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September 24, 2014

Updated: September 24, 2014 23:22 IST

Heliborne Surveys reveal potential for groundwater exploration

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Presence of fresh water zones below the upper saline layers in the deserts of Jaisalmer, arsenic-free aquifer after the top zone in Bihar and water-bearing aquifer at a depth of 200 metres in the hard rock areas of Tumkur, Karnataka are among some of interesting findings that emerged from Heliborne Geophysical surveys undertaken on a pilot basis in five States in the country.

With uncontrolled exploitation of groundwater resources across the country adversely affecting the shallow aquifer resources both in terms of quantity and quality, a pilot aquifer mapping project was initiated by the Central Ground Water Board, Ministry of Water Resources, under a World Bank funded hydrology project.

The aim of the project is to develop sustainable and comprehensive groundwater management plans. The surveys carried out by CSIR-NGRI scientists, Dr.Shakeel Ahmed and Dr.Subhash Chandra and their team, have proved to be of immense use for aquifer mapping and revealed an enormous potential for the groundwater exploration in the country, said CSIR-NGRI Director, Dr. Y. Bhaskar Rao.

According to Dr. Subhash Chandra, precise information was lacking before. For instance, the scientists came across a rare finding of weathered-fractured quartzite below the 40-60m thick alluvium in Dausa district of Rajasthan, indicating that it was a potential water-bearing zone. He said they were also able to detect some tectonic activity like folding and faulting.

A detailed plan for future ground water resources in Dausa could be made based on the high-resolution mapping and the water-bearing zone could be targeted for drinking water and irrigation purposes. In Bihar, groundwater modeling could be taken up. While top aquifer had arsenic, the one below it was free from it and water could be pumped up without disturbing natural hydraulic balance.

"The top layer can be sealed. That can be done", he added. He said that state-of-the-art dual moment technology was used with special focus on aquifer mapping. Apart from finding potential water-bearing zones, the scientists also found some other interesting information and were able to map a paleo river channel in Cuddalore, Tamil Nadu.

Besides Rajasthan, Bihar and Karnataka, the surveys were also done in Maharashtra and Tamil Nadu. They were carried out in collaboration with Aarhus University, Denmark.

Keywords: Heliborne Surveys, groundwater exploration, Heliborne Geophysical surveys, groundwater

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