

## Chapter 12

## Geology and Soils

### General Comments

1. The main items covered by Chapter 12 are:
  - Regional Geology
  - Soils
  - Faulting and Seismicity
  - Paleontology
  - Landslides

**Regional Geology** is the standard, broad-brush description that is typical for an EIS.

**Soils** maps and descriptions are based entirely on USDA agricultural soils surveys and are of minimal use to a dam construction project.

**Faulting and Seismicity** are very thoroughly discussed. The information presented is assumed to be based almost entirely on work by Lettis and Associates who are regarded as a leading authority in NorCal seismicity and faulting.

**Paleontology** is thoroughly discussed.

Known **Landslides** are adequately described and are of no to minimal consequence to the Sites project. There is no discussion of the potential for required excavation to trigger landslides. Construction-triggered landslides are most likely to impact the duration and cost of the project.

### Soils

The distribution of major soil types (gravel, sand, silt and clay) is extremely important to a dam construction project. It is assumed that most of the fine-grained embankment materials will come from within the limits of the proposed reservoir. Borrowing operations within the reservoir area should cause no additional environmental impacts beyond those associated with inundation by the reservoir. Gravel and sand (select materials) required for embankment drainage and filter zones will most likely come from offsite contractor-developed borrow areas and/or from commercial suppliers, as is currently the case with the safety of dams construction of B.F. Sisk Dam.

Chapter 12 makes no mention of:

- Proposed offsite sources of construction materials such as rockfill, sand and gravel.
- Environmental impacts of quarrying operations required to develop offsite materials sources.
- Locations of commercial sand and gravel suppliers and their distance from the project site.
- Proposed materials haul routes and the environmental impacts of hauling large volumes of materials on traffic, nearby residential areas and air quality.

### **Study Area Maps – Figures 12-1B and 12-1C**

I found these figures to be extremely difficult to use and locate. No index (location) map is provided. Figures 12-1B and -1C could only be located by comparing them to Google Maps. Useful landmarks such as the towns of Hamilton City and Willows on 12-1B and Hwy I-5 on 12-1C are missing. The GCID Main Canal does not connect to the Sacramento Rive on 12-1B. This last error brings into question the accuracy of all figures.