GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES AND GANGA REJUVENATION
CENTRAL GROUND WATER BOARD

GROUND WATER YEAR BOOK OF CHHATTISGARH 2015 - 16

NORTH CENTRAL CHHATTISGARH REGION
RAIPUR
October 2016

FOREWORD

Central Ground Water Board, North Central Chhattisgarh Region, Raipur monitors the water levels in the State four times a year through a network of 1158 number of observation wells(both dug wells and piezometers). Water quality is also assessed once in a year. The generated data from these observation wells are compiled, analysed and presented in the form of reports from time to time and circulated to various Central and State Government Departments. The present report embodies data and information collected during monitoring in the year 2015-16.

The water level data and sample collection was done by the officers of CGWB, NCCR Raipur. The report has been compiled and prepared by Smt Mausumi Sahoo, Scientist 'B' under the supervision of Shri M M Sonkusare, Scientist 'D' .I appreciate the efforts put by the officers of Report Processing Section in bringing out this report. I am sure this report will be of immense help to all the stakeholders of groundwater in the State.

(C. Paul Prabhakar)
Regional Director,
CGWB, NCCR, Raipur

CONTENTS

1. INTRODUCTION

The State of Chhattisgarh lies between North Latitude 17°47' to 24°06' and East Longitude 80°14' to 84°24' (Fig. 1.1). Central Ground Water Board, North Central Chhattisgarh Region, Raipur is carrying out ground water regime monitoring in the State. The State covers a geographical area of 1,37,360 sq. km. Nearly 65.90 % of the total area is covered by tribals and hence it is said as tribal dominated State. The ground water regime is monitored through a network of observation dug wells and piezometers. Dug wells represent the shallow phreatic aquifer system where as piezometers represent the shallow un-confined as well as deeper semi-confined aquifer system. The network of observation stations form a part of All India Network Hydrograph Stations, which is being monitored by various Regional offices of the department, located at different parts of the country.

As on March 2016, a network of 1158 observation wells (both dug wells and purpose built piezometers) are monitored four times a year. The monitoring includes measurement of ground water level and quality. The purpose is to observe the behavior of ground water and their levels in different hydro geological environments in order to estimate the ground water resource from time to time and to know the water quality changes.

The monitoring database on water levels and chemical parameters helps to simulate models of forecasting, planning and management of ground water resources. The behavior of the ground water level and quality during the period from May 2015 to January 2016 is presented in this report with the idea that it will enable the user agencies to plan the development strategy for optimum utilization of ground water resources in the state.

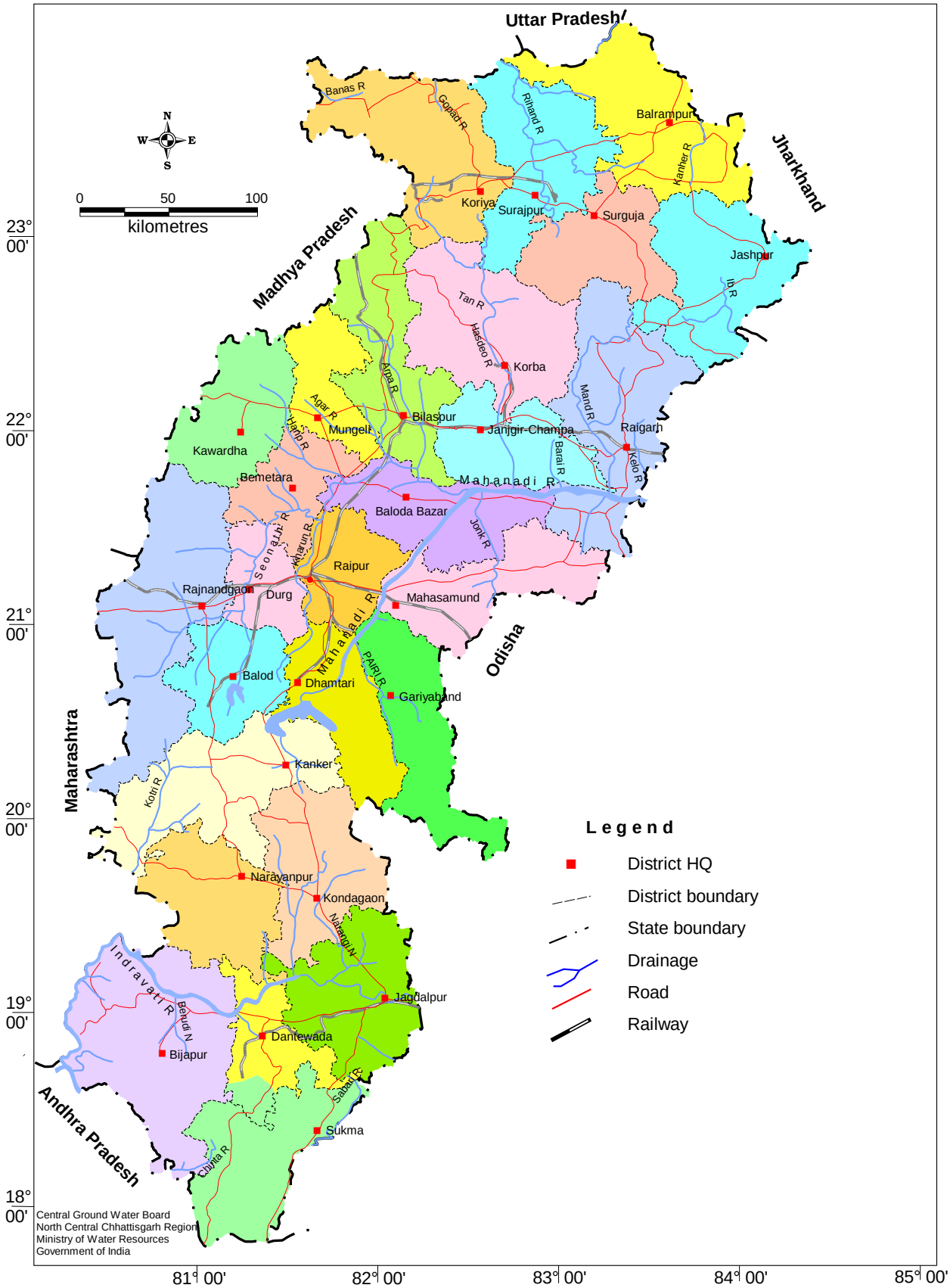


Fig 1.1 Administrative Division of Chhattisgarh state

2. GEOMORPHOLOGY

2.1 Physiography

Physiographically, Chhattisgarh can be divided into three distinct units i.e.

i) Bastar plateau region on the southern part,

ii) Chhattisgarh Plain region on the central part and

iii) Northern hilly region on the northern parts of the State.

The Bastar Plateau Region

It covers Bastar, Kondagaon, Narayanpur, Kanker, Bijapur, Sukma and Dantewada districts lying on the southern parts of the State. Except Indravati River plains, most of the area is covered by evergreen dense reserve forests and hilly tracts. The major landforms are high-level plateaus, structural hills and valleys and pediments and pediplains. The altitude varies from 400 to 600 m amsl. In the plains of Indravati River covering central parts, and along the Shabri River, covering southeastern parts the altitude varies from 250 to 300 m amsl.

The Chhattisgarh Plain

It is spread over the central part of the State and covers parts of Bilaspur, Mungeli, Janjgir-Champa, Mahasamund, Dhamtari, Raipur, Balodabazar, Gariyaband Durg, Balod, Bemetara, Rajnandgaon and Kawardha districts. It forms the structural plains on Proterozoic rocks and mature pediplain with remnants of few isolated hills and ridges in between flood plains of numerous tributaries of Mahanadi River system. It is characterised by a gently undulating and flat terrain. The overall altitude varies from 750 m amsl on northwestern parts of the area to 284 m amsl on southeastern parts.

Northern Hilly Region

It covers from north to the north central part of the area and occupies parts of Sarguja, Balrampur, Surajpur Koriya, Korba, Bilaspur, Jashpur and Raigarh districts. It is a part of Maikal and Hazaribagh hill ranges of central India. It represents structural

plains of Gondwana rocks, pediment/pediplains, structural and denudational plateaus, structural and denudational hills and valleys. It supports north flowing tributaries of Son River and south flowing Hasdeo and other tributaries of Mahanadi River. The Narmada, an important west-flowing River of central India, originates from Amarkantak in the central part of this physiographic unit.

The highest point in the State is 1197 m amsl at Tulisi Dongri range in Dantewada district and the lowest point is 50 m amsl at Konta in Dantewada district.

2.2 Drainage

The major Rivers flowing in Chhattisgarh State are given in Table 2.1. The Mahanadi River and its tributaries Seonath, Hasdeo, Mand and Arpa drain part of Raipur, Durg, Rajnandgaon, Bilaspur, Raigarh and Surguja districts. The Indravati River is a tributary to Godavari River and drains the districts of Kanker, Bastar and Dantewada. Most of the Rivers are perennial in nature. The Drainage patterns in the state are dendritic, parallel, angular and radial types. Son is the tributary of Ganga River and drains parts of Sarguja and Koriya districts. Fig. 2.1 shows the physiography and Fig 2.2 shows the drainage existing in the State.

Table 2.1: Major River Basins in Chhattisgarh State

S.No.	Major Rivers	Tributaries	Districts
1.	Ganga 18407 Sq.Km.	Son	Surguja, Koriya, Jashpur and Bilaspur
2.	Mahanadi 75858 Sq.Km.	Ib, Hasdeo, Seonath, Tel, Mand	Raipur, Mahasamund, Dhamtari and parts of Durg, Rajnandgaon, Kawardha, Korba, Kanker, Bastar, Surguja, Raigarh and Bilaspur.
3.	Godavari 38694 Sq.Km.	Indravati, Sabari Wain ganga	Parts of Durg,Bastar, Rajnandgaon, Kanker and Dantewada
4.	Narmada 744 sq.Km.	Narmada	Parts of Rajnandgaon, Bilaspur, and Kawardha
5.	Bramhani 1394 sq.Km.	Sankh	Part of Jashpur

