Geospatial Analysis Support for Optimization Questions In the Project Life Cycle

Geospatial methods can be used to answer specific optimization questions at each stage of the project life cycle. The specific geospatial methods, along with the fundamental concepts and the categories (simple, more complex, advanced) for these methods are discussed in detail in this guidance. Information about conducting geospatial analyses at sites is included in the Work Flow section. Software packages that can be used to perform these geospatial analyses are also presented in this guidance.

The data required for performing geospatial analysis varies with both site-specific conditions and with the type of analysis that is conducted. There are, however, some general minimum requirements for these data sets (see Table 1). Figure 1 includes a decision tree that can help determine whether the minimum requirements of the data set have been met or whether more data are required.

In addition to the methods discussed in this section, more sophisticated methods requiring more advanced statistical background may be particularly useful on large or complex projects. For example, factorial kriging can be used to define subsite boundaries that may benefit from a specific remedial action. Conditional simulation can help to assess probabilities of contaminant extent (and thus costs) to exceed different thresholds. Other methods are part of a group of relatively simple techniques or tools that are similar and are not distinguished in this section. These more advanced methods are described in the Methods section, along with examples that illustrate how the method results are used in optimization.