~~
~~Toluene~~	~~159.00~~	~~2,580.00~~	~~160.00~~	~~2,600.00~~	~~174.00~~	~~2,820.00~~	~~190.00~~	~~3,090.00~~
~~Ethylbenzene~~	~~391.00~~	~~6,350.00~~	~~393.00~~	~~6,380.00~~	~~427.00~~	~~6,930.00~~	~~468.00~~	~~7,590.00~~
~~o, m and p-Xylenes~~	~~42.40~~	~~688.00~~	~~42.70~~	~~692.00~~	~~46.40~~	~~752.00~~	~~50.80~~	~~824.00~~
~~MTBE*~~	~~12,700.00~~	~~206,000.00~~	~~12,800.00~~	~~207,000.00~~	~~13,900.00~~	~~226,000.00~~	~~15,300.00~~	~~249,000.00~~
~~Benzo(a)anthracene~~	~~669.00~~	~~4,190.00~~	~~670.00~~	~~4,190.00~~	~~690.00~~	~~4,320.00~~	~~714.00~~	~~4,470.00~~
~~Benzo(a)pyrene~~	~~126.00~~	~~789.00~~	~~126.00~~	~~790.00~~	~~129.00~~	~~804.00~~	~~131.00~~	~~822.00~~
~~Benzo(b)fluoranthene~~	~~68.90~~	~~431.00~~	~~69.30~~	~~433.00~~	~~74.90~~	~~469.00~~	~~81.70~~	~~511.00~~
~~Benzo(k)fluoranthene~~	~~23,500.00~~	~~147,000.00~~	~~23,600.00~~	~~147,000.00~~	~~23,900.00~~	~~150,000.00~~	~~24,400.00~~	~~153,000.00~~
~~Chrysene~~	~~7,330.00~~	~~45,800.00~~	~~7,360.00~~	~~46,100.00~~	~~7,960.00~~	~~49,800.00~~	~~8,660.00~~	~~54,200.00~~
~~Dibenz(a,h)anthracene~~	~~337.00~~	~~2,110.00~~	~~337.00~~	~~2,110.00~~	~~342.00~~	~~2,140.00~~	~~347.00~~	~~2,170.00~~
~~Indeno(1,2,3-c,d)pyrene~~	~~2,010.00~~	~~12,600.00~~	~~2,010.00~~	~~12,600.00~~	~~2,050.00~~	~~12,800.00~~	~~2,090.00~~	~~13,100.00~~
~~Naphthalene~~	~~22.80~~	~~370.00~~	~~22.90~~	~~372.00~~	~~25.00~~	~~406.00~~	~~27.50~~	~~446.00~~

* Methyl tertiary-butyl ether
All chemical concentrations expressed in milligrams per liter (mg/L).

(c) The action levels in ~~ground-water~~ groundwater for the ~~ground-water~~ groundwater to outdoor air pathway for chemical(s) of concern shall be as follows for the applicable soil type:

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Soil Class 1

Chemicals of Concern	Groundwater to Outdoor Air		
	Residential	Non-Residential	Excavation Worker
Benzene	788	496	5,370
Toluene	431,000	704,000	912,000
Ethylbenzene	86,100	141,000	182,000
o, m, and p-Xylenes	9,280	15,200	19,600
Naphthalene	843	531	2,500
1,2,4 - Trimethylbenzene	781	1,280	1,650
MTBE*	84,100	53,000	>1E+6
1,2 – Dibromoethane (EDB)	42.3	26.7	864
1,2 – Dichloroethane (EDC)	506	319	2,680
Benzo(a)anthracene	5,960	3,750	121,000
Benzo(a)pyrene	12,900	8,140	264,000
Benzo(b)fluoranthene	96,100	60,600	>1E+6
Benzo(k)fluoranthene	106,000	66,800	>1E+6
Chrysene	249,000	157,000	>1E+6
Dibenz(a,h)anthracene	27,900	17,600	570,000
Indeno(1,2,3-c,d)pyrene	46,200	29,100	943,000

~~Chemicals of Concern~~	~~Ground WaterGroundwater to Outdoor Air~~		
	~~Residential~~	~~Non-Residential~~	~~Excavation Worker~~
~~Benzene~~	~~818.00~~	~~515.00~~	~~5,520.00~~
~~Toluene~~	~~32,500.00~~	~~53,100.00~~	~~68,800.00~~
~~Ethylbenzene~~	~~82,700.00~~	~~135,000.00~~	~~175,000.00~~
~~o, m, and p-Xylenes~~	~~8,560.00~~	~~14,000.00~~	~~18,100.00~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~758,000.00~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(a)anthracene~~	~~24,800.00~~	~~15,600.00~~	~~507,000.00~~
~~Benzo(a)pyrene~~	~~7,680.00~~	~~4,840.00~~	~~157,000.00~~
~~Benzo(b)fluoranthene~~	~~2,020.00~~	~~1,270.00~~	~~41,200.00~~
~~Benzo(k)fluoranthene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Chrysene~~	~~212,000.00~~	~~133,000.00~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~78,400.00~~	~~49,400.00~~	~~>1E^+6~~
~~Indeno(1,2,3-c,d)pyrene~~	~~123,000.00~~	~~77,200.00~~	~~>1E^+6~~
~~Naphthalene~~	~~1,200.00~~	~~1,970.00~~	~~2,550.00~~

All chemical concentrations expressed in milligrams per liter (mg/L).

Soil Class 2

Chemicals of Concern	Groundwater to Outdoor Air		
	Residential	Non-Residential	Excavation Worker
Benzene	828	522	5,650
Toluene	452,000	739,000	956,000
Ethylbenzene	90,100	147,000	191,000
o, m, and p-Xylenes	9,780	16,000	20,700
Naphthalene	1,020	640	3,020

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1,2,4 - Trimethylbenzene	821	1,340	1,740
MTBE*	97,800	61,600	>1E+6
1,2 – Dibromoethane (EDB)	51.7	32.6	1,050
1,2 – Dichloroethane (EDC)	566	356	3,000
Benzo(a)anthracene	8,130	5,120	166,000
Benzo(a)pyrene	12,900	8,110	263,000
Benzo(b)fluoranthene	104,000	65,200	>1E+6
Benzo(k)fluoranthene	111,000	70,200	>1E+6
Chrysene	319,000	201,000	>1E+6
Dibenz(a,h)anthracene	20,600	13,000	420,000
Indeno(1,2,3-c,d)pyrene	57,000	35,900	>1E+6

~~Chemicals of Concern~~	~~Ground WaterGroundwater to Outdoor Air~~		
	~~Residential~~	~~Non-Residential~~	~~Excavation Worker~~
~~Benzene~~	~~860.00~~	~~541.00~~	~~5,800.00~~
~~Toluene~~	~~34,000.00~~	~~55,600.00~~	~~72,000.00~~
~~Ethylbenzene~~	~~86,300.00~~	~~141,000.00~~	~~183,000.00~~
~~o, m and p-Xylenes~~	~~8,960.00~~	~~14,600.00~~	~~18,900.00~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~885,000.00~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(a)anthracene~~	~~31,600.00~~	~~19,900.00~~	~~645,000.00~~
~~Benzo(a)pyrene~~	~~8,200.00~~	~~5,170.00~~	~~167,000.00~~
~~Benzo(b)fluoranthene~~	~~2,720.00~~	~~1,710.00~~	~~55,500.00~~
~~Benzo(k)fluoranthene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Chrysene~~	~~286,000.00~~	~~180,000.00~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~38,700.00~~	~~24,400.00~~	~~789,000.00~~
~~Indeno(1,2,3-c,d)pyrene~~	~~131,000.00~~	~~82,400.00~~	~~>1E^+6~~
~~Naphthalene~~	~~1,430.00~~	~~2,340.00~~	~~3,030.00~~

* Methyl tertiary-butyl ether

All chemical concentrations expressed in milligrams per liter (mg/L).

