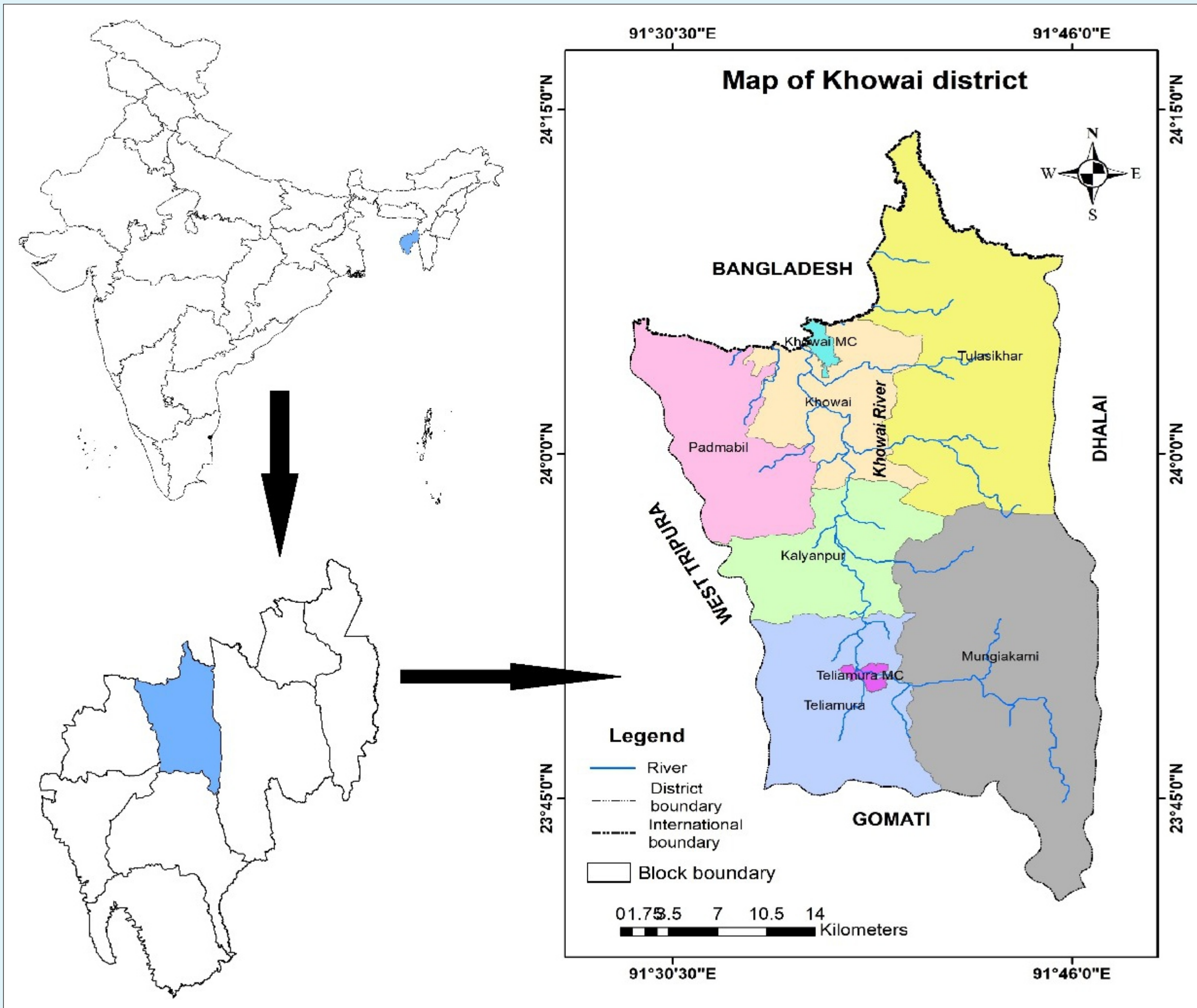
