Montana Priority Ranking Guidance for Petroleum Tank Releases

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Priority Ranking for Petroleum-Tank Releases

Purpose:	The purpose of this document is to describe the objectives, expectations, and detailed items necessary to determine the risk priority of petroleum tank releases.
Scope:	This guidance applies to petroleum products and constituents of petroleum products released into the environment from petroleum storage tank systems that are regulated under the Petroleum Storage Tank Cleanup Act (§75-11-301 et seq.) or the Montana Underground Storage Tank Act (§75-11-501 et seq.) and administrative rules promulgated thereunder. This guidance supersedes all previous versions of guidance addressing the prioritization of petroleum storage tank releases.

Revision Date	Revision Description
March 2020	Update to previous priority ranking of petroleum tank release guidance including the following: updated the Prioritization Matrix and added the Prioritization Flowchart for Petroleum Tank Releases.

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Referenced documents available at DEQ's website:

http://deq.mt.gov/Land/lust/techguidlist

- MT DEQ Risked-Based Corrective Action Guidance for Petroleum Releases
- MT DEQ Remedial Investigation Guidance
- MT DEQ Remedial Alternatives Analysis Guidance
- MT DEQ Release Closure Plan
- MT DEQ Cleanup Guidance for Petroleum Releases
- MT DEQ Vapor Intrusion (VI) Guidance
- MT DEQ Monitored Natural Attenuation
- MT DEQ Petroleum Release Closure Guidance
- MT DEQ Glossary of Terms

Priority Ranking Guidance for Petroleum Tank Releases

Montana Department of Environmental Quality (DEQ)
Petroleum Tank Cleanup Section (PTCS)

Overview

This DEQ Priority Ranking Guidance (Guidance) is intended to assist with remediation and cleanup actions at petroleum tank releases (releases) regulated under the Petroleum Storage Tank Cleanup Act (§75-11-301 et seq.) or the Montana Underground Storage Tank Act (§75-11-501 et seq.) and administrative rules promulgated thereunder.

Objectives

The Department of Environmental Quality (DEQ) prioritizes releases to direct the finite resources available for corrective action to address the releases that pose the greatest risk to human health, safety, and the environment. DEQ does not possess adequate resources to address all releases simultaneously so work efforts are typically focused on higher-risk releases before conducting work at lower-risk releases. The efficiency and effectiveness of the owner/operator and their representatives to respond to and properly conduct corrective action greatly influences DEQ's ability to move releases through the remediation process, and ultimately, to closure.

Risk Priority Categories

The risk priority categories are described below. A prioritization matrix and a prioritization flowchart are located at the end of this Guidance (Pages 4 & 5) to help determine priorities of releases. Sensitive receptors are defined for this Guidance to include the following: drinking water; surface water bodies; direct contact with petroleum-contaminated soil; buildings at risk for petroleum-vapor intrusion (PVI); utility corridors at risk for PVI, light non-aqueous phase liquid (LNAPL), or dissolved-phase plume migration; and other site-specific receptors.

1.1 High-Priority / Emergency Response

These releases are emergency responses and/or they pose an immediate or significant threat to human health or the environment. The release may impact or imminently threaten sensitive receptors. These releases are typically uncontrolled, not fully characterized, and often newly discovered. Any uncharacterized release with known migrating free product or LNAPL will be placed in this category.

1.2 High-Priority Remediation (Migrating LNAPL)

These releases must be fully investigated and all unknowns must be resolved before being placed in a remediation category. Releases in this category will have some known impact or immediate threat to a sensitive receptor, and have a migrating LNAPL plume. These releases will be fully characterized and will have a remediation system in place or required, thereby distinguishing them from category 1.1 releases.

Migrating LNAPL - An LNAPL body that is expanding laterally or vertically into areas previously un-impacted by LNAPL. The term 'migration' describes LNAPL movement on a macro or plume scale, which can occur only if the LNAPL driving mechanisms (e.g., LNAPL head) exceed the resistive mechanisms, and thus displace water in adjacent pore spaces. Natural and manmade preferential pathways may exist at a given site that could allow migration to occur where it would not otherwise be expected.

Releases with active remediation systems will remain priority 1.2, priority 1.3, or priority 3.0 until the project manager and the consultant determine that the remediation system is either no longer necessary or the risk to sensitive receptors (for priority 1.2 and priority 1.3) or the risk to non-sensitive receptors (for priority 3.0) has been mitigated.