Soil Class 3

Chemicals of Concern	Groundwater to Outdoor Air		
	Residential	Non-Residential	Excavation Worker
Benzene	1,300	821	8,880
Toluene	698,000	>1E+6	>1E+6
Ethylbenzene	137,000	224,000	290,000
o, m, and p-Xylenes	15,500	25,400	32,900
Naphthalene	2,990	1,880	8,880
1,2,4 - Trimethylbenzene	1,300	2,120	2,740
MTBE*	255,000	161,000	>1E+6
1,2 – Dibromoethane (EDB)	158	99.4	3,220
1,2 – Dichloroethane (EDC)	1,260	794	6,680
Benzo(a)anthracene	21,000	13,200	428,000
Benzo(a)pyrene	5,100	3,210	104,000
Benzo(b)fluoranthene	49,900	31,500	>1E+6
Benzo(k)fluoranthene	50,300	31,700	>1E+6

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Chrysene	347,000	219,000	>1E+6
Dibenz(a,h)anthracene	5,170	3,260	106,000
Indeno(1,2,3-c,d)pyrene	48,100	30,300	982,000

~~Chemicals of Concern~~	~~Ground WaterGroundwater to Outdoor Air~~		
	~~Residential~~	~~Non-Residential~~	~~Excavation Worker~~
~~Benzene~~	~~1,350.00~~	~~848.00~~	~~9,080.00~~
~~Toluene~~	~~51,500.00~~	~~84,100.00~~	~~109,000.00~~
~~Ethylbenzene~~	~~129,000.00~~	~~211,000.00~~	~~273,000.00~~
~~o, m, and p-Xylenes~~	~~13,600.00~~	~~22,200.00~~	~~28,800.00~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(a)anthracene~~	~~33,000.00~~	~~20,800.00~~	~~673,000.00~~
~~Benzo(a)pyrene~~	~~3,870.00~~	~~2,440.00~~	~~78,900.00~~
~~Benzo(b)fluoranthene~~	~~9,560.00~~	~~6,020.00~~	~~195,000.00~~
~~Benzo(k)fluoranthene~~	~~642,000.00~~	~~405,000.00~~	~~>1E^+6~~
~~Chrysene~~	~~991,000.00~~	~~625,000.00~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~7,210.00~~	~~4,540.00~~	~~147,000.00~~
~~Indeno(1,2,3-c,d)pyrene~~	~~61,500.00~~	~~38,700.00~~	~~>1E^+6~~
~~Naphthalene~~	~~4,030.00~~	~~6,590.00~~	~~8,540.00~~

* Methyl tertiary-butyl ether

All chemical concentrations expressed in milligrams per liter (mg/L).

(d) The action levels in soil for the direct contact with soil pathway for chemical(s) of concern shall be as follows for all soil types:

Chemicals Of Concern	Direct Contact		
	Residential	Non-Residential	Excavation Worker
Benzene	26	140	1,200
Toluene	820	820	820
Ethylbenzene	130	480	480
o, m and p-Xylenes	260	260	260
Naphthalene	90	450	560
1,2,4 - Trimethylbenzene	160	220	220
MTBE*	1,100	5,700	8,900
1,2 – Dibromoethane (EDB)	0.83	4.4	38
1,2 – Dichloroethane (EDC)	11	56	480
Benzo(a)anthracene	12	58	1,200
Benzo(a)pyrene	1.2	5.8	120
Benzo(b)fluoranthene	12	58	1,200
Benzo(k)fluoranthene	120	580	12,000
Chrysene	1,200	5,800	120,000
Dibenz(a,h)anthracene	1.2	5.8	120
Indeno(1,2,3-c,d)pyrene	12	58	1,200

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~~Chemicals Of Concern~~	~~Direct Contact~~		
	~~Residential~~	~~Non-Residential~~	~~Excavation Worker~~
~~Benzene~~	~~9.8~~	~~100~~	~~310~~
~~Toluene~~	~~590~~	~~5,900~~	~~24,000~~
~~Ethylbenzene~~	~~1,500~~	~~17,000~~	~~160,000~~
~~o, m and p-Xylenes~~	~~660~~	~~6,400~~	~~7,000~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~5,300~~	~~52,000~~	~~57,000~~
~~Benzo(a)anthracene~~	~~11~~	~~63~~	~~810~~
~~Benzo(a)pyrene~~	~~1.1~~	~~6.3~~	~~81~~
~~Benzo(b)fluoranthene~~	~~11~~	~~63~~	~~810~~
~~Benzo(k)fluoranthene~~	~~110~~	~~630~~	~~8,100~~
~~Chrysene~~	~~1,100~~	~~6,700~~	~~41,000~~
~~Dibenz(a,h)anthracene~~	~~1.1~~	~~6.7~~	~~41~~
~~Indeno(1,2,3-c,d)pyrene~~	~~11~~	~~67~~	~~410~~
~~Naphthalene~~	~~54~~	~~530~~	~~1,900~~

*** Methyl tertiary-butyl ether**

All chemical concentrations expressed in milligrams per kilogram (mg/kg).

(e) The Soil Action Levels for Total Petroleum Hydrocarbon (TPH) shall be as follows:

Petroleum Fraction	Soil Class 1	Soil Class 2	Soil Class 3
Light Distillate Fraction (C6-C12)	1,000	5,000	8,000
Middle Distillate Fraction (C10-20)	2,000	10,000	20,000
Heavy Distillate Fraction (C20-C34)	5,000	20,000	40,000

All chemical concentrations expressed in milligrams per kilogram (mg/kg).

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(f) The action levels in soil for the soil to indoor air, soil to outdoor air, soil to drinking water leaching and soil to non-drinking water leaching pathway for chemical(s) of concern shall be as follows for the applicable soil type:

Soil Class 1

Chemicals of Concern	Soil to Indoor Air		Soil to Outdoor Air			Soil to Drinking Water Leaching	Soil to Non-Drinking Water
	Residential	Non-Residential	Residential	Non-Residential	Excavation		
Benzene	1.67	10.5	52.7	33.2	359	0.246	20.5
Toluene	1,240	20,200	39,200	64,000	82,900	70.7	15,300
Ethylbenzene	406	6,590	12,800	20,900	27,100	84.5	5,020
o, m and p-Xylenes	42.7	693	1,350	2,200	2,850	1,030	524
Naphthalene	52.7	330	1,670	1,050	4,950	0.511	613
1,2,4 - Trimethylbenzene	5.35	86.7	169	275	356	0.197	5.48
MTBE*	150	940	4,740	2,990	96,800	2.42	2,710
1,2 – Dibromoethane (EDB)	0.154	0.961	4.86	3.06	99.1	0.00788	14.3
1,2 – Dichloroethane (EDC)	1.01	6.33	31.9	20.1	169	0.0982	11.6
Benzo(a)anthracene	72,800	456,000	>1E+6	>1E+6	>1E+6	38.1	854,000
Benzo(a)pyrene	213,000	>1E+6	>1E+6	>1E+6	>1E+6	29.2	>1E+6
Benzo(b)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	136	>1E+6
Benzo(k)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	1,270	>1E+6
Chrysene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	3,870	>1E+6
Dibenz(a,h)anthracene	853,000	>1E+6	>1E+6	>1E+6	>1E+6	46.6	>1E+6
Indeno(1,2,3-c,d)pyrene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	1,020	>1E+6