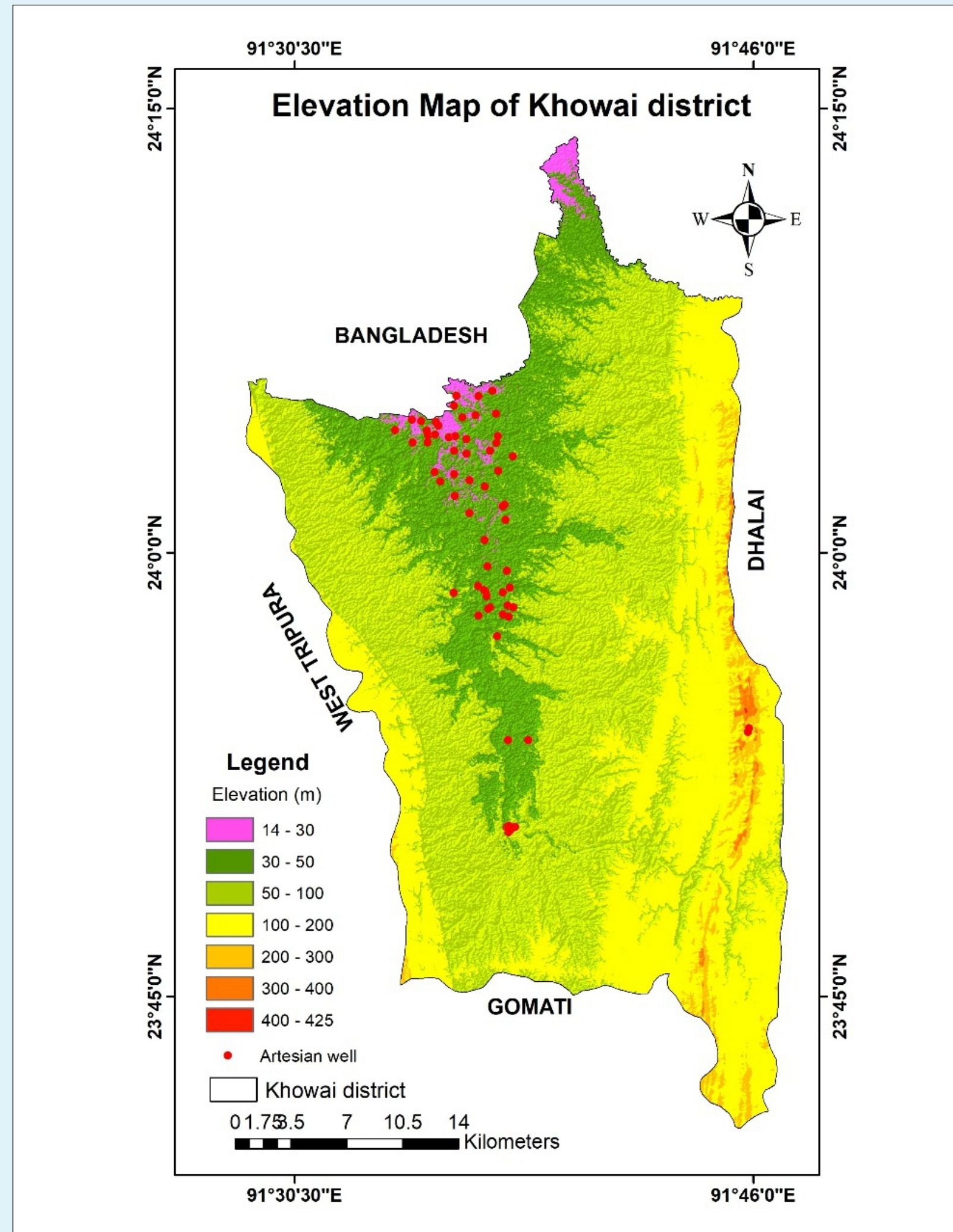


