

# MRBCA Nuts & Bolts

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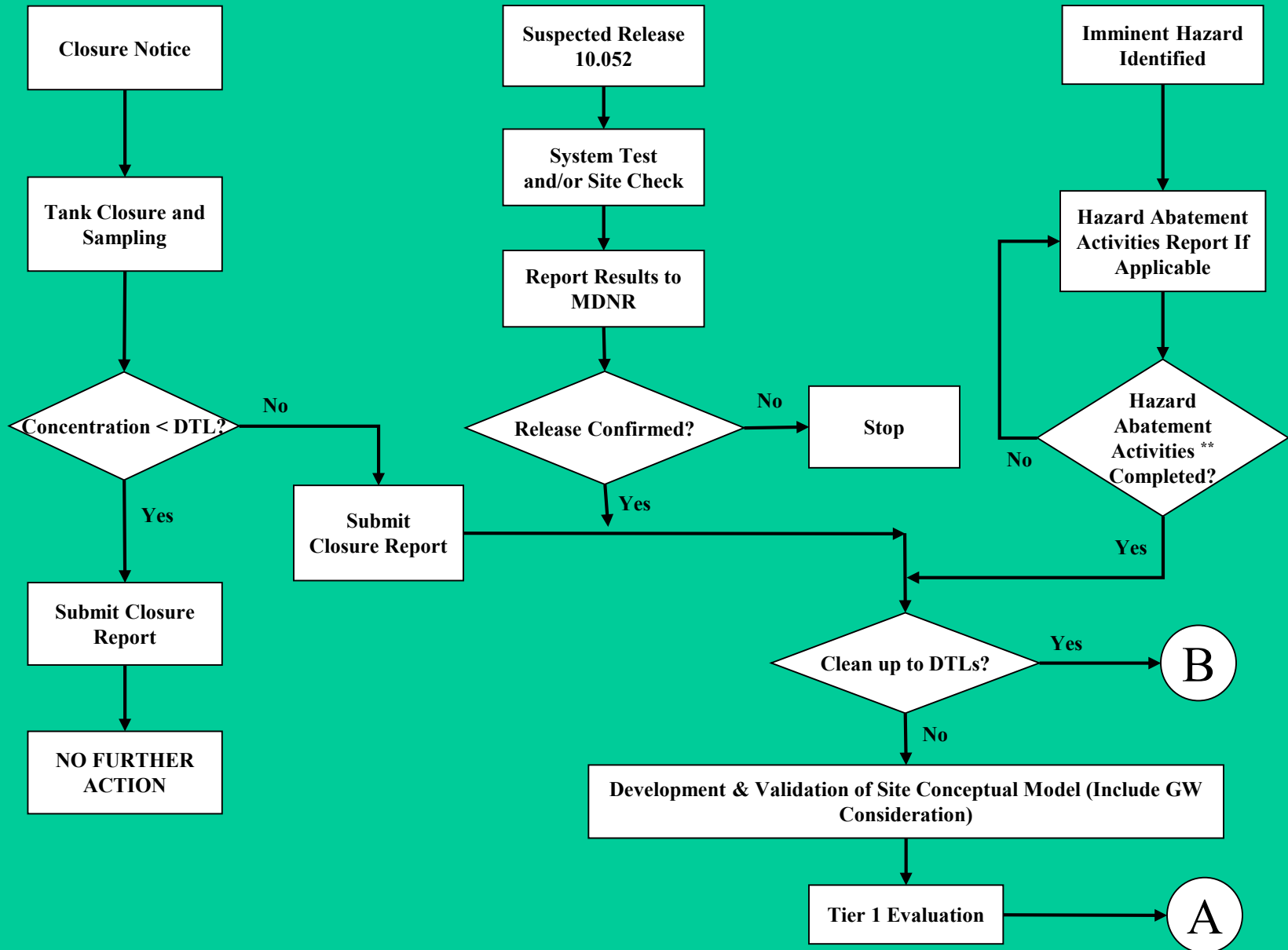


Figure 2-2. MRBCA Process Flowchart (Page 1 of 3)

