



Major Changes to MRBCA Guidance Document 2008 Revision Effort

Section 1.0 – Introduction and Background

- Explanation of application of revised guidance vs. previous version
- Explanation of inclusion of soil type RBTLs, change in RBTLs to be consistent with departmental MRBCA guidance
- Definitions added: domestic use of groundwater, remediating party, site, and source property

Section 2.0 – Overview of MRBCA

- Added statement regarding the guidance not being a substitute for professional judgment and that actions beyond those specifically provided for in the guidance might be necessary
- Explanation of soil type dependent RBTLs added, refers to guidance sections explaining applicability and soil type determination process
- Added statement to clarify application of SSTLs even when lower than RBTLs
- Introduces public participation and notice provisions in Section 11 when contamination migrates off the source property
- Explanation that a Risk Management Plan is required for every site at which residential target levels are exceeded
- First use of terminology “AULs or other approved LTS measures”

Section 3.0 – Site Discovery and Initial Response

- No major changes

Section 4.0 – UST Closure (Removed)

- Entire section has been removed from the MRBCA guidance and placed into a separate, stand-alone document entitled “*Tanks Closure Guidance*”
- General overall restructuring to improve flow, group like elements, and be consistent with progression of tank closure activities
- Allows the application of DTLs or, if domestic use pathway incomplete, Soil Type 1 Residential RBTLs at closure
 - If owner/operator wants to apply other target levels, full MRBCA evaluation required
- Changes frequency of sampling of excavated soil from one 4-point composite per 100 cubic yards to one discrete sample per 50 cubic yards
- Stockpiles of soil intended for reuse limited to 50 cubic yards
- Explains new provisions for reuse of excavated soil
- Requires submittal of closure report within 60 days of completion of closure activities
- Sample preservation with TSP optional if analyzing laboratory purges samples below 80 degrees C

Section 5.0 – Site Characterization and Other Data Requirements

- Clarifies need for full site characterization prior to risk assessment, though preliminary assessment needed to define acute risks
- Added provisions regarding migration of contamination off the source property
 - Defines “off the source property” migration
 - Requirements added regarding accessing neighboring properties
 - Requirements established for when access is denied
 - Denial of access to be noted in NFRA, copy provided to neighbor
 - Reference to need to meet requirements at subsection 6.1.2 (remediate neighboring property to residential or remediate to non-residential with application of AULs or other approved LTS measures)
- Presents new provisions regarding RAFU, in particular that MDNR will make RAFU decisions based on information provided by RP and, for neighboring properties, information from RP and neighboring property owner
 - Presents new “RAFU Prediction Form”
 - Clarifies that RAFU determinations pertain only to future land use and not to whether specific exposure pathways will or will not be complete
 - Use and configuration of a property can be preserved via AULs
 - Discusses applicability of physical AULs
 - Explains that use of engineered controls requires application of AULs
- Explains soil type determination process
 - Applicability of determination
 - Analytical methods required
 - Sampling locations and depth of borings
 - How to determine at previously characterized sites
 - Provisions regarding consideration of soil heterogeneity
 - How the determination is to be documented
- Definition of “smear zone” added
- Added discussion of soil horizons, including definition
- Replaces discussion regarding number of investigation points for geotechnical sampling with modified, clearer provisions
- Added detailed discussions regarding establishing site specific values for soil geotechnical parameters, discussion of relevance of soil horizons
 - Explanation that site specific values may be determined using the soil survey or by strictly adhering to the provisions of the guidance
- Replaced existing text regarding Volumetric Water Content (VWC) data collection with extensive detail regarding collection of VWC data – intended to ensure adequate representation of spatial and temporal variations
 - Most significant are added provisions for representation of temporal variations
- Replaced existing text regarding Fractional Organic Carbon (FOC) data collection with detailed and specific requirements
 - Most significant are requirements for representation of spatial variation
- Added text regarding need to account for soil heterogeneity for all geotechnical parameters, particularly via identification and sampling of soil horizons
- Changed delineation criteria requirements to DTLs or other approved residential values

- Other values allowed if domestic use pathway is and will remain incomplete
 - States that RBTLs for leaching must be included in delineation criteria
- Explains need not sample soil for ethanol or methanol due to hydrophilic properties
- Added an explanation that methanol and ethanol analysis is required only when the domestic use pathway is of concern and the fuel released contained one or the other
- Explains preservation with TSP required only when analyzing lab purges samples at temperatures >80 degrees C; if lower, acid preservation acceptable
 - Same provisions apply to groundwater samples
- Establishes new delineation criteria for groundwater (DTLs or, of domestic use incomplete, other approved residential values)
- Deletes provision for minimum of three monitoring wells, replaces with explanation that number of wells must be sufficient to ensure full delineation of vertical and horizontal extents of groundwater contamination
- Deleted text regarding plume stability monitoring
 - Replaced with specific language, default requirement is two years of quarterly monitoring, reference to Appendix H (new plume stability guidance)
- Added detailed discussion regarding reporting limits