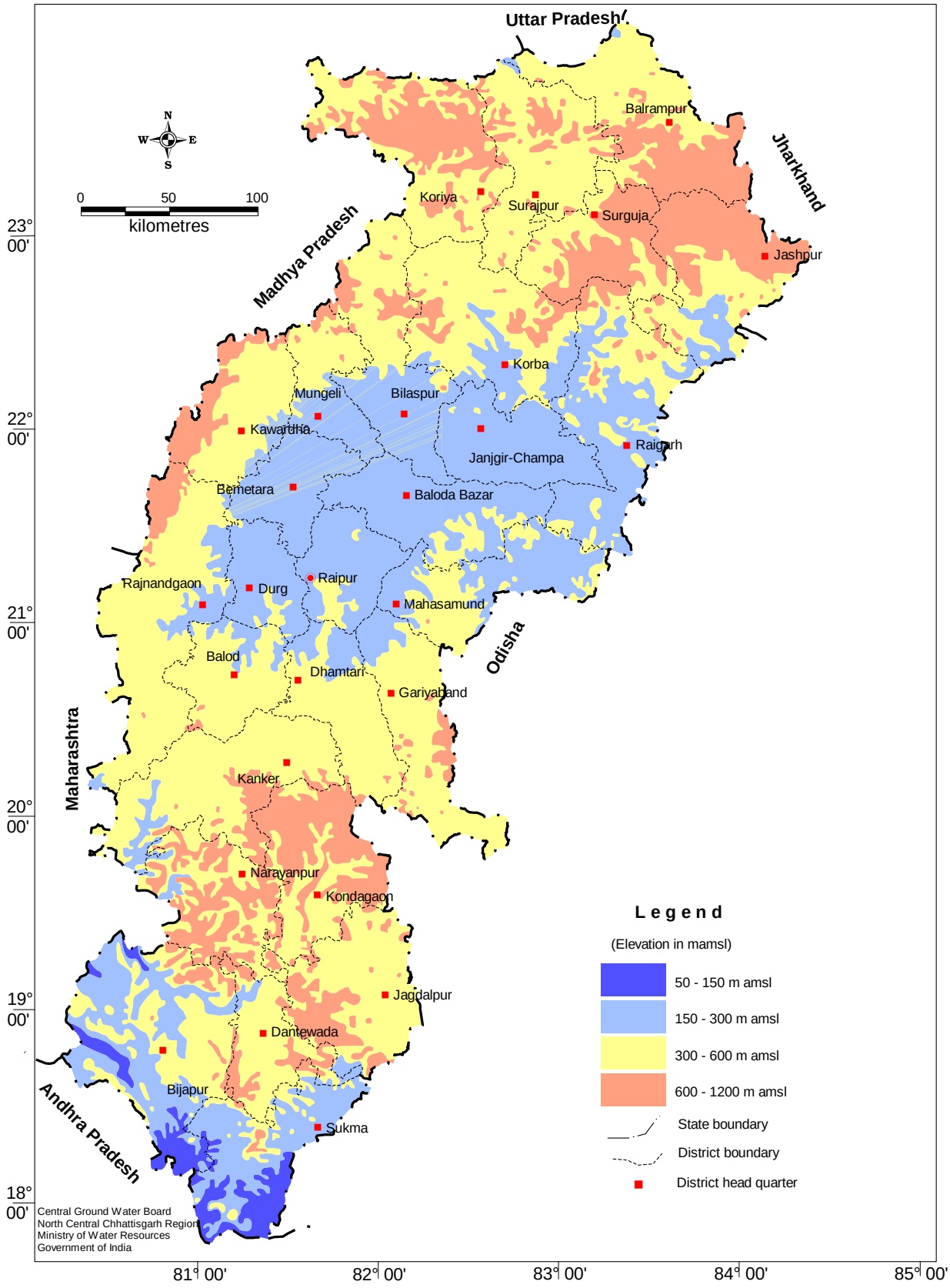


Fig 2.1 Physiography of Chhattisgarh state

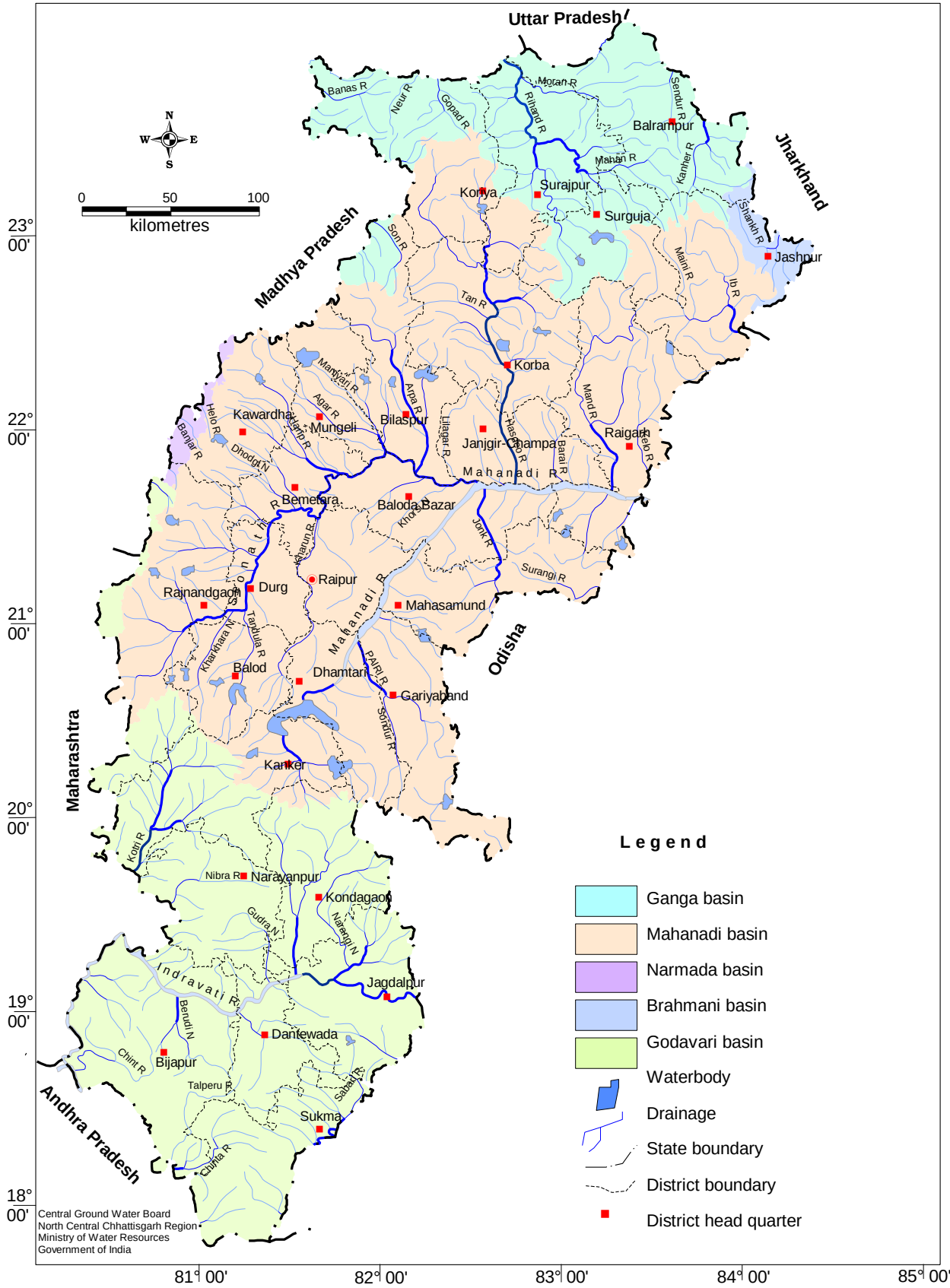


Fig 2.2 Drainage map of Chhattisgarh state

3. CLIMATE AND RAINFALL

3.1 Rainfall

The region is endowed with sub-tropical monsoon climate with three distinct seasons i.e. summer, monsoon, and winter. The southwest monsoon starts from June and continues till middle of September. Winter season spreads from October to February. Summer season extends from March to middle of June. Rainfall is the major source of ground water recharge in the area and receives maximum (85%) rainfall during the southwest monsoon season. The winter rainfall is meagre (10 - 15%).The Indian Meteorological Department (IMD), various State Government departments; Agricultural Universities etc. are maintaining number of rain gauge stations which comes to more than 200 in the State. The isohyetal map is shown in Fig 3.1.

Table 3.1 shows the District wise annual rainfall in mm for Chhattisgarh for the last eight years.

Table 3.1 District wise average anuual Rainfall (mm) of Chhattisgarh

Sl. No.	District	Year								Average
		2007	2008	2009	2010	2011	2012	2013	2014	
1	Bastar	1259.2	1398.3	1038.3	1623.2	1160.5	1320	1434.5	1476.6	1338.82
2	Bilaspur	1269.4	1047	854.8	973.9	1290.1	1189	1449.5	1348.2	1177.73
3	Dantewara	1685.6	1206	709.1	1631.2	1219.7	1254		1440.2	1306.54
4	Dhamtari	1007.2	901	1113	1211.1	1102.4	1130	1462.1	1289.2	1152
5	Durg	1068.5	904.8	794.9	1149.7	1282.3	1197	1568	1379.7	1168.11
6	Janjgir-Champa	1396	1404.6	873.7	1212.6	1319.6	1256	1224.8	1169.7	1232.12
7	Jashpur	1233.5	1412	1064	1133.9	1858.7	1298	1003.3	786.2	1223.7
8	Kanker	1235.7	652.2	868.6	1480.8	1211.5	1205	1622.2	1364.4	1205.05
9	Korba	857.4	1233.6	822.6	1093.1	1490.4	1187	1219.4	1304	1150.93
10	Koriya	1318.7	998.4	816.9	702.2	1808.7	1254	1606.5	1511.4	1252.1
11	Kawardha	654.5	694.7	612.4	1225	1028.2	943	1074	1289.1	940.11
12	Mahasamund	1174.6	944.9	1190.1	1130	1298.6	1234	1511.3	1519.8	1250.41
13	Raigarh	1291.8	1513.9	978.2	988.3	1288.5	1200	1221.3	1227.8	1213.72
14	Raipur	1434.2	1114.5	948.3	1109.1	1322.9	1232	1443.6	1233.2	1229.72
15	Rajnandgaon	769.8	812.7	734.9	1221.9	1169.8	1075	1470.1	1119	1046.65
16	Surguja	1153.4	1019.6	616.8	596.7	1383.6	1009	809	840	928.51
Chhattisgarh										

Source: India Meteorological Department (IMD)

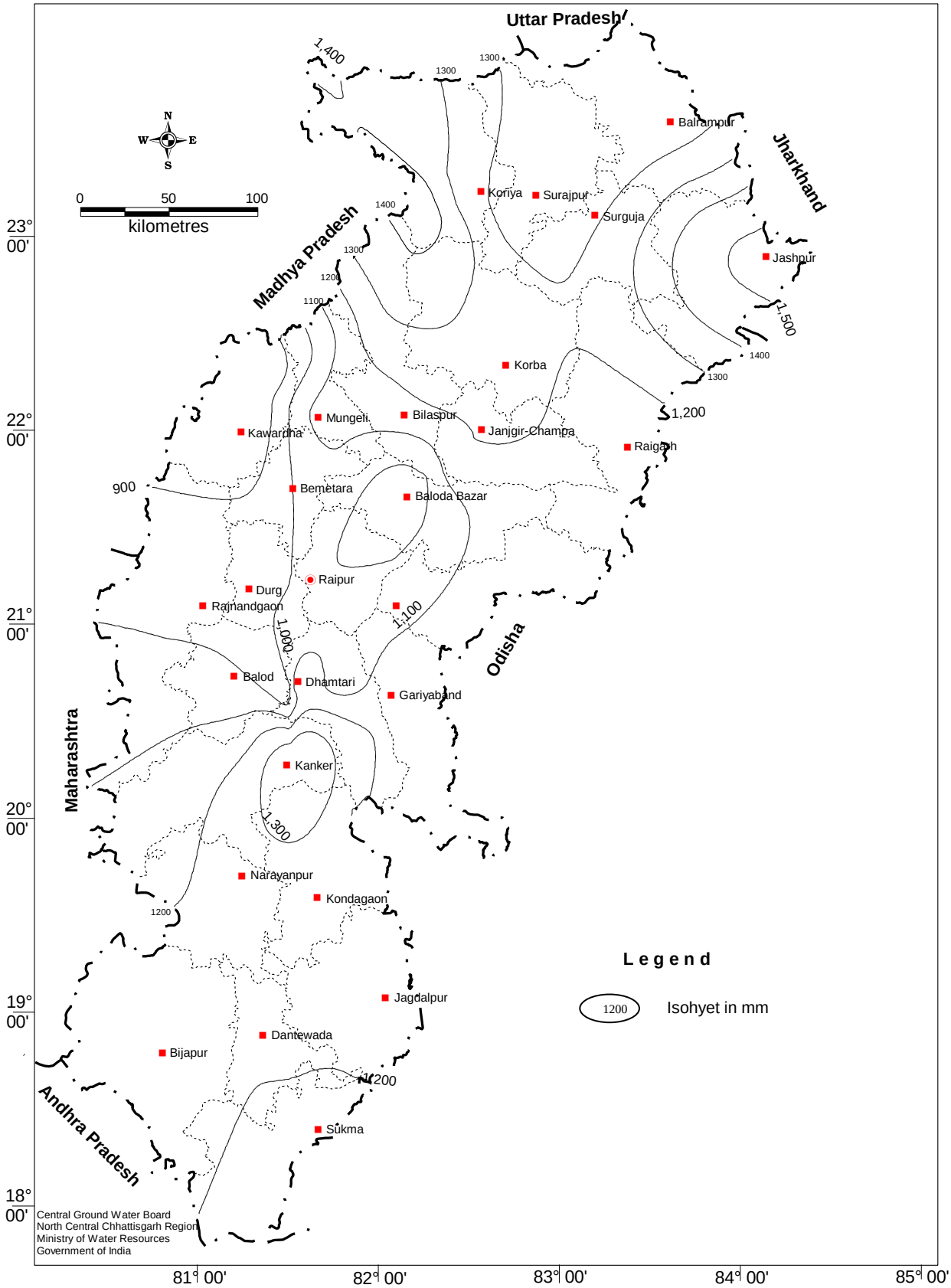


Fig 3.1 Isohyetal map of Chhattisgarh

3.1 Temperature

The State experiences sub-tropical climate characterized by extreme summer and moderate winter. The summer extends from March to mid June and May is the hottest month. The mean daily maximum temperature during the month of May goes upto 46^0C. The winter season lasts till end of February. January is the coldest month with the mean daily maximum temperature at 30°C and the mean daily minimum temperature at 10.2°C. In Raipur area, the average temperature varies from 13°C during winter to 46°C in summer. However, in the plateau areas on the northern part, the variation was from 10°C in winters to 39°C in summers.

4. SOIL AND LANDUSE

4.1 Soil

The soils in the upper reaches of the drainage are shallow, young and are eroding in nature. Changes in soil properties indicate the drainage conditions, transport of eroded material and redeposition of soil constituents. Down the slope, the soil depth, water holding capacity, ion exchange capacity, and preponderance of calcium and magnesium increases. The colour changes from red to dark brown. The texture also changes from sandy loam to clayey, and sticky to very sticky. The various soil types existing in the State and their suitability for various crops is enumerated in Table 4.1 and fig 4.1.

Table 4.1**:** Distributions of Soils and suitability of crops in Chhattisgarh State

Type of soil	Parent Rock	Distribution (Districts/tehsils)	Suitable Crops
Red-yellow soil (Matasi)	Gondwana, Chhattisgarh Supergroup	Surguja, Koriya, Jashpur, Raigarh, Korba, Bilaspur Kawardha, Durg, Raipur, Dhamtari and and Mahasamund districts	Paddy
Red-sandy soil	Archaean Granite	Bastar, Dantewada, Kanker, Durg, Rajnandgaon and Dhamtari districts	Kodo-Kutki, Jawar, Maize, Potato Coarse grains etc
Red-domat soil	Archaean Granite	Dantewara and Konta tehsils	Paddy
Laterite soil	Mixed	Bagicha, Samri, Sitapur, Ambikapur, Kawardha, Chhui-Khaddan, Saja, Bemetera and Jagdalpur tehsils	Potato, Jawar, Kuddo-Kutti, Oilseeds, Pulses etc.
Black soil	Mixed	Mungeli, Ariya, Raipur, Rajim, Mahasamund, Kurud and Kawardha tehsils	Paddy, Wheat, Cotton, Gram, Sugarcane And Rabi crops