1.3 High-Priority Remediation (Migrating Dissolved-Phase Plume)

These releases must be fully investigated and all unknowns must be resolved before being placed in a remediation category. Releases in this category will have some known impact or immediate threat to a sensitive receptor, and have a migrating dissolved-phase petroleum plume. These releases will be fully characterized and will have a remediation system in place or required. The only distinction between this category and category 1.2 is that these releases do not have migrating LNAPL.

Releases with active remediation systems will remain priority 1.2, priority 1.3, or priority 3.0 until the project manager and the consultant determine that the remediation system is either no longer necessary or the risk to sensitive receptors (for priority 1.2 and priority 1.3) or the risk to non-sensitive receptors (for priority 3.0) has been mitigated.

1.4 High-Priority Characterization

These are typically new releases where risks to human health and the environment are unknown and nearby sensitive receptors are known but are not likely threatened. Releases in this category require characterization to determine factors such as; LNAPL and dissolved-phase plume status, and extent and magnitude of soil and/or groundwater contamination. Releases with unknown sensitive receptor location or status will also be placed in this category.

All new releases, except for 1.1 High-Priority/Emergency Response releases, will be treated as High Priority Characterization releases until they are characterized or until enough information is obtained about the release to determine that it does not pose significant risks to human health or the environment. Information provided with the 30-Day Release Report may demonstrate the release represents a lower risk; then the release will be re-prioritized accordingly. DEQ will consider additional data or rationale provided by an owner/operator or their representative in making this determination.

2.0 Medium-Priority Characterization

These releases have not been completely investigated but all sensitive receptors have been identified and are not contaminated or threatened. The release may have petroleum-contaminated soil or groundwater extending to third parties but there is no threat to sensitive receptors.

3.0 Medium-Priority Remediation

These releases have been investigated to the extent necessary to determine that there are no threats to sensitive receptors or that limited unknowns remain. Remediation may be active or additional work is needed. The LNAPL body and/or groundwater contaminant plume is stable and/or shrinking. Remediation system(s) may remain in operation to address the shrinking plume and/or petroleum vapor in vadose zone. This priority may include releases where remediation has been deferred due to the location of contamination (e.g. beneath buildings or under active USTs systems) and no sensitive receptors are threatened.

4.0 Monitoring

These releases have been fully investigated and are undergoing long-term compliance monitoring following active remediation; or they meet the criteria for ground water management (as defined in ARM 17-56-607(7)(e)) and are being remediated by monitored natural attenuation (MNA). These releases have a defined groundwater plume with petroleum contamination exceeding DEQ's risk-based screening levels (RBSLs), but no sensitive receptors are threatened. The cumulative groundwater monitoring data must demonstrate the plume is stable or decreasing under fluctuating hydrogeologic conditions. Monitoring will continue in accordance with a plan developed for the site and approved by DEQ (as defined in ARM 17-56-607(8) & (9) et seq.).

5.0 Pending Closure

These releases meet the criteria for closure as set forth in MT DEQ Petroleum Release Closure Guidance.

Priority Ranking Process

DEQ project managers determine the priority of releases based on this Guidance and the Prioritization Matrix for Petroleum Tank Releases (Page 4) and the Prioritization Flowchart for Petroleum Tank Releases (Page 5). This priority ranking process applies to releases regulated under the Petroleum Storage Tank Cleanup Act (§75-11-301 et seq.) or the Montana Underground Storage Tank Act (§75-11-501 et seq.) and administrative rules promulgated thereunder, including releases in the Leaking Underground Storage Tank (LUST) Trust Fund Program and the Petroleum Brownfields Program.

Once the priority is determined, the highest priority releases will be actively addressed. When DEQ staff turnover occurs, high-priority releases are reassigned and DEQ staff members may temporarily suspend work on their medium- to low-priority releases. Preference will be given to high-priority releases over lower-priority releases whenever workload exceeds available resources.

Project managers will re-prioritize releases as the corrective action work – investigation, cleanup, and monitoring –progresses. Once corrective action begins, DEQ will endeavor to continue to address the release completely through the closure process, regardless of re-prioritization. However, if resource constraints require delaying work at releases where cleanup has already begun in order to apply those resources to higher priority releases, the current priority will be used in the decision.

