

## **22K - GEOTECHNICAL STUDIES**

The objective of this activity is to investigate and analyze the geology and hydrogeology aspects of the project. This information will be used in the formulation of project alternatives, screening and selection of preferred alternatives.

### **Review Existing Information.**

The Feasibility Report phase will include a limited data search of existing information from past reports and investigations such as geotechnical reports, bore hole logs, geophysical logs, academic studies, hydro-geologic reports, aerial photography, surveys, infrastructure and utility maps. The existing information will be used to aid in the development of the study alternatives and modeling efforts. Gaps in the information obtained will be identified and a plan for additional data collection will be developed.

### **Geotechnical Design/Input for the Initial Screening.**

For the preliminary array of alternatives, the geotechnical design parameters for the project features will be based on the information obtained from the review of existing information described above.

### **Field Investigations.**

Geotechnical field exploration will be needed to support the design of the project features. Once the locations and /or general alignments of the project features have been identified, field investigations will be initiated in order to validate the preliminary designs and better define the cost of project features. Field investigations may include geophysical surveys, core borings, test pits, muck probes, recharge tests, slug tests, and pump tests. Any additional field exploration required for subsequent engineering and design studies will be identified at this point.

### **Laboratory Analysis.**

Laboratory testing and analysis of samples obtained from the field investigations will be required. The test results will be used for the engineering analysis/design phase of the study and to further define the cost associated with certain project features.

### **Geotechnical Design/Analysis for the Final Array of Alternatives.**

Slope stability analyses will be performed to determine the required side slopes for all earthen embankments and canal modifications included in the final array of alternatives. Additionally, the design effort may include settlement analyses, finite-element seepage

analyses, support for groundwater/water-quality modeling, evaluating the foundation conditions for structures and wells, slope protection requirements and the location of suitable borrow/disposal areas. This information will be provided to the project team for use in the design of project features and evaluation of their effectiveness in meeting the desired objectives.

**Finalize the Geotechnical Sections for the Feasibility Report.**

The geotechnical portion of the Feasibility Report will include a summary of the geologic and hydro-geologic information obtained as a part of the existing data search, the findings from the field investigations, a description of the design analyses performed and the design recommendations.