



Hydrogeophysical characterisation of artificial recharge ponds on the Llobregat River Barcelona, Spain

Alex Sendrós (1), Mahjoub Himi (1), Raúl Lovera (1), Ismael Casado (1), Helena Gallardo (2), Josefina C. Tapias (2), and Albert Casas (1)

(1) Geochemistry, Petrology and Geological Prospecting Dept., University of Barcelona, Barcelona, Spain (albert.casas@ub.edu), (2) Soil Science Lab., Water Institute, University of Barcelona, Barcelona, Spain (jtapias@ub.edu)

Artificial aquifer recharge is a water management technique aimed to optimise effective use of water resources in a region. The application of this technique, using both surplus and reclaimed water, may constitute a viable option in densely populated areas where demand for water is high and extraction of this resource to a large extent exceeds natural aquifer recharge. This is the case of the area studied in the present research, located on the lower stretches of the Llobregat River, close to the metropolitan area of Barcelona.

This study is based on a combination of information collected from various sources, such as hydrogeological mapping of the area, subsoil structure determined by boreholes, infiltration tests and electrical resistivity tomography profiles, making it possible to establish an integrated methodology to improve the characterisation of the groundwater environment involved in the recharge process.

The geometry of the hydrogeological units and the aquifer-aquiclude contact, together with vertical and lateral variations, have been accurately defined in the models generated from electrical resistivity tomography profiles. However, these methods must be complemented with lithological information obtained from borehole logs and estimated permeability values obtained from granulometric analysis of borehole samples.