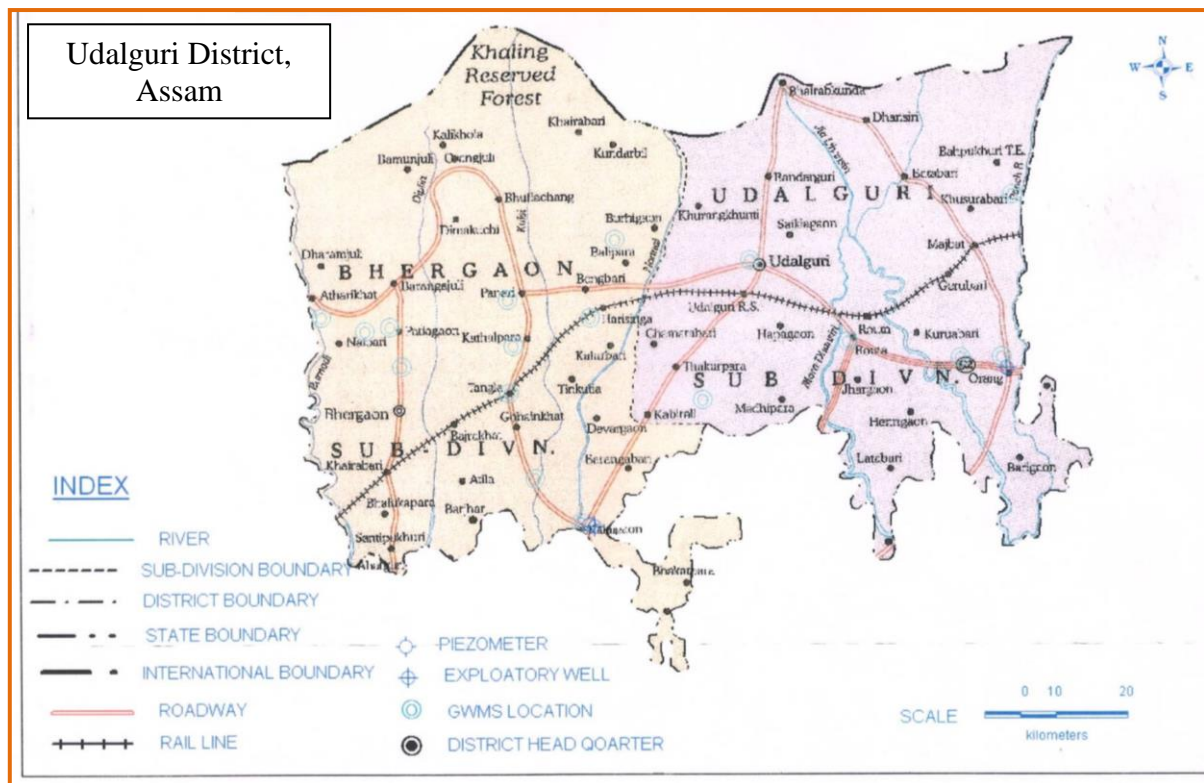




# Ground Water Information Booklet Udalguri District, Assam



**Central Ground Water Board**  
North Eastern Region  
**Ministry of Water Resources**  
Guwahati  
March 2013

**GROUND WATER INFORMATION BOOKLET  
UDALGURI DISTRICT, ASSAM**

**DISTRICT AT A GLANCE**

Sl. No.	ITEMS	STATISTICS
1	<b>GENERAL INFORMATION</b> i) Geographical Area (in sq.km) ii) Population (2011) iii) Average Annual Rainfall (mm)	1,673.94 8,32,769 2,000
2	<b>GEOMORPHOLOGY</b> i) Major Physiographic Units  ii) Major Drainage	Flood plain & alluvial terrace, inselberg, swamp. Bamadi, Dipila, Na, Noa, Mangaldai, Bega, Mara Dhansiri, Jiya Dhansiri and Panch Rivers
3	<b>LAND USE (sq. km.)</b> i) Forest Area ii) Net Area Sown iii) Total cropped area iv) Area sown more than once	224.00 999.49 1588.14 588.65
4	<b>MAJOR SOIL TYPES</b>	New alluvium, older alluvium, loamy & Lateritic soils
5	<b>AREA UNDER PRINCIPAL CROPS in sq km</b>	Not available
6	<b>IRRIGATION BY DIFFERENT SOURCES</b> Potential created for Kharif crops	301.92
7	<b>NUMBERS OF GROUNDWATER MONITORING WELLS OF CGWB (undivided Darrang)</b>	29
8	<b>PREDOMINANT GEOLOGICAL FORMATIONS</b>	Alluvial formation
9	<b>HYDROGEOLOGY</b> i. Major water bearing formations  ii. Pre-monsoon Depth to Water level iii. Post-monsoon Depth to Water level	Alluvial sediment of Quaternary age 0.56 to 4.61 m bgl 1.08 to 5.19 mbgl
	iv. Long term Water level trend in 20 yrs	Rise/Fall during Pre-monsoon (0.002-0.120 / 0.081-0.237) m/yr