ARTESIAN (FREE FLOWING) WELLS IN KHOWAI VALLEY, TRIPURA

Introduction: The term “Artesian Zone” is defined by the area of free flowing wells. The Khowai valley of Tripura is bestowed upon with free flowing artesian wells.



Map of the study area in the Khowai Valley in the Khowai District of Tripura



Elevation map of Khowai district

DETAILS OF ARTESIAN ZONES

Surveying of artesian zone has been carried in all the 6 blocks of Khowai district and out of which three blocks are found to have free flowing artesian zone. An isolated artesian flowing well is found at 45 miles area in Atharamura hill range under Mungiakami block.

To measure the actual piezometric head of free flowing artesian well, a transparent pipe of 2 to 3 m was erected above the parapet of the well. The locations are plotted in the google earth for demarcating the artesian zone and it is mapped to be about 180 sq km.

The discharge of the artesian well is monitored using volumetric method. A Total of 68 no. of representative artesian wells have been inventoried & monitored periodically and data have been collected. The block wise details of discharge and piezometric head collected is given in table.

Table no 1: Block wise details of discharge (in lps) of artesian wells

S.No.	Block	Discharge range (lps)			
		Nov-2009	Sept. 2022	Nov-2022	Jan-2023
1	Khowai	0.05 to 2	0.1 to 2	0.04 to 1.6	0.07 to 2
2	Teliamura	0.02 to 0.75	0.03 to 1.2	0.1 to 0.75	0.02 to 0.72
3	Kalyanpur	0.09 to 0.75	0.1 to 1.5	0.06 to 1.3	0.07 to 1.14

Table no 2: Block wise details of Piezometric head (in m) of artesian well

S.No.	Block	Piezometric head range (in m agl)		
		Sept. 2022	Nov-2022	Jan-2023
1	Khowai	0.5 to 3.5	0.4 to 3.5	0.18 to 3.5
2	Teliamura	0.22 to 1.38	0.5 to 1.36	0.23 to 1.35
3	Kalyanpur	0.5 to 2.7	0.46 to 2.7	0.49 to 3

PHOTOGRAPHS



Barobil, Khowai block
Pz Head- 0.75 m agl (Pz Head measurement through transparent pipe)



High yielding auto flow well at Char Ganki, Khowai block with a discharge of 14.6 lps



