



# Coal Seam Gas – Water Quality Assessment & Management

The management of groundwater and surface water associated with the development and operation of coal seam gas projects is key to the viability and success of these projects. For more than 20 years, Earth Systems has been providing specialist services in the assessment and management of groundwater and surface water related issues, from water-rock interactions to aqueous chemistry, monitoring and treatment.

Earth Systems has an experienced team of specialists in geology, geochemistry, hydrogeology, hydro-geochemistry, and aqueous chemistry that provides expert advice across the spectrum of groundwater and surface water related issues relevant to the coal seam gas industry. This expertise includes a comprehensive understanding of the controls of fluid-rock interactions on the likely evolution of water chemistry, and of local and regional groundwater flow systems.

## SERVICES PROVIDED

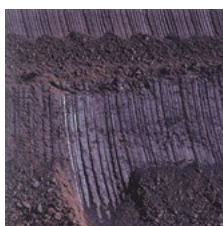
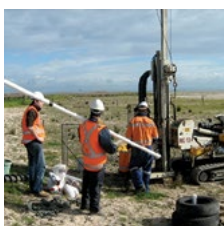
- Design of groundwater and surface water monitoring programs (baseline / operational / post-closure)
- Conceptual groundwater models
- Design and installation of groundwater monitoring bores
- Implementation of surface water monitoring programs and automated monitoring systems
- Specialist understanding of water collection, preservation and analytical procedures
- Water chemistry data assessment and interpretation
- Development and design of robust sampling and analytical protocols, including sampling frequency and field / laboratory parameters, to quantify groundwater and surface water contamination and meet regulatory requirements
- Geochemical assessment of drill spoil and geological units potentially affected by groundwater drawdown
- Geochemical assessment of fluid-rock interaction associated with drilling additives for coal seam gas recovery, including methane and carbon dioxide
- Identification of water management / re-use / treatment options for groundwater and surface water
- Identification of salinity management options
- Water quality database development
- Development of QA/QC procedures for assessing the validity of water quality analyses
- Development of QA/QC procedures for avoiding data entry and



- storage issues
- Development of data communication protocols and automated reporting
- Project management and coordination of multidisciplinary hydrogeological investigations

## EXPERIENCE

Earth Systems has over 20 years of experience in water quality assessment, management and treatment for groundwater and surface water in the resources sector throughout Australia and internationally, including New Zealand, Papua New Guinea, Solomon Islands, Fiji, Lao, Thailand, Cambodia, Vietnam, India, China, Mali, Senegal, Tanzania, Guinea, Kyrgyzstan, Peru and the United Kingdom.



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