~~Chemicals of Concern~~	~~Soil to Indoor Air~~		~~Soil to Outdoor Air~~			~~Soil to Drinking Water Leaching~~	~~Soil to Non-Drinking Water~~
	~~Residential~~	~~Non-Residential~~	~~Residential~~	~~Non-Residential~~	~~Excavation~~		
~~Benzene~~	~~1.04~~	~~6.50~~	~~32.70~~	~~20.60~~	~~221.00~~	~~0.149~~	~~12.80~~
~~Toluene~~	~~61.300~~	~~994.00~~	~~1,930.00~~	~~3,150.00~~	~~4,090.00~~	~~49.100~~	~~760.00~~
~~Ethylbenzene~~	~~199.000~~	~~3,230.00~~	~~6,280.00~~	~~10,300.00~~	~~13,300.00~~	~~45.500~~	~~2,480.00~~
~~o, m and p-Xylenes~~	~~15.700~~	~~254.00~~	~~494.00~~	~~806.00~~	~~1,040.00~~	~~469.00~~	~~194.00~~

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~~Methyl tertiary-butyl ether (MTBE)~~	~~1,240.00~~	~~20,200.00~~	~~39,300.00~~	~~64,200.00~~	~~83,100.00~~	~~0.470~~	~~14,600.00~~
~~Benzo(a)anthracene~~	~~476,000.00~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~22.20~~	~~>1E^+6~~
~~Benzo(a)pyrene~~	~~245,000.00~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~50.60~~	~~>1E^+6~~
~~Benzo(b)fluoranthene~~	~~165,000.00~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~55.30~~	~~>1E^+6~~
~~Benzo(k)fluoranthene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~501.00~~	~~>1E^+6~~
~~Chrysene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~4,410.00~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~94.00~~	~~>1E^+6~~
~~Indeno(1,2,3-c,d)pyrene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~244.00~~	~~>1E^+6~~
~~Naphthalene~~	~~54.000~~	~~877.000~~	~~1,710.00~~	~~2,790.00~~	~~3,610.00~~	~~39.80~~	~~632.00~~

*** Methyl tertiary-butyl ether**

All chemical concentrations expressed in milligrams per kilogram (mg/kg).

Soil Class 2

Chemicals of Concern	Soil to Indoor Air		Soil to Outdoor Air			Soil to Drinking Water Leaching	Soil to Non-Drinking Water
	Residential	Non-Residential	Residential	Non-Residential	Excavation		
Benzene	1.95	12.2	86.2	54.3	587	0.437	36.6
Toluene	1,470	23,900	65,100	106,000	138,000	168	36,700
Ethylbenzene	491	7,960	21,700	35,400	45,800	163	9,720
o, m and p-Xylenes	51.8	841	2,290	3,740	4,840	1,950	993
Naphthalene	65.8	412	2,910	1,830	8,650	1.12	1,350
1,2,4 - Trimethylbenzene	6.54	106	289	472	611	0.348	9.70
MTBE*	167	1,050	7,400	4,660	151,000	4.24	4,740
1,2 – Dibromoethane (EDB)	0.178	1.11	7.87	4.96	161	0.0168	30.5
1,2 – Dichloroethane (EDC)	1.16	7.26	51.3	32.3	272	0.173	20.5
Benzo(a)anthracene	91,200	571,000	>1E+6	>1E+6	>1E+6	1,480	>1E+6
Benzo(a)pyrene	267,000	>1E+6	>1E+6	>1E+6	>1E+6	N/A	>1E+6
Benzo(b)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	N/A	>1E+6
Benzo(k)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	57,500	>1E+6
Chrysene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	45,000	>1E+6
Dibenz(a,h)anthracene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	N/A	>1E+6
Indeno(1,2,3-c,d)pyrene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	N/A	>1E+6

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~~Chemical of Concern~~	~~Soil to Indoor Air~~		~~Soil to Outdoor Air~~			~~Soil to Drinking Water Leaching~~	~~Soil to Non-Drinking Water~~
	~~Residential~~	~~Non-Residential~~	~~Residential~~	~~Non-Residential~~	~~Excavation~~		
~~Benzene~~	~~1.15~~	~~7.22~~	~~51.00~~	~~32.10~~	~~344.00~~	~~0.252~~	~~21.60~~
~~Toluene~~	~~70.800~~	~~1,150.000~~	~~3,130.00~~	~~5,110.00~~	~~6,610.00~~	~~105.000~~	~~1,630.00~~
~~Ethylbenzene~~	~~233.000~~	~~3,780.000~~	~~10,300.00~~	~~16,800.00~~	~~21,800.00~~	~~83.000~~	~~4,530.00~~
~~o, m and p-Xylenes~~	~~18.000~~	~~291.000~~	~~793.00~~	~~1,300.00~~	~~1,680.00~~	~~825.000~~	~~342.00~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~1,370.000~~	~~22,200.000~~	~~60,500.00~~	~~98,900.00~~	~~128,000.00~~	~~0.788~~	~~24,400.00~~
~~Benzo(a)anthracene~~	~~596,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~18,600.00~~	~~>1E^+6~~
~~Benzo(a)pyrene~~	~~306,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(b)fluoranthene~~	~~206,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(k)fluoranthene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~738,000.00~~	~~>1E^+6~~
~~Chrysene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~451,000.00~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Indeno(1,2,3-c,d)pyrene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Naphthalene~~	~~67.300~~	~~1,090.000~~	~~2,980.00~~	~~4,860.00~~	~~6,300.00~~	~~84.20~~	~~1,340.00~~

* Methyl tertiary-butyl ether

All chemical concentrations expressed in milligrams per kilogram (mg/kg).

Soil Class 3

Chemicals of Concern	Soil to Indoor Air		Soil to Outdoor Air			Soil to Drinking Water Leaching	Soil to Non-Drinking Water
	Residential	Non-Residential	Residential	Non-Residential	Excavation		
Benzene	2.39	15.0	451	284	3,070	1.63	140
Toluene	1,790	29,100	338,000	552,000	715,000	850	189,000
Ethylbenzene	596	9,670	112,000	184,000	238,000	639	39,100
o, m and p-Xylenes	63.5	1,030	12,000	19,600	25,300	7,490	3,900
Naphthalene	80.8	505	15,000	9,430	44,500	4.99	6,160

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1,2,4 - Trimethylbenzene	7.99	130	1,510	2,460	3,190	1.54	44.0
MTBE*	236	1,480	44,100	27,800	899,000	17.1	19,600
1,2 – Dibromoethane (EDB)	0.239	1.49	44.1	27.8	899	0.0732	137
1,2 – Dichloroethane (EDC)	1.54	9.65	289	182	1,530	0.709	86.0
Benzo(a)anthracene	111,000	691,000	>1E+6	>1E+6	>1E+6	275,000	>1E+6
Benzo(a)pyrene	318,000	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6
Benzo(b)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6
Benzo(k)fluoranthene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6
Chrysene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6
Dibenz(a,h)anthracene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6
Indeno(1,2,3-c,d)pyrene	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6	>1E+6

~~Chemical of Concern~~	~~Soil to Indoor Air~~		~~Soil to Outdoor Air~~			~~Soil to Drinking Water Leaching~~	~~Soil to Non-Drinking Water~~
	~~Residential~~	~~Non-Residential~~	~~Residential~~	~~Non-Residential~~	~~Excavation~~		
~~Benzene~~	~~1.42~~	~~8.86~~	~~267.00~~	~~168.00~~	~~1,800.00~~	~~0.937~~	~~82.30~~
~~Toluene~~	~~86.000~~	~~1,400.000~~	~~16,200.00~~	~~26,500.00~~	~~34,300.00~~	~~479.000~~	~~7,610.00~~
~~Ethylbenzene~~	~~282.000~~	~~4,570.000~~	~~53,100.00~~	~~86,800.00~~	~~112,000.00~~	~~313.000~~	~~17,500.00~~
~~o, m and p-Xylenes~~	~~21.700~~	~~353.000~~	~~4,100.00~~	~~6,700.00~~	~~8,670.00~~	~~3,060.000~~	~~1,300.00~~
~~Methyl tertiary-butyl ether (MTBE)~~	~~1,970.000~~	~~32,000.000~~	~~368,000.00~~	~~601,000.00~~	~~778,000.00~~	~~3.440~~	~~109,000.00~~
~~Benzo(a)anthracene~~	~~716,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(a)pyrene~~	~~366,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(b)fluoranthene~~	~~251,000.000~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Benzo(k)fluoranthene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Chrysene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Dibenz(a,h)anthracene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Indeno (1,2,3-c,d)pyrene~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~	~~>1E^+6~~
~~Naphthalene~~	~~82.800~~	~~1,340.000~~	~~15,400.00~~	~~25,100.00~~	~~32,500.00~~	~~362.000~~	~~5,890.000~~

* Methyl tertiary-butyl ether

All chemical concentrations expressed in milligrams per kilogram (mg/kg).

