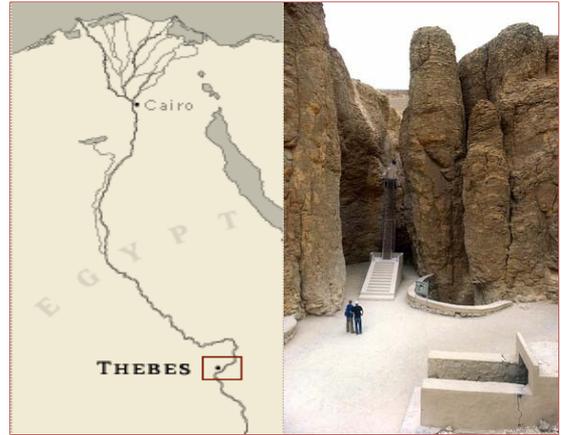


Al Qurna –west banc-Thebes

Engineering geological conditions and problem

- Three sedimentary rock formations were laid down in the area in a marine environment, and were effected by geological uplifting in late Tertiary period and rainfall in early Pleistocene.
- The process which created the valley now threaten to destroy the tombs dug into it.
- There are some main problems involved in the construction and digging the tombs:
 - a. Geological faults.
 - b. Soil bearing capacity.
 - c. Slope stability.
 - d. Funeral chamber stability.
 - e. Swellability according to the high ratio of clay minerals “Fe-smectite, Na-beidellite”.
 - f. Soft rock formations as Esna shale and interbedding marly sandstone where some tombs been digged.



Protection measures already have been taken or have to be taken:

- Some protection measures are proposed like:
 - a. Contouring the historic walls by walls embedded to the soil, thus any soil bulge-out from under the walls is prevented.
 - b. Using lime water impregnation to improve the physical properties of shale.
 - c. Creating some suitable mortars for the conservation of damaged mortars in the area.
 - d. Using the most suitable materials to consolidate the mural paintings in the area.

Other information:

Thebes was imperfectly situated for effective role over Egypt, the natural topography of the area nevertheless made it the perfect location for royal necropolis. A flat plain on the western side of the Nile, the area associated by the Egyptians with the sinking sun and the other life.

References on studies already performed:

- Kerisel, J., Geotechnical problems in the Egypt of Pharaohs, in Geotechnical Engineering for the Preservation of Monuments and Historic sites, Rotterdam 1997.
- Reeves, N., Wilkinson, R.H., The Complete Valley of the Kings, Tombs and Treasures of Egypt's Greatest Pharaohs, A.U.C press, Cairo 1996.
- Moussa, A., Study the Effect of Geology on the Deterioration of Rock-cut tombs in Saqqara Area-Egypt, master thesis, Cairo University Egypt, 2001.