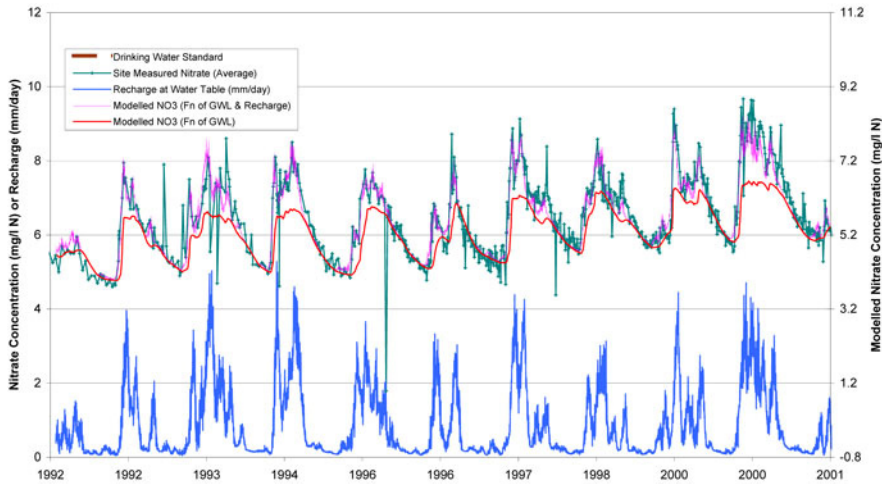


## Screening and Modelling Nitrate Trends for PR09 and WAgriCo Wessex Water Services Ltd and UKWIR



*Simulating past nitrate trends to give confidence in likely success of catchment management*

Entec assisted Wessex Water Services Ltd in a number of areas related to nitrates in groundwater during PR09 and went on to use some of the tools developed to predict the impacts of changes in farming practice on their abstractions as part of the EU Life project WAgriCo.

Entec's work commenced in June 2007 with the development of a bespoke Excel tool, which allowed Wessex Water to easily review nitrate concentration data at all of their sources. This tool, which received the 'wow' factor in our client's words, also provided a number of linear trend line fits to the data and provided estimated concentrations at selected dates in the future. The tool was used by Wessex Water to examine which of their sites could require blending or treatment in the next AMP5 period and in the more distant future. A number of sources were prioritised for more detailed evaluation.

Entec then developed a GIS and Excel tool, which mechanistically modelled the slow movement of historically leached nitrate down through the unsaturated zone of the Chalk aquifer. Seasonal and short term variations in nitrate were simulated by linking to groundwater level and bypass recharge variations. Model predictions

closely matched short term and long term trends and gave confidence in the use of the models for predicting nitrate concentrations in the years to come assuming a number of nitrate leaching scenarios. Wessex Water used the findings of these models to assess the likely success of active catchment management as an alternative to blending or treatment in the short and long term.

Talks were given on the work by Wessex Water at the CIWEM Drinking Water Quality Conference in March 2008 and by Entec at the Groundwater Forum Meeting in June 2008. The approach went on to be used in assessing impacts from land management measures developed in co-operation with farmers in the EU Life WAgriCo project (<http://www.wagrico.org>) managed by UKWIR. Presentations on the WAgriCo work were given in September 2008 at an EU workshop in Germany, at an UKWIR open meeting in London and at a farmer's meeting in Dorchester.

### Customer Feedback

"A lot of data was taken and analysed in a short time and a credible, logical and well presented conceptual model produced of nitrate movement. It has served to push forward Catchment Management and has been of great interest to farmers and our agronomists as well as being hydrogeologically sound."

"Innovative thinking, well presented, on time."

