भूजल सूचना पुस्तिका

सिमडेगा जिला, झारखंड

Ground Water Information Booklet

Simdega District, Jharkhand State

High yielding (25.00 lps) bore well drilled at village & block Kolebira, Simdega district

केन्द्रीय भूमिजल बोर्ड

जल संसाधन मंत्रालय

(भारत सरकार)

राज्य एकक कार्यालय, राँची

मध्य-पूर्वी क्षेत्र

पटना

Central Ground water Board

Ministry of Water Resources

(Govt. of India)

State Unit Office,Ranchi

Mid-Eastern Region

Patna

सितंबर 2013

September 2013

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Prepared By

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राज्य एकक कार्यालय, राँची

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GROUND WATER INFORMATION OF SIMDEGA DISTRICT, JHARKHAND STATE

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SIMDEGA – DISTRICT AT A GLANCE

Sl No.	ITEMS	Statistics	
1.	GENERAL INFORMATION		
	i) Geographical Area (Sq km.)	3756.19 Sq. km.	
	(16) Administrative Divisions (As on -------) Number of Block Number of Panchyat / Villages	 10 87/ 454	
	(ii) Population (As on 2011 Census)	599578 persons	
	(iii) Average Annual Rainfall (mm)	1487 mm	
2.	GEOMORPHOLOGY		
	Major Physiographic units	Chotanagpur plateau	
	Major Drainages	Sankh and Palamara	
3.	LAND USE (Sq Km.)		
	a) Forest area:	559	
	b) Net area sown:	816.7	
	c) Cultivable area:	1167.6	
4.	MAJOR SOIL TYPES	Ultisols (red and yellow soils) Alfisoils (red gravelly and sandy soil) Light textured Acidic to Neutral Very poor fertility	
5.	AREA UNDER PRINCIPAL CROPS	Pulses – 110.07 Oilseeds – 55.09 Paddy – 1276.41 Maise – 88.05	
6.	IRRIGATION BY DIFFERENT SOURCES (Areas and Number of Structures)	Nos.	Area (in Ha)
	Dugwell	15039	4293
	Tube wells /Bore wells	Nil	Nil
	Tanks / Ponds	6	62
	Canals	10	24
	Other Sources	178	436
	Net irrigated area	4815 Ha.	
	Gross irrigated area	8321 Ha.	
7.	NUMBERS OF GROUND WATER MONITORING WELLS OF CGWB (As on 31-03-07) No of Dugwell No. of Piezometers	 6 Nil	
10.	PREDOMINANT GEOLOGICAL FORMATIONS	Chotanagpur Granite and Gneiss	
11			
	➢ Major Water bearing formation ➢ (Pre-monsoon Depth to water level during 2012) ➢ Post-monsoon Depth to water level during 2012) ➢ Long term water level trend in 10 yrs (2002-2011) in m / yr. (Pre – monsoon)	Granite gneiss 3.05 to 8.91 mbgl 1.25 to 5.82 mbgl Rise: 0.028 – 0.310 Fall: 0.001 – 0. 219	

12.	GROUND WATER EXPLORATION BY CGWB (As on 31-03-2012)	
	No. of wells drilled (EW, OW, PZ, SH, Total	EW – 10, OW – 7
	Depth Range (m)	82.00 – 199.92 mbgl
	Discharge (m^3/hr.)	1.62 – 90.00
	Storativity (S)	--
	Transmissivity (m^2/day)	--
13.	GROUND WATER QUALITY	Good
	Presence of Chemical constituents more than permissible limit (e.g. EC, F, As, Fe)	EC 136 to 730 micro mhos/cm at 25^0 C.
	Type of Water	Potable
14.	DYNAMIC GROUND WATER RESOURCES (2009) in mcm.	225 mcm / year
	Net Annual Ground Water Draftfor all uses	7196.57 ham
	Over all Stage of Ground Water Development	26.69 %
15.	AWARENESSS AND TRAINING ACTIVITY	
	Mass Awareness Programmes Organized Date: 09/02/2012 Place: + 2 High School, Simdega No. of Participants: 349 persons	1
16.	EFFORTS OF ARTIFICIAL RECHARGE & RAINWATER HARVESTING	
	Projects completed by CGWB (No & Amount spent)	Nil
	Projects under technical guidance of CGWB (Numbers)	Nil
17	GROUND WATER CONTROL AND REGULATION	
	Number Of OE Blocks	Nil
	No. of Critical Block	Nil
	No. of Blocks notified	Nil
18.	MAJOR GROUND WATER PROBLEMS AND ISSUES	100% HNS showing declining trend of water level for post monsoon period (2002 – 2011)

“Ground Water Information Booklet”
Simdega district, Jharkhand state

1.0 Introduction

1.1 Administration: - Simdega district of Jharkhand state is located in the southern part of the state. It covers an area of about 3756.19 Sq. Km. The Simdega town is located about 170 km from Ranchi on Rourkela (Orisaa) road. The district is bounded in the north by the Gumla district, in the east by Ranchi district, in the south by Orissa state and in the west by the Chhatisgarh state. The district is situated between 22^0 20’ 30” and 23^0 50’ 15” N latitude and 84^0 01’ 00” and 85^0 04’ 30” E longitude. The district is covering Survey of India toposheet nos. 73 A/ 03, 04, 06, 07, 08, 11, 12, 15, 16, 73 B/ 01, 05, 09, 10, 13 and 14. The Simdega district comes under the south Chhotanagpur division. It has one sub – division i.e. Simdega Sadar sub – division. Further, the sub – division is devided into ten blocks namely – Simdega, Bano, Jaldega, Kolebira, Kurdeg, Thetaitanger, Pakartanr, Kersai and bansjor (Fig. 1). As per census of 2011, the total population of the district is 599578 persons. The administrative division and population of the district is given in table – 1.

1.2 Sub – basin/ Basin, Drainage: - The district is forming Sankh sub basin of the Brahmni basin.The river Sankh is the main river of the district, which flows north to south direction in the western part of the district. The tributaries of the river Sankh are the Palamara, Girma, Chhinda, lurgi and Dev rivers. The other important river of the district is the river South Koel which form the eastern boundary of the the district. The river South Koel flows north to south direction and finally joint with the river Sankh in Oriissa state. All these drainage is characterized by rapid surface run – off. All these rivers are seasonal in nature.The drainage pattern of the district is dendritic.