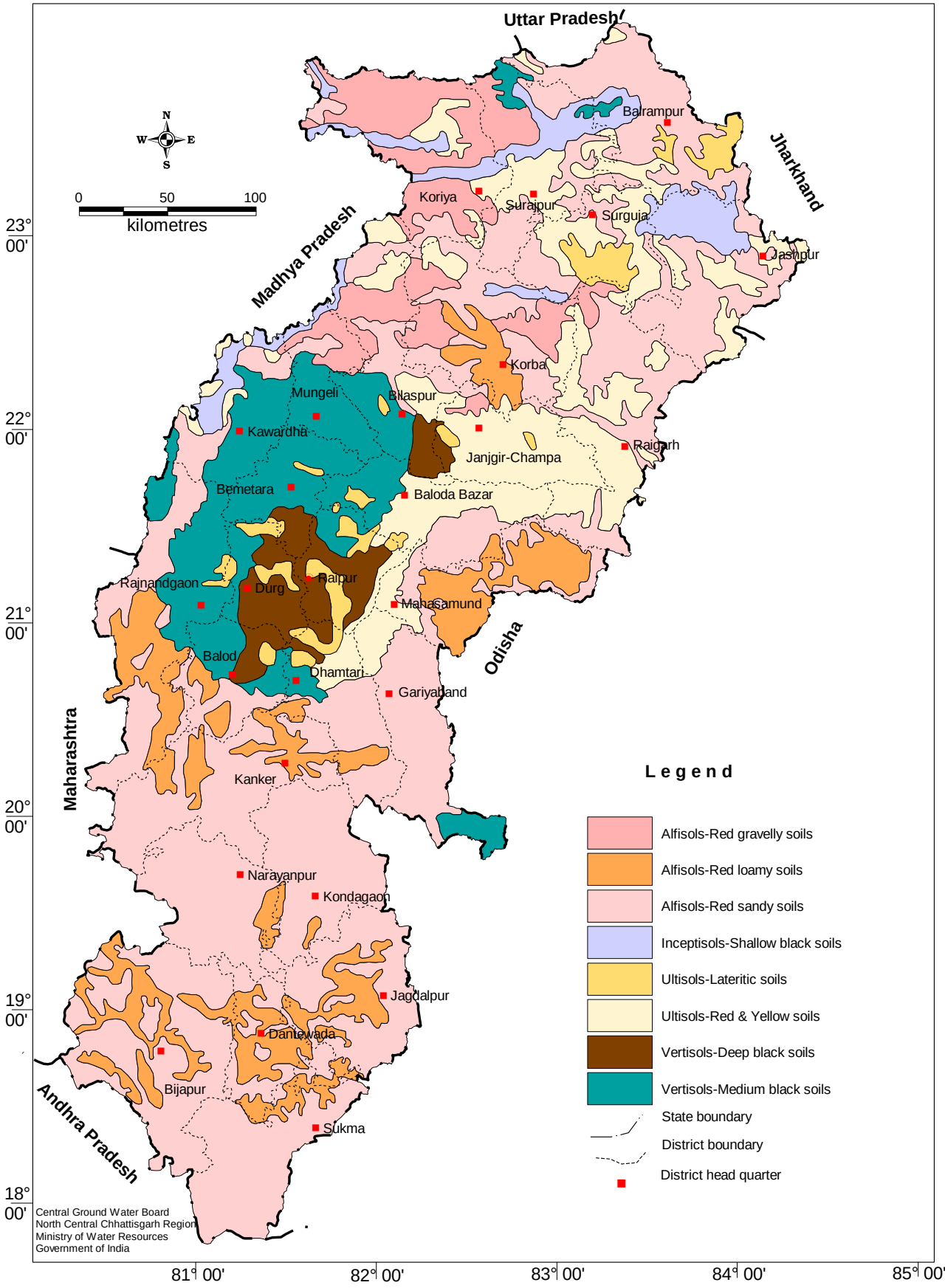


Fig 4.1 Distribution of soil in the State

4.2 Land use

The land use pattern is an important index of the human, social, cultural, and economic developments. As per the available statistics (Department of Statistics, Govt. of Chahttisgarh), 6352413 Ha. (46 %) of the total area in the State is covered by forests. The forests include protected forests, reserved forests, revenue forests and others .Nearly 85.14 % of Narayanpur district (638801 Ha) is covered and also area wise Narayanpur district has the maximum forest cover (638801 Ha). Bemetara district has the lowest forest cover in terms of percentage of the toal area (0.015 %,40 Ha) and also area wise Bemetara has the lowest forest cover (40Ha).The net sown area in Chhattisgarh is just 33.87% (4671469Ha).The double cropped area is 1019386 Ha. Nearly 37 % of the net sown area has irrigation facilities. Land use map is presented in fig 4.2.

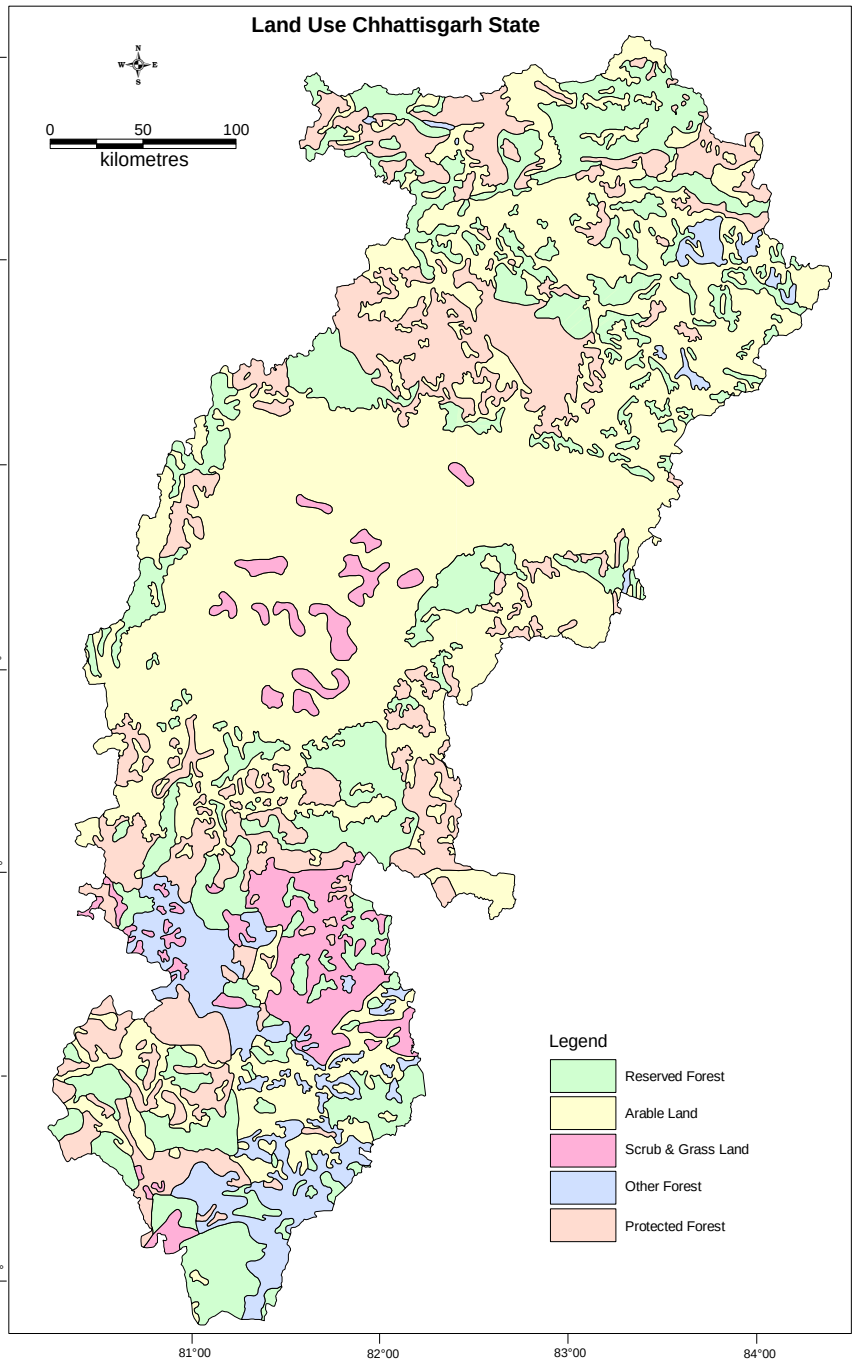


Fig 4.2 Landuse map of the State

5. HYDROGEOLOGICAL CONDITIONS

The occurrence and movement of ground water is related to the existing geology of the area. The State is underlain by various rock types belonging to different geological ages, from Azoic to Quaternary. The major litho units are shown in Fig. 5.1 and the general geological succession is given in Table 5.1.

Nearly 58 % of the State is covered by Crystalline and Metamorphic rocks, around 27 % of the area is covered by Chhattisgarh Group of rocks. The semi-consolidated Gondwana Supergroup of rocks covers 13 % of the area and the remaining 2 % by Daccan trap, Lameta, Laterite and River Alluvium.

The Archaean crystallines comprising of granites and gneisses form the major litho unit in the area. The ground water occurs under unconfined to semi-confined conditions. All the districts except Janjgir- Champa are covered by crystallines. The weathered formation and the fractures form the main repository for ground water in these rocks. The second important litho unit in the area is the Proterozoic arenaceous–argillacaous- calcareous rocks of Chhattisgarh, Indravati, Khariyar and Sukma Groups. The weathered formation, caverns, fractures and formation contacts form the potential ground water zones. The karstified argillo –calcareous rocks are much more productive than compact –sillicified arenaceous sediments. The gypsum karsts are more intense than calcareous karsts in the Chhattisgarh basin. The overall karstification in Indravati basin is much higher than in the Chhattisgarh basin. Karsts, though few and far in between are the best repository for ground water. These rocks cover the districts of Bastar, Narayanpur, Kondagaon, Dantewada, Bijapur, Sukma, Kanker, Raipur, Dhamtari, Mahasamund, Durg, Rajnandgaon, Kawardha, Bilaspur, Mungeli, Janjgir- Champa, Korba and Raigarh.

The rocks belonging to Gondwana Supergroup are the third major litho unit in the area. The sandstones shows primary and occasional secondary porosity. They form thick and extensive unconfined to confined aquifers extending to a depth of 300 mbgl. At some places free flow conditions are existing and at places the temperature

of ground water goes up to 50^0C. The Gondwana formations are covering the districts of Raigarh, Korba, Koriya and Surguja and are exhibiting confined conditions.

Table 5.1**:** Geological Succession for Chhattisgarh State

Age	Formation	Lithology
Quaternary	Recent to sub recent	Alluvium – clay, silt, sand pebble, gravel, laterite ferruginous concretions
Cenozoic	Deccan traps	Traps with or without intertrappean sediments
Cenozoic, Mesozoic, upper Palaeozoic	Gondwana Super group	Sandstone, shale, conglomerate, quartzite, silt – stone, clay stone.
Proterozoic	Chhattisgarh Super group Chilipi, Kotri, Dongargarh, Iron Ore Super group	Limestone and shale Arkose, conglomerate, sand stone, silt stone, shale Schist, phyllite, slate, gneiss, marble, BHQ.
Azoic	Basement crystallines Basement crystallines	Charnockite, khondalite, granulite, gneisses and meta sediments Granites, gneisses and associated basic and ultra basic intrusive

The unconsolidated formation of Quaternary age comprising alluvium, clay, silt and laterite form as a thin and extensive unconfined aquifer in several isolated patches along major River courses. The thickness of alluvium extending up to a depth of 30 mbgl along Mahanadi, Arpa, Hasdeo, Seonath, Kharun, Mand, Kelo Rivers.

From the hydrogeological point of view, all rock types existing in the State can broadly be divided into three groups as i) the consolidated formations, ii) the semi consolidated formations and iii) the unconsolidated formations. The hydrogeological map of the state is presented in Fig. 5.2.

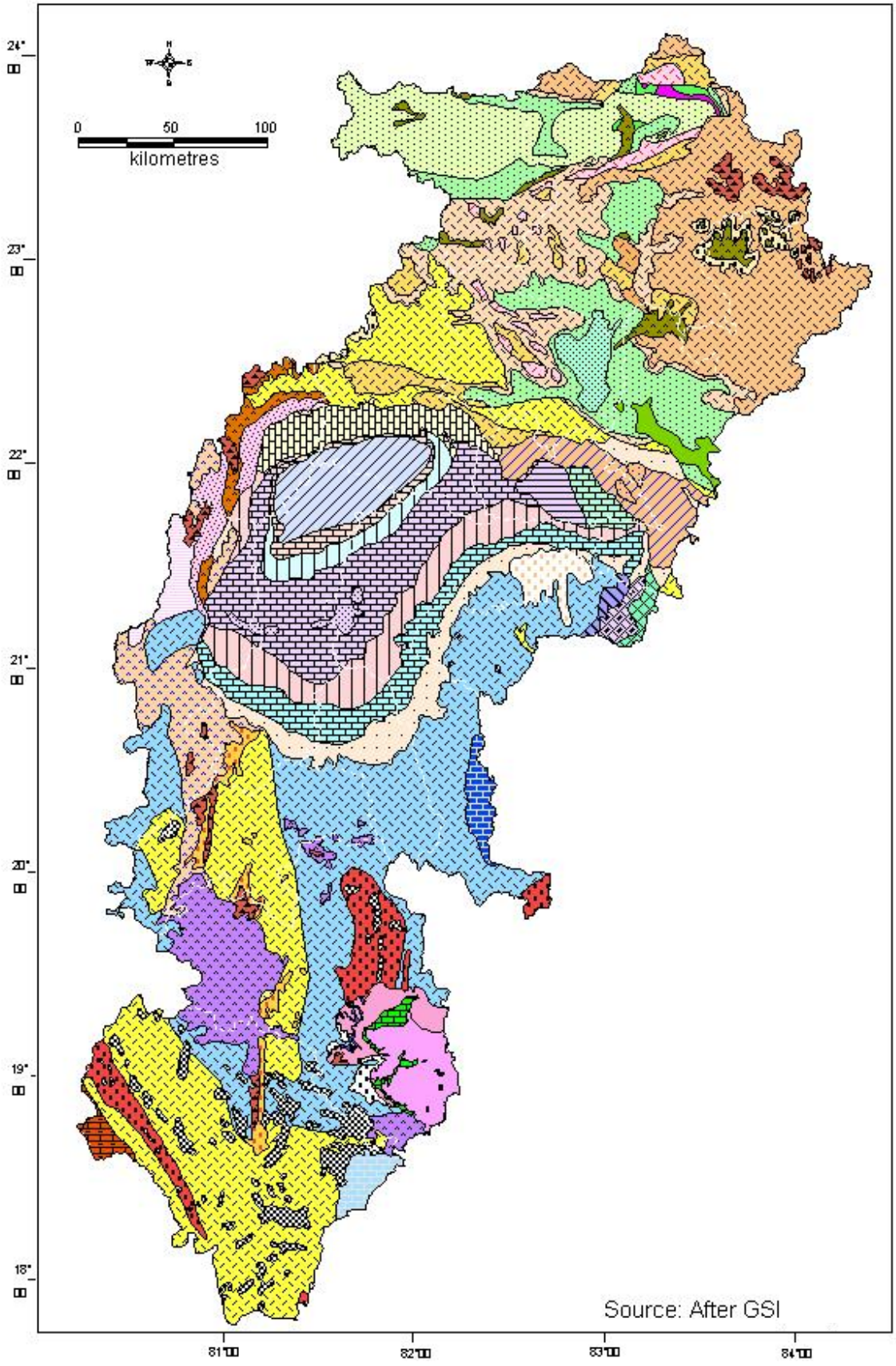
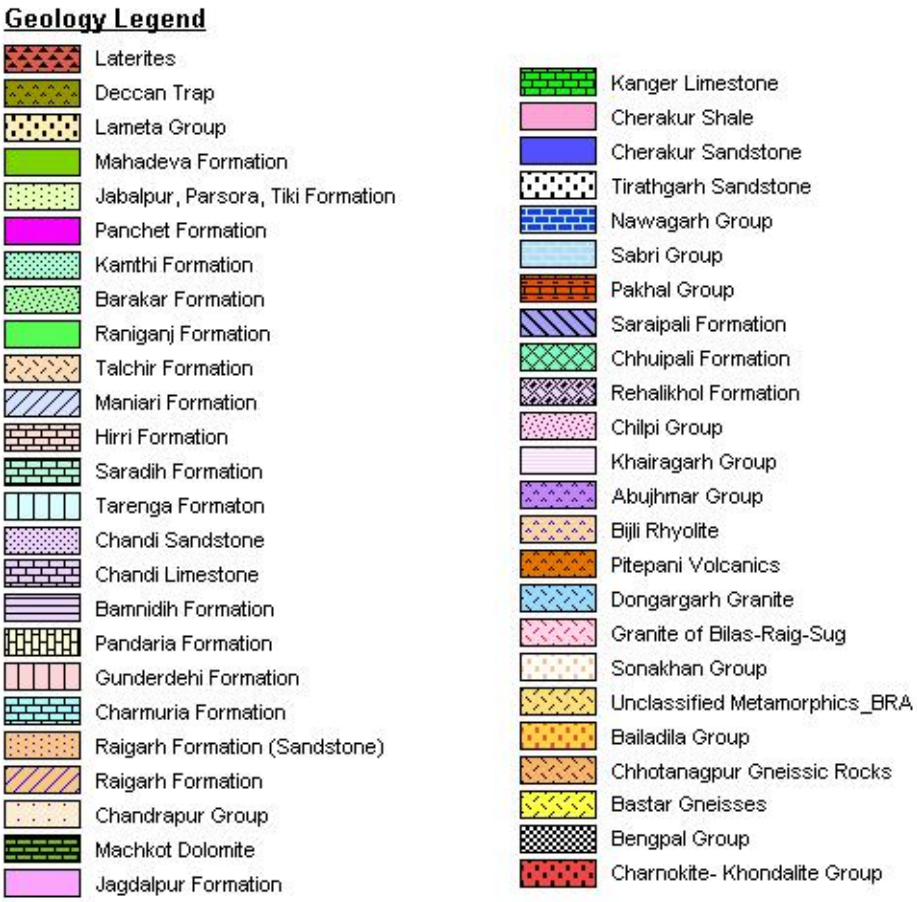