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(4) Multiple chemical adjustments.

Where ten or more non-carcinogenic or carcinogenic chemicals of concern are present when analyzing for Analytical Groups 4 and/or 5, the standard for each chemical of concern shall be adjusted to meet the following goals:

(a) For chemicals of concern having carcinogenic effects, the cumulative carcinogenic risk for all chemical(s) of concern shall not exceed a total excess upper bound cancer risk of $1x\ 10^{-05}$ (i.e., one excess cancer in a population of 100,000);

(b) For chemicals of concern having non-carcinogenic effects, the cumulative risk for all chemical(s) of concern shall not exceed a hazard index of one.

(c) A cumulative adjustment shall be made for each of the following pathways:

(i) ~~Ground water~~ **Groundwater** ingestion;

(ii) Direct contact with soil;

(iii) Soil to indoor air; and

(iv) ~~Ground water~~ **Groundwater** to indoor air.

(K) Interim Response Action.

(1) If an Interim Response Action is to be conducted it must be implemented within ninety days of approval of a Tier 1 Delineation conducted pursuant to paragraph (I) of this rule, **approval of** a Tier 2 Evaluation conducted pursuant to paragraph (L) of this rule or **approval of** a Tier 3 Evaluation conducted pursuant to paragraph (M) of this rule. Once an Interim Response Action has been completed, previously identified potentially complete exposure pathways shall be re-evaluated.

(2) An Interim Response Action Notification shall be submitted on a form prescribed by the state fire marshal ten days prior to beginning the Interim Response Action. The notification shall include the following:

(a) A description of the Interim Response Action;

(b) The anticipated volume of soil to be excavated, if applicable;

(c) The estimated volume of petroleum contaminated soil to be removed from the site and free product and/or ~~ground water~~ **groundwater** to be recovered, if applicable;

(d) The anticipated length of time of the interim response action;

(e) A site map indicating the limits of excavation if soil is to be removed;

(f) A proposed sampling and analysis plan; and

(g) A brief description of the rationale for the selected Interim Response Action.

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(3) Prior approval of an interim response action shall be obtained from the state fire marshal if:

(a) The combined total volume of soil to be excavated for all tier evaluations will be greater than eight hundred cubic yards;

(b) The anticipated time to initiate and complete the interim response action is greater than three months; or

(c) More than one interim response action is to be conducted for all tier evaluations.

(4) A report summarizing the Interim Response Action(s) shall be submitted to the state fire marshal within sixty days of completing the activities and shall contain, at a minimum, the following information as appropriate:

(a) A completed Petroleum Contaminated Soil form as provided by the state fire marshal;

(b) Copies of laboratory data sheets and chain-of-custody form(s);

(c) A site map showing the limits of the excavation zone(s) and sample locations;

(d) A discussion of sample collection, field screening and preservation techniques;

(e) A discussion of the treatment technique used to address chemical(s) of concern in soil and/or ~~ground water~~ **groundwater**;

(f) Actual volume of soil and/or ~~ground water~~ **groundwater** remediated;

(g) A discussion of soil and ~~ground water~~ **groundwater** disposal techniques; and

(h) Laboratory analysis summary form as prescribed by the state fire marshal.

(L) Tier 2 Evaluation.

The purpose of a Tier 2 Evaluation is to define the distribution of chemical(s) of concern to the applicable action levels, determine the current and potential future land use for the UST site and surrounding properties, develop a site conceptual exposure model and develop site-specific target levels using spreadsheets and models approved by the state fire marshal. A Tier 2 Evaluation shall be conducted in accordance with all of the following:

(1) Determination of the distribution of chemical(s) of concern.

(a) The distribution of chemical(s) of concern shall be delineated in all directions from the source areas(s) to the applicable Tier 1 action level(s) determined for the UST site.

(b) Soil borings and ~~ground water~~ **groundwater** monitoring wells shall be installed in accordance with paragraph (H)(1)(d) of this rule.

(c) If the highest concentration of a particular chemical(s) of concern is determined to be below detection limits and below action levels as specified by this rule during the Tier 1 Source Investigation conducted pursuant to paragraph (H) of this rule, then that chemical(s) of concern may be excluded from future tier evaluations.

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(d) If the determination of the likely distribution of chemical(s) of concern requires off-site access, owners and operators shall use their best efforts to obtain permission to enter such off-site areas to complete the investigations required by this rule. At a minimum, this effort shall include at least three attempts to contact the property owner within a ninety day period for access permission. If access cannot be obtained, owners or operators shall submit written notice to the state fire marshal within forty-five days after determining off-site access cannot be obtained or forty-five days after the third unsuccessful request for access. The notice shall describe the efforts taken by the owners or operators to obtain off-site access, the reasons why access could not be obtained, and include contact information for the off-site access requests along with copies of documents and/or phone logs. Owners and operators shall take additional action to obtain off-site access if requested by the state fire marshal.

(2) Land use determination.

(a) Land use for the UST site shall be residential unless:

(i) The current land use at the UST site is not residential and seventy-five percent of the area within three hundred feet of the property boundaries of the UST site is non-residential land use; or

(ii) A land use restriction as approved by the state fire marshal for the UST site in accordance with paragraph (L)(4)(a)(ii)(*c*) of this rule has been documented and recorded in the county where the UST site is located or the owners and operators enter into an environmental covenant with the state fire marshal in accordance with sections 5301.80 to 5301.92 of the Revised Code.

(b) Land use for the UST site and adjacent properties shall be determined as residential or non-residential using reasonably available information based on the following:

(i) The historical land use of the UST site and adjacent properties*;*

(ii) The current land use of the UST site and adjacent properties;

(iii) The historical zoning or planning designation for the UST site and adjacent properties; and

(iv) The current zoning or planning designation for the UST site and adjacent properties.

(3) Action level determination.

Action levels for the UST site shall be determined in accordance with the following:

(a) Non-residential land use.

(i) If the UST site meets the non-residential land use determination pursuant to paragraph (L)(2)(a) of this rule, then the owners and operators shall compare the concentrations of chemical(s) of concern to the appropriate non-residential action levels and ~~**ground water**~~ **groundwater** use action levels in paragraph (J)(3) of this rule.

(*a*) If the concentrations of all chemical(s) of concern are at or below the action levels for all applicable pathways, then no further action is required. The owners and operators

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shall prepare a Tier 2 Evaluation report in accordance with paragraph (L)(7) of this rule.

(b) If the concentration of a specific chemical of concern is at or below the action level(s), then no further evaluation is necessary for that chemical of concern and for the corresponding complete exposure pathway.

(c) If one or more of the concentrations of chemical(s) of concern are above non-residential land use and/or ~~ground water~~ **groundwater** use action levels as determined in accordance with paragraph (I)(2) of this rule for any applicable pathway, owners and operators shall develop a site conceptual exposure model pursuant to paragraph (L)(4) of this rule.

(b) Residential land use.