If an owner/operator disagrees with DEQ's priority for a release or has additional questions they should contact the assigned DEQ project manager for further discussion.

DEQ uses this prioritization process to determine which releases should be addressed first; however, to best manage all petroleum releases with finite resources DEQ considers other factors including the following.

Ongoing Active Remediation:
DEQ may continue remediation activities at a lower-priority release if an active remediation system is in operation (e.g., soil-vapor-extraction/air-sparge system). Cleanups under these circumstances will be evaluated by DEQ on a site-specific basis.

Adjacent Releases and Sites:
DEQ may address lower-priority releases along with a higher-priority releases if contaminants are comingled and/or work can be coordinated and conducted in an efficient manner.

Investigation / Cleanup Opportunities:
DEQ may consider addressing lower-priority releases when an opportunity for investigation or cleanup presents itself. These opportunities may include real-estate transactions, property development, highway reconstruction, building demolition, or removal of UST systems in areas that have hindered investigation or cleanup. The owner/operator is responsible for notifying DEQ when these opportunities occur. The benefit of addressing investigations and cleanups under these circumstances will be evaluated by DEQ on a site-specific basis.

Prioritization Matrix for Petroleum Tank Releases

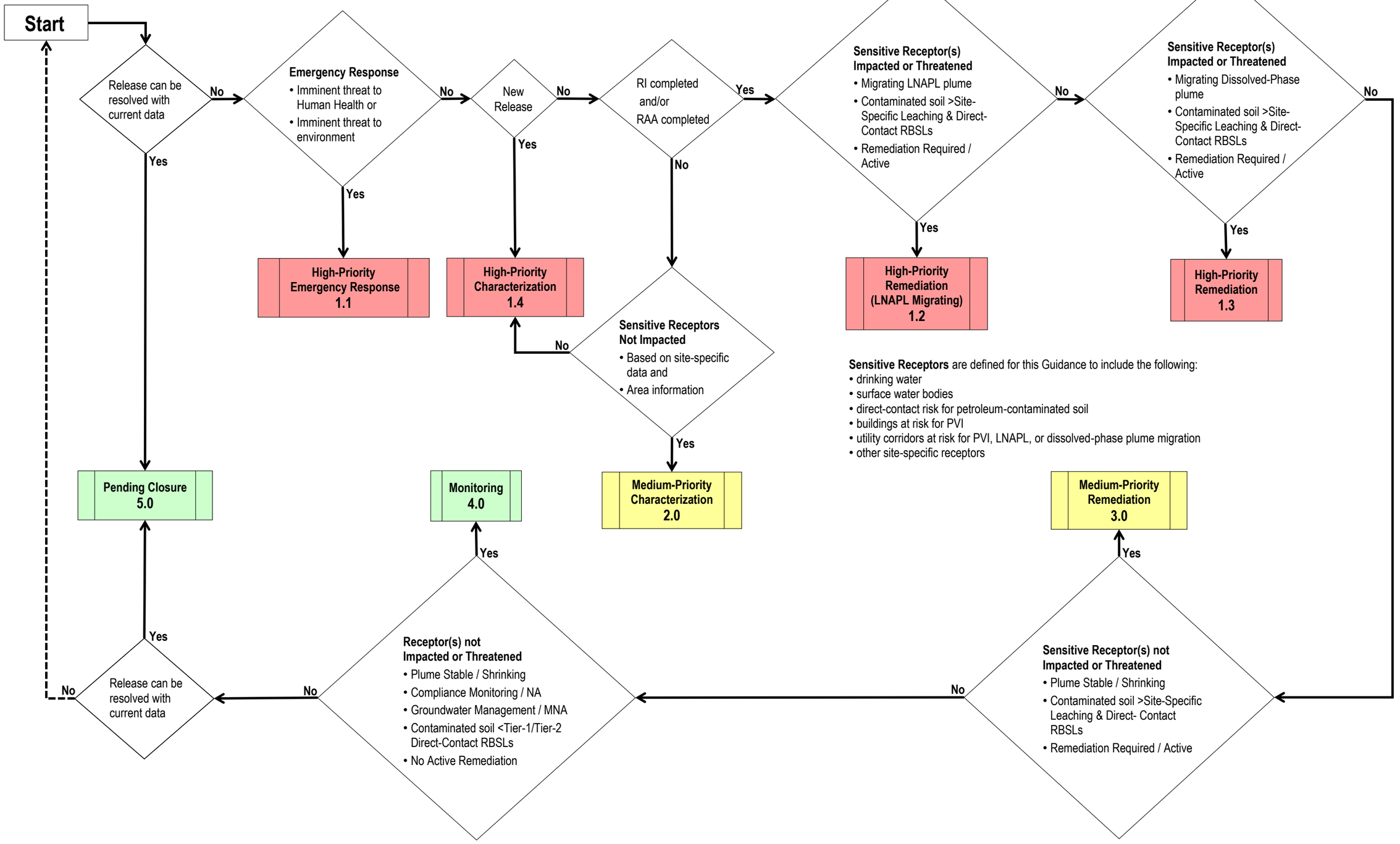
2/21/2020 v5.3

Sensitive Receptors are defined for this Guidance to include the following: drinking water; surface water bodies; direct contact with petroleum-contaminated soil; buildings at risk for petroleum-vapor intrusion (PVI); utility corridors at risk for PVI, light non-aqueous phase liquid (LNAPL), or dissolved-phase plume migration; and other site-specific receptors.