		Rise/Fall during Post-monsoon (0.00-0.00/0.002-2.006) m/yr
10	GROUND WATER EXPLORATION BY CGWB (as on 28.02.2013) i. Number of wells drilled ii. Depth range (m) iii. Discharge (m <sup>3</sup> /hr) iv. Transmissivity (m <sup>2</sup> /day)	6 (4 EW, 2 OW) 276.42 - 300.2 188.04-216.54 18.75-3447.37
11	GROUND WATER QUALITY i. Chemical constituents above permissible limit ii. Type of water	Fe Good, potable
12	DYNAMIC GROUND WATER RESOURCE (2009) in mcm  i) Annual replenishable ground water resource  ii) Net annual ground water drafts iii) Projected demand for Domestic & Industrial use upto 2025 iv) Stage of ground water development	NA( District newly formed in 2010 after separating from Darrang district)
13	AWARENESS AND TRAINING ACTIVITY i) Mass Awareness programmes organised ii) Date iii) Place iv) Number of participants	Nil
14	EFFORTS OF ARTIFICIAL RECHARGE AND RAINWATER HARVESTING i) Projects completed by CGWB (no. & amount spent) ii) Projects under technical guidance of CGWB (nos.)	Nil Nil
15	GROUND WATER CONTROL AND REGULATION i) Number of over exploited block ii) Number of critical block iii) Number of blocks notified	Nil Nil Nil
16	MAJOR GROUND WATER PROBLEMS AND ISSUES	Higher concentration of Fe in ground water

# **GROUND WATER INFORMATION BOOKLET**

## **UDALGURI DISTRICT, ASSAM**

### **1.0 Introduction**

Udalguri district covers an area of 1,852.16 sq km. it is situated in the northern bank of the River Brahmaputra. It has an international and state boundary with Bhutan & Arunachal Pradesh on north respectively. It is bounded by Baksa & Kamrup (Rural) district in the west, Darrang district on the south and Sonitpur district on the east.

Number of perennial streams flow through the district from north to south and join the Brahmaputra River. The major streams that drain the area are Barnadi, Dipila, Na, Noa, Mangaldai, Bega, Mara Dhansiri, Jiya Dhansiri and Panch Rivers.

The Irrigation Department has taken up 18 (eighteen) schemes in total both new as well as renovated/improved old schemes in Udalguri District, out of which 16 (sixteen) schemes are directly related to supplying of irrigation water for cultivation and 2 (two) are not irrigation oriented. Out of 16 (sixteen) irrigation oriented schemes, all the schemes have been completed and a total potential of 2,450 ha for Kharif Crops have been so far created through the achievement of these schemes.

### **2.0 Rainfall and Climate**

The district enjoys a tropical rain forest climate with absence of a dry hot summer season. Temperature ranges between 17.5° Celsius (minimum, in December/January) and 28.5° Celsius (maximum, in July/August).

South west monsoon activates from May and continues up to September-October. The average annual rainfall of the district, as recorded at Tangla is 1,980.5 mm, with about 66% rainfall occurring during the monsoon. The air is highly humid throughout the year except during February - April. North-easterly and easterly winds are most common throughout the year.

### **3.0 Geomorphology and Soil**

Physiographically, the district is mainly an alluvial tract. In the northern front along the base of the foot hills of the eastern Himalayas from where the alluvial plain gradually slopes down to the Brahmaputra River. There are several low lying mounds are made up of un-assorted river terraces. The forests are mainly tropical evergreen in nature. Terraced alluvial deposits is characterised with the conspicuous occurrence of buried channels, back swamps, etc.

Soils in greater part of the district are sandy and silty loam. It is found to be slightly alkaline in reaction and is moderately permeable. Soils restricted to inselberg areas are more clayey, lateritic and less permeable and are highly acidic in nature. From agriculture point of view, the soils in major part of the area are suitable for all sorts of crops.

