Using Analysis Results for Optimization

Geospatial methods can be used to guide sampling plan design, determine the extent of a groundwater plume, understand trends, identify redundant sampling points, and aid in a number of other approaches to optimizing remediation efforts. This section includes descriptions of using geospatial results to support different optimization activities and also some examples. Several examples in this section, (as well as longer case studies elsewhere in this guidance) illustrate how geospatial methods are used at various stages in the project life cycle. Often, more than one geospatial method is appropriate; for example, an analysis might start with EDA and simple methods, then progress to more complex or advanced methods. The method selection flow charts can be used to assist in determining applicable methods for a site.

Table 5 below summarizes certain general topics that geospatial analysis can support in each stage of the project life cycle.

Table 5 Using Geospatial Results for Optimization

General Topic	Life Cycle Stage
Plume Intensity and Extent	Release Detection, Site Characterization, Monitoring
Trend Maps	Release Detection, Remediation, Monitoring, Closure
Estimating Quantities	All Stages
Hot Spot Detection	Release Detection, Site Characterization
Sample Spacing	Site Characterization
Estimating Concentrations Based on Proxy Data	Site Characterization
Background Estimation	Site Characterization
Quantifying Uncertainty	Site Characterization, Closure
Remedial Action Optimization	Remediation
Monitoring Program Optimization	Monitoring, Closure

The examples illustrate how geospatial analysis is performed for optimization.

- Example 1: Sampling redundancy analysis for monitoring program optimization using VSP.
- Example 2: Plume shrinkage analysis using Surfer or ArcGIS.
- Example 3: Sampling optimization using co-kriging and Isatis software.
- Example 4: Sampling design strategy using VSP or ArcGIS.