If the UST site does not meet the non-residential land use determination pursuant to paragraph (L)(2) of this rule, owners and operators shall develop a site conceptual exposure model pursuant to paragraph (L)(4) of this rule.

(c) If chemical(s) of concern have migrated off the UST site, action levels shall be developed for each impacted property pursuant to paragraph (J) of this rule according to the corresponding land use.

(4) Site conceptual exposure model.

A site conceptual exposure model shall be developed to clearly describe the conditions under which an exposure to chemical(s) of concern may occur by identifying exposure pathways and points of exposure in accordance with the following:

(a) Pathway evaluation.

(i) Exposure pathway identification.

Identify all exposure pathways that exceed Tier 1 action levels determined pursuant to paragraphs (H)(2) and (L)(3) of this rule. Pathway identification shall include identifying all receptors, media and transport mechanisms and routes of exposure in accordance with the following:

(a) Receptor identification

Identify current and potential future receptors that may be exposed to the release. At a minimum, the following potential receptors shall be evaluated:

(i) Adults and children for residential scenarios;

(ii) Adults for non-residential scenarios;

(iii) Adults for excavation worker scenarios; and

(iv) Aquatic life and recreational receptors in a surface water body located within three hundred feet of the UST site.

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(b) Media identification.

The environmental media that are likely to contain concentrations of chemicals of concern shall be identified for evaluation. The following environmental media shall be evaluated:

(i) Soil;

(ii) ~~Ground water~~ **Groundwater**;

(iii) Surface water;

(iv) Indoor air; and

(v) Outdoor air.

(c) Transport mechanisms identification.

All fate and transport mechanisms for chemical(s) of concern in the environmental media shall be identified. The following transport mechanisms shall be evaluated for all applicable pathways:

(i) Atmospheric dispersion;

(ii) Volatilization;

(iii) Enclosed space vapor accumulation; and

(iv) Soil leaching and ~~ground water~~ **groundwater** transport.

(d) Routes of exposure identification.

The following routes of exposure shall be evaluated:

(i) Ingestion;

(ii) Inhalation; and

(iii) Direct contact.

(ii) Pathway completeness evaluation.

Evaluate exposure pathways to determine if the exposure pathways identified in the site conceptual exposure model developed in accordance with paragraph (L)(4)(a)(i) of this rule are complete.

(*a*) An exposure pathway is incomplete when any one of the following criteria exists:

(i) There is no point(s) of exposure identified pursuant to paragraph (L)(4)(b) of this rule, for a chemical of concern in an identified environmental media;

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(ii) Site-specific data demonstrates that there is no transport mechanism in the identified environmental media to move the chemical(s) of concern from the source area(s) to the point(s) of exposure;

(iii) Site-specific data demonstrates that there are no route(s) of exposure for the identified receptor;

(iv) Points of exposure are eliminated by ~~ground water~~ **groundwater** use restrictions enforceable by a local government and/or regulatory agency, or by an environmental covenant with the state fire marshal;

(v) Points of exposure are eliminated by land use restrictions enforceable by a local government and/or regulatory agency, or by an environmental covenant with the state fire marshal.

(b) If the pathway cannot be determined to be incomplete according to the criteria listed in paragraph (L)(4)(a)(ii)(*a*) of this rule, the exposure pathway shall be considered complete.

(c) Land use restrictions.

Where points of exposure are eliminated based on a land use restriction, owners and operators shall enter into an environmental covenant with the state fire marshal in accordance with sections 5301.80 to 5301.92 of the Revised Code that is recorded in the county where the UST site is located for the purpose of restricting the land use to activities that are consistent with the land use determination. A copy of the **environmental covenant** ~~mechanism used~~ shall be provided with the Tier 2 Evaluation report.

(d) ~~Ground water~~ **Groundwater** use restrictions.

Where points of exposure are eliminated based on a ~~ground water~~ **groundwater** use restriction, owners and operators shall enter into an environmental covenant with the state fire marshal in accordance with sections 5301.80 to 5301.92 of the Revised Code that is recorded in the county where the UST site is located for the purpose of restricting the drinking water use to activities that are consistent with the ~~ground water~~ **groundwater** use determination. A copy of the **environmental covenant** ~~mechanism used~~ shall be provided with the Tier 2 Evaluation report.

(iii) Pathway evaluation conclusions.

(a) If an exposure pathway is determined to be complete in accordance with paragraph (L)(4)(a)(ii)(*b*) of this rule, then owners and operators shall evaluate points of exposure pursuant to paragraph (L)(4)(b) of this rule.

(b) If an exposure pathway is determined to be incomplete in accordance with paragraph (L)(4)(a)(ii)(*a*) of this rule, then no further evaluation will be required for that exposure pathway. The determination that an exposure pathway is incomplete shall be documented and based on information and data collected during the Tier 2 Evaluation.

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(b) Points of exposure.

(i) Identify point(s) of exposure based on the current and reasonably anticipated future use at the UST site and in the surrounding area. At a minimum, all of the following potential point(s) of exposure shall be evaluated:

(a) Where ~~ground water~~ **groundwater** has been determined to be a drinking water source in accordance with paragraph (I)(2)(c) or (I)(2)(e) of this rule, the point of exposure shall be one of the following, whichever is closest to the source area(s):

(i) Any potable well located on the UST site;

(ii) The property line when the UST site is located in a Drinking Water Source Protection Area;

(iii) The Drinking Water Source Protection Area boundary if a Drinking Water Source Protection Area is within three hundred feet of the UST site;

(iv) The property line, unless one of the following can be demonstrated:

(A) No potable wells are located on or within three hundred feet of the UST site based on a physical survey and an ordinance requires a mandatory tie-in to a municipal water system for all properties in the surrounding area;

(B) No potable wells are located on or within three hundred feet of the UST site based on a physical survey and an ordinance prohibits the installation of potable water wells at all properties within the surrounding area; or

(C) No potable wells are located on or within three hundred feet of the UST site based on a physical survey and ~~100~~ **one hundred** percent of the properties within three hundred feet of the UST site are connected to a municipal water source or a municipal source is readily available;

(v) If the point of exposure is determined to be the property line in accordance with paragraph (L)(4)(b)(i)(*a*)(*ii*) or (L)(4)(b)(i)(*a*)(*iv*), and a roadway or railroad separates the source area from a property where a potable well could be installed, the point of exposure may be extended across the roadway or railroad to the property line of that property;

(vi) If a point of exposure has not been identified in paragraphs (L)(4)(b)(i)(*a*)(*i*) to (L)(4)(b)(i)(*a*)(*iv*) of this rule, the point of exposure shall be three hundred feet from the source area(s) or an alternate point of exposure approved by the state fire marshal; or

(vii) Not withstanding paragraphs (L)(4(b)(i)(*a*)(*i*) to (L)(4(b)(i)(*a*)(*vi*), the state fire marshal may require that point(s) of exposure be evaluated other than or in addition to those specified in paragraph (L)(4)(b) of this rule.

(b) Surface water where a surface water body exists within three hundred feet of the UST site;

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(c) Residential and/or other buildings located or anticipated to be located above soil or ~~ground water~~ **groundwater** containing concentrations of chemical(s) of concern;

(d) Subsurface structures, such as utility manways and underground tunnels; and

(e) Surface and subsurface soil areas where:

(i) The current or reasonably anticipated future use is determined to be residential land use then a point of exposure for direct contact with surface soil shall be zero to ten feet below ground surface.

(ii) The current and reasonably anticipated future use is determined to be non-residential then a point of exposure for direct contact with surface soil shall be zero to two feet below ground surface.

(c) If the distribution of chemical(s) of concern cannot be defined on properties that are impacted or potentially impacted by the release, concentrations of chemical(s) of concern at the affected property boundary line(s) shall meet action levels appropriate to each property's land use determination.

(5) Site-specific target level development.