1.3 Irrigation: - Agriculture and forestry are the two main occupations of the local population in the district. But the land available for the cultivation is limited

because of the hilly and rigged topography. The absence of proper and the assured source of the irrigation have impeded the growth of agriculture.

Undulating topographic features characterize the district. The agricultural activity of the district is solely dependent upon the monsoon rainfall and the kharif crops mainly paddy is grown extensively. Irrigational facilities are not adequate in the district. Well is the most common source of irrigation, but this is not very dependable source. The major part of the district being rocky, it is difficult to dig deep dug wells. Where there exists facility for irrigation during Rabi season from the ponds and store water in small nalas, vegetable is the major crop grown in that area. The summer padi is grown in low lying areas in few places.

1.4 Studies: Central Ground Water Board has established a network of observation wells under National Hydrograph Network programme to study the behavior of ground water level and quality of ground water in the district. The ground water management study has been carried out during the year 2002 – 03 in part of the district and field data was collected for the study of ground water conditions in respect of quality and quantity. The board has also carried out exploratory drilling in the district under the AAP 2007 – 08 and 2008 – 09. Seventeen bore wells (10 EW and 7 OW) have been drilled to know the sub – surface geology, depth and thickness of water bearing formation with their yield and determine the different aquifer parameters which are presented in table - 2.

2.0 Climate and rainfall: The Simdega district enjoys a healthy climate through out the year. Normal atmospheric temperature in the area often goes up to 42^0 c in summer and it goes down to about 4^0 c during winter.

The climate of the area could be divided in to three district season. The winter commences from November and extends of to middle of March, December being the coldest month. The winter season is characterized by heavy dew thick fog and cold wave. The rainy season last up to middle of October. The area is free from hot winds and dust storm. The monsoon sets in by the middle of June and continues till the middle of October. The area receives rain fall mainly

by North-west monsoon during rainy season and from retreating monsoon during inter-monsoon period, which originates in the bay of Bengal. The average annual rainfall of the district is 1487 mm. Rainfall is the only sources of replenishment of ground water in the district.

3.0 Geomorphology and soil types

3. 1 Geomorphology: The Chottanagpur plateau is a region of large physical inequalities and presents a rich panorama of topographical features. The general configuration of region varies from valley fills, pedeplains, to structural ridges. In the district three well marked erosion surfaces are clearly discernible.

The large difference relief brings about strong, contrast climate, natural vegetation, surface drainage, under ground water and soil profile. In the pat region the rivers are long deep and with terrace but in pedeplain area they are wide with gentle slopes. The general slope of the district is towards south direction. The general elevation of the district is 300 to 700 m above MSL.

3.2 Soils: Soils in Simdega district have formed as a result of insitu weathering of crystalline rock (granite & gneisses), climate, topography and vegetation have contributed in the formation of soils in the area. The following types of soils are found in the entire district –

(i) Alluvial soil: All the river channels in the area are covered with alluvial soil recent of origin deposited over consolidated rocks. Alluvial fills are also found in patches away from the river channels. Thickness of these fills depends upon the topographical control. The alluvial sediments are comprised of coarse sand and gravel mixed with silt and clay, silt materials predominates over clayey materials.

(ii) **Grey eroded scarp soil:** This covers almost the entire are as a thin capping over granitic rocks.

(iii) **Red calcareous soil:** The red calcareous soils are found in some parts mainly in the intermontance valley. They are mostly sandy loam mixed with kankar.

(iv) **Forest soil:** Forest soil is confined to the reserve forest area and have surface layer of organic matter.

4.0 Ground Water Scenario

4.1 Hydrogeology: - Simdega district is mainly a dissected upland of ancient crystalline rocks which covers the major parts of the district. Ground water availability in crystalline rocks is considered to be poor because of the absence of primary porosity which is essential for the free occurrence and movement of ground water. The secondary porosity in the form of fractures, fissures, joints etc. develop due to orogenic movements aided by weathering, making the crystalline rocks potential repository for the occurrence and movement of ground water. The ground water in the district is controlled primarily by the thickness of weathered zone, extent, size opennes and interconnection of fractures, geological and topographical setting. Major part of the district fractured and weathered crystalline hard rock form the aquifer. Ground water in the district characterized by the hard rocks is located in the weathered residuum in the shallow depth under unconfined condition and circulates through the under lying fracture system extending to deeper horizon under semi – confined to confined conditions. Hydrogeological map is shown in figure 4.

4.1.1 Exploratory wells: To understand the sub – surface geology, identify the various water bearing horizons including their depth location and thickness and compute the hydraulic characteristics such as Transmissivity and Storativity of the aquifers, exploratory drilling programme was carried out under AAP 2007– 08 & 2008 - 09. There are 10 exploratory wells and 07 observation wells were drilled in the district. The depth of exploratory wells ranges between 82.00 to 199.92 mbgl. The static water level of these exploratory wells varies from 0.19 magl to 10.40 mbgl.

4.1.2 Depth to Water Level: -

There are 6 National Hydrograph Stations (NHS) have been established by Central Ground Water Board for the study of behavior of the water level and their fluctuation.

Pre monsoon depth to water level: - On the basis of the depth to water level of the year 2012 - 13 (table – 2), the pre monsoon depth to water level was monitored between 3.05 to 8.91 mbgl. Majority of the wells (83.33%) fall in the water level range of 6 – 9 mbgl. and rest of the wells (16.67%) fall within the water level ranges from 3 – 6 mbgl. Pre monsoon depth to water level map (2012 – 13) is prepared and shown in fig.-2.

Post monsoon depth to water level: - On the basis of the depth to water level of the year 2012 – 13, the post monsoon depth to water level ranges between 1.25 to 4.83 mbgl. About 66.67% of the wells fall in the water level ranges between 3 – 6 mbgl and rest of the 33.33% of the wells fall in the depth to water level ranges between 0 - 3 mbgl. Post monsoon depth to water level map (2012 – 13) is prepared and shown in figure 3.

