

# TECHNICAL REPORT NO. 7

## Delineation of Groundwater Protection Zones for the Rahoub Spring

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### Summary

The Ain Rahoub spring in the northwestern part of Jordan, located about 5 km northeast of Irbid, is important for the domestic water supply of the village of Mughayyir. In order to safeguard the water quality of this spring, proposals for the establishment of a groundwater protection area have been elaborated within the framework of the German-Jordanian Technical Cooperation project "Groundwater Resources Management". The proposed groundwater protection area has been subdivided into three zones, which require different degrees of landuse restrictions. The Jordanian Guideline for Water Resources Protection, issued in July 2006, has been used as a basis for the delineation of these zones. The spring has shown several incidents of bacteriological contaminations over the past few years and had to be shut down for that reason. The aim of this report is to reduce the risk of pollution for the spring. During the field work to this report several risks to the drinking water supply provided by the Ain Rahoub spring were noticed. They partly arise from deficits in the construction and upkeep of the water supply infrastructure (design of spring catchment structure; water conveyance system), from the lacking access barriers to the protection zone (partly missing fence), from the insufficiently large protection zone (not all of zone I is located

inside the land plot owned by WAJ) and from pollution risks in zone II. The report proposes several corrective measures in order to avoid contamination of the drinking water source. It is important that these measures are implemented as soon as possible so that the health risk to the local population is reduced. This will require that WAJ purchases the entire land plots of protection zones I, reestablishes the fence and physically blocks entrance to the spring chamber. A number of corrective measures have also been proposed for protection zone II, where the most prominent contamination risks arise from an animal farm and a chicken feed factory. Implementation of these measures should also be given priority. Since the implementing agency concerning groundwater protection zone II is the Ministry of Environment, the responsible staff will need to control the enforcement of these measures. In order to avoid further contamination risks in the future, it is seen as important that the landuse planning authorities closely coordinate their activities with the Ministry of Water and Irrigation as well as with the Water Authority of Jordan. The project will carry out workshops for awareness building and provide training for the implementation agencies.

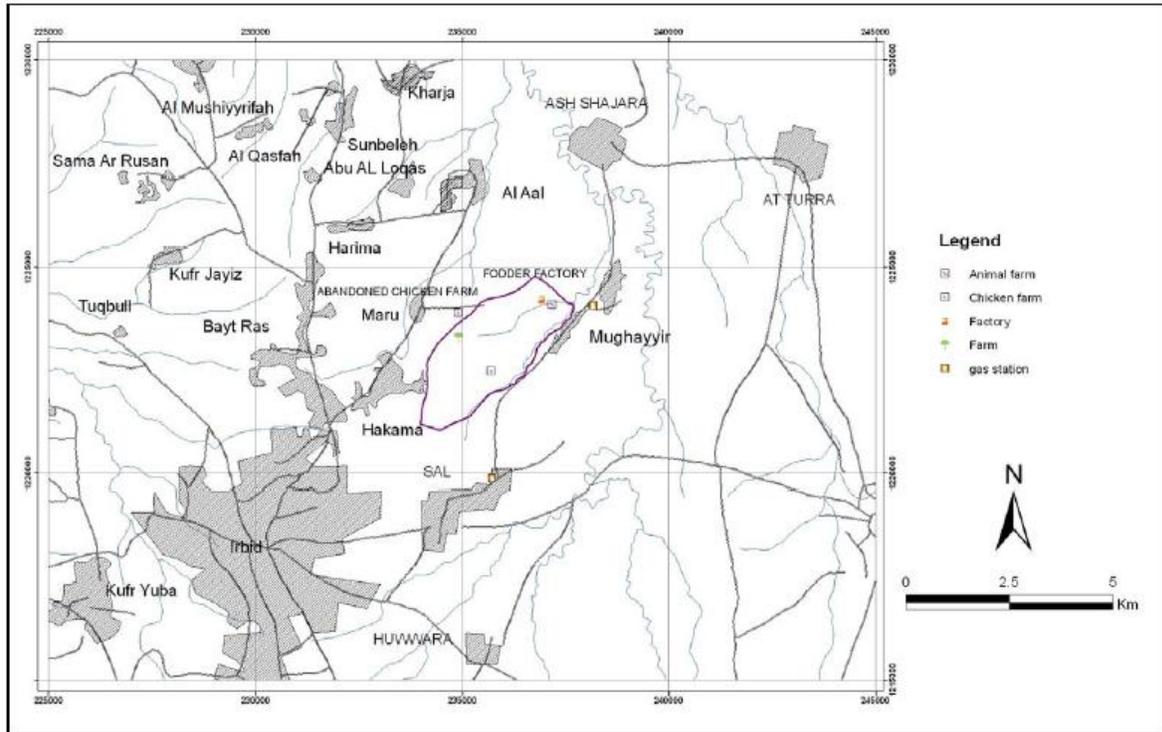


Figure 43: Map of Hazards to Groundwater ( - catchment area)