

1. Project Title: Ground Water Prospects Mapping for Assam under Rajiv Gandhi National Drinking Water Mission Project, Phase – III

2. Scope and Objectives: The groundwater prospects map prepared as per the methodology described below based on the interpretation of satellite imagery in conjunction with field surveys and other collateral data indicate the prospective ground water zones in an area. The user depts. can use these maps for narrowing down the target zones around the problem habitations for detailed ground hydrological and geophysical investigations, ultimately to select the sites for drilling. These maps should be used for selection of sites with follow-up ground surveys, i.e. detailed hydrogeological / ground geophysical investigations (wherever required) in the prospective zones to obtain the exact information about the weathered zone, thickness of deposited material, depth and thickness of aquifers, presence of fractures in the subsurface and their subsurface configuration, information about the existing wells, etc. Subsequently, based on the confirmatory evidences obtained from ground geophysical / hydrogeological surveys, the sites have to be selected for drilling. Similarly for recharge structures also, though each unit has been evaluated for its suitability for taking up different types of recharge structures, the exact site for locating these recharge structures have to be evaluated based on the requirement, nature of underlying aquifer, site conditions, availability of water for recharge, etc.

The objective of the project is to prepare the 'ground water prospects maps' corresponding to Survey of India toposheet on 1: 50,000 scale, covering all the habitations. The map has to show a) prospective zones for ground water occurrences b) tentative locations for constructing recharge structures.

3. Centre: North Eastern Space Applications Centre (NESAC), Umiam; Gauhati University & Department of Geology & Mining, Assam and C-DAC, Pune.

4. Funding Agency: Dept.of Drinking Water Supply, Ministry of Rural Development, Govt. of India.

5. Study Area: Assam, India.

6. Brief Methodology: In order to achieve the objective of the present work, a comprehensive methodology has been developed taking into account the experience of ground water studies carried out in different terrains and the advantages that are there with the satellite images in the application of ground water studies. The different steps (Fig.1) involved in preparation of thematic layers are

- Visual interpretation for extraction of themes like lithological, geological structure, geomorphological, hydrological and base layers
- Internal Quality check
- Field verification of thematic layers and collection of well inventory
- Incorporation of field data
- Preparation of integrated map
- Internal Quality check
- Digitization of these maps and GIS overlay

- Final quality check
- Output generation

7. Data Used: Geocoded (precision scale corrected) IRS-1C / 1D LISS-III Standard FCC imagery on 1: 50,000 scale, preferably of February – May period with scene specific enhancement.

- Locations of the non-covered (NC) and partially covered (PC) habitations provided by the PHED, Assam.
Survey of India (SOI) toposheets on 1:50,000 scale.
- Existing geological, geomorphological and hydrological maps and information.
- Historical data of the observation wells available with the State Depts. and Central Ground Water Board (CGWB)
- Ground hydrological data collected during the field visit.

8. Status of the Project: Completed

9. Results of the project:

The final groundwater prospects map prepared by combining all the five layers and composed corresponding to Survey of India toposheets on 1: 50,000 scale to have an easy understanding for the users. The database generated were lithology, geological structures, geomorphology, hydrology (drainage- line & polygon, canal, spring, rain, irrigated area, wells, WRDPL, WRDPP), base (roads, rail, administrative, settlement-point, hydro-geomorphological layer (generated by overlaying lithology & geomorphology).

10 Utilization / Feedback / Success Stories:Public Health Engineering Department (PHED), Assam, MRD (Govt. of India) and other related Central and State Govt. Depts., NGOs, etc.