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CORUM CONFERENCE CENTER

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AMPHOS²¹

Groundwater modelling of managed aquifer recharge in infiltration ponds with reclaimed water (NE Spain)

Abstract n. 2518



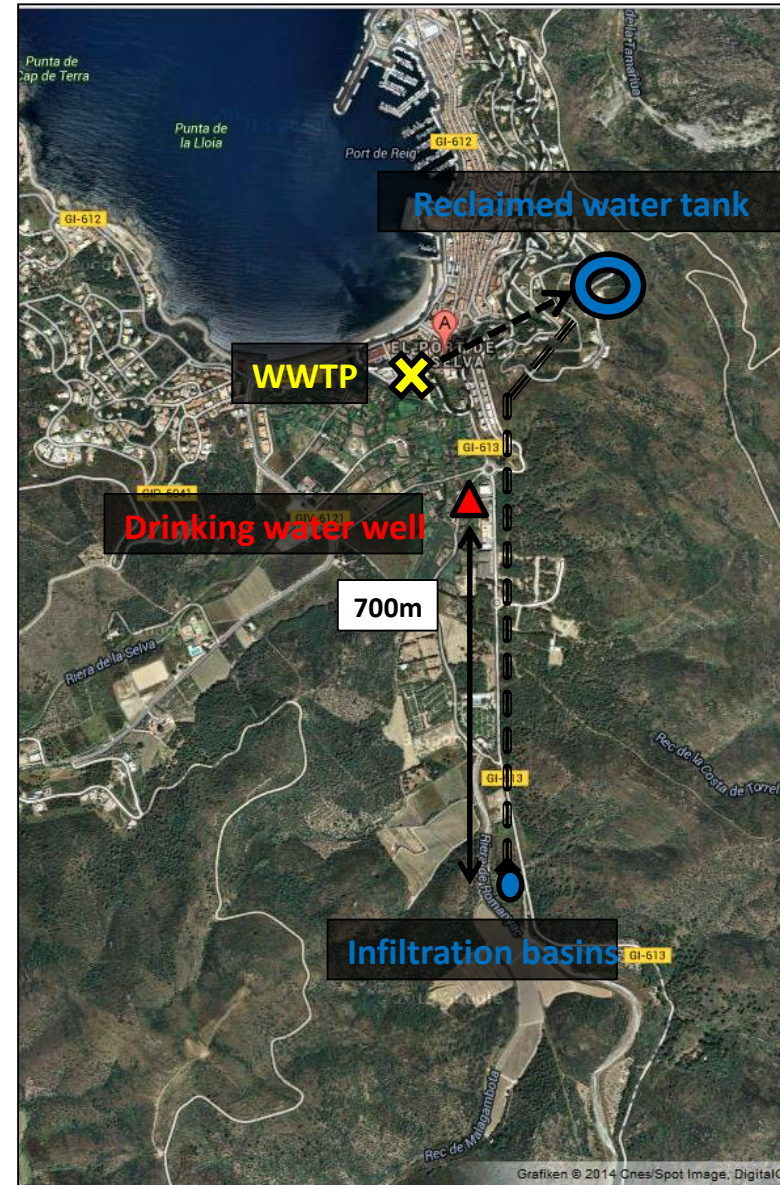
Martí Bayer, Ester Vilanova, Salvador Jordana & Jordi Guimerà



