

Delineation Approach

Identify site characteristics or conditions that could result in ongoing site contamination including the potential for leaching of in-situ contamination and the presence of leaking barrels, drums, tanks, pipelines and/or other sources. Sufficient media specific data (soil, soil vapor, groundwater) should be collected to characterize the source. Evaluate the current and reasonably anticipated future use of the site to establish a conceptual site model (CSM). Please be aware that this may be an iterative process.

Compare existing data for all media to the applicable risk-based screening levels (RBSLs) for all appropriate receptors. NDRBCA Tier 1 RBSLs can be found in Table 6-1(a)-Residential and 6-1(b)-Commercial/Industrial. For commercial properties, delineation is allowed to commercial/industrial levels. However, if the plume extends off-site and surrounding land uses are residential, then delineation would be to residential levels. At sites where it is clear that a Tier 2 risk evaluation will be necessary, preliminary Tier 2 RBSLs may be developed and used.

If contamination is present above the applicable RBSLs and the extent of contamination above RBSLs has not been defined, continue to gather data until the extent of the applicable RBSLs exceedance area has been delineated.

The site is considered delineated when contaminant concentrations in all impacted media are equal to or below the applicable RBSLs and when it is demonstrable that the contaminant plume is stable. Evaluation of stability may be based on multiple factors including presence or absence of free product, concentration trends (multiple sampling events), contaminant type and mobility, contaminant mass flux, age of release, vertical and horizontal concentration gradient, and/or contaminant transport modeling.

Delineation may not be necessary beyond the horizontal or vertical extent at which contaminant concentrations fall below the applicable RBSLs. However, some site situations may require additional data collection or analysis to determine whether a contaminant plume is stable and/or attenuating. Please refer to Figure 1 Contaminant Delineation Decision Flowchart.

Background Concentrations

Natural background soil data should be collected outside the area of contamination, but from within a geologic unit or soil type similar to that found in the contaminated area of interest and from an equivalent soil profile depth. Sufficient samples should be collected to statistically quantify background concentrations in a legally defensible manner. Documentation must be included for statistical methodology used to eliminate naturally occurring compounds.

Natural background groundwater data should be collected from a hydraulically upgradient location from the site and within the same groundwater depth or zone. Sufficient samples should be collected based on the size of the site and its hydrologic complexity. Documentation must be included for statistical methodology used to eliminate naturally occurring compounds.

NDRBCA uses a performance-based delineation criteria where horizontal and vertical extent of soil and groundwater contamination must be delineated to the extent necessary to assess potential exposures to receptors and impacts to surface water bodies and ecological receptors.

Please refer to the NDRBCA Technical Guidance Document for further guidance.

Off-Property Impacts

Offsite property sampling needs to be considered in the following situations:

- Onsite impacted media concentrations are greater than applicable RBSLs near the property boundary
- Groundwater is impacted or suspected to be impacted

Refer to the Off-Property Investigation Flowchart found at <https://deq.nd.gov/NDRBCA/>

Property Access Issues

Where property access is not granted for lateral delineation of soil or groundwater contamination, or drilling locations are inaccessible due to physical constraints (utilities, railroads, wetlands, etc), predictive computer modeling may be used to predict maximum extent of contamination. Documentation of accessibility issues, property access requests and all other relevant information should be presented to the NDDEQ in request to use modeling. Sufficient information must be collected to allow for reliable modeling and inputs should be clearly documented.

Figure 1. Contaminant Delineation Decision Flowchart