4.1.3 Seasonal Fluctuation:- From the pre monsoon and post monsoon depth to water level data collected during May 2012 and November 2013 respectively, water level fluctuation were computed for all NHS of the district. The water level fluctuation between pre monsoon and post monsoon period of the district varies from 1.80 to 5.95 m.

4.1.4 Long term water level trend: - Water level depends upon the storage of ground water development and variation in rainfall over a long period. Central Ground Water Board has established eleven numbers of National Hyrdograph Stations (NHS) for the study of water level behavior in the district. The water level data of each station has been analyzed. The pre monsoon and post monsoon long term water level trend has been calculated for the period of 2002 – 2011 (Table 4). The long term water level trend is showing declining trend between 0.001 – 0.219, 0.024 – 0.217 and 0.063 – 0.202 m/ year for pre monsoon, post monsoon and all period respectively. About 50% of the wells showing declining

trend for pre monsoon period, 100% wells showing declining trend for post monsoon period and 66.67% wells showing declining trend for all the period.

4.2 Ground Water Resources: Based on the recommendation of the Ground Water Estimation Committee – 1997 (GEC – 1997), Block wise the ground water resource assessment has been evaluated (March 2009). The net annual ground water availability of the district is 26958.05 ham. The gross ground water draft for all uses of the district is 7196.57 ham. The net ground water availability for future irrigation development for the district is 19481.98 ham. All blocks of the district falling under “Safe” category. The stage of ground water development varies from 18.33% to 41.79% (Table – 6). Block wise (except new blocks) stage of ground water development is shown in figure- 5.

4.3 Ground Water Quality: To evaluate the quality of ground water, samples have been collected from representative NHS (dug wells) during the month of May 2011. These samples have been considered to assess the chemical quality of ground water and its suitability for drinking and irrigation purposes. The samples represent the quality of phreatic zone or the shallow zone. The ground water samples were analysed for major chemical constituents by using standard procedure at chemical laboratory in CGWB, MER, Patna. Analysed results are given in table 5.

The results of ground water samples were evaluated in accordance with the standard (ISI – 1993) for drinking purpose. In general the quality of ground water in the phreatic aquifer is acceptable except one sample which is showing nitrate concentration more than permissible limit. The EC value ranges from 136 – 730 micro Siemens/cm at 25^0c.

4.4 Status of Ground Water Development: The over all ground water development of the district is only 26.69%. Thus, there is sufficient scope for shallow as wells deep bore wells. State Govt. Agency has been constructed a large number of bore wells to minimize the drinking water problem in the district. Central Ground Water Board has been drilled 10 exploratory bore wells and 7

observation bore wells in the district. The depth of bore wells ranges between 82 – 199.92 mbgl. The yield of bore wells ranges from 1.44 to 90.00 m^3/hr. The detail of exploratory bore wells drilled by Central Ground Water Board is given in table -2.

5.0. Ground Water Management Strategy

5.1. Ground Water Development: Dug wells and shallow to medium depth (upto 50 m) bore wells are the main ground water extraction structures in the area to meet the increasing demand of domestic water supply. The overall ground water development stage of the district is 26.69% only. Thus, there is sufficient scope for development of ground water through dug wells, shallow and medium depth bore wells.

Construction of dug cum bore well structure is also suitable for enhance the yield of dug wells in respect of cost beneficial and economical. The ground water development varies in different places depending on the availability of favorable locations. For the construction of ground water structures, knowledge of the local as well as regional hydrogeological condition of the area is necessary.

For potential available for the ground water development considering the ground water draft has been worked out as per norms of Ground Water Estimation Committee – 1997 (GEC – 1997) and the details of ground water recharge, net annual ground water availability, annual draft, net ground water balance and stage of ground water development has been assessed and presented in table -6.

5.2. Water Conservation and Artificial Recharge: In view of the increasing thrust on development of ground water resources, there is urgent need to augment the depleting ground water resources. This gets augmented through natural recharge and can be augmented in an increased scale through artificial recharge. From hydrogeological point of view, rain water conservation is needed to arrest decline in ground water levels and to improve ground water quality by

dilution. The construction of water conservation structures and artificial recharge structures depends on the topographic features, hydrological and hydrogeological conditions of the area. The artificial recharge through roof top rain water harvesting practice may be implemented in Simdega urban area to arrest decline in ground water level. The long term water trend of NHS is showing declining tend of water level for all the blocks. Thus, all the blocks required for artificial recharge through ckeck dam, percolation tank , nala bandhara, gabion structures and contour bunding and trenching.

6.0 Ground Water Related Issue and Problems: As per the result of chemical analysis of water samples collected from NHS, the nitrate concentration is found more than permissible limits in shallow aquifer in Kolebira village. The long term water level trend of NHS is showing declining trend in 66.67% wells for pre monsoon period and 50% well for post monsoon period. Similarly, the long term water level trend of NHS is showing declining trend in 100% well for all period.

7.0. Awareness and Training Activity

7.1. The Mass Awareness Programme (MAP) by CGWB: 09/02/2012, about 349 peoples participated in the programme.

7.2 Participation in Exhibition, Mela, Fair etc. - Nil

7.3 Presentation and Lecture deliver in public forum / Radio / T.V / Institution of repute / Grassroots association / NGO / Academic institution etc. – Nil

8.0 Area Notified by CGWA / CGWA: As per the ground water resource assessment evaluated, all blocks of the district falling under the safe category. Thus, the authority has not been notified any blocks.

9.0 Recommendation

1. Artificial recharge practice is required in all the blocks of the district because the long term water level trend of NHS of CGWB is showing declining trend specially for all period. In order to conserve run – off water during monsoon, it is suggested to construct the water conservation structures at suitable places to facilitate the ground water recharge around the water scarcity villages through check dam, percolation tank, nala bandhara, gabion structures and contour bunding and trenching.

