

**Arizona Department of Environmental Quality UST Program
Release Reporting & Corrective Action Guidance**

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SECTION 5. REMEDIAL RESPONSES

Remedial responses are essentially activities intended to cleanup environmental media resulting from a confirmed release from the regulated UST system. A remedial response is one which results in remediation. Remediation is defined as either (a) the treatment or removal of contaminated soil, surface water, and groundwater to meet predetermined or site-specific risk-based levels of chemicals of concern (COCs); or (b) soil, surface water, and groundwater that meets predetermined or site-specific risk-based levels of COCs when site uses and/or receptor exposures are maintained under the conditions accounted for in the risk assessment.

The conceptual site model (CSM) developed in conjunction with site investigation may serve as a tool for identifying and summarizing appropriate remedial activities. Figure 4.1.3.a indicates designators: \hat{I} - \hat{O} that can be placed on the CSM to indicate removal/treatment remedial actions, containment remedial actions, and institutional controls implemented to control exposure and, thereby, risk. Remedial actions planned and implemented shall comply with the requirements of A.A.C. R18-12-263.

5.1 CONDITIONS WHEN REMEDIAL RESPONSES ARE NOT REQUIRED

If the approved Site Characterization Report (SCR) documents that levels of any COCs at the site are at or below the applicable corrective action standard, then no remedial (clean-up) activities are required and the owner or operator should request LUST case closure [see Section 8 and A.A.C. R18-12-263(B)].

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5.2 CONDITIONS WHEN REMEDIAL RESPONSES ARE REQUIRED

If the approved SCR documents that levels of all COCs at the site are above the applicable corrective action standard, then the owner or operator must perform remedial (clean-up) activities. Remedial activities shall be conducted until concentrations for each COC, in each contaminated medium, at the point of compliance, is documented to be at or below the corrective action standard determined and the LUST case closure requirements are completed and approved by the department [A.A.C. R18-12-263(B)].

Under the conditions described below (see Sections 5.3 and 5.4), the department may or shall require the submittal of a corrective action plan (CAP) pursuant to A.A.C. R18-12-263(C) and (D). The owner or operator may, at any time, voluntarily submit a CAP when not required by the department.

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5.3 CONDITIONS WHEN A CORRECTIVE ACTION PLAN (CAP) MAY BE REQUESTED

The department may require a CAP when any of the following conditions exist [A.A.C. R18-12-263(C)]:

- *Soil or groundwater contamination extends or has the potential to extend off the facility boundary and the LUST site is classification 3* [excerpt from R18-12-263(C)(1)]. This includes any factors which may potentially result in off-site impacts, e.g., shallow groundwater above a confining clay layer, or installation and use of a production well located upgradient or cross-gradient to site.
- *Free product is determined to extend off the facility boundary* [R18-12-263(C)(2)].
- *Site-specific conditions indicate a potential level of threat to public health and the environment equal to or exceeding that occurring under the preceding two bullets. In determining the extent of threat to public health and the environment, the department shall consider the following* [excerpt from R18-12-263(C)(3)]:
 - a. *The nature of the regulated substance and location, volume, and the distribution of concentrations of chemicals of concern in soil, surface water, and groundwater.*
 - b. *The presence and location of known receptors potentially impacted by the release.*
 - c. *The presence of complete exposure pathways.*

When free product is present in surficial soils, in subsurface conduits, or on surface water, the site is classified as 1, Immediate threats, for which a CAP will be required as described in Section 5.4. This is because a potential receptor may be exposed directly, regardless of the location of the free product, *i.e.*, on-site or off-site. However, when free product is present in subsurface soils on the water table or submerged beneath a water table that has undergone a sustained rise in elevation, groundwater may or may not be impacted at an **existing** well. The condition which **may** present either an immediate exposure or exposure within 2 years to contaminated groundwater, most likely will occur when free product migrates off-site and groundwater uses are not restricted by a DEUR for well installation prohibition and/or existing well abandonment.