Fig. 5.1: Geological map of Chhattisgarh State



5.1 Consolidated Formations

The consolidated formations include the crystallines and the metamorphosed sedimentary formations belonging to Proterozoic age. They are mainly granites, granite gneisses, schistose rocks, charnockites, quartzites, calcsilicate rocks, shales, phyllites and limestones. These rocks are devoid of primary porosity, the ground water occurs in the secondary porosity resulting from fracturing, jointing and weathering. These hard rock aquifers exhibit considerable variations laterally as well as depth wise. The weathered formation is composed of loose regolith with secondary intergrannular porosity, which facilitates free circulation of ground water. Also the fractures at depth form potential repository of ground water. In general the average thickness of weathered formation varies from 15 to 20 m. The ground water occurs under water table conditions. The water bearing fracture zones are generally occurring within a depth of 100m, but deeper potential fractures are also encountered in some of the boreholes.

Deccan Trap basalts are typical hard rock formations. The lava flows are generally 10 to 20 m thick. The top of each flow comprises of 25 to 40 % vesicular/fragmentary basalt. The vesicles are generally filled with secondary minerals like calcite and zeolite. The characteristic red bole beds form the marker horizons and occur as inter- trappean beds between successive flows. Deccan Traps with primary vesicular structure and secondary fractures and joints are moderately productive from ground water point of view. The ground water occurs under both unconfined to semi confined conditions. The Deccan Trap basalts are occurring at few places in the state.

5.2 Semi-consolidated formations

The semi-consolidated formations include Gondwana Supergroup of sedimentary rocks and ranging in age from Upper Carboniferous to Cretaceous. This group includes sandstone, shale, siltstone and conglomerate beds. These formations are generally highly compact and possess less intergrannular porosity. The coarse to medium grained, weathered, fractured and friable sandstone forms good aquifer. The ground water occurs under water table conditions in the near surface aquifers and under confined conditions in the deeper aquifers. The depth of weathering in Gondwana Group of rocks generally extends to a depth of 15 m.

5.3 Unconsolidated formations

The unconsolidated formations include alluvium and laterite. Alluvium occurs as discontinues patches along the River courses where its thickness is limited. The sand and gravel layers act as a good repository for ground water. The ground water occurs under unconfined conditions. The laterites occur as cap rocks on basalts or granites. The laterites are vesicular, essentially ferruginous and form good repository of ground water.

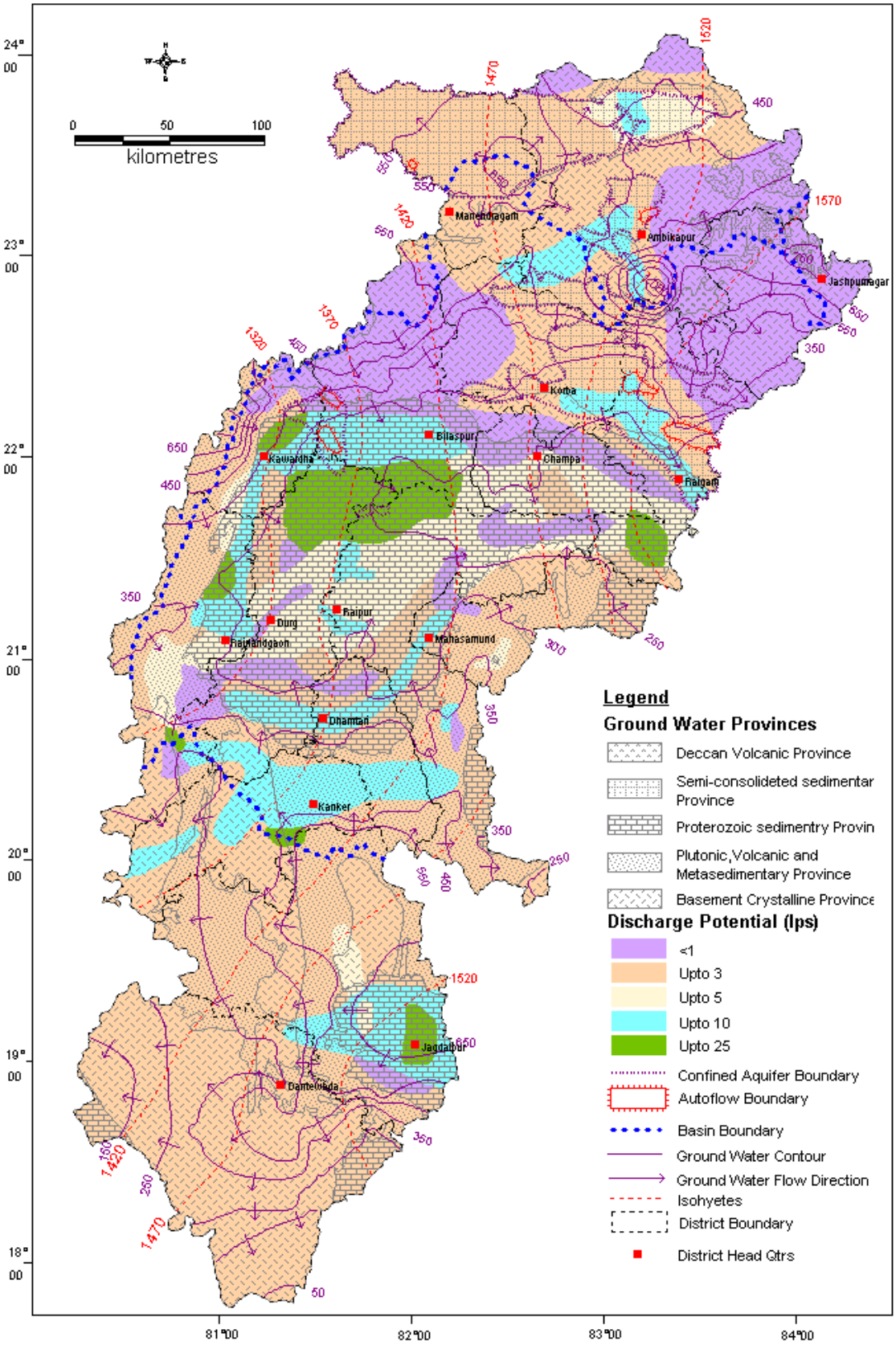


Fig. 5.2: Hydrogeological map of Chhattisgarh State

6. GROUND WATER REGIME MONITORING

Ground water level is not static. It is always under the influence of time-dependant recharge and discharge factors. As a result the water level in the aquifer system fluctuates and the range depends on the period of influence. The recharge is due to many factors such as rainfall, seepage from reservoirs, lakes, ponds, rivers and irrigation, etc. The discharge includes ground water withdrawal through manual and pumping systems, natural seepage to rivers and sea, evaporation from shallow water table and transpiration through vegetation.

The Central Ground Water Board is monitoring the ground water regime through the length and breadth of the country since the year 1969 through a network of Hydrograph Stations (NHS). The density of observation wells is increased from year to year. As on 31st March 2016, a total of 1158 number of observation wells, which included both dug wells (890) and piezometers (263) were established in Chhattisgarh state for monitoring purposes. Location of the NHS wells is shown in Fig. 6.1. The details of NHS are given in Annexure-I.

The hydrograph network stations (NHS) are established permanently and are monitored during every set of measurements. The existing network provides information on ground water regime with fair degree of accuracy. The NHS wells are monitored four times in a year during the following months. They are;

May - *21st to 31st of the month - represents water level of Pre-monsoon period.*
August - *21st to 31st of the month - represents peak monsoon water level*
November - *1st to 10th of the month- represents water level of Post-monsoon period.*
January - *1st to 10th of the month- represents the recession stage of water level*

Water samples were collected from each network station during the month of May 2015 (Pre-monsoon) to assess the chemical quality of ground water.

6.1 Distribution of Hydrograph Network Stations (NHS)

a) District-wise

The total number of hydrograph network stations (NHS) in the State are 1158.Out of these 890 are dug wells tapping the shallow aquifer and 268 are piezometers tapping both shallow and deeper aquifers. District-wise distribution of the hydrograph network stations is given in Table 6.1 and is also shown in Fig. 6.1.

Table 6.1District-wise distribution of the hydrograph network stations in the state of Chhattisgarh

Sl No	Name of the District	Total No. of Ground Water Monitoring Wells (As on 31, Mar, 2015)			Total No. of Ground Water Monitoring Wells Established upto March, 2016)			Total No. of Ground Water Monitoring Wells (As on March, 2016)		
		DW	PZ	Total	DW	PZ	Total	DW	PZ	Total
1	Bastar	42	14	56	3	0	3	45	14	59
2	Bilaspur	81	17	98	9	0	9	90	17	107
3	Dhamtari	29	12	41	3	0	3	32	12	44
4	Durg	72	25	97	8	0	8	80	25	105
5	Janjgir-Champa	42	14	56	10	0	10	52	14	66
6	Jashpur	61	11	72	2	0	2	63	11	74
7	Kanker	20	3	23	0	0	0	20	3	23
8	Kawardha	15	10	25	0	0	0	15	10	25
9	Korba	68	30	98	3	0	3	71	30	101
10	Koriya	34	6	40	2	0	2	36	6	42
11	Mahasamund	27	20	47	4	0	4	31	20	51
12	Raigarh	104	30	134	1	0	1	105	30	135
13	Raipur	95	42	137	11	0	11	106	42	148
14	Rajnandgaon	57	8	65	9	0	9	66	8	74
15	Surguja	78	21	99	5	0	5	83	21	104
	Total	**825**	**263**	**1088**	**70**	**0**	**70**	**890**	**263**	**1158**

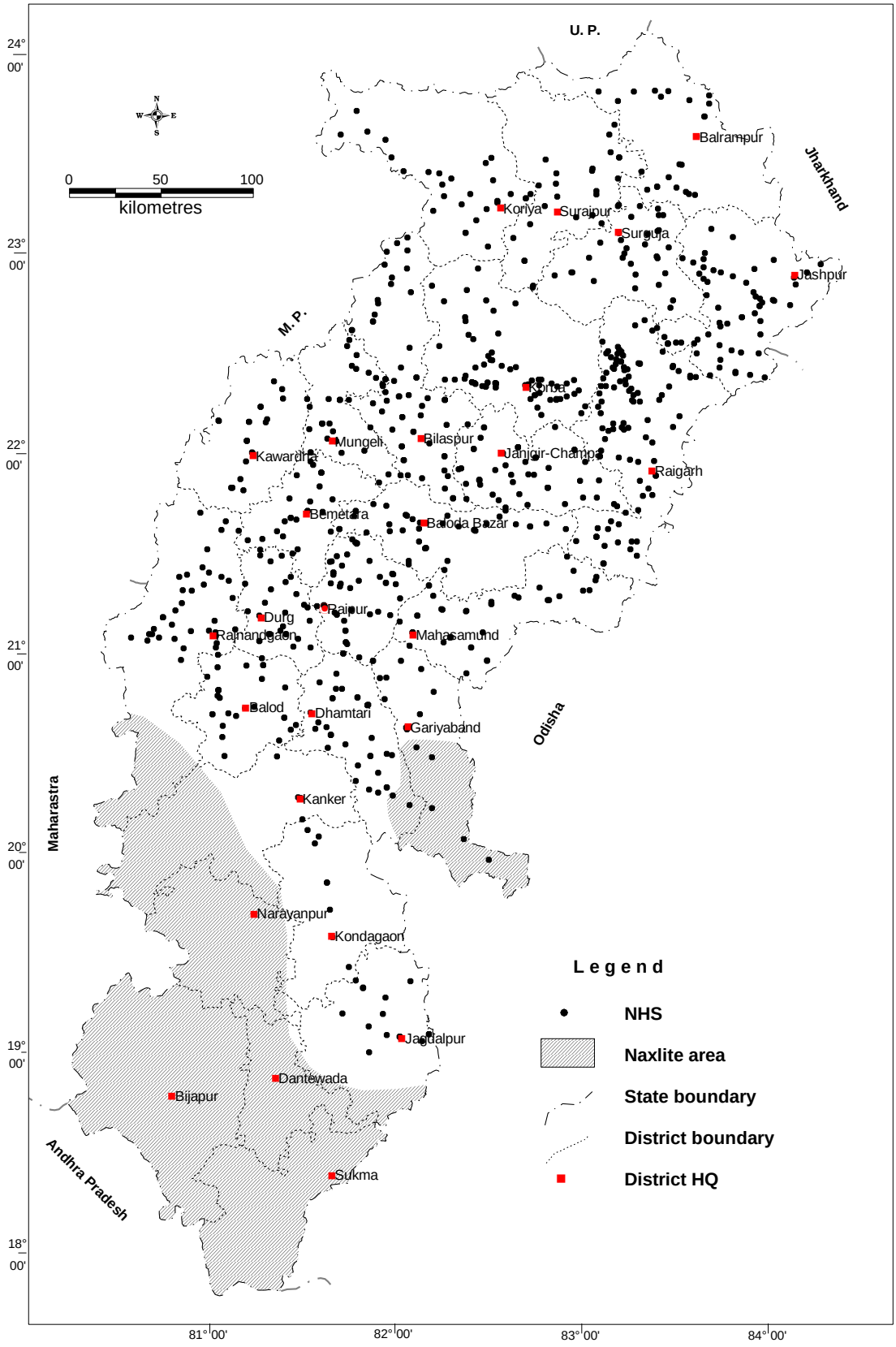


Fig.6.1 Location of NHNS monitoring in Chhattisgarh

7. ANALYSIS OF WATER LEVELS

The ground water levels observed over a period provides valuable information on the behaviour of the ground water regime, which is constantly subjected to changes due to recharge and discharge phenomena. A balance between these two factors results in the decline or rise in the ground water storage. When the recharge exceeds discharge there will be a rise in the ground water storage and vice versa. The decline in water level may be due to increase in draft (for different purposes) or decrease in precipitation (less recharge to ground water). On the other hand a rise in water level may be due to an increase in rainfall and/or due to changes in irrigation practices.