2. The drilling data of the district is indicating that there is good prospect for successful bore wells. The productive water bearing fracture zones encountered within the depth of 50 – 150 mbgl. Thus, it is suggested that the bore wells should be drilled upto 150 mbgl. after proper study of lineaments and geophysical survey.

TABLE 1: ADMINISTRATIVE DIVISION AND POPULATION (CENSUS 2011) OF SIMDEGA DISTRICT

Sr. No.	Block	Rural population			Urban population		
		Male	Female	Total	Male	Female	Total
1	Simdega	36093	36038	72131	21884	21060	42944
2	Kurdeg	23881	24103	47984	--	--	--
3	Bolba	15223	15563	30786	--	--	--
4	Thetaitangar	43710	43748	87458	--	--	--
5	Kolebira	35993	35290	71283	--	--	--
6	Jaldega	32167	32119	64286	--	--	--
7	Bano	39855	40607	80462	--	--	--
8	Pakartanr	19065	18442	37507	--	--	--
9	Kersai	19582	19636	39218	--	--	--
10	Bansjor	12856	12663	25519	--	--	--
	Total	278425	278209	556634	21884	21060	42944

TABLE 2: DETAILS OF EXPLORATORY WELLS DRILLED IN SIMDEGA DISTRICT (As on March'2012)

Sl No	Location	Type of well	Depth drilled (mbgl)	Depth of casing (mbgl)	Depth of water bearing zones encountered (mbgl)	Disch-age (Lps)	Static water level (mbgl)
1	Kolebira	EW	83.62	3.00	15.00 – 16.00 83.00 – 83.62	25.00	0.30 (magl)
2	Kolebira	OW -I	82.00	3.50	11.00 – 12.00 81.00 – 82.00	16.70	0.19
3	Kolebira	OW-II	84.00	3.50	14.00 – 15.00 82.50 – 83.50	16.70	--
4	Bano	EW	199.22	8.20	80.00 – 81.00 144.00 – 146.00	3.00	6.93
5	Bano	OW	199.92	11.00	83.00 – 84.00	3.00	7.05
6	Banki	EW	199.92	7.50	54.00 – 55.00 122.00 – 123.00	0.40	7.18
7	Lachragarh	EW	199.92	11.50	15.00 – 16.00	4.50	5.70
8	Lachragarh	OW	146.00	12.00	144.00 – 146.00	10.50	--
9	Jaldega	EW	199.92	13.50	18.00 – 20.00 94.00 – 95.00	0.45	4.16
10	Lomboi	EW	192.30	11.50	45.00 – 46.00	0.45	--
11	Pandripani	EW	170.94	9.00	18.00 – 19.00 109.00 – 111.50	5.10	5.83
12	Pandripani	OW-I	169.44	11.50	18.00 – 19.00	0.80	6.08
13	Pandripani	OW-II	116.00	8.00	22.00 – 23.00 109.00 – 111.00	7.80	6.40
14	S. S. High School, Simdega	EW	199.92	11.50	48.00 – 49.00	0.45	6.30
15	Officers' Colony, Simdega	EW	199.92	28.00	181.00 – 182.50	3.00	10.40
16	Officers' Colony, Simdega	OW	199.92	12.00	31.00 – 32.00 90.00 – 91.00 130.00 – 131.00	2.80	3.12
17	S. S. High School, Joram	EW	123.72	18.50	9.00 – 15.50 75.00 – 77.00 130.00 – 131.00	12.30	2.15

TABLE 3: DEPTH TO WATER LEVEL OF HYDROGRAPH NETWORK STATIONS LOCATED IN SIMDEGA DISTRICT (2012 - 13)

Sl No.	Location	May 2012	August 2012	November 2012	January 2013
1	Bano	6.95	1.95	3.95	4.86
2	Kolebira	7.90	2.35	4.83	5.82
3	Lachragarh	8.42	1.86	4.24	5.44
4	Simdega	8.91	1.06	2.96	3.57
5	Thetaitangar	3.05	0.90	1.25	1.43
6	Jaldega	6.72	0.56	3.75	4.42

TABLE 4: LONG TERM WATER LEVEL TREND FOR EXISTING HYDROGRAPH NETWORK STATIONS OF SIMDEGA DISTRICT (2002 – 2011)

Sl No.	Location	Pre monsoon trend (m/year)		Post monsoon trend (m/year)		All period (m/year)	
		Rise	Fall	Rise	Fall	Rise	Fall
1	Bano	--	0.007	--	0.143	--	0.202
2	Kolebira	--	0.219	--	0.119	--	0.099
3	Lachragarh	0.032	--	--	0.217	--	0.144
4	Simdega	--	0.001	--	0.091	0.044	--
5	Thetaitangar	0.028	--	--	0.024	--	0.063
6	Jaldega	0.310	--	--	0.122	0.000	--