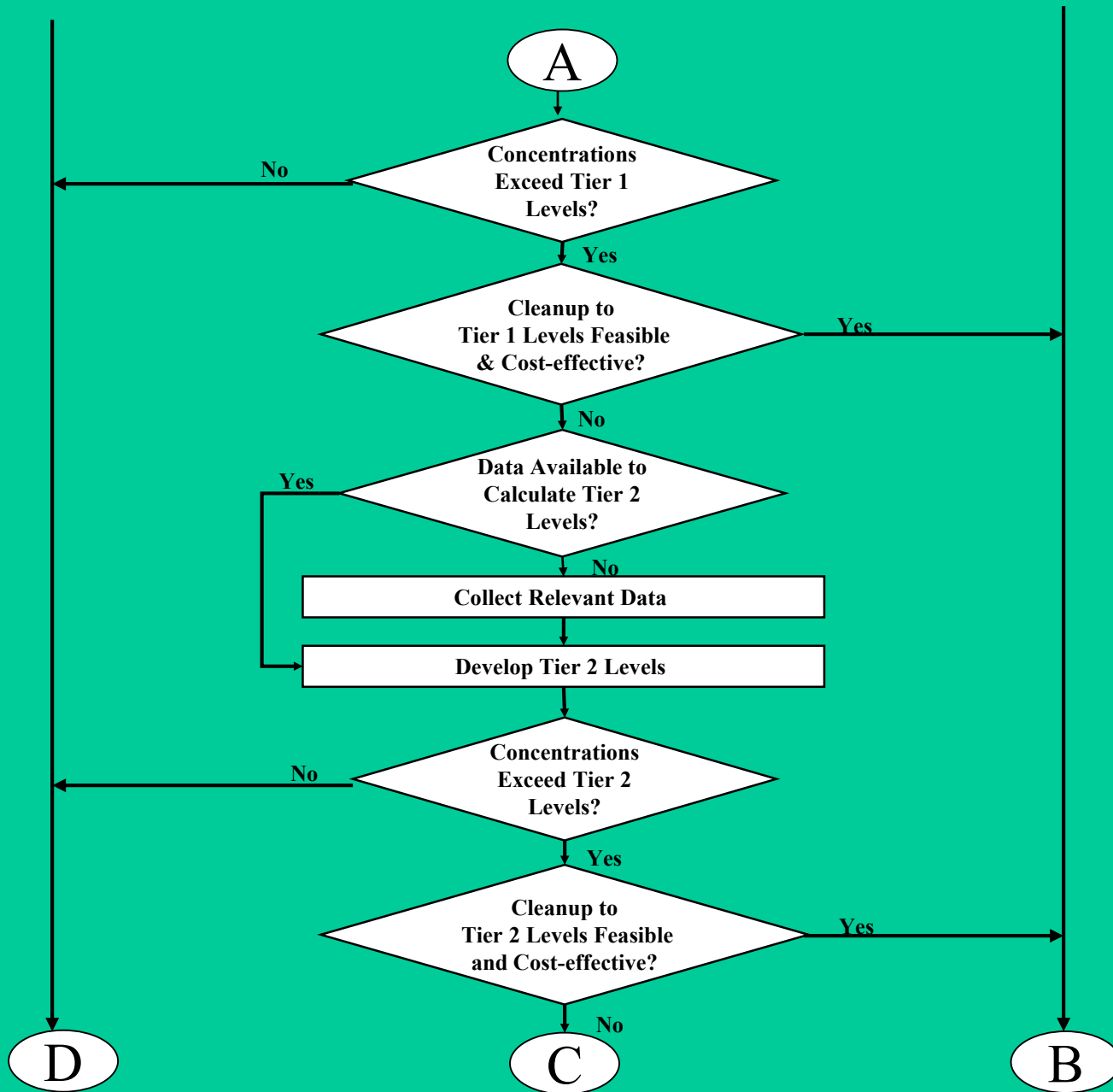
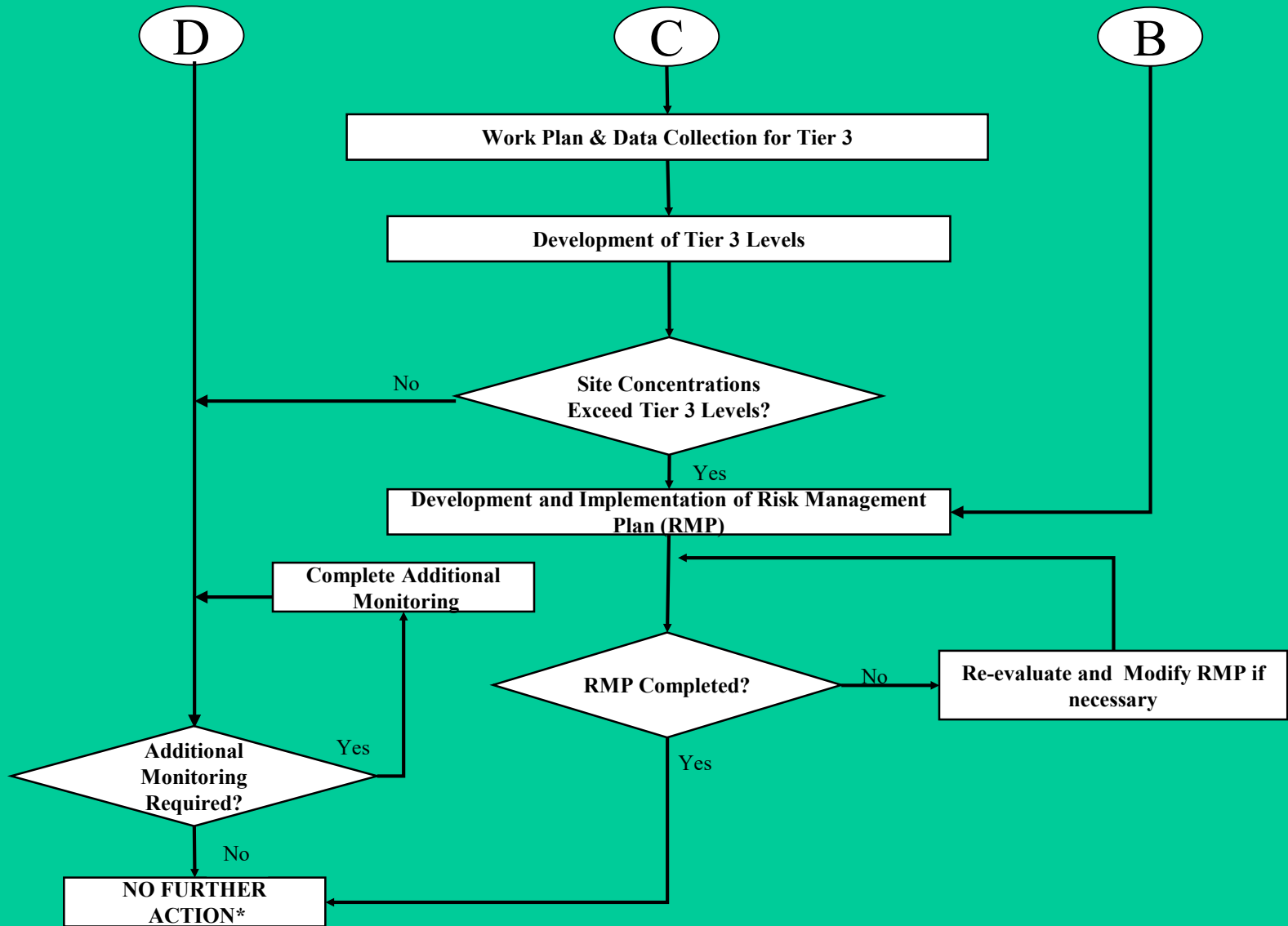