### **4.0 Ground Water Scenario**

#### **4.1 Hydrogeology**

Based on the behaviour and occurrence of ground water, the regional ground water flow system of district has been described under following categories.

- i. Shallow aquifer group occurring within 50 m depth.
- ii. Deeper aquifer group beyond a depth of 50 m and down to 200 m bgl.

i. Shallow Aquifer Group

It is constituted of a mixture of boulder, gravel, sand, silt and clay. The thickness of the aquifer varies from 15 to 40 m. Ground water in this aquifer generally occurs under water table to semi-confined conditions. The development of ground water from this aquifer for both domestic and irrigation purposes is by open wells and shallow tube wells.

The boulders are restricted mostly to the northern parts of the district. They occur between GL to 50 m bgl and thickness varies from 20 - 30 m. The thickness increases from south to north.

The water level in the major part of the district generally lies between 2 to 4 m bgl. The northern most part occupied by the piedmont zones and the areas adjoining to the inselbergs are having deeper water level. The movement of ground water is southerly towards Brahmaputra River. The water table contour follows the topography of the area and lies more or less parallel to the Brahmaputra River. The hydraulic gradient becomes gentler towards south.

ii. Deeper Aquifer Group

It is constituted of coarse to medium sand with intercalation of clay. Ground water occurs under water table to semi-confined conditions. Detailed hydrogeological surveys aided by exploratory drilling revealed the existence of two to three promising aquifer zones down to the depth of maximum 200 m bgl. Aquifer displays various degree of lateral and vertical variation indicating various degree of depositional environment both in space and time. The piezometric surface is highly variable and the movement of ground water is towards the south.

## **4.2 Ground Water Resource**

Methodology adopted for ground water resource estimation of Udalguri District of Assam is as per GEC 1997 Report, i.e. Ground Water Level Fluctuation and Rainfall infiltration factor Method.

The net ground water availability in the year 2009 is not computed separately because it was a part of Darrang district and this district was formed in 2010

### **4.3 Ground Water Quality**

There is appreciable variation in the quality of ground water between shallow and deeper aquifers. The ground water is alkaline in nature in majority of the cases. All are excellent to good class and a few are in good to permissible class. The formation water of both shallow and deep aquifers is suitable for most of the irrigational and industrial purposes.

From the point of view of domestic uses, the ground water is having a little higher concentration of iron but this can be used after treatment.

### **5.0 Ground Water Management Strategy**

Shallow ground water structures are congenial for construction in the district, as water level and aquifer material are laterally persistent throughout the district. Dug wells and dug-cum-bore wells especially near the inselberg zone are very beneficial. Deep tube wells can be constructed preferably below the depth of 50 m tapping aquifer zone with a discharge varying from 100 - 200 m<sup>3</sup>/hr with maintaining a spacing of about 1 km.

Considering the vast potential of river water as well as ground water in the district, it is recommended that the conjunctive use of both these resources may be judiciously made.

### **6.0 Ground Water Related Issues and Problems**

Frequent floods devastate the district every year during the monsoon months from May to September. Flood accompanied with soil erosion and sand deposition cause maximum damage to standing crops to the agricultural lands.