Risk vs Impacts / Threats to Receptors			Site-Specific Risks from Petroleum Contaminants; Receptors; Remediation Systems; Etc.						
Risk Priority		**Summary**	**Soil Contamination** refer to RBCA Guidance	**LNAPL**	**Groundwater Contamination** refer to RBCA Guidance	**Surface Water**	**Petroleum-Vapor Intrusion (PVI)** refer to Vapor Intrusion Guidance	**Subsurface Utilities**	**Expected Remediation Actions**
High	**High-Priority Emergency Response 1.1**	• Significant impacts to Sensitive Receptors • Immediate risks to Sensitive Receptors • Emergency actions required	• Exceeds multiple Default RBSLs by order of magnitude, and/or • Extent unknown	• LNAPL plume not defined	• Exceeds DEQ-7 and RBSLs • Receptor pathway completed • Water supply well contaminated, and/or • Imminent threat to water supply well • Plume extent/magnitude not defined	• Surface water contaminated or • Surface water imminently threatened	• PVI documented and/or imminent threat • Receptor pathway complete and/or threatened • Imminent danger of fire or explosion • Dangerous PVI concentrations in ambient air • PVI migrating • Complaint	• Utility receptor impacted and/or imminent threat • Receptor pathway completed • Extent of contamination unknown	• Emergency Response Actions • Immediate Response • Inital Cleanup & mitigation • Remediation work, etc.
	High-Priority Remediation (Migrating LNAPL) 1.2	• Characterized, investigated • Known impacts to Sensitive Receptors • Imminent threats to Sensitive Receptors • LNAPL migrating with groundwater plume • Active remediation required	• Exceeds multiple Default RBSLs by order of magnitude and/or • Extent defined or partially defined	• Migrating LNAPL plume • LNAPL plume defined or partially defined	• Exceeds DEQ-7 and RBSLs • Receptor pathway completed • Water supply well contaminated and/or • Imminent threat to water supply well • Plume extent/magnitude defined or partially defined	• Surface water contaminated or • Surface water imminently threatened	• PVI documented and/or imminent threat • Receptor pathway complete and/or imminent threat • PVI migrating • Complaint	• Utility receptor pathway complete and/or imminent threat • Extent of impacts to utilities unknown • Utility receptor pathway not eliminated	• Active remediation • Install / Operate In-situ system / treatment, and/or • Soil excavation, etc
	High-Priority Remediation 1.3	• Characterized, investigated • Probability of impacts to Sensitive Receptors • LNAP present but not migrating • Groundwater plume migrating • Active remediation required	• Exceeds multiple Default RBSLs by order of magnitude and/or • Exceeds Direct-Contact RBSLs • Extent defined or partially defined	• LNAPL plume not migrating • LNAPL plume defined	• Exceeds DEQ-7 and RBSLs • Receptor pathway completed • Water supply well contaminated and/or • Imminent threat to water supply well • Plume extent/magnitude defined or partially defined	• Surface water imminently threatened	• PVI documented and/or imminent threat • Receptor pathway complete and/or imminent threat • PVI migrating • Complaint	• Utility receptor pathway complete and/or imminent threat • Extent of impacts to utilities unknown • Utility receptor pathway not eliminated	• Active remediation • Install / Operate In-situ system / treatment, and/or • Soil excavation, etc
	High-Priority Characterization 1.4	• Unknown impacts to Sensitive Receptors, • Possible threats to Sensitive Receptors • Remedial investigation required	• Exceeds multiple Default RBSLs by order of magnitude and/or • Exceeds Direct-Contact RBSLs • Extent unknown	• Unknown	• Groundwater contamination not defined • No imminent threat to Sensitive Receptors • No imminent threat to water supply wells	• Not threatened and/or • Pathway eliminated	• PVI extent unknown • Sensitive Receptors not immediately threatened • PVI migration potential not apparent	• Utilities not immediately threatened • Utility impacts not investigated or partially investigated	• Pending Remedial Investigation, and/or • Remedial Alternatives Analysis
