

BOOK REVIEW

GROUNDWATER TECHNOLOGY HANDBOOK by A.R. Mahendra. Patridge, India, 258p.

Since independence the groundwater consumption in the country has steadily risen to 61% as on 2009, India being the highest consumer of groundwater in the world. Groundwater resource is cheap, easy to handle, available at place of need even in droughts or rain-short periods. It can be developed by individuals using their own resources and without much technical skill, and also has high water use efficiency. This has led to its accelerating consumption and overexploitation in some parts of the country with adverse environmental impacts, but surprisingly in several other parts its use is subnormal resulting in skewed rural development and stunted economic growth. This underscores the necessity of harmonious development and management of the resource. However, the root of the problem lies in a general lack of even elementary knowledge of groundwater among the millions of its users. Further, over the years with the proliferation of groundwater uses for manifold purposes, its exploitation and management technologies have evolved many times. Groundwater management cannot succeed without adequate public awareness of this renewable but not unlimited resource. Now that the resource conservation and scientific exploitation have assumed the centre stage of our national policy, transfer of technical knowhow to the grass roots is vital.

The book under review is aimed at educating the NGOs, water well drillers, groundwater practitioners, water managers and agriculturists, or even enlightened farmers, Panchayat leaders, sections of administration and executives, who do not need advanced hi-tech knowledge, but instead need finger tips, ready reckoners, handbooks, field guides to help them in the field application of groundwater technology, such as tube well drilling, designing, construction, pumping, and remediation of contaminated or low quality well waters etc. Mahendra has, no doubt, tried and succeeded to an appreciable extent in reaching out to his target group. Here lies the significance of the book, a summarised version of groundwater knowledge with practical field experience, as the author sums up in the Preface of the Handbook: "Data ...compiled.....from numerous publications and integrated with extensive field experience of the author.....incorporating the core material essential for groundwater development".

Tube wells are important groundwater structures in the alluvial terrain of India, which is the most potential hydro-geological unit in the country. Hence, the main focus of the Handbook has been logically on tube well drilling, construction and development, and related aspects. Thus, the handbook fairly dwells on most of these crucial aspects of well drilling, - right from drilling and construction of tube wells to pumping tests, pump selection, valves and piping systems. If the design and construction are not proper, tube well is

liable to be defective and incapable of delivering desired or optimum yield, or even be a failure. It is also important to test the newly constructed well for dependable and sustainable yield. Further, since the ultimate objective is to transport the water from the source to the place of its intended use, selection of pump set, pipeline and valve system of correct specifications is vital. The knowledge of the system valves is essential to regulate the water flow through the pipe lines, preventing back flow and build-up of sudden back-pressure. 'Trouble shooting' is a welcome addition to the book, which will be of much help to the groundwater practitioners. These are some of the topics not normally treated in the generally available groundwater books. Water quality being an important aspect controlling its sustainability, has also been treated in brief. Other chapters of the Handbook offer a general introductory reading. These are some of the highlights of the book.

The author also invites suggestions for revision/modification of the book, if any. Being the first edition, the book, of course, may need some revision in places. The flow of the text sometimes loses rhythm directing the readers to the published textbooks. The data may need updating in places, along with inclusion of essential, relevant information omitted in the book: (1) Hydrological cycle: water table, piezometric surface vis-a-vis unconfined/confined aquifers, groundwater movement, types of aquifers etc. (2) Hydrogeological investigations: Map reading, both topographic and geological/hydrogeological being basic to selection of potential drill sites. (3) Worked out examples and case studies to reinforce interpretation techniques of resistivity sounding and Aquifer Performance Tests. (4) Complete sources of Tables for authentication. (5) Literature citations in text to be all included in the Reference List.

However, notwithstanding the above humble suggestions for improvement of quality, this handbook will help in fixing many tricky problems, which need to be tackled at the field level itself for optimal and scientific use of the groundwater structures. Coming from the pen of an octogenarian scientist, dipped in his long priceless field experience, this attempt of A.R. Mahendra is praiseworthy. Good print quality, valuable tables, fine illustrations, and lucid language mark the book, making it an enjoyable reading, easily accessible and understandable by all. More such handbooks will be welcome to impart practical knowledge to the millions of groundwater users in India, which will help in understanding, implementing and enforcing scientific groundwater resource management. Not many field geologists translate their field experience into handbooks like this transferring the knowledge bank to the younger workers.

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