(a) Fate and transport of chemical(s) of concern above action levels that have complete exposure pathways shall be evaluated by conducting one or a combination of the following:

(i) Develop site-specific target levels by replacing default values specified by the state fire marshal for the geological, hydrogeological, and physical parameters in the algorithms used to develop action levels with site-specific values;

(ii) Utilize analytical fate and transport modeling, approved by the state fire marshal, to predict concentrations of chemical(s) of concern at each point of exposure; or

(iii) Back calculate site-specific target levels by utilizing analytical fate and transport models, approved by the state fire marshal, from the point(s) of exposure to the source area for any complete pathway(s). The calculated site-specific target levels must be protective of human health and the environment at each point of exposure determined pursuant to paragraph (L)(4)(b) of this rule.

(b) The default values shall not be replaced by alternative literature values. Any non-default input data shall be representative of the UST site conditions.

(c) Proper documentation of the modeling work shall be prepared and submitted to the state fire marshal within the Tier 2 Evaluation report. The documentation shall include input values, assumptions and the results of the modeling. Model results must be reproducible by the state fire marshal.

(d) After determining site-specific target levels, the maximum concentrations of chemical(s) of concern for each complete exposure pathway shall be compared to the calculated site-specific target levels.

(e) Where site-specific target levels are developed based on land use other than residential land use

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and non-residential land use is not established in accordance with paragraph (L)(2)(a)(i) of this rule, owners and operators shall enter into an environmental covenant with the state fire marshal in accordance with sections 5301.80 to 5301.92 of the Revised Code to restrict the land use to activities that are consistent with the land use determination. A copy of the mechanism used shall be provided with the Tier 2 Evaluation report.

(f) Where site-specific target levels are developed based on ~~ground water~~ **groundwater** use other than drinking water use and non-drinking water use is not established in accordance with paragraph (I)(2)(d) of this rule, owners and operators shall enter into an environmental covenant with the state fire marshal in accordance with sections 5301.80 to 5301.92 of the Revised Code to restrict the drinking water use to activities that are consistent with the ~~ground water~~ **groundwater** use determination. A copy of the mechanism used shall be provided with the Tier 2 Evaluation report.

(6) Tier 2 decisions.

Upon submission of the Tier 2 Evaluation report, the state fire marshal will evaluate the submitted information for completeness and either issue a letter of approval or a letter requesting additional information, as appropriate. The maximum concentrations of chemical(s) of concern shall be compared to the action level or Tier 2 site-specific target levels, as applicable.

(a) If the concentrations of all chemical(s) of concern are at or below Tier 2 site-specific target levels for all pathways and no monitoring is required pursuant to paragraph (O) of this rule, then no further action is required. If required by paragraph (O) of this rule, a monitoring plan shall be developed for ~~ground water~~ **groundwater** and submitted with the Tier 2 Evaluation report, prepared in accordance with paragraph (L)(7) of this rule, to demonstrate that concentrations of all chemical(s) of concern will remain at or below Tier 2 site-specific target levels.

(b) If the concentration of a specific chemical of concern is at or below the Tier 2 site-specific target levels, then no further evaluation is necessary for that chemical of concern and for the corresponding complete exposure pathway.

(c) If the concentrations of chemical(s) of concern are above the Tier 2 site-specific target levels for one or more exposure pathways, then the owners and operators shall complete one or a combination of the following to address the chemical(s) of concern and the corresponding complete exposure pathways:

(i) An Interim Response Action, under paragraph (K) of this rule, may be implemented to eliminate a complete exposure pathway or to reduce concentrations of chemical(s) of concern in the source area(s) to a level at or below the Tier 2 site-specific target levels in accordance with paragraph (L) of this rule.

(ii) A Remedial Action Plan, pursuant to paragraph (N) of this rule, may be developed using the Tier 2 site-specific target levels for remedial action.

(iii) A Tier 3 Evaluation plan**, pursuant to** ~~in accordance with~~ paragraph (M)**(1)(a)** of this rule**,** may be developed**.** ~~and submitted with the Tier 2 Evaluation report.~~

(iv) A plan for approval by the state fire marshal to calibrate or disprove the fate and transport model using additional site-specific data. This plan shall be submitted with the Tier 2

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Evaluation report.

(7) Tier 2 Evaluation report.

(a) Owners and operators shall prepare and submit the Tier 2 Evaluation report to the state fire marshal, within eighteen months from the approval of the Tier 1 Investigation report:

(b) The Tier 2 Evaluation report shall include all of the following information:

(i) A summary of the maximum concentrations for all chemical(s) of concern in soil and ~~ground water~~ **groundwater**, the potential drinking water use determination, depth-to-~~ground water~~ **groundwater** and the soil class for each complete pathway determined during the Tier 1 Source Investigation and the Tier 1 Delineation activities;

(ii) Tier 2 Delineation documentation.

A summary of the Tier 2 Delineation data collection activities that includes, at a minimum, the following information*:*

(a) A summary of the rationale for sampling and testing locations;

(b) A description of the field methodologies employed, including instrument calibration techniques and the make and model of equipment used;

(c) A site map that accurately depicts the locations of current and historical underground storage tank system(s), property boundaries, street locations, above ground structures, underground utilities, on-site potable well(s) and soil.

(d) Drilling logs and well construction diagrams that include:

(i) Type of sampler used (e.g., Shelby tube, California sampler, split-spoon);

(ii) The presence of organic vapors as determined by field screening techniques;

(iii) A description of the presence of free product;

(iv) The location in decimal degrees accurate to within five feet of the actual location and reported to five decimal places;

(v) Depth at which saturated conditions were first encountered during drilling and the depth of the static water level;

(vi) A complete description of the soil sample for each sampling interval including;

(A) The color and moisture content*;*

(B) The USCS classification;

(C) The gradation consistency;

(D) A description of horizontal and/or vertical fracturing of bedrock encountered

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while drilling;

(E) The type and a description of bedrock with differentiation between weathered and competent bedrock;

(F) A description of any voids or significant pressure changes observed in bedrock drilling;

(G) A graphic illustration of each sample interval;

(H) A description of which soil sample interval(s) were sent to the laboratory for analysis; and

(I) The sample recovery for each interval in units of feet.

(e) Monitoring well sampling and development logs, documenting the number and quantity of well purging volumes, date, time and duration of collection and development.

(f) Depth-to-fluid, depth-to-water, free product thickness measurements, and top-of-casing and ~~ground water~~ **groundwater** elevations in tabular form for each well. When available, include historical data in the table and reference the source(s) of all information presented.

(g) A ~~ground water~~ **groundwater** elevation contour map using all relevant monitoring wells to establish ~~ground water~~ **groundwater** contour and flow direction and clearly indicating the dates that ~~ground water~~ **groundwater** measurements were collected. Justification for the exclusion of specific monitoring wells in the determination of flow direction, if applicable, shall be provided.

(h) The calculation of the hydraulic gradient;

(i) Analytical laboratory results including:

(i) Laboratory analyses in tabular form, by environmental medium, including applicable action levels. Present current results along with historical results, when available. Indicate sample collection date(s) and reference source(s) of all information presented. All tables shall include the corresponding method detection limit for each analysis that was below detection limits; and

(ii) All analytical results, QA/QC procedures and data quality objectives including, without limitation, all laboratory certificates of analysis (data sheets), completed chain-of-custody forms indicating soil boring and/or monitoring well numbers and laboratory sample numbers.

(j) Chemical(s) of concern concentration maps for soil in units of milligrams per kilogram (mg/kg) and ~~ground water~~ **groundwater** in units of milligrams per liter (mg/l). Maps shall include the location of sampling points, the depth of each soil sample interval, and the location of each source area(s). Maps shall include historical soil and ~~ground water~~ **groundwater** results for the release being investigated. Maps that include ~~ground water~~ **groundwater** data may be limited to the most recent four sampling events unless directed by the state fire marshal.