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5.4 CONDITIONS WHEN A CORRECTIVE ACTION PLAN (CAP) SHALL BE REQUIRED

The department shall require a CAP when any of the following conditions exist [A.A.C. R18-12-263(D)]:

1. *The LUST site is classification 1 or classification 2.*
2. *The owner or operator proposes a corrective action standard for groundwater or surface water under a Tier 2 or Tier 3 evaluation.*
3. *The owner or operator proposes a corrective action standard for soil under a Tier 3 evaluation, and the point of compliance extends beyond a facility property boundary.*
4. *The intended response or remediation technology involves discharge of a pollutant either directly to an aquifer or the land surface or the vadose zone.*

Regardless of required or voluntary submittal, a CAP, specific for site-conditions, may present one or two remedial alternatives which rely upon remediation technologies and/or restrictive covenants to the property deed for achieving a **pre-determined** corrective action standard. However, the remaining one or two remedial alternatives presented in the CAP may rely upon establishing an alternative **site-specific** risk-based corrective action standard, with or without the use of a remediation technology and/or institutional or engineering controls. The extent to which the site-specific risk-based alternative is developed must meet the same criteria as any other technology or tool evaluated within the context of a CAP. Please refer to Section 7.3 for further detail on CAP contents, and Sections 6.2 - 6.4 for discussion on the use of screening level tier evaluations and full tier evaluations.

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5.5 DETERMINATION OF REMEDIATION RESPONSE

An owner or operator must determine the remedial alternative to be used based on protecting *public health and welfare and the environment*, allowing *maximum beneficial use of the water and soil of this state*, being *reasonable, necessary, cost effective and technically feasible* [excerpt from A.R.S. §49-1005(D)]. The remedial alternative selected must also fulfill all of the following criteria [A.A.C. R18-12-263(E)]:

1. *Local, State, and federal requirements that affect the installation, operation, demobilization, and other activities associated with the technology.*
2. *Reduction of toxicity, mobility, or volume.*
3. *Long-term effectiveness and permanence.*
4. *Short-term effectiveness.*
5. *Ability to implement, including consideration of the results presented in the site characterization report, the corrective action standard for each chemical of concern in each contaminated medium, ease of initiation, operation and maintenance of the technology, and public response to any contamination residual to or resulting from the technology.*

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5.6 DERIVED WASTE

When contaminated or potentially contaminated material generated during the course of site investigative or remedial activities are treated, stored or disposed on-site, the derived waste shall be [see A.A.C. R18-12-263(F)]:

- Contained to *prevent the migration of contaminants into subsurface soil, surface water, or groundwater throughout the time the derived waste remains on-site*. An owner or operator must utilize protective measures to ensure:
 - P Access by unauthorized persons is restricted.
 - P Integrity of any containment system of the derived waste is maintained during placement, storage, treatment or removal.
- Stored or treated in stockpiles, drums, tanks, or other vessels in a manner that is consistent with the statutes of the Solid Waste Program (A.R.S. Title 49, Chapter 4, Article 9) and the rules written thereunder. The containers must be labeled accordingly.
- Treated to the appropriate and applicable corrective action standards if the derived waste is to be returned to the on-site subsurface.

None of the above requirements *shall supersede more stringent requirements for storage, treatment, or disposal of on-site or off-site derived waste imposed by local, state, or federal governments*.

An owner or operator meeting the above requirements is deemed to meet the exemption provisions in the definition of solid waste under A.R.S. § 49-701.01(B)(12)(b) for petroleum contaminated soils stored or treated on-site.

Derived waste which is transported off-site and which exceeds the applicable soil remediation levels is defined under A.R.S. § 49-851(3), (5) and 852(A)1. These petroleum contaminated soils are subject to the special waste provisions for best management practices pursuant to A.R.S. Title 49, Chapter 4, Article 9.

If free product is present in investigative or remedial derived wastes and is determined to constitute hazardous waste, the provisions for waste disposal under A.R.S. Title 49, Chapter 5 shall apply. Please contact the Hazardous Waste Program for further information.

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5.7 PERIODIC SITE STATUS REPORT

An owner or operator must submit a site status report, on the form provided in Appendix C, as requested by the department after the date of department notice of approval of the SCR, unless another submission schedule is provided in a department approved CAP. The submittal of the site status report must continue until the department approves a LUST case closure report. The site status report must include all of the following information [see A.A.C. R18-12-263(G)]:

- Identification of each type of remedial corrective action technology being performed;
- Date each remedial corrective action technology became operational;
- Results of monitoring and laboratory analysis of collected samples for each contaminated medium received since the last report to the department;
- Site plan showing the current location of the components of any installed remediation technology including monitoring and sample collection locations of data collected.
- Estimated time until response activities, including remediation and verification monitoring, will demonstrate that the concentration of each chemical of concern is at or below the corrective action standard determined for that chemical of concern in the contaminated medium; and
- The current LUST site classification.

The site status report should also include the following information:

- Description of all work performed for the reporting time frame.
- Estimate of the volume of petroleum hydrocarbons recovered.
- Volume of media treated.
- Remediation system uptime and downtime, including a description of any problems encountered.
- Interpretive analysis of current and historical data collected for the remedial technologies employed.
- Proposed future activities.