

# GEOLOGICAL AND ENVIRONMENTAL SUSTAINABILITY

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## Groundwater yield improvement by hydro fracturing technique: A case study from crystalline hard rock terrain

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Hydro fracturing technique plays a significant role in increasing groundwater yield in the hard rock borewells. The technique involves injecting water under high pressure down the borewell to widen and clean the cracks and fissures in the rock formation. Hydro fracturing process in borewells was developed during the 1940's for enhancing the yield of oil and gas. Later this technique was adopted for water well development. The hydro fracturing process consists of pumping test before and after fracturing a well. The pumping test results are analyzed and correlated to understand the yield improvement before and after fracturing. An attempt was made to improve the groundwater yield from a borewell in a hard rock formation. The pre-pumping static water level was 4.25 m bmp and the safe yield was 5 lpm/16 m drawdown/8 hours of pumping per day. Hydro fracturing was carried out by a single packer system and two fracture zones lying at the depth of 15 to 45 m were treated. After fracturing treatment, the post-pumping test result revealed that the safe yield is 80 lpm/16 m drawdown/8 hours of pumping per day. The yield improvement indicated that hydro fracturing is a favorable outcome in the hard rock borewell.

### Biography

Senthil Kumar G R has completed his MSc (Geology) and MPhil (Geology) in the Department of Geology, Presidency College, Chennai, India and the degrees was awarded in the year 1991 and 1992, respectively. He has completed his PhD Degree in Geology from Annamalai University, Tamil Nadu, India. In addition, he is in possession of a Diploma in Mining Engineering. Since 1999, he is working as a Faculty Member in the Department of Earth Sciences, Annamalai University. He was a member of the Annamalai University Academic Council and Board of studies. He is also serving as a Board Member for few colleges and Universities. To his credit, he has published 51 research papers and attended 14 training programs on various aspects. He has guided for MPhil and Ph.D. students.

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