Medium	**Medium-Priority Characterization 2.0**	• No impacts to Sensitive Receptors, and/or • Possible impacts to non-sensitive receptors • Some unknowns • Further investigation required	• Exceeds Default RBSLs, and/or • Exceeds Direct-Contact RBSLs • Extent defined or partially defined	• LNAPL may be present, but not migrating, and • LNAPL not mobile	• Plume defined or partially defined • Water supply wells not threatened	• Not threatened and/or • Pathway eliminated	• Sensitive receptors not threatened by PVI • PVI migration potential not apparent • PVI investigation may be required	• Utilities not immediately threatened • Utility impacts investigated or partially investigated	• Pending Remedial Investigation, and/or • Remedial Alternatives Analysis
	Medium-Priority Remediation 3.0	• Some impacts to non-sensitive receptors, and/or • Low probability of impacts to Sensitive Receptors • Further remediation needed	• Exceeds Direct-Contact RBSLs and/or • Exceeds Leaching RBSLs • Extent defined	• LNAPL plume defined • LNAPL not migrating and not mobile	• Plume defined • Plume stable and/or shrinking • Receptor pathway is eliminated	• Not threatened and/or • Pathway eliminated	• Receptor pathway for PVI eliminated or mitigated • PVI threat resolved	• Utilities not impacted or threatened • Utility receptor pathway is eliminated	• Operate In-situ system / treatment, and/or • Soil excavation, etc
Low	**Monitoring 4.0**	• No further active remediation required • Compliance Monitoring / Natural Attenuation (NA) • Groundwater Management / Monitored Natural Attenuation (MNA)	• Contaminated soil partially remediated • Leaching RBSLs may be exceeded • Direct-Contact Tier-1/Tier-2 RBSLs not exceeded	• LNAPL plume not present	• Cumulative monitoring data demonstrate NA is occurring • Plume defined, stable, and shrinking • Water supply wells not threatened/impacted	• Not threatened and/or • Pathway eliminated	• Receptor pathway for PVI eliminated or mitigated • PVI threat resolved	• Utilities not impacted or threatened • Utility receptor pathway is eliminated	• Conduct monitoring for Compliance via NA, or • Conduct monitoring for GW Management via MNA
	Pending Closure 5.0	• DEQ internal review required • Well abandonment and/or other documentation may be required • Engineering controls (EC) may be required • Institutional controls (IC) may be required	• Residual Contaminated soil • GW monitoring data mitigate Leaching RBSL exceedances • Direct-Contact Tier-1/Tier-2 RBSLs not exceeded	• LNAPL plume not present	• Monitoring data demonstrate analytes do not exceed DEQ-7 and RBSLs • Analytes proven not a risk to receptors • Receptor pathways eliminated	• Not threatened and/or • Pathway eliminated	• Receptor pathway for PVI eliminated or mitigated • PVI threat resolved	• Utilities not impacted or threatened • Utility receptor pathway is eliminated	• All Remedial Actions completed for: • Investigation, • Cleanup, and • Monitoring
		Petroleum Mixing Zone (PMZ) Closure	Additional evaluation and/or investigation are required; refer to MT DEQ Petroleum Release Closure Guidance						

Prioritization Flowchart for PetroleumTank Releases

Revised 2/21/2020; v5.3



Sensitive Receptors are defined for this Guidance to include the following:
- drinking water
- surface water bodies
- direct-contact risk for petroleum-contaminated soil
- buildings at risk for PVI
- utility corridors at risk for PVI, LNAPL, or dissolved-phase plume migration
- other site-specific receptors