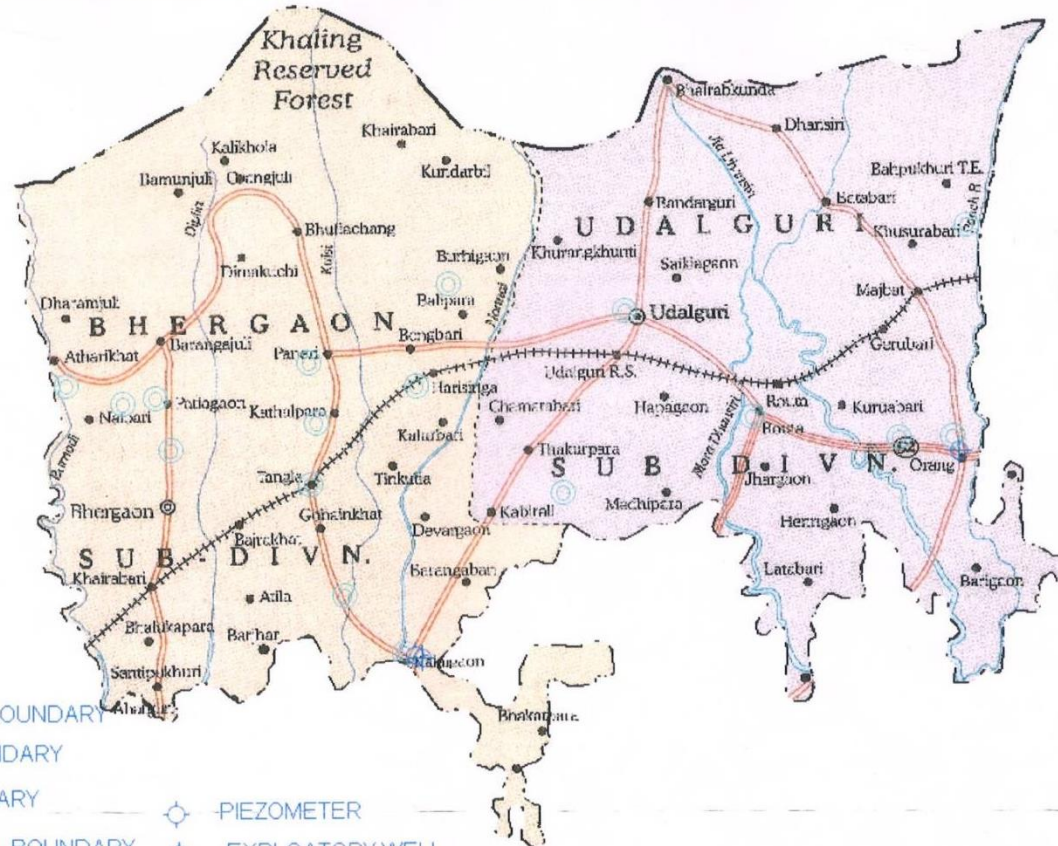
Other than sporadic high Iron content, most of the chemical constituents are within permissible limit.

### **7.0 Recommendation**






Existing hydrogeological set up and availability of huge ground water resource indicate that there is much scope for the development of ground water through construction of abstraction structures in a planned and systematic way.

Iron treatment plants need to be installed with PHED water supply schemes before using for drinking.

# LOCATION MAP OF UDALGURI DISTRICT, ASSAM

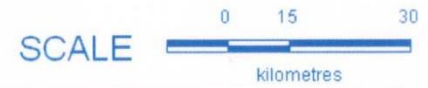
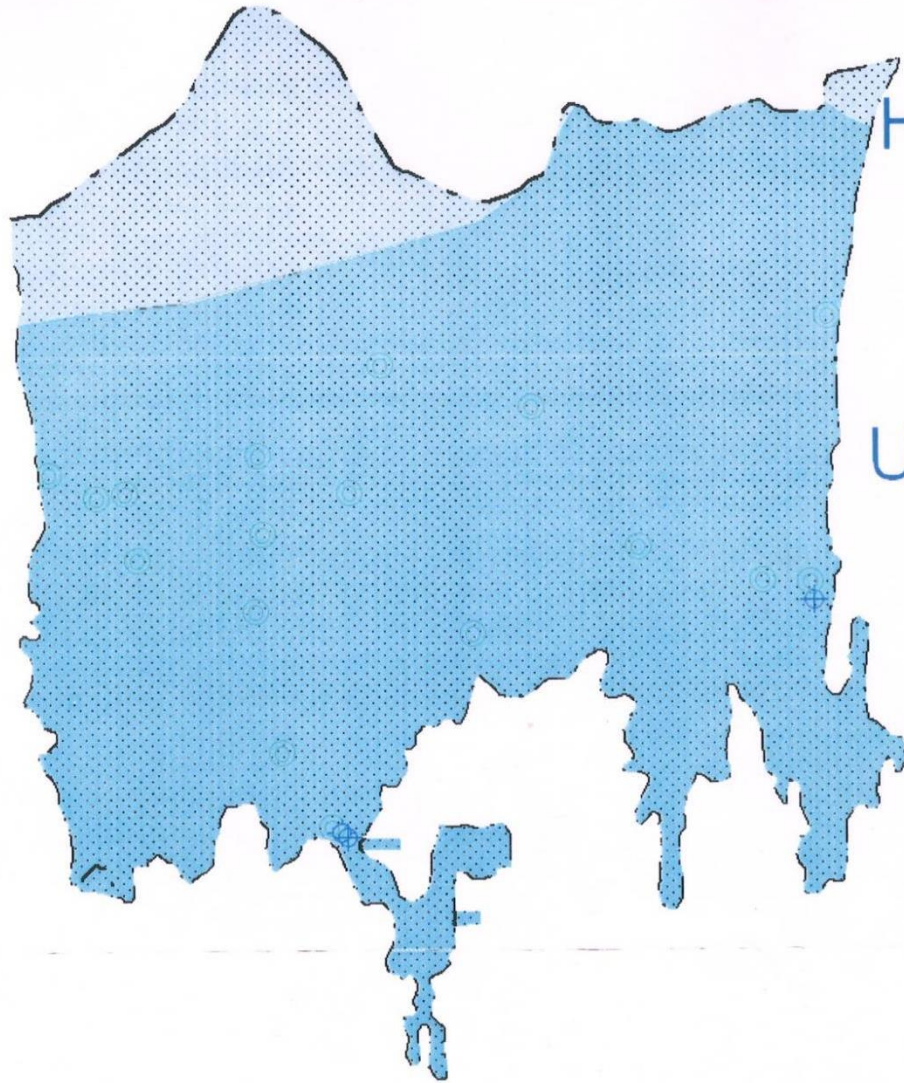