Figure 2-2. MRBCA Process Flowchart (Page 2 of 3)



\* Assuming ecological and nuisance conditions if any have been addressed.

Figure 2-2. MRBCA Process Flowchart (Page 3 of 3)

# MRBCA Applicability and Purpose

- Applies to all media at all regulated UST/AST sites
  - Existing sites: depending on situation, may finish under old guidance or go with MRBCA
- Purpose: to ensure adequate characterization, evaluate based on actual risks, means of developing site-specific target levels

# MRBCA PROCESS OVERVIEW

- Site discovery
- Characterize contamination and site features
- Compare COC concentrations to DTLs
- NFA or proceed to Tier 1

# OVERVIEW (continued)

- Develop Site Conceptual Model
  - Consideration of land use (residential, non-residential)
  - Exposure Model identifies receptors, pathways, routes of exposure
- Compare COC concentrations to Tier 1 Risk-Based Target Levels
- NFA, cleanup to Tier 1, or proceed to Tier 2

## OVERVIEW (continued)

- At Tier 2, develop Site-Specific Target Levels (SSTLs) using site-specific fate and transport parameter values
- Compare COC concentrations to SSTLs
- NFA, cleanup to Tier 2, conduct soil vapor sampling as warranted, or proceed to Tier 3



# OVERVIEW (continued)

- Develop Tier 3 SSTLs
- Compare COC concentrations to SSTLs
- NFA or remediate to Tier 3 SSTLs
- Site characterization and development of site conceptual model (particularly exposure model) are critical regardless of tier at which site is evaluated