Section 6.0 – General Considerations for Risk-Assessment

- Added language regarding the need for AULs or other approved LTS measures if cleanup to other than residential targets
- Explains MDNR will make RAFU decisions as per Section 5.0
- Presents new requirements when contamination migrates off the source property
 - Remediate neighboring property to residential or
 - Remediate to non-residential and apply AULs or other approved LTS measures
 - If appropriate and with MDNR agreement, risks at neighboring property may be mitigated solely through the application of AULs or other approved LTS measures
 - “Notice of Acceptable Land Use” (originating in 10 CSR 20-10.068) may be applied as AUL/LTS measure if approved by MDNR
 - Exception to remediation: if existing AUL and MOA render incomplete the pathway driving the need for remediation
- Regarding utilities, language added to highlight threat to plastic water lines
- Language added to clarify that RBTLs for the leaching pathways apply to entire soil column
- Language added to explain that the indoor inhalation pathway might be related to surficial soil under certain defined circumstances
- Statement added regarding target levels should not exceed effective saturation/solubility
- Reference added regarding dermal toxicity value calculations
- Statement added explaining potential for need to apply models other than those in MRBCA if advective transport of vapors is or might be significant
- LNAPL requirements modified and significant additions made to:
 - Be consistent with regulatory requirements

- Explain methods for evaluating impracticability
 - Allow for management of residual LNAPL under MRBCA
- Added language regarding AULs: what they are, applicability, conditions for use, etc.

Section 7.0 – Tier 1

- Changes to allow soil gas sampling at Tier 1 with comparison to Tier 1 RBTLs for soil vapor
- RBTLs for soil vapor added to Tier 1 RBTL tables

Section 8.0 – Tier 2

- Explanation added regarding when the vapor intrusion pathway is applicable to surficial soil
- Modifications in light of soil gas sampling at Tier 1, measured soil gas data from Tier 1 used at Tier 2 but compared to SSTLs for soil vapor
- New information regarding the applicability of SSTLs following excavation
 - If soil replaced with dissimilar material, SSTLs might not remain applicable
 - Target levels dependent on backfill material used, target level might change based on backfill, need to determine before beginning excavation

Section 9.0 – Tier 3

- Language added to explain that, if Tier 3 SSTLs are lower than Tier 2 SSTLs, must be applied (cannot go back to Tier 2 levels) and that Tier 3 SSTLs must then be developed for all pathways for which COCs did not exceed Tier 2 SSTLs

Section 10.0 – Corrective Action Plans

- Terminology changed from “Risk Management Plan” to “Corrective Action Plan”
- Explains that a CAP is required for every site at which COC concentrations exceed residential targets
- Explains that, if CAP required, public participation and notice requirements in Section 11 must be met
- Describes information needed in CAP if AULs or other approved LTS measures are used to mitigate risk

Section 11.0 – Public Participation and Notice

- New public participation and notice requirements
 - Based on 10 CSR 20-10.067, apply to MDNR
 - Required when RMP is required
 - Explains how notice is to be provided
 - Explains that activities must occur prior to implementation of RMP
 - Must again be applied if RMP fails and/or changes
 - Describes how public comments will be managed

Section 12.0 – Long-Term Stewardship

- New section that replaces previous Section 11 – Activity and Use Limitation Policy
- Presents LTS requirements for tank sites
 - Provisions apply when COCs will remain at concentrations above residential

- Explains LTS principles – what LTS is and is intended to do
- Defines important terms – LTS Measures, Deed Notice, Environmental Covenant, Tank Facility, UST Facility, Risk Management Plan
- Not required for operating UST facilities

Section 13.0 - Reporting

- Reporting section rewritten but requirements not significantly changed

Appendix A - Appeals

- New appeals process added – pertains to disagreements between MDNR and those applying MRBCA process (this appendix will likely be deleted from guidance)

Appendix B – Development of RBTLs

- New information regarding source of toxicity values
- New information regarding dermal toxicity values and development of related target levels
- Table B-5 added of saturated/effective saturated soil COC concentrations, effective solubility of COCs in water, and effective soil vapor concentrations; pertinent to determination of COC concentrations when LNAPL present and for comparison to target levels
- New equations related to development of dermal target levels

Appendix C – Indoor Inhalation Pathway, Soil Vapor Sampling

- Modifications to allow soil gas sampling at Tier 1 with comparison to Tier 1 RBTLs for soil gas

Appendix D – Determining an Aquifer

- No major changes

Appendix E – Representative Concentrations

- Explanation added regarding RBTLs for leaching apply to entire soil column (surface and subsurface soil)
- Explanation added regarding development of representative concentrations for the leaching to groundwater followed by domestic use pathway
- Explanation added regarding applicability of vapor intrusion pathway to surface soil
- Modifies representative concentration calculation for surface soil
- Clarification regarding subsurface soil representative concentration calculations
 - Must conduct hypothetical building evaluation for future scenario even if buildings currently present
 - Must use maximum value from boring rather than averaging multiple values from within a single boring
 - Must consider data from smear zone, if highest value within zone, must use
- Clarification regarding representative concentration calculation for groundwater domestic use pathway
 - Discussion added regarding consideration of plume stability in pathway evaluation and representative concentration calculation

- Clarification regarding representative concentration calculation for groundwater vapor intrusion pathway
- Added provisions regarding calculation of representative concentrations for soil vapor
- New provisions added regarding calculation of representative concentrations when LNAPL present
 - Use of Raoult's Law for developing COC concentrations for dissolved phase and vapor phase when LNAPL present
- General clarifications of considerations in calculating representative concentrations

Appendix F – Consideration of TPH

- No major changes

Appendix G – Reporting Forms

- Not yet revised

Appendix H – Plume Stability Determinations

- New appendix regarding plume stability determinations
 - Explains when a determination is required
 - Presents various methods for making a determination
 - Monitoring required for minimum of 2 years to make determination
 - If not stable after 3 years, action is required – explains what actions might be taken