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-  DISTRICT HEAD QUARTER




# HYDROGEOLOGICAL MAP OF UDALGURI DISTRICT



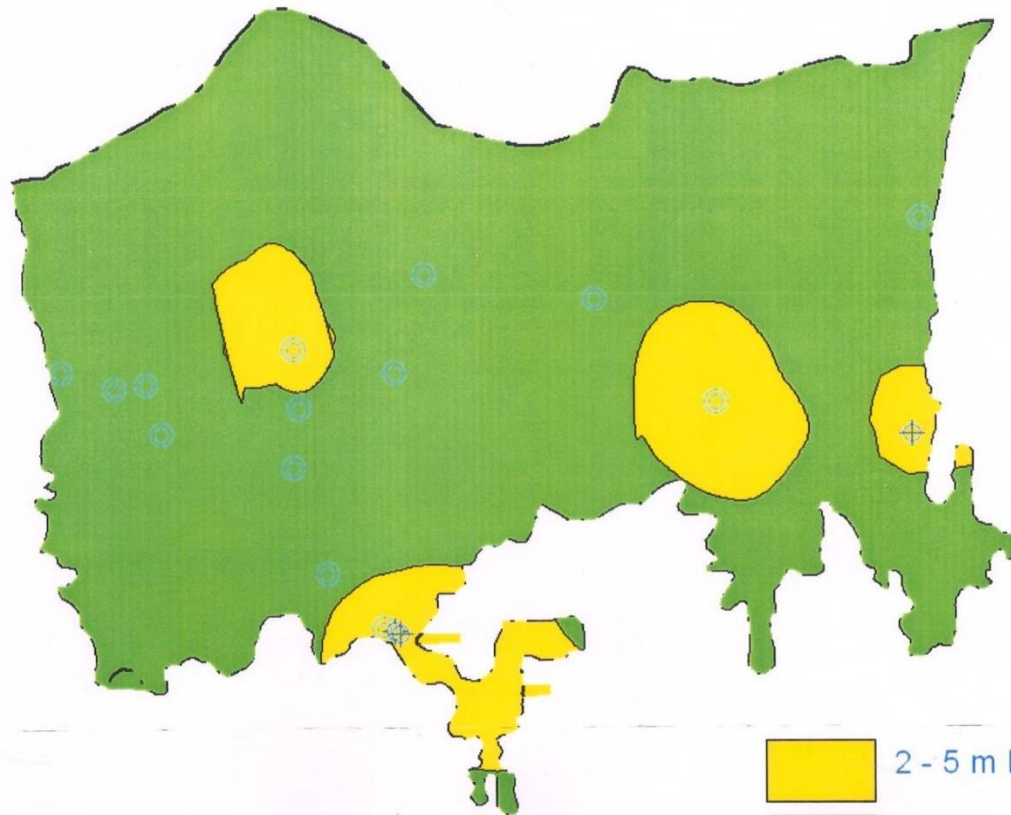
**LEGEND**

FORMATION	YIELD PROSPECT
 Unconsolidated Formation	150 TO 200 m <sup>3</sup> /hr for drawdown within 8 m.
 Formation	Upto 150 m <sup>3</sup> /hr for drawdown within 6 to 12 m.





## PRE-MONSOON WATER LEVEL OF UDALGURI DISTRICT



## POST-MONSOON WATER LEVEL OF UDALGURI DISTRICT