# TIERED PROCESS

- DTLs (not technically a tier but a subset)
- Tier 1 - generic defaults (physical/chemical, exposure, fate and transport, toxicity), prescribed models/equations
- Tier 2 - same models/equations, site-specific fate and transport values
- Tier 3 - same or different models, entirely site-specific

# Default Target Levels (DTLs)

- Lowest of the Tier 1 residential RBTLs
- A screening value, not a Tier
- No consideration of land use
- Compare maximum on-site concentration
- Can close site if DTLs are not exceeded, provided characterization is complete

# TIER 1

- Generic look-up tables, not site-specific
  - Though MDNR is developing soil-type specific RBTLs, to be discussed later
- Consider land use
- Use representative, pathway-specific concentrations in comparison to RBTLs
- Ecological evaluation a necessary component

## TIER 2

- Site-specific, consider land use, use representative concentrations, conduct eco evaluation
- Develop Site-Specific Target Levels (SSTLs) for each pathway using site-specific fate and transport parameter data
- Can conduct soil vapor monitoring if soil or groundwater vapors to indoor air exceed SSTLs

# Tier 2 Soil Vapor Monitoring

- If SSTLs for soil or gw vapors to indoor air pathway are exceeded
- General guidance in Appendix C of MRBCA guidance document
- MDNR in process of developing more detailed soil vapor monitoring Standard Operating Procedures (SOP)
- Must be conducted under MDNR-approved work plan

## TIER 3

- Entirely site-specific
- May use models other than those used at Tiers 1 and 2
- May modify exposure, physical/chemical, and toxicity parameter data with adequate justification and documentation
- Evaluation must be under a MDNR-approved work plan

# ALL TIERS

- Risk levels: IECLR at  $1 \times 10^{-5}$  (1 in 10,000), Hazard Quotient of 1
- Ecological evaluation
- Current and Future land use considered
- Additivity not considered
- Use of representative concentrations
- Activity and Use Limitations can be used to manage risk



# Analytical Methods

- No more OA1/OA2
- VOCs (BTEXN, EDB, EDC, oxygenates) and TPH-GRO by Methods 5035 and 8260
  - Method 5035 required for volatiles in soil
- PAHs, TPH-DRO & ORO by Method 8270
- Metals by Method 6010
- Fractionation by TNRCC Method 1006

# Chemicals of Concern (COCs)

- Expanded from previous guidance
- COCs are product specific
- Gasoline: BTEXN, TPH-DRO, Oxygenates, Lead, EDB, EDC
  - EDB, EDC, Lead for leaded gasoline only
- Diesel: BTEXN, PAHs, TPH-DRO & ORO
- Waste Oil: BTEXN, TPH-GRO, DRO & ORO, PAHs, Metals

# Representative Concentrations

- Pathway specific using data from within a specific exposure domain
- Pathways evaluated under MRBCA:
  - surface soil: direct contact & leaching pathways
  - subsurface soil: indoor inhalation of vapors & leaching pathways
  - groundwater: ingestion (domestic use), indoor inhalation of vapors, dermal contact
  - construction worker: direct soil contact, direct contact with gw, outdoor inhalation of vapors

# Representative Concentrations (continued)

- Pathways (cont.):
  - Surface water: ingestion, direct contact, fish ingestion
- For representative concentration:
  - use “recent” data (<4 yrs old)
  - data must represent entire exposure domain
  - non-detects within exposure domain replaced by 1/2 the detection limit
  - max concentration not to exceed 10x rep. conc.

# Activity and Use Limitations (AULs)

- Generally known as “Institutional Controls”
- Under MRBCA, AULs include legal and physical restrictions or limitations on the use of, or access to, a site
  - Legal: Deed Notice, Restrictive Covenant, ordinance, easements, etc.
  - Physical: Engineering controls primarily, including pre-existing (e.g., pavement, roads, etc.)

# NFA Issuance

- Must meet certain criteria for NFA issuance
  - Applicable cleanup target levels
  - Necessary AULs must be in place and documentation submitted to MDNR
  - GW plume must be demonstrably stable or decreasing
  - Maximum COC concentration should not exceed 10x representative concentration
  - No ecological concerns

## NFA Issuance (continued)

- If current use is non-residential and pathways are incomplete due to non-residential use, or non-residential targets met but residential targets exceeded, future non-residential use must be ensured via adequate documentation or an AUL