Jamirapara, Khowai block,
Pz head- 2 m agl



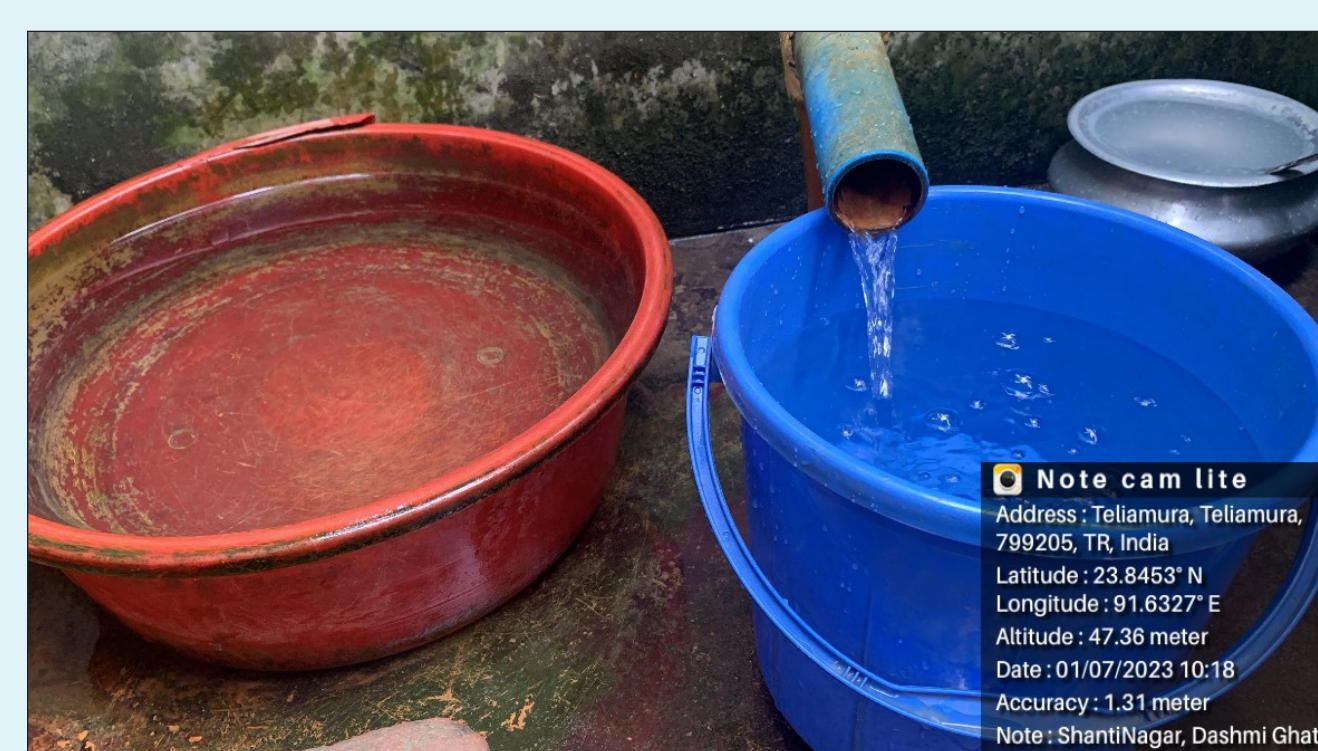
Artesian well at Khowai town, Khowai Block used for domestic purpose



Artesian well at Balishghar, Teliamura block used for pisciculture



Iron deposition and slime formation at Ratia, Kalyanpur block



Dashmi ghat, Teliamura block (January, 2023 with Discharge of 0.079 lps)