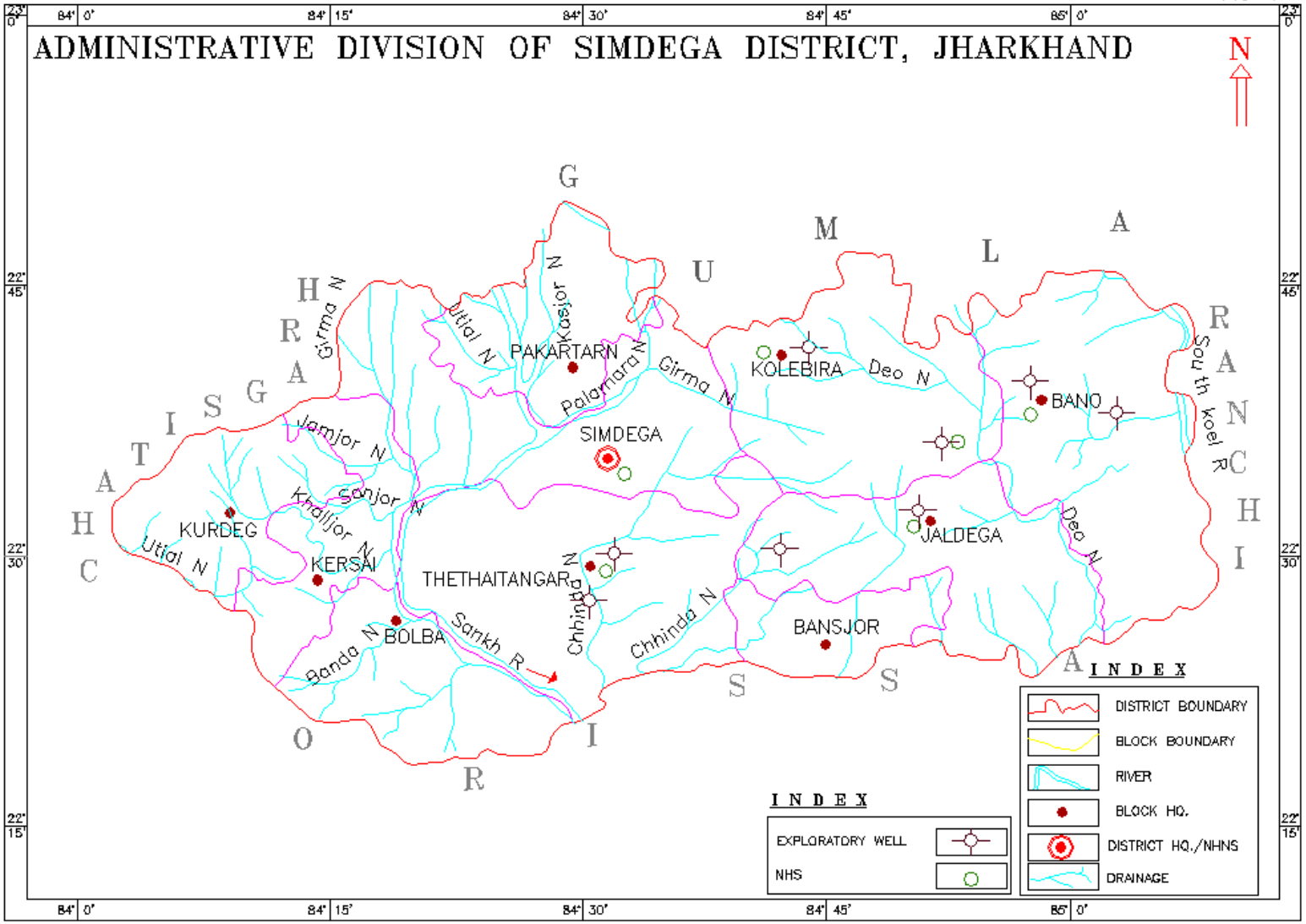
TABLE 5: ANALYSIS OF WATER QUALITY PARAMETERS OBSERVED IN HYDROGRAPH NETWORK STATIONS OF SIMDEGA DISTRICT (2011)

Sl No.	Location	EC in micro siemens/cm at 25^0 c	pH	TH as $CaCO_3$	Ca	Mg	Na	K	HCO_3	Cl
					← mg / l →					
1	Simdega	136	8.28	50	16	2.43	4	1.6	61.5	10.63
2	Thetaitangar	231	8.39	65	22	2.4	21	1.6	55	21
3	Jaldega	730	8.43	230	64	17.01	56	3.3	159.8	102.8

TABLE 6: DETAILS OF GROUND WATER DEVELOPMENT AND STAGE OF GROUND WATER DEVELOPMENT OF SIMDEGA DISTRICTS AS ON 31ST MARCH 2009 (in hectare meters)

Sl. No.	Assessment Unit/ District	Net Annual Ground Water Availability	Gross Ground Water Draft for Irrigation	Gross Ground Water Draft for Domestic and Industrial water Supply	Gross Ground Water Draft for all Uses (10+11)	Allocation for Domestic and Industrial Requirement supply upto next 25 years	Net Ground Water Availability for future irrigation development (9 – 12 – 13)	Stage of Ground Water Development (12/9)*100 (%)	Categorization for future ground water development (safe/ critical/ over - exploited)
1	2	9	10	11	12	13	14	15	16
1	Bano	4394.01	683.94	121.67	805.61	162.22	3547.86	18.33	Safe
2	Bolba	1520.02	369.81	45.17	414.97	60.21	1089.99	27.30	Safe
3	Jaldega	4634.41	1057.46	125.44	1182.89	167.23	3409.73	25.52	Safe
4	Kolebira	3728.18	922.43	101.39	1023.82	135.17	2670.58	27.46	Safe
5	Kurdeg	3417.00	601.81	129.86	731.67	173.13	2642.06	21.41	Safe
6	Simdega	6344.16	1631.42	185.66	1817.08	247.52	4465.22	28.64	Safe
7	Thetaitangar	2920.27	1090.86	129.66	1220.52	172.86	1656.55	41.79	Safe
	Total	**26958.05**	**6357.73**	**838.84**	**7196.57**	**1118.35**	**19481.98**	**26.69**	**Safe**

FIG–1


ADMINISTRATIVE DIVISION OF SIMDEGA DISTRICT, JHARKHAND
N
84° 0'
84° 15'
84° 30'
84° 45'
85° 0'
23° 0'
22° 45'
22° 30'
22° 15'
GUMLA
RANCHI
SINGHBHUM
KHUNTI
GIRIDIH
KOLEBIRA
BANO
South Koel R
Deo N
Girma N
Utial N
Kasjor N
PAKARTARN
Palamara N
SIMDEGA
Jamjor N
Sanjor N
Khalljor N
KURDEG
KERSAI
THETHAITANGAR
Chhindpa N
Chhinda N
BOLBA
Banda N
Sankh R
JALDEGA
BANSJOR
INDEX
EXPLORATORY WELL
NHS
INDEX
DISTRICT BOUNDARY
BLOCK BOUNDARY
RIVER
BLOCK HQ.
DISTRICT HQ./NHNS
DRAINAGE