The dug wells are tapping the phreatic aquifer which is mostly limited to a depth of 15 m. The depth of piezometers which are tapping both the phreatic and deeper aquifers varies from 18 to 90 m. Hence the water level recorded in the piezometers may not be the same as that of dug wells for a particular period though both the structures are in the same place. In this report the water level data collected from the dug wells is presented. The water level in some of the wells on the southern part of the State could not be measured due to various reasons. Hence those areas are left blank while preparing different maps.

The NHS (dug wells) water level data collected four times during the year 2015-16 was analysed and for every set of measurements, write up and maps were prepared and are presented here under various paragraphs. The NHS (dug well) water level data is given in Annexure-II. The purpose of water level data analysis is;

i) Four measurements of depth to water level gives an overall idea regarding the ground water level in the state during the year of measurement.

ii) The fluctuation in comparison to the same month in the previous year gives an idea about the change in the ground water level for a particular period with respect to that of the level during the same month in the previous year. This gives an idea about the change in the amount of draft and rainfall between the two years.

iii) The water level fluctuation during the pre-monsoon period in comparison to last year gives an idea about the seasonal fluctuation, which ultimately reflects the change in dynamic ground water resources.

iv) The water level fluctuation during a particular month of measurement with reference to the decadal mean for the same months gives an idea of the behaviour of the ground water level on long-term basis.

7.1 Depth to Water Level

7.1.1 May 2015

In general, the depth to water level ranges up to 5 mbgl is observed in approximately 30.19% of the wells and depth to water level range up to 10 mbgl is observed in 50.26% of the wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 2.44% of the observation wells and mostly in parts of Bilaspur, Durg, Kawardha, Raigarh and Dhamtari districts. The deepest water level of 31.07 m bgl was monitored in kota observation well (piezometer) of Bilaspur district.

25 numbers of wells (approximately 4.36% of the monitored wells) in the state are showing water levels between 0-2 m bgl in almost all the distrcts of Chhattisgarh State except Bilaspur, Jashpur, Kanker, kawardha, Korba, koriya, Rajnandgaon and Surguja. Water levels in the range of 2-5 m bgl are recorded in about 148 of the observation wells monitored. The highest percentages of wells in this range are in Durg (42.86%), Raipur (35.94%), Dhamtari (35.00%) and Jnajgir-Champa (27.66%) districts. Nearly 50.26% of observation wells are exhibiting water level in the range of 5-10 mbgl in most of the districts of the state.

The district wise frequency distribution of different ranges of depth to water level are furnished in Annexure-I and II. District wise distribution of percentage of observation wells at different ranges of depth to water level as observed in May 2015 are given in Table 7.1 and represented on a map and appended as Fig 7.1.

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Table 7.1 District wise distribution of percentage of observation wells at differen ranges of depth to water level in May' 2015

District	No. of Wells Analysed	Depth to Water Table (mbgl)	No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0.0-2.0	2.0-5.0	5.0-10.0	10.0-20.0	20.0-40.0
BASTAR	11	0.47	13.03	2 18.18%	3 27.27%	4 36.36%	2 18.18%	0
BILASPUR	72	2.10	31.07	0	24 33.33%	34 47.22%	11 15.28%	3 4.16%
DHAMTARI	20	0.99	29.25	3 15.00%	7 35.00%	7 35.00%	0	3 15.00%
DURG	49	1.90	23.03	1 2.04%	21 42.86%	17 34.69%	9 18.37%	1 2.04%
JANJGIR - CHAMPA	47	0.80	17.58	2 4.26%	13 27.66%	19 40.43%	13 27.66%	0
JASHPUR	50	2.85	17.27	0	9 18.00%	37 74.00%	4 8.00%	0
KANKER	4	3.58	5.86	0	1 25.00%	3 75.00%	0	0
KAWARDHA	18	3.83	22.00	0	3 16.67%	7 38.89%	6 33.33%	2 11.11%
KORBA	46	2.20	13.47	0	9 19.57%	30 65.22%	7 15.22%	0
KORIYA	12	5.23	11.66	0	0	8 66.67%	4 33.33%	0
MAHASAMUND	25	0.20	18.58	4 16.00%	7 28.00%	10 40.00%	4 16.00%	0
RAIGARH	64	1.18	24.50	1 1.56%	16 25.00%	33 51.56%	10 15.63%	4 6.25%
RAIPUR	64	0.33	14.75	12 18.75%	23 35.94%	23 35.94%	6 9.38%	0
RAJNANDGAON	36	2.01	13.20	0	8 22.22%	22 61.11%	6 16.67%	0
SURGUJA	55	3.44	16.38	0	4 7.27%	34 61.82%	17 30.91%	0
Total	**573**	**0.20**	**31.07**	**25**	**148**	**288**	**98**	**13**

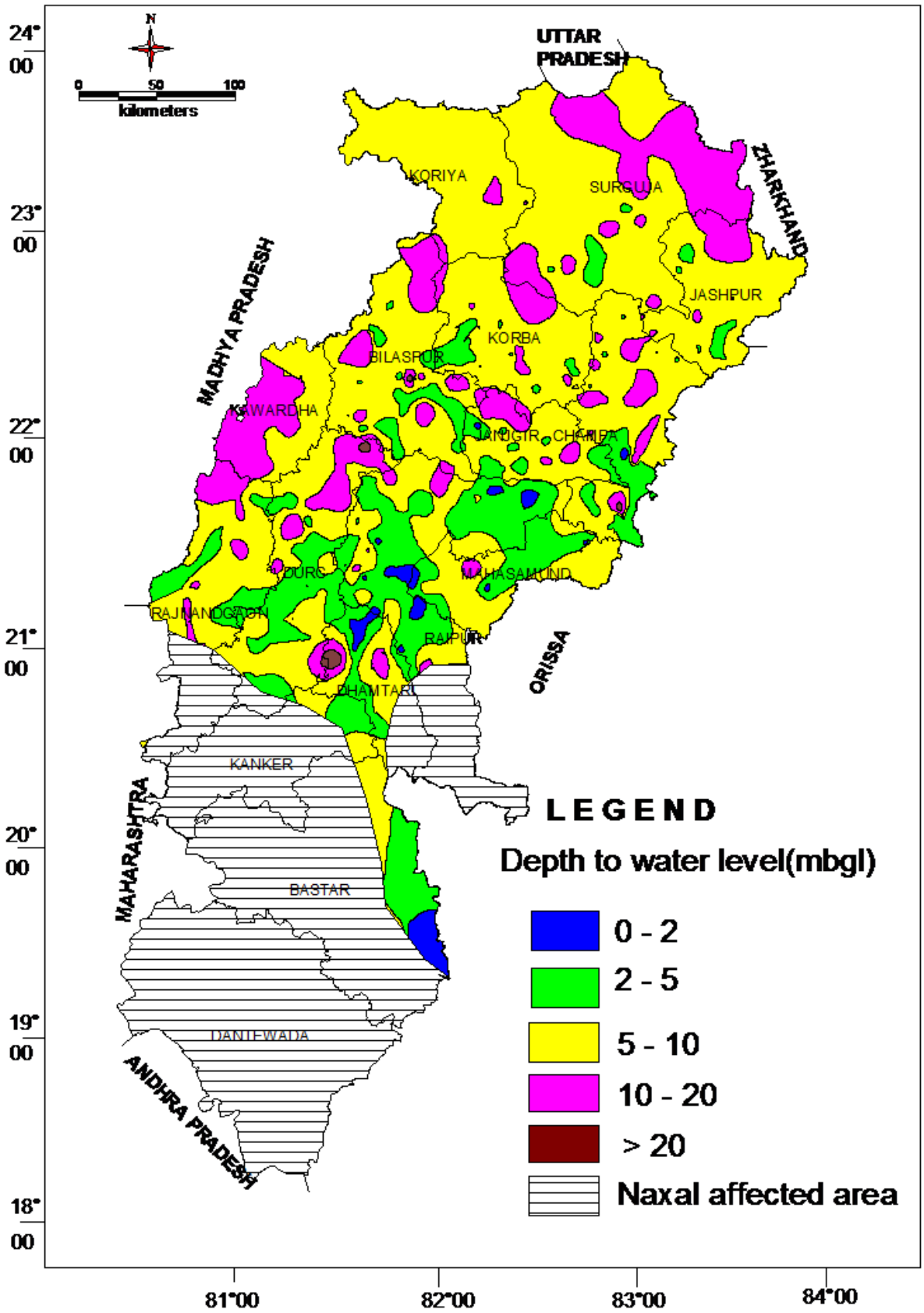

Fig 7.1 Depth To Water Level Map May' 2015

7.1.2 August 2015

In general, the depth to water level range up to 5 mbgl is observed in approximately 82% of the wells and depth to water level range up to 10 mbgl is observed in approximately 13% of the wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 5% of the observation wells and mostly in parts of Bilaspur, Durg, Dhamtari, Kawardha, Jashpur, Korba, Mahasamund and Surguja districts. The deepest water level of 44 mbgl was monitored in Ganiyari observation well (Shallow piezometer) of Bilaspur district.

261 numbers of wells (approximately 45% of the monitored wells) in the state are showing water levels between 0-2 m bgl in almost all the distrcts of Chhattisgarh State. Water levels in the range of 2-5 m bgl are recorded in about 210 of the observation wells monitored (approximately 37%). The highest percentages of wells in this range are in Surguja (56.45%), Jashpur (48.08%), Korba (47.62%), Kawardha (44.44%), Bilaspur (36.23%), Raigarh (35.82%), Jangir – champa (35.56%) and Koriya (34.78%) districts. Nearly 13% of observation wells are exhibiting water level in the range of 5-10 mbgl in most of the districts of the state.

The district wise frequency distribution of different ranges of depth to water level are furnished in Annexure-I and II. District wise distribution of percentage of observation wells at different ranges of depth to water level as observed in August'2015 are given in Table 7.2 and represented on a map and appended as Fig 7.2.

Table 7.2 District wise distribution of percentage of observation wells at different ranges of depth to water level in August' 2015

District	No. of Wells Analysed	Depth to Water Table (mbgl)		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of				
		Min	Max	0.0-2.0	2.0-5.0	5.0-10.0	10.0-20.0	20.0-40.0
BASTAR	17	0.22	6.99	11 64.71%	5 29.41%	1 5.88%	0	0
BILASPUR	69	-0.10	16.57	36 52.17%	25 36.23%	5 7.25%	3 4.35%	0
DHAMTARI	15	0.50	7.60	07 46.67%	5 33.33%	3 20.00%	0	0
DURG	50	-0.67	21.40	24 48%	11 22%	8 16.00%	6 12.00%	0
JANJGIR - CHAMPA	45	-0.17	8.47	26 57.78%	16 35.56%	3 6.67%	0	0
JASHPUR	52	-0.40	12.80	18 34.62%	25 48.08%	7 13.46%	2 3.85%	0
KANKER	1	1.33	1.33	1 100%	0	0	0	0
KAWARDHA	18	0.98	19.00	5 27.78%	8 44.42%	1 5.56%	4 22.22%	0
KORBA	42	-0.69	13.47	18 42.86%	20 47.62%	3 7.14%	1 2.38%	0
KORIYA	23	0.41	14.92	5 21.74%	8 34.78%	8 34.78%	2 8.70%	0
MAHASAMUND	19	0.15	8.24	8 42.11%	5 26.32%	6 31.58%	0	0
RAIGARH	67	-0.55	17.50	31 46.27%	24 35.82%	10 14.93%	2 2.99%	0
RAIPUR	59	-0.54	8.10	44 74.58%	11 18.64%	4 6.78%	0	0
RAJNANDGAON	35	0.34	10.25	15 42.86%	12 34.29%	7 20%	1 2.86%	0
SURGUJA	62	0.59	13.42	12 19.35%	35 56.45%	7 11.29%	8 12.90%	0
Total	**574**	**-0.69**	**21.40**	**261**	**210**	**73**	**29**	**0**

