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Mapping of Groundwater Vulnerability and Hazards to Groundwater in the Area South of Amman

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Summary

Urban development, expansion of agriculture and industrialization in the area south of Amman, lead to an increasing risk of groundwater contamination.

For the area south of Amman, from the southern outskirts of the city in the north to the area of Wadi el Wala in the south, maps of groundwater vulnerability to contamination and hazards to groundwater have been prepared. The maps cover an area of 1400 km² and show at a scale of 1:100,000 the regional distribution of areas with differing ratings of the protective effectiveness of the soil and rock cover and the actual distribution of potentially polluting activities in this area.

The map of groundwater vulnerability to contamination can be seen as an attempt to provide planners with a tool for the preliminary selection of priority areas for different forms of land use. It shows the areas where the natural protection of the groundwater by the overlying soil and rock cover is low and the risk of polluting the groundwater, in consequence, is high. Since the areas where the groundwater is less sensitive to pollution are also delineated, the map can be used as a tool for land use planning.

Waste disposal sites and uncontrolled handling of contaminating substances should be avoided by any means in areas of high groundwater vulnerability. Areas of low to very low vulnerability can be seen as potential sites for the identification of suitable locations for activities with high pollution risks. Due to uncertainties in the assessment process however, the map can not replace detailed geotechnical and hydrogeological studies of a particular site before licensing of any high impact activities.

The map and an inventory of potential hazards to groundwater show that some of the existing factories and fuel depots are located in areas where the risk of groundwater contamination has been classified medium to high. In these cases precautions should be taken to protect the groundwater from contamination. Indications for groundwater pollution, e.g. elevated nitrate contents in irrigated areas, are common in many parts of the area under study.

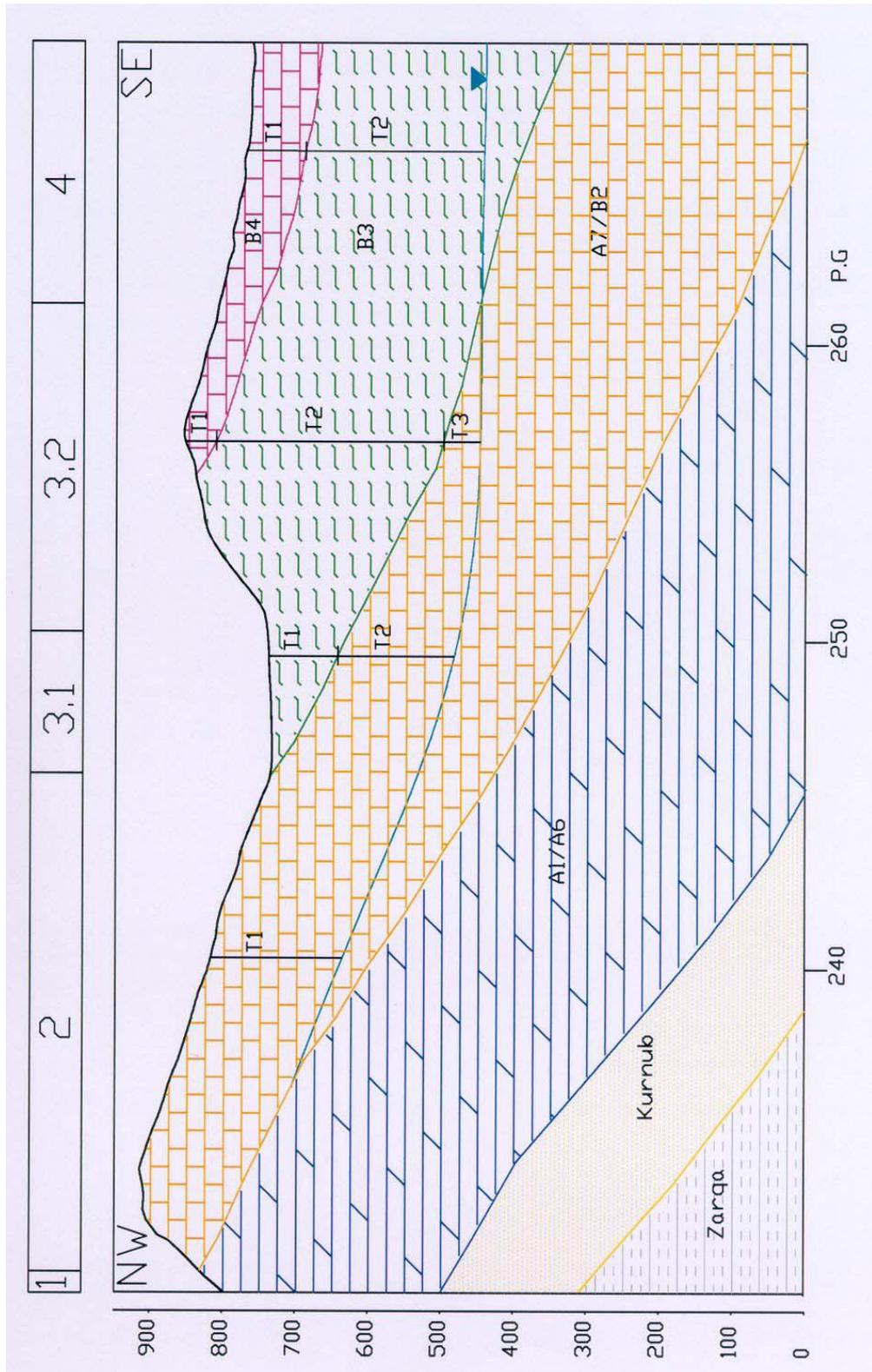


Figure: Determination of the protective effectiveness of the rock cover according to the hydrological setting