FIG–2

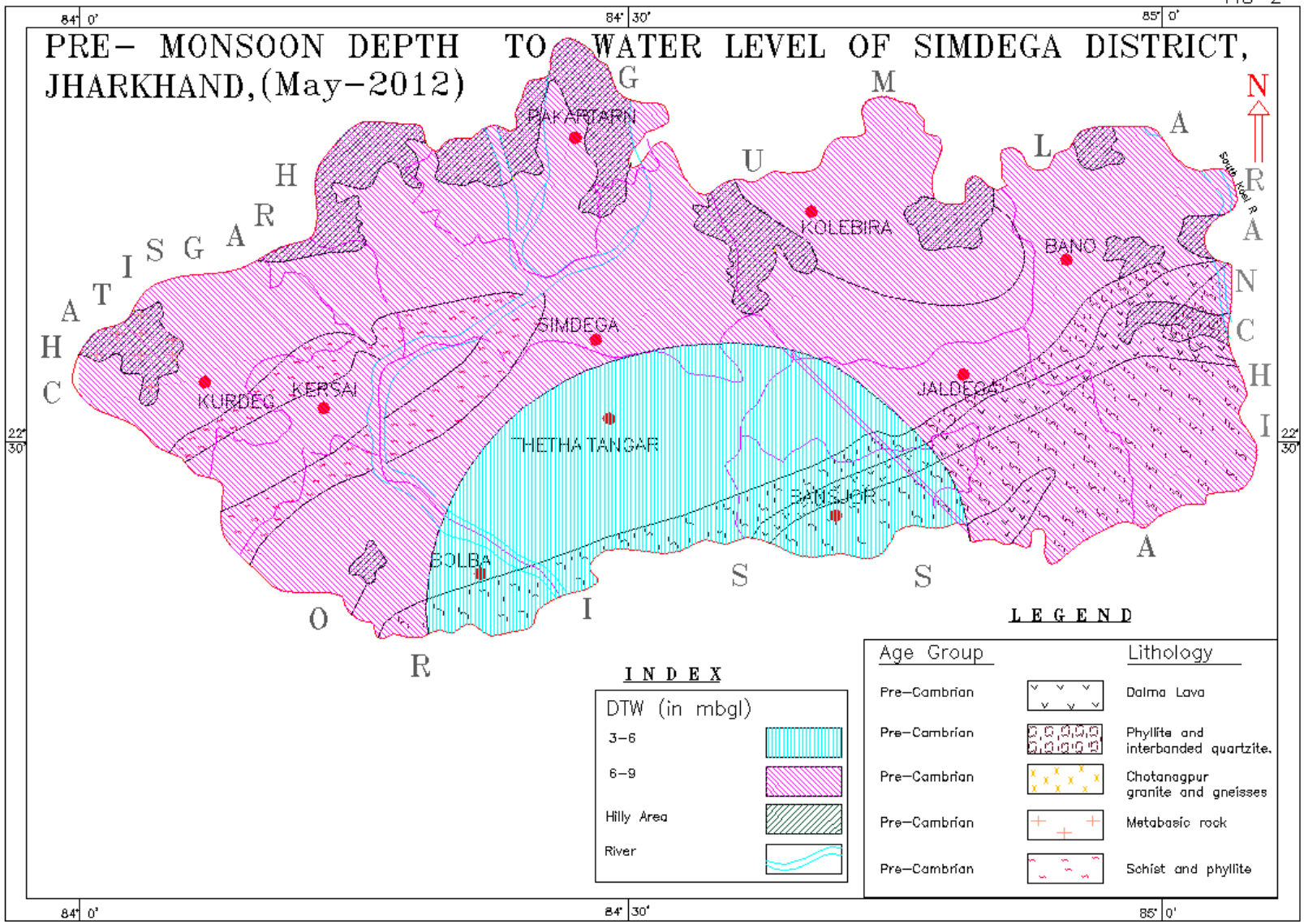