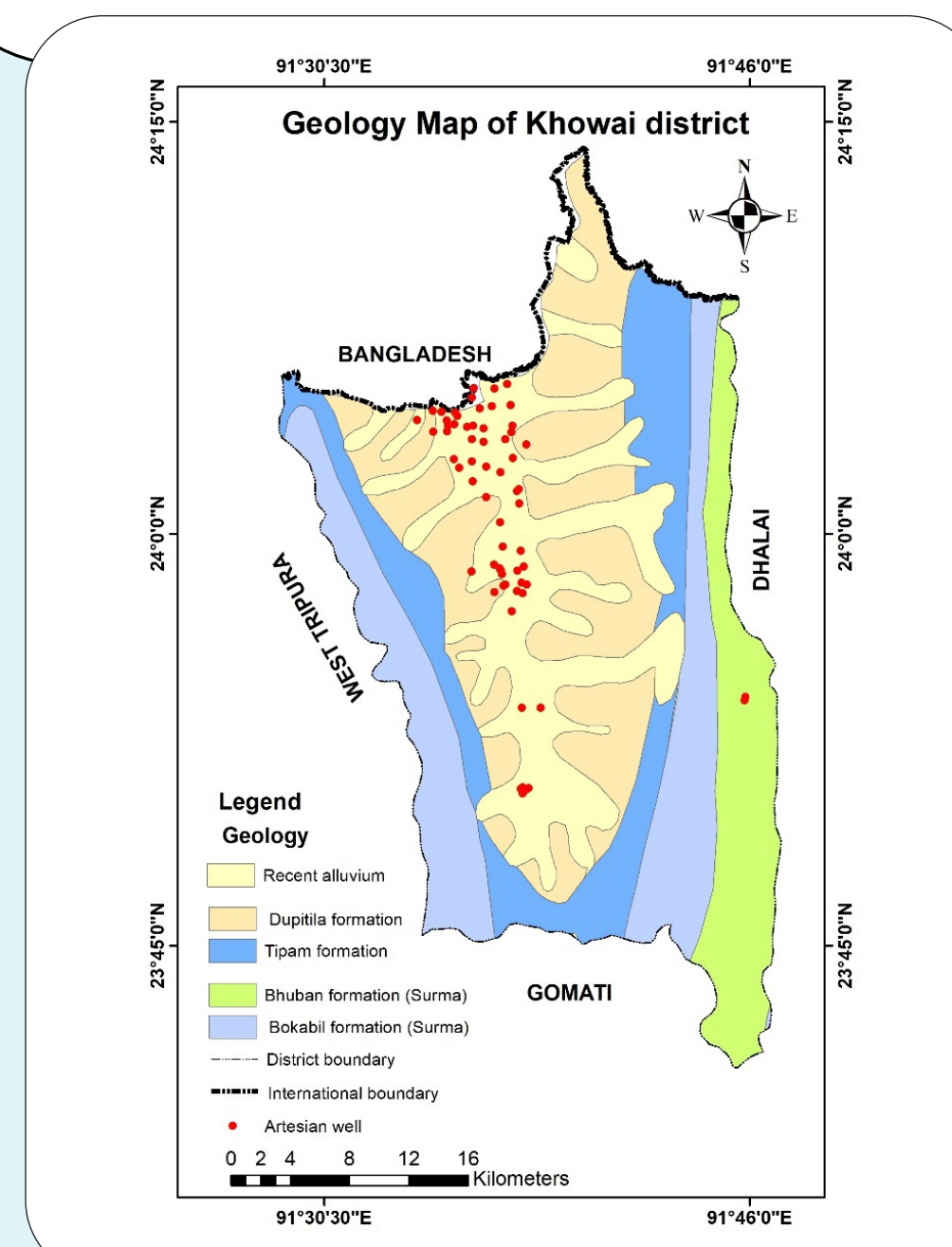


Artesian well at Khowai town, Khowai Block used for domestic purpose

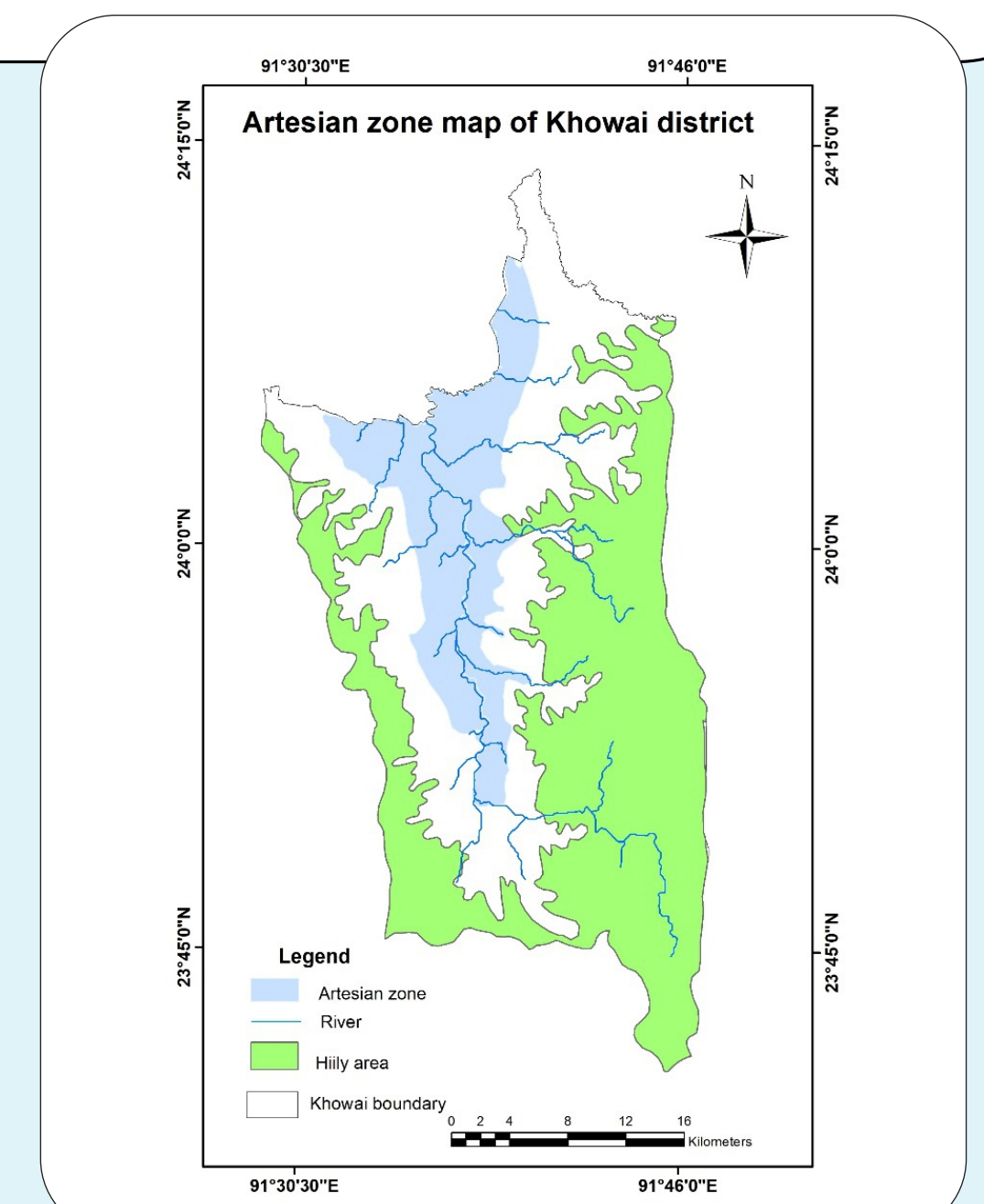


Aquifer System its Geometry and Characteristics

- Khowai valley is occupied by Quaternary age of recent Alluvium & Upper Tertiary age of Surma, Tipam & Dupitila Group of rocks.
- Recent alluvium occurs along the bank of river and thickness varies from 5 to 10 m with significantly high content of clay and sandy clay.
- The Dupitila Formation is nearly horizontal in disposition and its thickness varies from 10 to 30 m. The formation consists of mainly clay and silt with some intercalations of gritty & ferruginous sandstones.
- Due to high clay content the formation has low permeability and low storage capacity.
- Sandstones of Tipam formation forms the principal aquifer system in the study area.
- The recharge area of these sandstones are the neighboring anticlinal hills. Ground water occurs under unconfined, semi-confined to confined conditions.