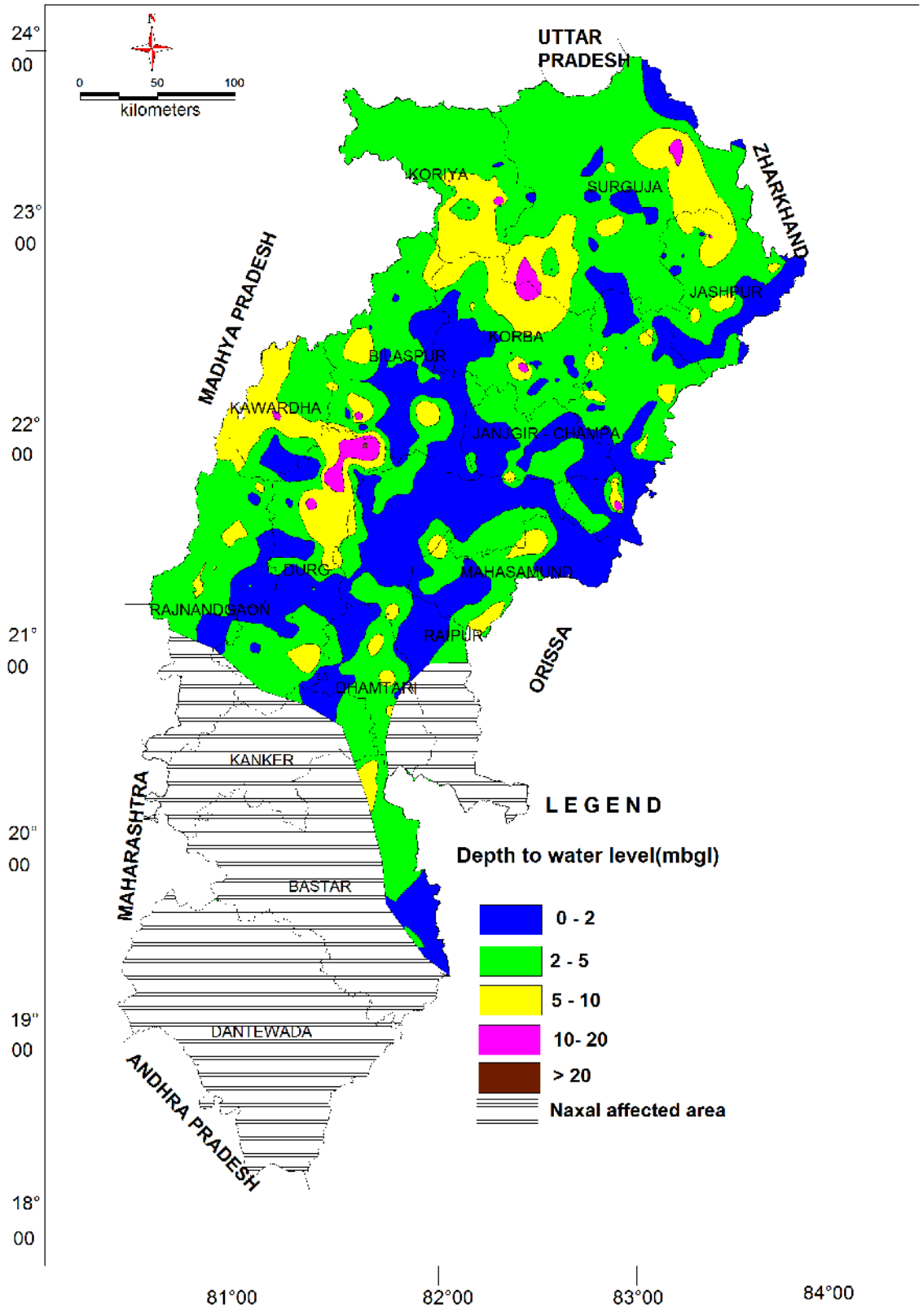

Fig 7.2 Depth to water level map (August'2015)

7.1.3 November 2015

In general, the depth to water level range up to 5 mbgl is observed in approximately 65.49% of the wells and depth to water level range up to 10 mbgl is observed in approximately 2.15% of the wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 6.86% of the observation wells and mostly in parts of Bilaspur, Durg, Dhamtari, Kawardha and Surguja districts. The deepest water level of 19.70 m bgl was monitored in Nawagarh observation well (Deep piezometer) of Durg district.

86 numbers of wells (approximately 16.85% of the monitored wells) in the state are showing water levels between 0-2 m bgl in almost all the distrcts of Chhattisgarh State. Water levels in the range of 2-5 m bgl are recorded in about 248 (48.62) of the observation wells monitored. The highest percentages of wells in this range are in Bastar (55.00%), Kanker (43.75%), Kawardha (45.45%), Korba (51.02%), Dhamtari (56.67), Raipur (65.38%), Koriya (38.46%), Mahasamund (27.59%) and Bilaspur (47.95%) districts. Nearly 27.64% of observation wells are exhibiting water level in the range of 5-10 mbgl in most of the districts of the state. The district wise frequency distribution of different ranges of depth to water level are furnished in Annexure-I and II. District wise distribution of percentage of observation wells at different ranges of depth to water level as observed in November ’2015 are given in Table 7.3 and represented on a map and appended as Fig 7.3.

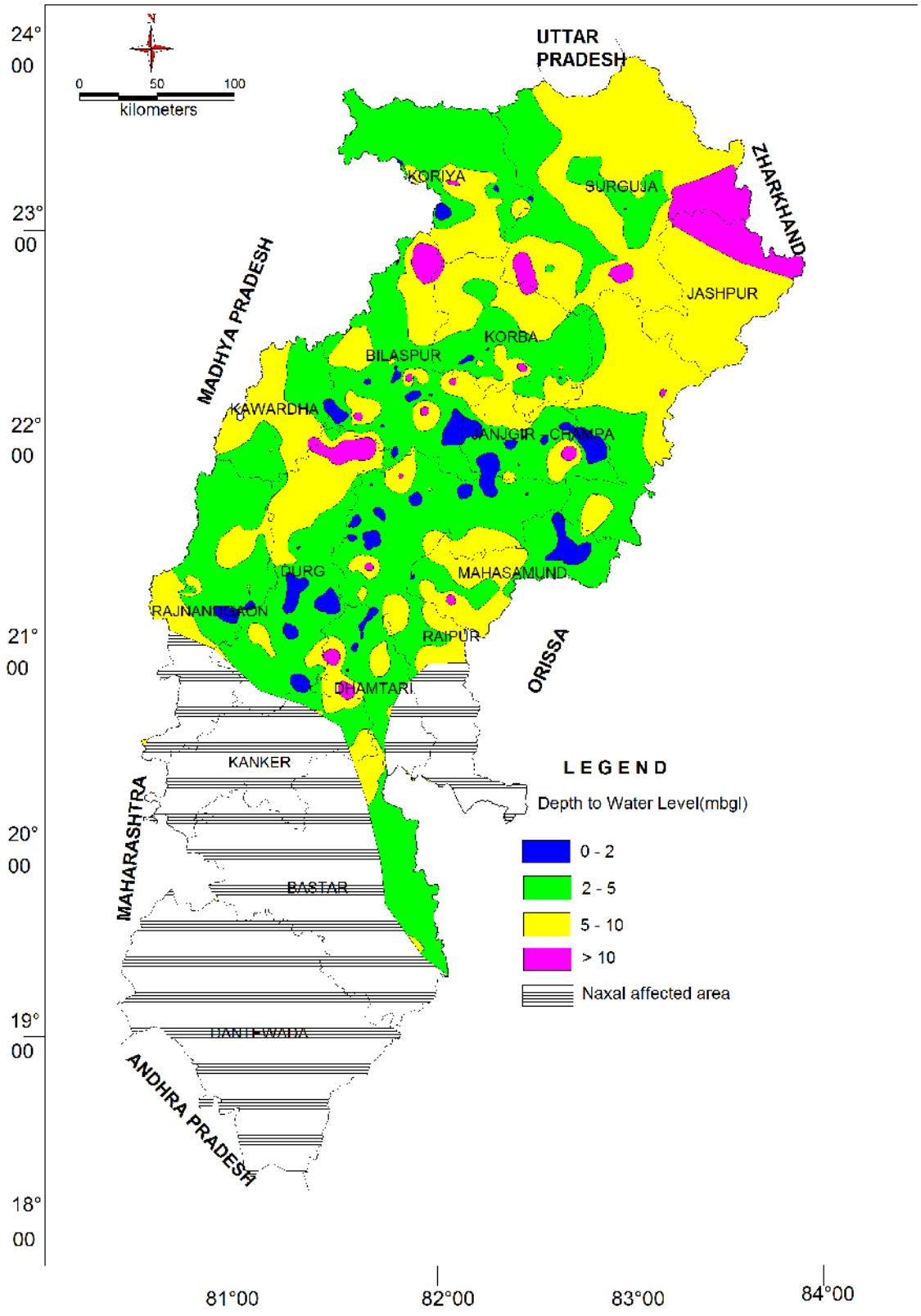

Fig 7.3 Depth to water level map (November'2015)

Table 7.3 District wise distribution of percentage of observation wells at different ranges of depth to water level in November' 2015

District	No. of Wells Analysed	Depth to Water Table (mbgl)		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of				
		Min	Max	0.0-2.0	2.0-5.0	5.0-10.0	10.0-20.0	20.0-40.0
BASTAR	20	1.96	13.74	1 5.00%	11 55.00%	7 35.00%	1 5.00%	0
BILASPUR	73	0.52	17.90	16 21.92%	35 47.95%	14 19.18%	8 10.96%	0
DANTEWADA	04	4.93	6.03	0	1 25.00%	3 75.00%	0	0
DHAMTARI	30	1.41	16.12	5 16.67%	17 56.67%	5 16.67%	3 10.00%	0
DURG	50	0.83	18.00	11 22.00%	21 42.00%	14 28.00%	4 8.00%	0
JANJGIR - CHAMPA	45	0.68	13.93	15 33.33%	19 42.22%	8 17.78%	3 6.67%	0
KANKER	16	2.82	9.46	0	7 43.75%	9 56.25%	0	0
KAWARDHA	11	1.82	17.37	2 18.18%	5 45.45%	3 27.27%	1 9.09%	0
KORBA	49	0.72	13.47	7 14.29%	25 51.02%	16 32.65%	1 2.04%	0
KORIYA	26	0.56	11.05	4 15.38%	10 38.46%	10 38.46%	2 7.69%	0
MAHASAMUND	29	1.43	14.27	4 13.79%	8 27.59%	15 51.72%	2 6.90%	0
RAIPUR	78	0.38	12.57	16 20.51%	51 65.38%	9 11.54%	2 2.56%	0
RAJNANDGAON	29	1.30	7.95	4 13.79%	15 51.72%	10 34.48%	0	0
SURGUJA	50	1.85	15.27	1 2.00%	23 46.00%	18 36.00%	8 16.00%	0
Total	**510**	**0.38**	**18.00**	**86**	**248**	**141**	**35**	**0**

7.1.4 January 2016

In general, the depth to water level range up to 5 mbgl is observed in approximately 32.93% of the wells and depth to water level range up to 10 mbgl is observed in approximately 52.38% of the wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 13.82% of the observation wells and mostly in parts of Bilaspur, Durg, Janjgir- Champa, Koriya and Surguja districts. The deepest water level of 22 m bgl was monitored in Surguja observation well (piezometer) of Surjuga district.

10 numbers of wells (approximately 2% of the monitored wells) in the state are showing water levels between 0-2 m bgl in almost all the districts of Chhattisgarh State. Water levels in the range of 2-5 m bgl are recorded in about 183 (31.2%) of the observation wells monitored. The highest percentages of wells in this range are in Raipur (58.82%), Korba (33.33%), Kawardha (36.36%), Jhajgir Champa (34.69%), Rajnandgaon (35.71%), Durg (36%), Mahasamund (36.84%), Bastar (29.09%) and Bilaspur (38.16%) districts. Nearly 52.38% of observation wells are exhibiting water level in the range of 5-10 mbgl in most of the districts of the state. The district wise frequency distribution of different ranges of depth to water level are furnished in Annexure-I and II. The district wise frequency distributions of different ranges of depth to water level are furnished in Table 7.4. Different ranges of depth to water table as observed in January 2016 are represented on a map and appended as Fig 7.4

Table 7.4 District wise distribution of percentage of observation wells at different ranges of depth to water level in Jan' 2016

District	No. of Wells Analysed	Depth to Water Table (mbgl)		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of				
		Min	Max	0.0-2.0	2.0-5.0	5.0-10.0	10.0-20.0	20.0-40.0
BASTAR	23	1.85	11.65	1 4.35%	6 26.09%	15 65.22%	1 4.355	0
BILASPUR	76	1.65	22.20	1 1.32%	29 38.16%	35 46.05%	9 11.84%	2 2.63%
DANTEWADA	3	6.62	7.26	0	0	3 100.00%	0	
DHAMTARI	12	2.30	16.87	0	4 33.33%	6 50.00%	2 16.67%	0
DURG	50	1.45	20.68	3 6.00%	18 36.00%	20 40.00%	8 16.00%	1 2.00%
JANJGIR - CHAMPA	49	1.70	17.80	1 2.04%	17 34.69%	22 44.90%	9 18.37%	0
JASHPUR	50	2.20	16.80	0	14 28.00%	33 66.00%	3 6.00%	0
KANKER	14	4.02	10.65	0	2 14.29%	11 78.57%	1 7.14%	0
KAWARDHA	11	2.93	19.72	0	4 36.36%	6 54.55%	1 9.09%	0
KORBA	45	2.00	14.47	1 2.22%	15 33.33%	25 55.56%	4 8.89%	0
KORIYA	28	2.65	16.24	0	4 14.29%	16 57.14%	8 28.57%	0
MAHASAMUND	19	1.87	15.35	1 5.26%	7 36.84%	9 47.37%	2 10.53%	0
RAIGARH	65	1.78	50.00	1 1.54%	18 27.69%	36 55.38%	8 12.31%	1 1.54%
RAIPUR	51	1.35	17.11	1 1.96%	30 58.82%	17 33.33%	3 5.88%	0
RAJNANDGAON	28	2.88	9.61	0	10 35.71%	18 64.29%	0	0
SURGUJA	62	3.55	18.00	0	5 8.06%	35 66.45%	22 35.48	0
Total	**586**	**1.35**	**50.00**	**10**	**183**	**307**	**81**	**4**