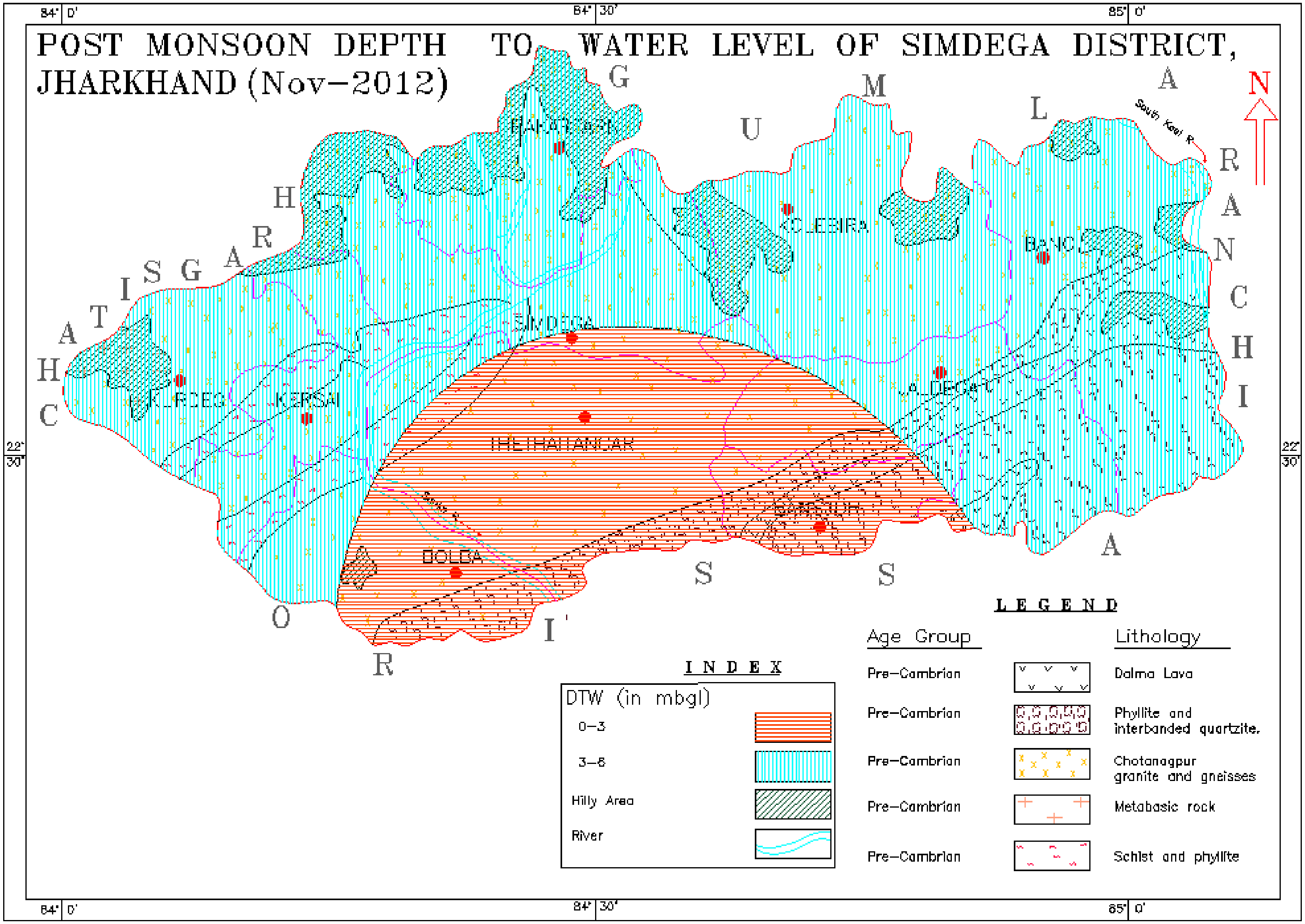
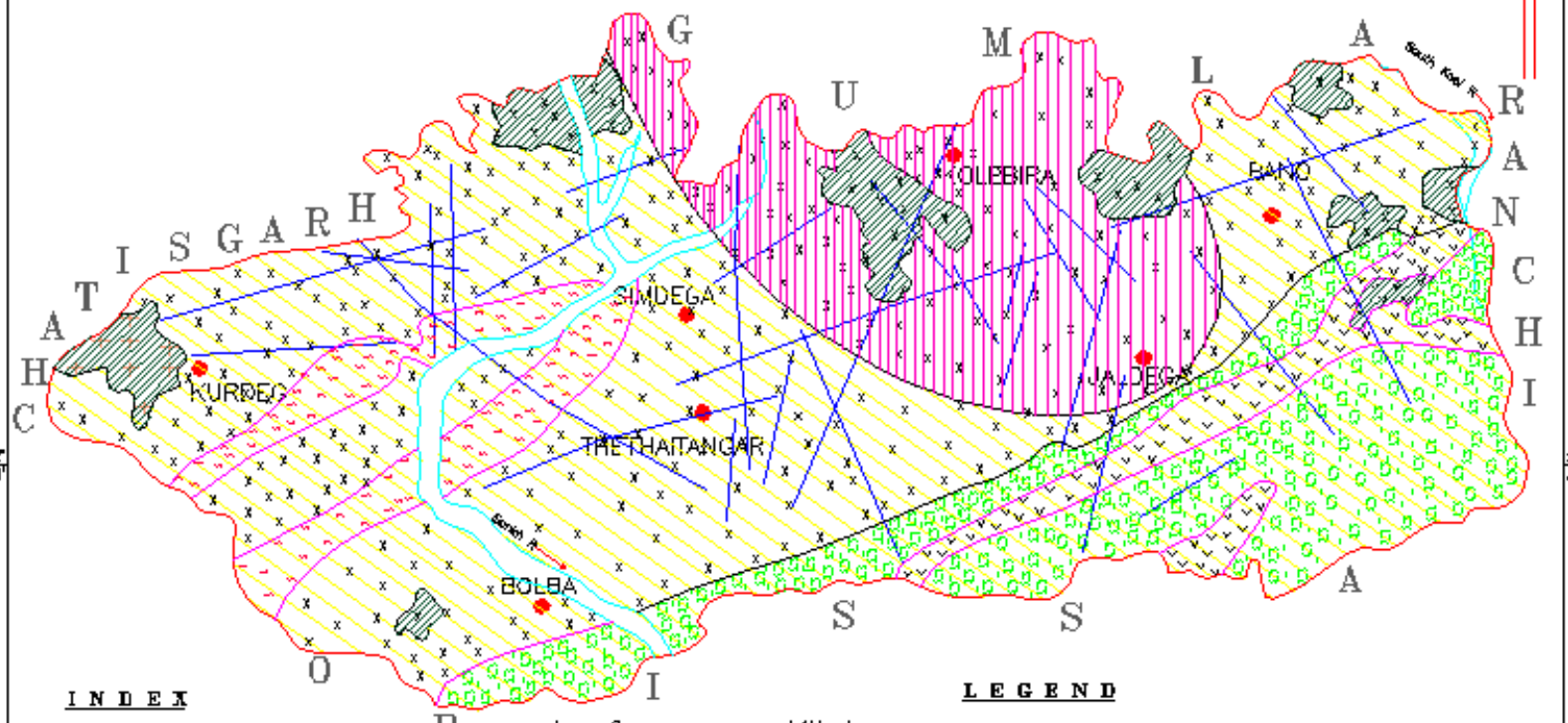