Acknowledgments: KWB, Veolia, CTM, CCB and Port de la Selva council town

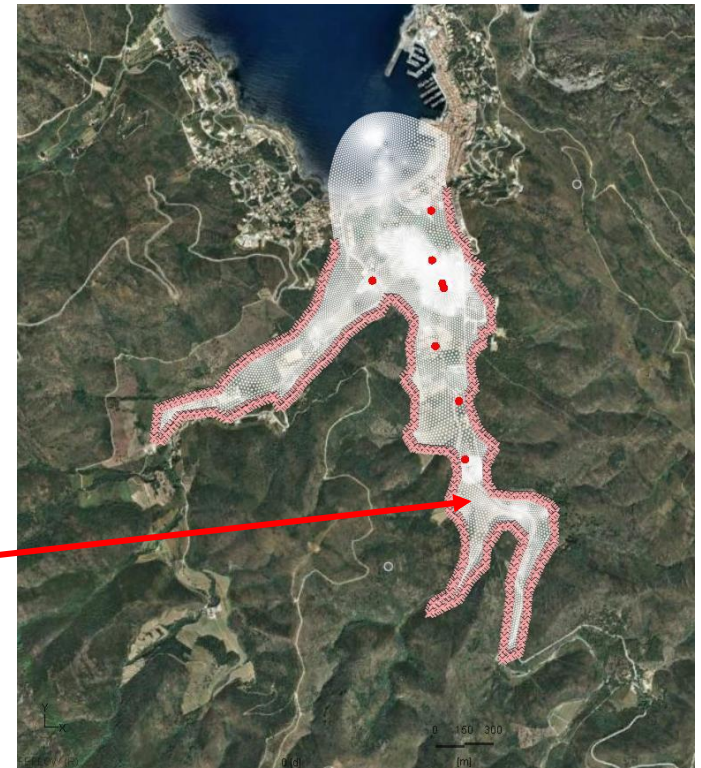
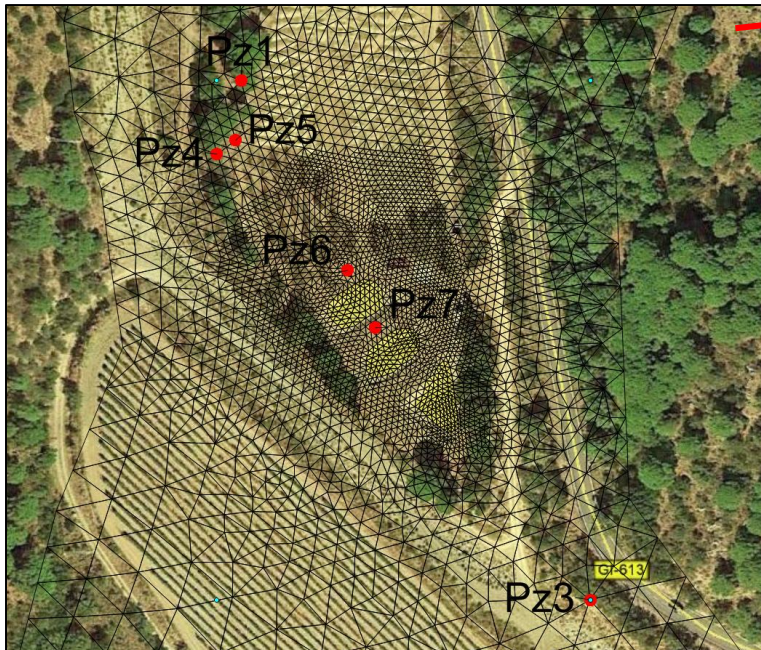
WWTP of Port de la selva (NE Catalonia) has tertiary treatment (coagulation, flocculation, multimedia filtration, UV + Chlorination) with a capacity of 600 m³/d.

3 infiltration basins of reclaimed water
1km upstream of water supply wells
1 m depth and 40 cm of sand layer
A total capacity of 439 m³
Alluvial aquifer: 0.66 Km²



A 2D Finite Element numerical model to simulate groundwater flow through the alluvial formation using the code FEFLOW (Diersch, 2014).

The model incorporate transport parameters to simulate the migration of reclaimed water from infiltration basins to water supply wells.



Infiltration began in November 2015
Data in nearby piezometers have been used to re-calibrate the model (tracer test)

The aquifer response to rainfall events is very fast.

The numerical model reproduces the measured hydraulic heads and is also capable of reproducing the aquifer response to pumping in water supply wells.

In the most conservative scenario (porosity 10%), the model predicts that pic concentration with 13% of content of reclaimed water in the water extracted at the well occurs after 12 months travel time. At higher porosities the expected travel times to water supply wells ranges from 12 to 24 months and always the concentration of reclaimed water in water supply wells is below 15%

1 year simulation of plume of reclaimed water (porosity 10%)