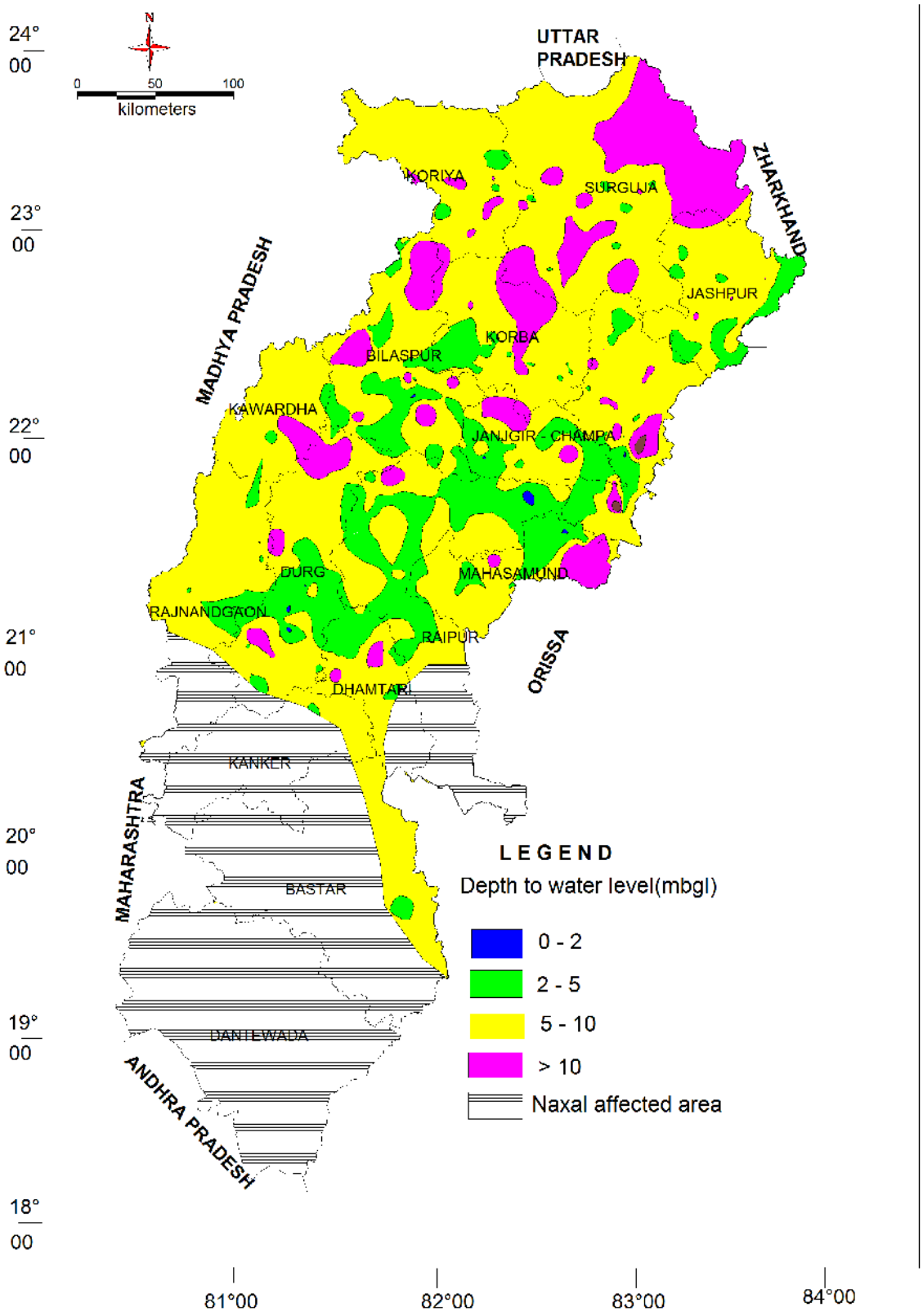

Fig. 7.4 Depth to Water Level Map (January'2016)

7.2 Water Level Fluctuation

7.2.1 May 2014 vs May 2015

When compared to water level in May 2014, nearly 44.23% of the observation wells are showing rise in water level in May' 2015. Rise of water level in the range of 0-2 m is observed in 27.56 % of the wells distributed in almost all the districts. Rise of water level in the range of 2-4 m is observed in 10.25 % of the wells distributed in almost all the districts except Jashpur, Kawardha and Koriya districts. Rise of water level by more than 4 m is also observed in 6.41 % of the monitored wells except Bastar, jashpur, kanker, Kawardha, Korba and Koriya district. Fall of water level is recorded in nearly 48.93% of the monitored wells. Fall of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 38.24%, 5.55% and 5.12% of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in Table 7.5. Different ranges of fluctuation in May 2015 as compared to May 2014 are represented on a map and appended as Fig 7.5 and Table 7.5.

Table 7.5 District wise frequency for different fluctuation ranges between May 2014 vs May 2015

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	9	0.13	3.28	-	-	5 55.56%	4 44.44%	0	0	0	0	9	0
BILASPUR	66	0.05	10.65	0.05	11.90	17 25.76%	2 3.03%	3 4.55%	29 43.94%	5 7.58%	7 10.61%	22	41
DHAMTARI	17	0.24	5.12	0.05	13.02	5 29.11	2 11.76%	2 11.76%	4 23.53%	0	3 17.65%	9	7
DURG	35	0.09	4.86	0.04	5.03	8 22.86%	2 5.71%	1 2.86%	17 48.57%	2 5.71%	1 2.86%	11	20
JANJGIR – CHAMPA	43	0.10	11.30	0.01	4.95	13 30.23%	6 13.95%	3 6.98%	15 34.88%	2 4.65%	2 4.65%	22	19
JASHPUR	40	0.01	2.00	0.10	2.70	12 30.00%	0	0	24 60.00%	24 60.00%	0	12	25
KANKER	3	0.84	2.38	0.26	0.26	1 33.33%	1 33.33%	0	1 33.33%	1 33.33%	0	2	1
KAWARDHA	12	0.23	1.30	0.05	12.90	5 41.67%	0	0	4 33.33%	4 33.33%	2 16.67%	5	6
KORBA	39	0.02	2.50	0.02	3.37	12 30.77%	2 5.13%	0	18 46.15%	18 46.15%	0	14	20
KORIYA	7	0.27	0.80	0.13	8.90	2 28.57%	0	0	1 14.29%	1 14.29%	2 28.57%	2	5
MAHASAMUND	24	1.13	12.04	0.41	2.07	5 20.83%	8 33.33%	6 25.00%	4 16.67%	4 16.67%	0	19	5
RAIGARH	59	0.02	7.55	0.02	4.78	16 27.12%	2 3.396%	1 1.69%	22 37.29%	22 37.29%	5 8.47%	19	33
RAIPUR	51	0.15	13.37	0.25	4.21	18 35.29%	11 21.75%	9 17.65%	10 19.61%	10 19.61%	1 1.96%	38	11
RAJNAND-GAON	24	0.13	4.90	0.15	2.53	6 25.00%	4 16.67%	1 4.17%	9 37.50%	9 37.50%	0	11	11
SURGUJA	39	0.04	9.05	0..07	6.86	4 10.26%	4 10.26%	4 10.26%	21 53.85%	21 53.85%	1 2.56%	12	25
Total	**468**	**0.02**	**13.37**	**0.01**	**13.02**	**129**	**48**	**30**	**179**	**179**	**24**	**207**	**229**

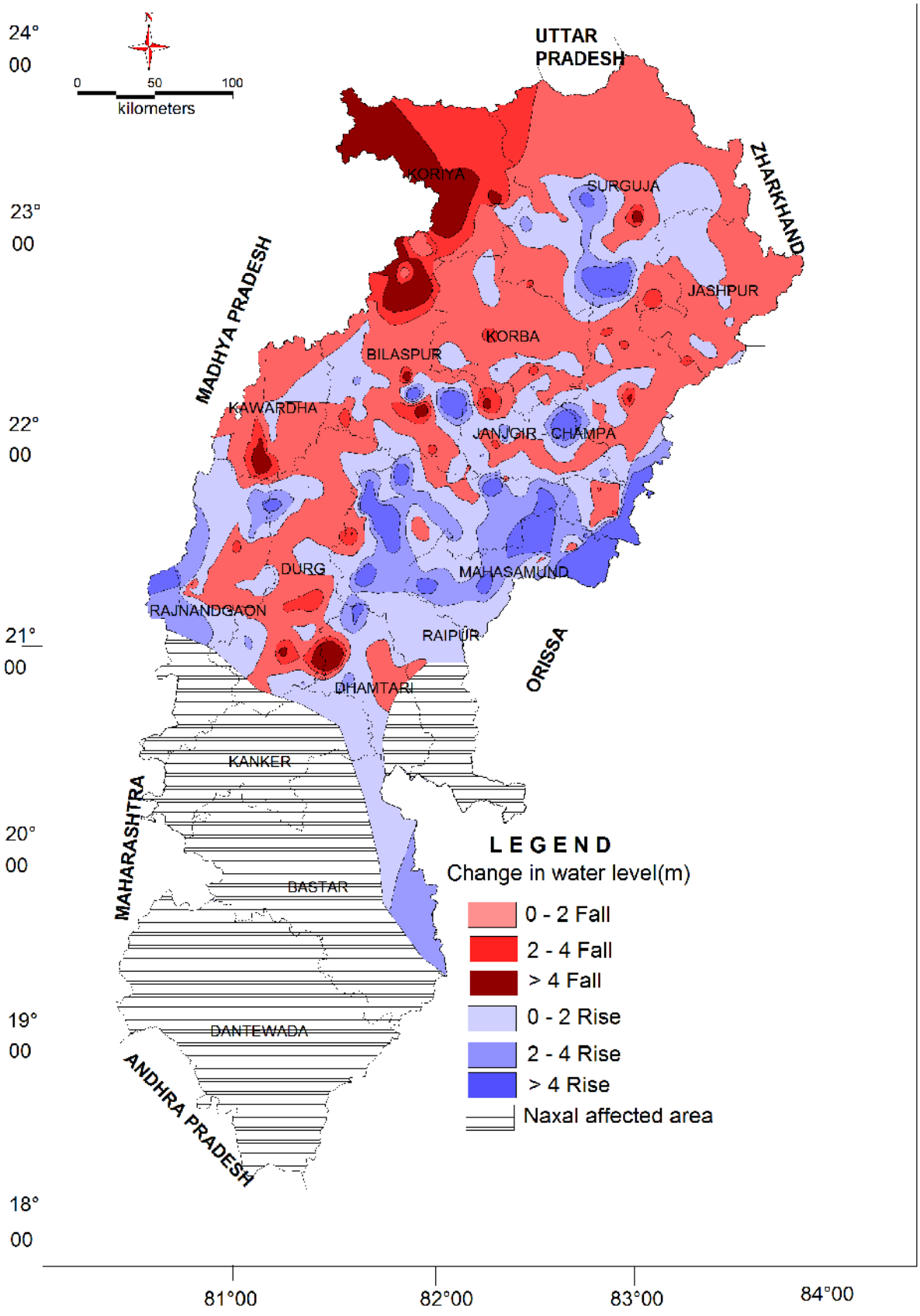

Fig. 7.5 Water Level Fluctuation (May'2014 Vs May'2015)

7.2.2 August 2014 vs August 2015

When compared to water level in August 2014, nearly 31% of the observation wells are showing rise in water level in August' 2015. Rise of water level in the range of 0-2 m is observed in 26 % of the wells distributed in almost all the districts except Kanker district. Rise of water level in the range of 2-4 m is observed in 3 % of the wells monitored mostly in Bilaspur, Durg, Janjgir Champa, Korba, Raigarh, Raipur and Surguja districts. Rise of water level by more than 4 m is observed in 2% of the monitored wells in Bastar, Bilaspur, Durg, Jashpur, Korba, Raigarh Raipur and Surguja districts. Fall of water level is recorded in nearly 68% of the monitored wells. Fall of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 52%, 11% and 5% of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in table 7.6. Different ranges of fluctuation in Aug 2015 as compared to Aug 2014 are represented on a map and appended as fig 7.6.

7.2.3 November 2014 vs November 2015

When compared to water level in November 2014, nearly 23.35% of the observation wells are showing rise in water level in November' 2015. Rise of water level in the range of 0-2 m is observed in 20.18 % of the wells distributed in almost all the districts except Kanker district. Rise of water level in the range of 2-4 m is observed in 2.04 % of the wells monitored mostly in Kanker districts. Rise of water level by more than 4 m fall is observed in 12.19 % of the monitored wells. Fall of water level is recorded in nearly 75.28% of the monitored wells. Fall of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 56.0%, 13.3% and 5.89% of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in Table 7.7. Different ranges of fluctuation in Nov' 2015 as compared to Nov' 2014 are represented on a map and appended as Fig. 7.7.

7.2.4 January 2015 vs January 2016

When compared to water level in January 2015, nearly 31.65% of the observation wells are showing rise in water level in January' 2016. Rise of water level in the range of 0-2 m is observed in 22.37 % of the wells distributed in almost all the districts except Kanker district. Rise of water level in the range of 2-4 m is observed in 6.65 % of the wells monitored mostly in Bastar, Janjgir- Champa, Raipur and Durg districts. Rise of water level by more than 4 m fall is observed in 2.62 % of the monitored wells. Fall of water level is recorded in nearly 67.74% of the monitored wells. Fall of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 46.37%, 15.52% and 5.84% of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in Table 7.8. Different ranges of fluctuation in January 2016 as compared to January 2014 are represented on a map and appended as fig 7.8.