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(k) Documentation regarding off-site access pursuant to paragraph (L)(1)(d) of this rule, as appropriate.

(iii) Land use determination documentation including:

(a) A map depicting the land use of the UST site and all surrounding properties within three hundred feet of the UST site; and

(b) Supporting documentation and a summary of the land use determination conducted pursuant to paragraph (L)(2) of this rule.

(iv) Land and ~~ground water~~ **groundwater** use restrictions including:

(a) A discussion of land and ~~ground water~~ **groundwater** use restrictions documenting the source(s) of all information that details the restriction(s); and

(b) Provide a copy of all ordinances, recorded land and ~~ground water~~ **groundwater** use restriction documents and recorded environmental covenants.

(v) Site conceptual exposure model documentation.

Provide a summary of the pathway evaluation as developed in paragraph (L)(4)(a) and the point(s) of exposure in paragraph (L)(4)(b) of this rule. All sources of information in the report shall be documented.

(vi) Documentation of site-specific target level development.

Provide a summary of the activities conducted, the results of the Tier 2 Evaluation and a description of models or other methods used to determine site-specific target levels. The summary shall include the following:

(a) A description of any models used to evaluate data pursuant to paragraphs (L)(5)(a) and (L)(5)(b) of this rule that provides all assumptions, input parameters and output values;

(b) Present maximum concentration of chemical(s) of concern, action levels and site-specific target levels in tabular form by environmental media and exposure pathway;

(c) Present results of geotechnical testing for soil properties in tabular form referencing the ASTM method used to perform each test. At a minimum, the following information shall be included:

(i) Drilling logs;

(ii) Equipment and standard procedures used;

(iii) Analytical results, QA/QC procedures and data quality objectives including, without limitation, all laboratory certificates of analysis (data sheets), completed chain-of-custody form(s) indicating soil boring/monitoring well numbers and laboratory sample numbers; and

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(iv) A site map showing the location(s) of geotechnical soil borings.

(d) A summary and documentation of any field investigations conducted to collect site-specific data.

(vii) A summary of the Interim Response Actions conducted pursuant to paragraph (K) of this rule, including the volume of soil removed and/or ~~ground water~~ **groundwater** treated.

(viii) A summary of future actions and alternatives, including:

(a) A discussion of remedial actions, if appropriate;

(b) A discussion of further tier analysis, if appropriate;

(c) A summary of monitoring events, as appropriate; and

(d) A discussion of interim response actions including the volume of soil removed and/or ~~ground water~~ **groundwater** treated.

(M) Tier 3 Evaluation.

(1) Tier 3 Evaluation plan.

(a) If site-specific target levels are to be developed under a Tier 3 Evaluation, then a Tier 3 Evaluation plan shall be prepared and submitted to the state fire marshal within ninety days of approval of the Tier 2 Evaluation pursuant to paragraph (L)(7)(a) of this rule. Unless otherwise provided in this rule, this plan shall include all the following:

(i) A description of the objective of the Tier 3 Evaluation and the activities to be conducted;

(ii) A discussion of the effectiveness, cost and the rationale for selecting the Tier 3 Evaluation compared to other remedial action alternatives; and

(iii) An implementation schedule and the projected completion date of the proposed Tier 3 Evaluation.

(b) Upon approval of the Tier 3 Evaluation plan by the state fire marshal, owners and operators shall conduct the activities in accordance with the approved Tier 3 Evaluation plan.

(2) Public participation.

(a) For each confirmed release for which a Tier 3 Evaluation plan is submitted to the state fire marshal, the owners and operators shall provide notice to the public in a format approved by the state fire marshal by means designed to reach those members of the public directly affected by the release and the planned Tier 3 Evaluation. This notice may include, but is not limited to, public notice in local newspapers, block advertisements, public service announcements, ~~publication in a state register,~~ **certified** letters to individual households **and businesses**, or personal contacts by field staff. **Owners and operators shall submit proof of public notice to the state fire marshal within ninety days of the date of the public notice request.**

(b) The state fire marshal shall ensure that the UST site release information and decisions

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concerning the Tier 3 Evaluation plan are made available to the public for inspection upon request.

(c) Before approving a Tier 3 Evaluation plan, the state fire marshal may hold a public meeting to consider comments on the proposed Tier 3 Evaluation plan if there is sufficient public interest, or for any other reason.

(3) Tier 3 decisions.

(a) If the concentration of a particular chemical(s) of concern is at or below the Tier 3 site-specific target levels, then no further action is necessary for that chemical of concern and for the corresponding complete exposure pathway. If required by paragraph (O) of this rule, a monitoring plan shall be developed for ~~ground water~~ **groundwater** and submitted with the Tier 3 Evaluation report prepared in accordance with paragraph (M)(4) of this rule to demonstrate that concentrations of chemical(s) of concern will remain at or below Tier 3 site-specific target levels.

(b) If the concentrations of chemical(s) of concern are above the Tier 3 site-specific target levels, then the owners and operators shall conduct one or a combination of the following:

(i) An Interim Response Action may be implemented, in accordance with paragraph (K) of this rule, to eliminate a complete exposure pathway or to reduce concentrations of chemical(s) of concern at the source area(s) to at or below the site-specific target levels; or

(ii) The Tier 3 site-specific target level values may be used as target levels for remedial action and a Remedial Action Plan developed pursuant to paragraph (N) of this rule.

(4) Tier 3 Evaluation report.

Within ninety days from the projected completion date stated in the approved Tier 3 Evaluation plan a report summarizing the activities conducted in accordance with the Tier 3 Evaluation plan developed in paragraph (M)(1) of this rule and the results of the Tier 3 decisions described in paragraph (M)(3) of this rule shall be submitted to the state fire marshal for approval.

(N) Remedial Action.

(1) Remedial Action Plan

A Remedial Action Plan shall be prepared and submitted to the state fire marshal within ninety days of approval of the Tier 1 Investigation report pursuant to paragraph (I)(4) of this rule, approval of the Tier 2 Evaluation pursuant to paragraph (L)(7)(a) of this rule or approval of the Tier 3 Evaluation report pursuant to paragraph (M)(4) of this rule. The Remedial Action Plan shall include, at a minimum, all of the following information:

(a) A description of the remedial action program to be implemented;

(b) Proposed targets levels, identified by chemical(s) of concern and environmental media;

(c) A conceptual design of the remedial action system, detailed engineering drawings are not necessary;

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(d) A brief description of remedial action alternatives considered, including a discussion of the reliability, effectiveness, cost, and time needed for completion, and the rationale for the selected program;

(e) A Monitoring Plan, prepared in accordance with paragraph (O) of this rule, describing monitoring to be used to determine whether site-specific target levels are being achieved and to demonstrate that concentrations of chemical(s) of concern will remain at or below site-specific target levels, including locations of any monitoring wells designated for sampling;

(f) A description of reporting frequency and proposed content of reports;

(g) A description of all permits or other governmental approvals required for implementation of the plan;

(h) A description of activities and studies, if any, required to be performed prior to implementation of the proposed remedial action; and

(i) An implementation schedule, projected completion date and the submittal date for the completion report of the proposed remedial action.

(2) Public participation.

(a) For each release for which a Remedial Action Plan is submitted to the state fire marshal, the owners and operators shall provide notice to the public in a format approved by the state fire marshal by means designed to reach those members of the public directly affected by the release and the planned remedial 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,~~ **certified** letters to individual households **and businesses**, or personal contacts by field staff. **Owners and operators shall submit proof of public notice to the state fire marshal within ninety days of the date of the public notice request.**

(b) The state fire marshal shall ensure that the UST site release information and decisions concerning the Remedial Action Plans are made available to the public for inspection upon request.

