

Monitored Natural Attenuation Technical Guidance Change Log

List of significant changes from Version 1.0 (March 2012) to Version 2.0 (September 2022)

- **Cover Page:** Changed date to August 2022 and Version to 2.0
- **Section 1 Intended Use of Guidance Document:** Updated committee members and professional affiliations. Added language to make this section consistent with other Department guidance documents.
- **Section 2 Purpose:** Added a summary of major changes to the document. Changed "enhanced MNA" to "enhanced attenuation" and clarified the meaning of this term.
- **Section 3 Document Overview:** Expanded upon what should be included as the primary line of evidence supporting MNA, and updated references for N.J.A.C. 7:26E & 7:9C.
- **Section 4.1 Monitored Natural Attenuation Role in Remedial Actions:** Updated a reference for Remedial Action Permits.
- **Section 4.1.2 Technical impracticability:** Added a link to the TI Guidance Document.
- **Section 4.2 Conditions that Generally preclude Monitored Natural Attenuation as a Sole Ground Water Remedy:** Clarified that MNA is prohibited when free and residual product are present and referenced documents which should be consulted in the case that product is present at site. Removed language indicating MNA is not appropriate in bedrock formations.
- **Section 5 Site Characterization:** Clarified that basic aquifer matrix and hydraulic characteristic should be site specific.
- **Section 5.3 Contaminant Spatial and Temporal Distribution:** Clarified that only data collected following completion of active remedial actions should be used to support MNA as the final remedy.
- **Section 5.3.2:** Clarified that wells shown on figures 1 & 2 are not the same wells that will be installed on all sites. The number of wells and well locations are site specific. Additionally, figure 1 was updated to identify the core of the plume.
- **Section 5.3.3:** Updated references.
- **Section 6 Lines of Evidence:** Expanded on what should be included as the primary line of evidence supporting MNA.
- **Section 6.1 Primary Line of Evidence – Evaluation of Contaminant Plume and Concentration Characteristics:** Added "and Concentration" to section title and expanded upon what ground water data should be used to support MNA as the final remedy.
- **Section 6.1.1 Plume Behavior:** Clarified that shrinking, stable, and expanding characteristics discussed in this section apply to plume boundaries and not contaminant trends.
- **Section 6.1.2:** Change the section title from "Contaminant Trends" to "Trends in Contaminant Concentration or Mass".
- **Section 6.1.2.1 Spatial Analysis:** Added a footnote discussing modeling of Migration to Ground Water Exposure Pathway standards, and updated Figure 4 to remove high total BTEX concentrations.
- **Section 6.1.2.2 Graphical Analysis:** Added a mention of the most updated version of EPAs ProUCL as an analysis tool and referenced where to find more sophisticated spatial and temporal analysis tools.

- **Section 6.1.2.4 Non-Decreasing Levels of Ground Water Contamination:** NEW SECTION. This section of the Technical Guidance outlines circumstances in which it may be acceptable to use MNA as the final site remedy when there are non-decreasing ground water contaminant concentrations.
- **Section 6.2.2 Metals & Radionuclides:** Updated web links.
- **Section 6.3.1 Microbiological Tools:** Added reference to newly developed MBT framework using Biological Pathway Identification Criteria screening tool (BioPIC).
- **Section 6.3.2 Isotopic Studies:** Added references.
- **Section 7 Remedial Action Permit for Ground Water:** Removed “With Long Term Monitoring” from the section title, and updated citations.
- **Section 7.1 Long Term Monitoring Program:** Added references to new section 6.1.2.4 for sampling sites with non-decreasing contaminant concentrations. Clarified sentinel well sampling frequency when using sampling schedules other than those recommended in table 4. Updated citations.
- **Section 7.1.2 Monitoring Well Network:** Clarified that sentinel wells should be located to account for any significant variability in ground water flow direction encountered historically.
- **Section 7.2 Performance Evaluation of the Data:** Updated references to forms (CEA Fact Sheet form & RAP Modification form) which need to be submitted to modify the long-term monitoring program. Added reoccurrence of residual product as a situation which could require alternative remedial action, and updated subsection “4) Verify the goals of the MNA remedy have been met and terminate the LTM program”. Updated citations.
- **Section 8 Reporting:** Referenced the “Reporting” section of the Department’s “In Situ Design and Performance Monitoring Technical Guidance document”. Updated requirements for Termination of a Ground Water Remedial Action Permit.
- **Section 9 References:** Updated previous references, links, and added new references.
- **Appendices:** Updated links. Removed discussion of Connecticut DEP’s “Guidance for GW Monitoring for Demonstrating Compliance with the Connecticut Remediation Standard Regulations” from appendix F since this document is no longer used or available.