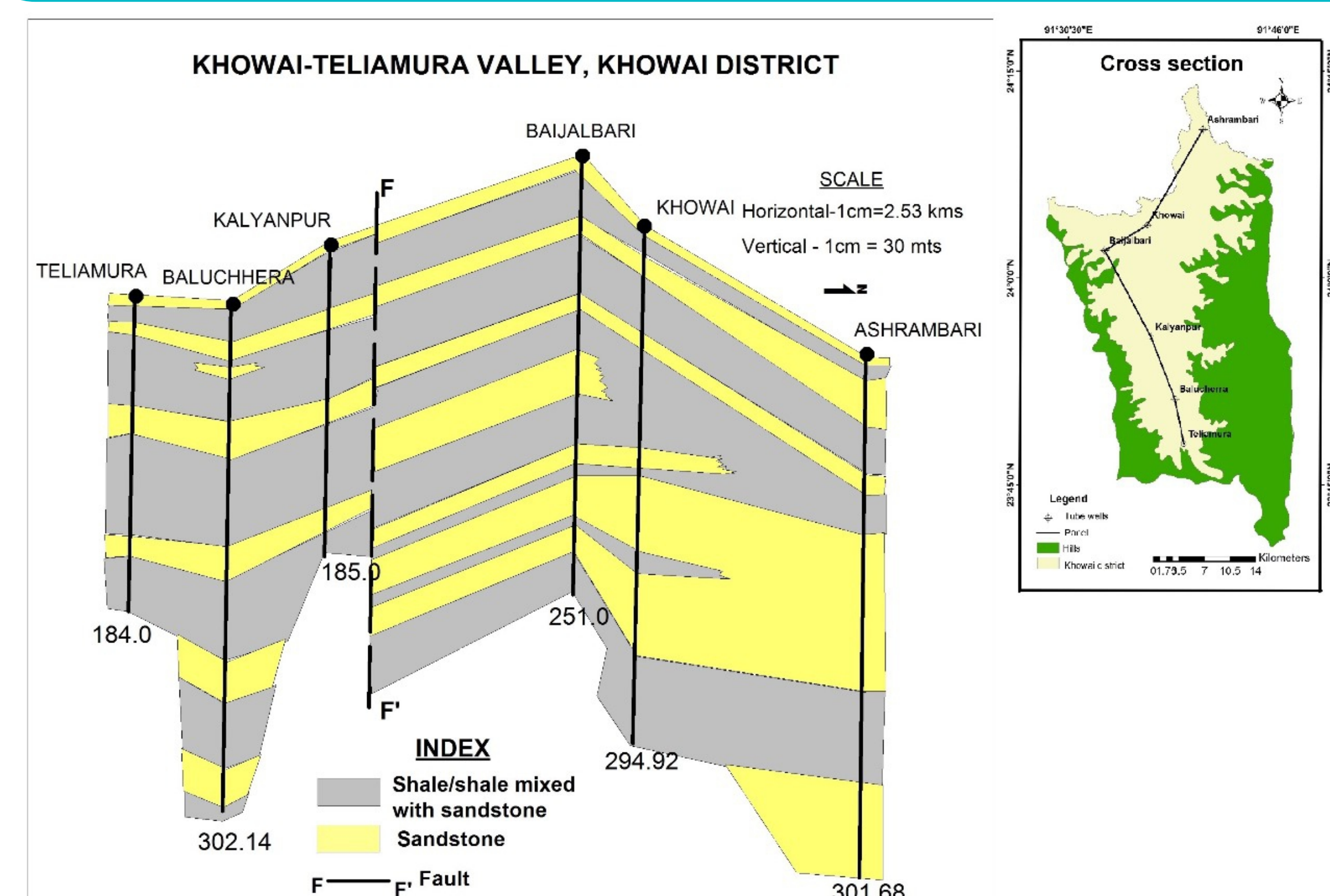


Geological map of Khowai district



Artesian zone of Khowai valley

AGUIFER DISPOSITION:



Panel diagram showing Sub surface geology of Khowai - Teliamura Valley

FINDINGS

- The geomorphic unit of tightly folded anticlinal hills with broad synclinal Khowai valley is favourable for artesian condition, whenever good thickness of impermeable clay beds underline and overlie the saturated granular zones occurs.
- These anticlinal hills form watersheds from which drainage patterns emerge. The recharge zone of artesian at Khowai valley is anticlinal hills with sandy formation.
- Artesian zone is mostly confined along the Khowai River inferring the artesian zone acts as a discharge zone.
- The artesian zone is mapped to be about 180 sq km covering three blocks (Khowai, Kalyanpur and Teliamura) of Khowai district.
- Flowing conditions with auto-flow of 72 to 10800 litres per hour are found mainly in the central part of most of the synclinal valley of Khowai district.
- The Piezometric head ranges from 0.2 m agl to 3 m agl.
- The free flowing artesian wells are mainly used for irrigation purpose. Some of them are also used for drinking & domestic purposes and few are used in fisheries.
- These artesian wells supports three times paddy cultivation in a year in this area, called Aman, Aus and Boro cultivation.