(c) Before approving a Remedial Action Plan, the state fire marshal may hold a public meeting to consider comments on the proposed Remedial Action Plan if there is sufficient public interest or for any other reason.

(d) The owners and operators shall give public notice that complies with paragraph (N)(2)(a) of this rule if implementation of an approved Remedial Action Plan does not achieve the established cleanup levels in the plan and termination of that plan is under consideration by the state fire marshal.

(3) Implementation of Remedial Action Plans.

(a) Upon approval of the Remedial Action Plan, owners and operators shall implement the plan. Owners and operators shall monitor, evaluate, and report to the state fire marshal the results of implementation efforts.

(b) If the treatment technology approved by the state fire marshal in the plan has been installed and

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operated for the time frame specified in the approved Remedial Action Plan and the technology is unable to reduce the concentration of chemical(s) of concern to a level at or below action or site-specific target levels, then the owners and operators shall:

(i) Re-evaluate the remedial action alternatives and submit a revised Remedial Action Plan;

(ii) Re-evaluate the assumptions and parameters used to develop the target levels, as appropriate.

(4) Completion report.

Following completion of remedial action in accordance with this rule, owners and operators shall prepare and submit a completion report no later than the submittal date provided in the approved plan. The completion report must demonstrate the remedial action objectives have been met. The report shall contain documentation supporting termination of the remedial action program. Upon approval of the report, the state fire marshal shall issue to the owners and operators written notice that no further action is required.

(O) Monitoring Plan.

(1) Purpose.

(a) A monitoring plan shall be developed as appropriate to:

(i) Demonstrate that no further action is appropriate in accordance with paragraphs (L)(6) and (M)(3) of this rule;

(ii) Demonstrate that a remedial action completed in accordance with paragraph (N) of this rule has achieved target levels; and

(iii) Verify fate and transport model assumptions and predictions related to the development of site-specific target levels pursuant to paragraph (L)(5) of this rule. Historical data may be used to verify model assumptions and predictions or to reduce the time period of the monitoring plan.

(b) The monitoring plan shall include, at a minimum, all of the following information:

(i) A description of the purpose and objective of the monitoring activity;

(ii) A description of monitoring activities to be conducted, including those conducted to implement engineering controls;

(iii) The location of the point(s) of demonstration and point(s) of exposure;

(iv) A summary of sampling procedures;

(v) A description of the anticipated length and frequency of the monitoring activity;

(vi) An identification and description of the criteria to be used for termination of the Remedial Action Plan or monitoring activity, as appropriate; and

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(vii) Criteria to be used for verifying ~~ground water~~ **groundwater** fate and transport model assumptions and predictions. The model assumptions shall be validated with empirical data collected from point(s) of demonstration.

(c) If the objectives of the monitoring plan have been met, then owners and operators shall submit a completion report within ninety days after receiving analytical results of the last monitoring plan sampling event and in accordance with paragraph (O)(3) of this rule. If the objectives of the monitoring plan have not been met, then the owners and operators shall conduct one or more of the following within ninety days after receiving analytical results of the last monitoring plan sampling event:

(i) Continue monitoring activities with state fire marshal approval;

(ii) Conduct an Interim Response Action in accordance with paragraph (K) of this rule;

(iii) Develop a Remedial Action Plan in accordance with paragraph (N) of this rule; or

(iv) Re-evaluate the assumptions and parameters used to develop site-specific target levels.

(2) Point(s) of demonstration.

The monitoring plan shall include a point(s) of demonstration between the source area and the point of exposure and be submitted with the Tier 2 Evaluation report, Remedial Action Plan or Tier 3 Evaluation report.

The process for the selection of the point(s) of demonstration shall consider the location of the point(s) of exposure including the receptor and exposure route, the transport mechanism (e.g., ~~ground water~~ **groundwater** migration, vapor migration) and the estimated travel time from the source to the point(s) of exposure. The point(s) of demonstration shall be located to monitor the progress of the remedial action (including natural attenuation) and to verify the predictions related to the potential fate and transport of the chemical(s) of concern. The point(s) of demonstration shall be located sufficiently upgradient of the point(s) of exposure to indicate whether continued migration of the chemical(s) of concern may impact the point(s) of exposure above the applicable action levels.

(3) Completion report.

Following completion of monitoring in accordance with paragraphs (O)(1) and (O)(2) of this rule, owners and operators shall prepare a completion report that demonstrates the monitoring objectives have been met. The report shall contain documentation supporting termination of the monitoring plan. Upon approval of the report, the state fire marshal shall issue to the owners and operators written notice that no further action is required.

(P) Petroleum contaminated soil.

The storage, treatment and disposal of petroleum contaminated soil generated from corrective actions undertaken pursuant to this rule shall be in accordance with rule 1301:7-9-16 of the Administrative Code.

(Q) Requests for extensions.

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If owners and operators desire an extension of time in which to comply with any portion of this rule, the owner and operator shall:

(1) Prepare a written request on a form prescribed by the state fire marshal, signed by the owners and operators, setting forth the following:

(a) The date the information was to be submitted;

(b) The reasons for requesting the extension;

(c) The length of time that the extension is requested for;

(d) The name and complete address of the UST site that is the subject of the extension request; **and**

(e) ~~**The name of the state fire marshal employee that is assigned to monitor the corrective actions activities at the UST site; and**~~

~~**(f)**~~ The release number, assigned by the state fire marshal, for the UST site that is the subject of the extension request.

(2) Submit a written request in accordance with paragraph (Q)(1) of this rule to the state fire marshal prior to the expiration of the time period that is the subject of the extension request. Submission of the written request required by paragraph (Q)(1) of this rule is accomplished only upon the actual receipt of the request by the state fire marshal. The state fire marshal may grant, modify, or deny any extension request at his sole discretion.

(R) Alternative methodologies and technologies.

(1) Methodologies and technologies other than those specified in this rule may be used if the owner and operator:

(a) Demonstrates to the state fire marshal that the alternative methodology or technology is at least as effective as those required by this rule; and

(b) Obtains written approval from the state fire marshal to use the alternative methodology or technology before the actual implementation of such methodology or technology. If the alternative methodology or technology is approved by the state fire marshal, the owner and operator using such an alternative methodology or technology shall comply with any conditions imposed by the state fire marshal on its use.

(2) The state fire marshal may approve the alternative methodology or technology for use at a specific UST site or for use at all UST sites. If the state fire marshal approves an alternative methodology or technology for use at all UST sites, the owners and operators must comply with any conditions imposed by the state fire marshal on the use of the alternative methodology or technology.

(3) Notwithstanding paragraphs (R)(1) and (R)(2) of this rule, if a covenant not to sue is issued by the director of the environmental protection agency in accordance with sections 3737.88(A)(3) and 3746.12 of the Revised Code, no further action is required.

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(S) Voluntary corrective action.

(1) Any person having a legal, equitable or possessory interest in a parcel of property may undertake voluntary corrective action in response to a release or suspected release from a UST system containing petroleum.

(2) Upon demonstration that the applicable standards established by this rule have been met, the state fire marshal shall issue the person that undertook voluntary corrective action written notice that no further corrective action is required.

(3) Written notice issued pursuant to paragraph (S)(2) of this rule that no further corrective action is required shall not be construed in any manner to suggest that the person completing voluntary corrective action has thereby assumed any liability or responsibility for the release or suspected release of petroleum, or for any residual contamination that may remain at the property.

(4) Any determination by the state fire marshal for the purpose of assisting voluntary corrective action does not release any owner or operator from any obligations under sections 3737.87 to 3737.89 of the Revised Code and the regulations adopted thereunder, or effect any other rights under the citizen suits provision of the Resource Conservation and Recovery Act of 1976, 90 Stat. 2795, 42 U.S.C.A. 6901, as amended. The state fire marshal reserves all enforcement and remedy rights available under the law.

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