PRE– MONSOON DEPTH TO WATER LEVEL OF SIMDEGA DISTRICT, JHARKHAND,(May–2012)
84° 0'
84° 30'
85° 0'
22° 30'
N
CHHATISGARH
GUMLA
RANCHI
ORISSA
PAKARTARN
KOLEBIRA
BANO
SIMDEGA
KURDEG
KERSAI
JALDEGA
THETHATANGAR
BANSJOR
BOLBA
South Koel R
INDEX
DTW (in mbgl)
3–6
6–9
Hilly Area
River
LEGEND
Age Group
Lithology
Pre–Cambrian
Dalma Lava
Pre–Cambrian
Phyllite and interbanded quartzite.
Pre–Cambrian
Chotanagpur granite and gneisses
Pre–Cambrian
Metabasic rock
Pre–Cambrian
Schist and phyllite

FIG-3


POST MONSOON DEPTH TO WATER LEVEL OF SIMDEGA DISTRICT, JHARKHAND (Nov-2012)
84° 0'
84° 30'
85° 0'
22° 30'
N
SIMDEGA
KOLEBIRA
KERSAI
THETHAITANGAR
BOLBA
South Koel R.
INDEX
DTW (in mbgl)
0-3
3-6
Hilly Area
River
LEGEND
Age Group
Lithology
Pre-Cambrian
Dalma Lava
Pre-Cambrian
Phyllite and interbanded quartzite.
Pre-Cambrian
Chotanagpur granite and gneisses
Pre-Cambrian
Metabasic rock
Pre-Cambrian
Schist and phyllite

FIG—4

HYDROGEOLOGY OF SIMDEGA DISTRICT,JHARKHAND



INDEX

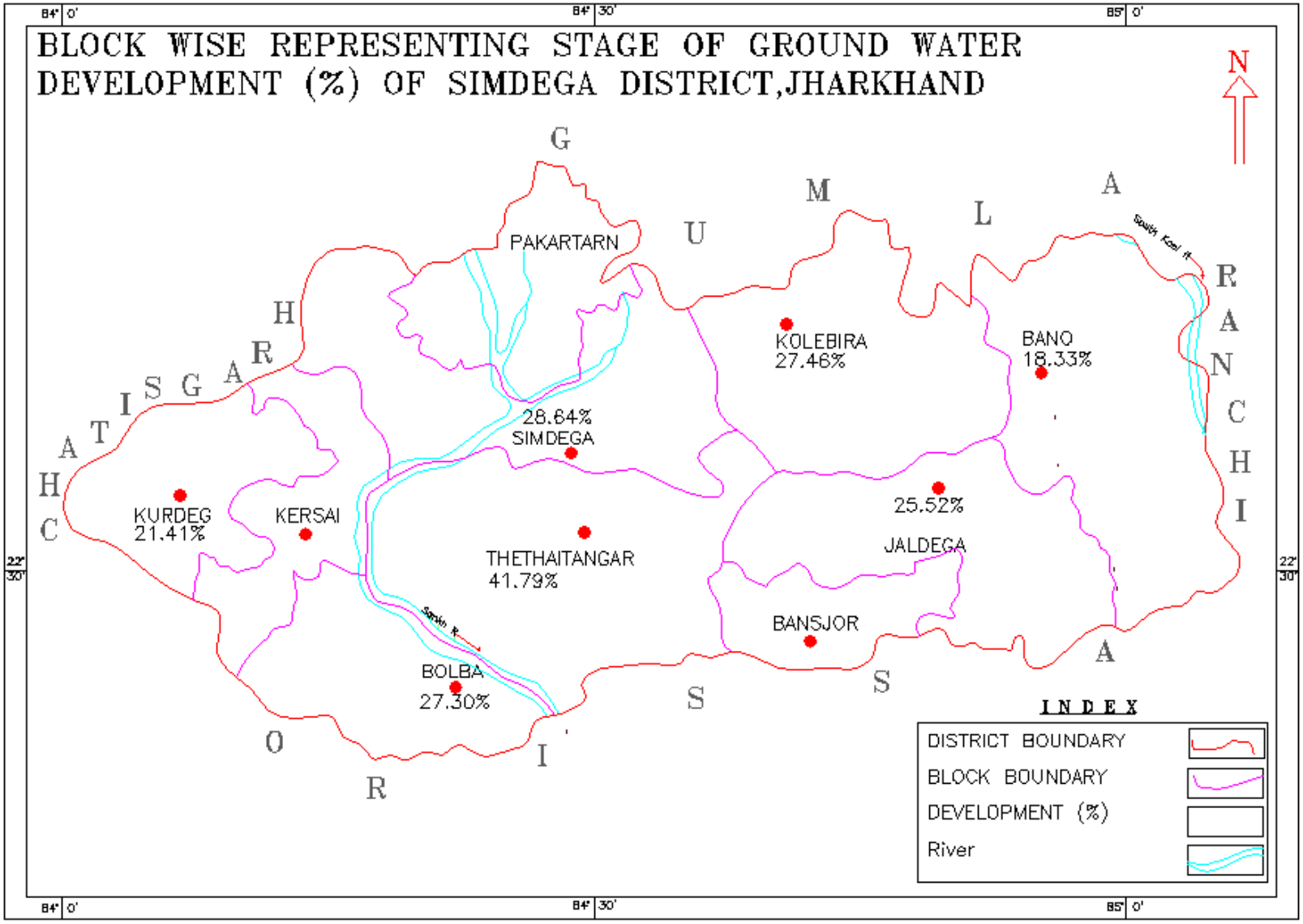
EC(in micro Siemens/ cm at 25° c)

- 0–250=
- 250–750=
- Lineament
- Hilly Area
- River

LEGEND

Age Group	Lithology	Hydrogeological condition	Groundwater potential
Pre–Cambrian	Dalma Lava	Ground water restricted to weathered residum fracture zone having secondary porosity	Limited yield prospect below 20 m^3/hr.
Pre–Cambrian	Phyllite and interbanded quartzite.	Discontinuos aquifers, unconfined to semi confined condition	Moderatly good yield prospect 10 – 20 m^3/hr.
Pre–Cambrian	Chotanagpur granite and gneisses	Hilly terrain, mostly form run– off zone	Moderatly good yield prospect 10 – 20 m^3/hr.
Pre–Cambrian	Metabasic rock	Ground water restricted to weathered residum fracture zone having secondary porosity	Limited yield prospect below
Pre–Cambrian	Schist and phyllite	Ground water restricted to weathered residum fracture zone having secondary porosity	Limited yield prospect below

FIG–5


BLOCK WISE REPRESENTING STAGE OF GROUND WATER DEVELOPMENT (%) OF SIMDEGA DISTRICT,JHARKHAND
84° 0'
84° 30'
85° 0'
22° 30'
N
PAKARTARN
KOLEBIRA
27.46%
BANO
18.33%
28.64%
SIMDEGA
KURDEG
21.41%
KERSAI
THETHAITANGAR
41.79%
25.52%
JALDEGA
BANSJOR
BOLBA
27.30%
South Koel R.
INDEX
DISTRICT BOUNDARY
BLOCK BOUNDARY
DEVELOPMENT (%)
River