Table 7.6 District wise frequency for different fluctuation ranges between Aug 2014 vs Aug 2015

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	16	0.18	4.43	0.02	4.99	3 18.75%	0	1 6.25%	10 62.50%	1 6.25%	1 6.25%	4	12
BILASPUR	66	0.02	8.28	0.04	3.09	29 43.94%	4 6.06%	3 4.55%	24 36.36%	6 9.09%	0	36	30
DHAMTARI	14	-	-	0.04	5.50	0	0	0	10 71.43%	1 7.14%	3 21.43 %	0	14
DURG	38	0.02	6.08	0.03	7.10	5 13.16%	1 2.63%	1 2.63%	23 60.53%	2 5.26%	6 15.79 %	7	31
JANJGIR – CHAMPA	42	0.02	2.43	0.02	3.54	19 45.24%	1 2.38%	0	17 40.48%	4 9.52%	0	20	21
JASHPUR	42	0.02	7.21	0.04	6.33	10 23.81%	0	1 2.38%	24 57.14%	5 11.90%	2 4.76%	11	31
KANKER	1	-	-	0.28	0.28	0	0	0	1 100.0%	0	0	0	1
KAWARDHA	15	0.11	1.60	0.33	2.44	6 40.00%	0	0	7 46.67%	2 13.33%	0	6	9
KORBA	41	0.04	4.07	0.10	3.97	13 31.71%	2 4.88%	1 2.44%	15 36.59%	8 19.51%	0	16	23
KORIYA	23	0.04	0.20	0.21	12.82	3 13.04%	0	0	6 26.09%	9 39.13%	5 21.74 %	3	20
MAHASAMUND	16	0.23	0.23	0.02	5.60	1 6.25%	0	0	10 62.50%	3 18.75%	2 12.50 %	1	15
RAIGARH	50	0.09	2.68	0.01	4.58	8 16.00%	2 4.00%	0	37 74.00%	1 2.00%	2 4.00%	10	40
RAIPUR	45	0.06	2.22	0.02	7.20	10 22.22%	1 2.22%	0	30 66.67%	2 4.44%	2 4.44%	11	34
RAJNAND-GAON	29	0.01	1.50	0.03	4.27	8 27.59%	0	0	17 58.62%	3 10.34%	1 3.45%	8	21
SURGUJA	53	0.03	5.57	0.01	5.24	15 28.30%	2 3.77%	2 3.77%	25 47.17%	7 13.21%	2 3.77%	19	34
Total	**491**	**0.23**	**0.20**	**0.01**	**12.82**	**130**	**13**	**9**	**256**	**54**	**26**	**152**	**336**

Table 7.7 District wise frequency for different fluctuation ranges between November 2014 vs November 2015

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	12	0.07	0.51	0.32	2.73	3 25.00%	0	0	7 58.33%	2 16.67%	0	3	9
BILASPUR	65	0.02	5.00	0.01	8.82	15 23.08%	2 3.08%	1 1.54%	34 52.31%	7 10.77%	6 9.23%	18	47
DHAMTARI	27	0.02	1.91	0.05	6.07	6 22.22%	0	0	17 62.96%	1 3.70%	2 7.41%	6	20
DURG	45	0.19	4.73	0.05	9.47	2 4.44%	2 4.44%	1 2.22%	26 57.78%	11 24.44%	3 6.67%	5	40
JANJGIR - CHAMPA	42	0.07	1.23	0.05	8.22	16 38.10%	0	0	21 50.00%	1 2.38%	4 9.52%	16	26
KANKER	3	2.95	2.95	3.00	3.29	0	1 33.33%	0	0	2 66.67%	0	1	2
KAWARDHA	9	0.02	8.41	0.23	3.50	1 11.11%	0	1 11.11	5 55.56%	2 22.22%	0	2	7
KORBA	47	0.05	2.22	0.03	8.31	7 14.89%	1 2.13%	0	26 55.32%	9 19.15%	2 4.26%	8	37
KORIYA	21	0.02	1.49	0.14	4.48	6 28.57%	0	0	9 42.86%	5 23.81%	1 4.76%	6	15
MAHASAMUND	25	0.20	0.30	0.02	6.02	2 8.00%	0	0	16 64.00%	5 20.00%	2 8.00%	2	23
RAIPUR	72	0.02	10.02	0.02	5.37	13 18.06%	0	2 2.78%	50 69.44%	2 2.78%	2 2.78%	15	54
RAJNANDGAON	28	0.01	3.42	0.01	5.67	2 7.14%	1 3.57%	0	17 60.71%	5 17.86%	3 10.71 %	3	25
SURGUJA	45	0.04	3.05	0.09	4.74	16 35.56%	2 4.44%	0	19 42.22%	7 15.56%	1 2.22%	18	27
Total	**441**	**2.95**	**0.30**	**0.01**	**9.47**	**89**	**9**	**5**	**247**	**59**	**26**	**103**	**332**

Table 7.8 District wise frequency for different fluctuation ranges between January 2015 vs January 2016

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	15	0.17	5.93	0.05	3.93	6 40.00%	2 13.33%	1 6.67%	4 26.67%	2 13.33%	0	9	6
BILASPUR	69	0.05	6.15	0.05	10.37	10 14.49%	4 5.80%	2 2.90%	37 53.62%	12 17.39%	4 5.80%	16	53
DANTEWADA	3	-	-	0.36	2.76	0	0	0	2 66.67%	1 33.33%	0	0	3
DHAMTARI	11	0.26	2.30	0.09	3.88	3 27.27%	1 9.09	0	4 36.36%	2 18.18%	0	4	6
DURG	40	0.02	5.84	0.32	9.23	6 15.00%	5 12.50%	2 5.00%	16 40.00%	8 20.00%	3 7.50%	13	27
JANJGIR - CHAMPA	46	0.07	3.51	0.20	5.09	15 32.61%	7 15.22%	0	17 36.96%	5 10.87%	2 4.35%	22	24
JASHPUR	45	0.05	4.57	0.03	3.97	14 31.11%	1 2.22%	1 2.22%	24 53.33%	5 11.11%	0	16	29
KANKER	11	0.18	0.18	0.71	5.02	1 9.09%	0	0	3 27.27%	3 27.27%	4 36.36 %	1	10
KAWARDHA	8	0.08	6.76	0.66	1.77	3 37.50%	0	2 25.00 %	3 37.50%	0	0	5	3
KORBA	37	0.05	4.24	0.14	3.80	10 27.03%	1 2.70%	1 2.70	17 45.95%	8 21.62%	0	12	25
KORIYA	16	1.24	1.24	0.24	5.86	1 6.25%	0	0	7 43.75%	5 31.25%	2 12.50 %	1	14
MAHASAMUND	14	0.32	2.03	0.28	6.22	2 14.29%	1 7.14%	0	8 57.14%	2 14.29%	1 7.14%	3	11
RAIGARH	57	0.15	5.85	0.04	5.12	12 21.05%	3 5.25%	2 3.51%	30 52.63%	7 12.28%	3 5.26%	17	40
RAIPUR	39	0.39	6.10	0.08	6.69	7 17.95%	5 12.82%	1 2.56%	20 51.28%	3 7.69%	3 7.69%	13	26
RAJNANDGAON	27	0.02	5.00	0.06	4.81	10 37.04%	1 3.70%	1 3.70%	8 29.63%	5 18.52%	1 3.70%	12	14
SURGUJA	58	0..0 7	3.63	0.11	7.63	11 18.97%	2 3.45%	0	30 51.72%	9 15.52%	6 10.34 %	13	45
Total	**496**	**1.24**	**0.18**	**0.03**	**10.37**	**111**	**33**	**13**	**230**	**77**	**29**	**157**	**336**

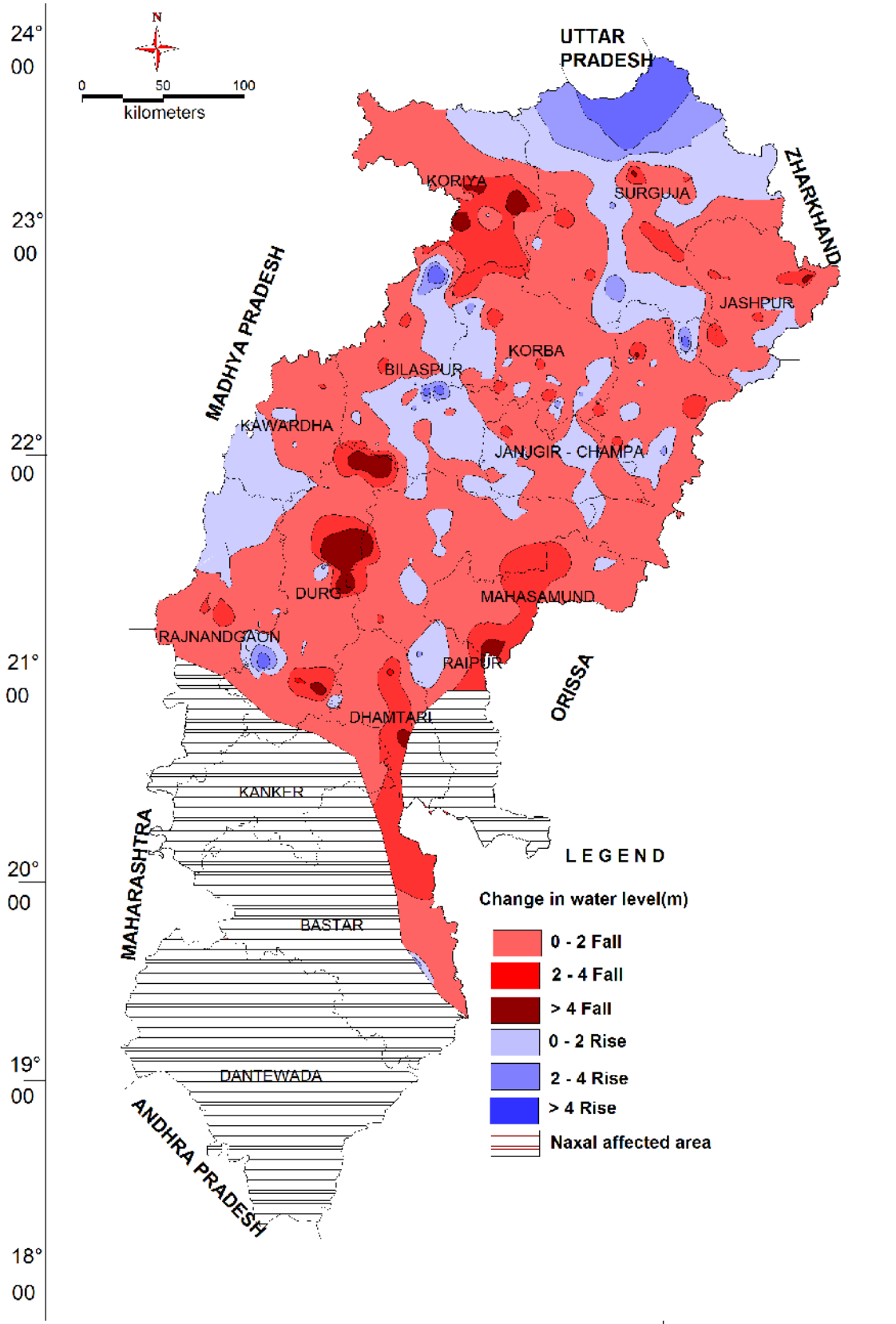

Fig 7.6 Water level fluctuation(Aug'2014 Vs Aug'2015)

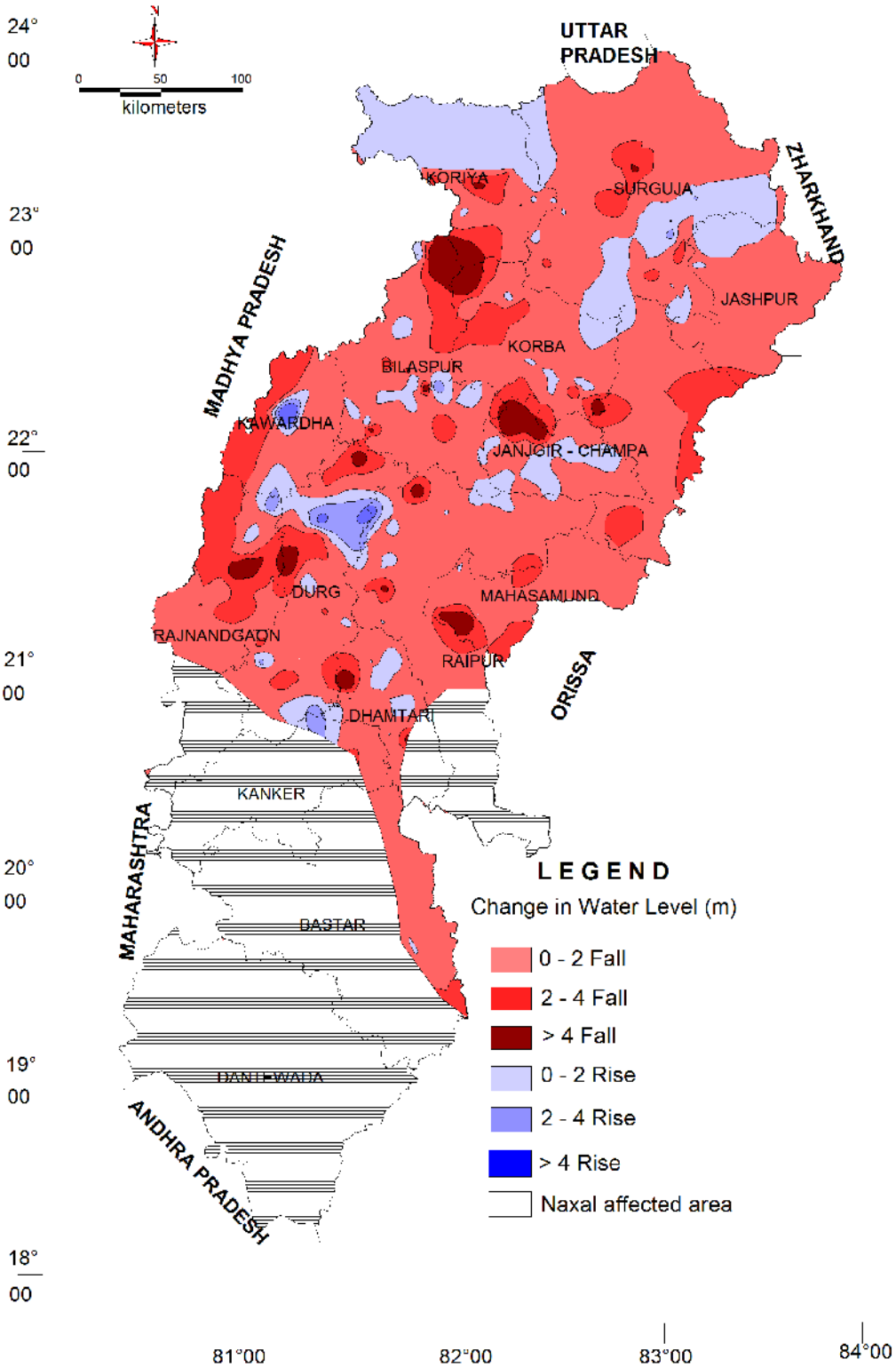

Fig 7.7 Water Level Fluctuation(November'2014 Vs November'2015)

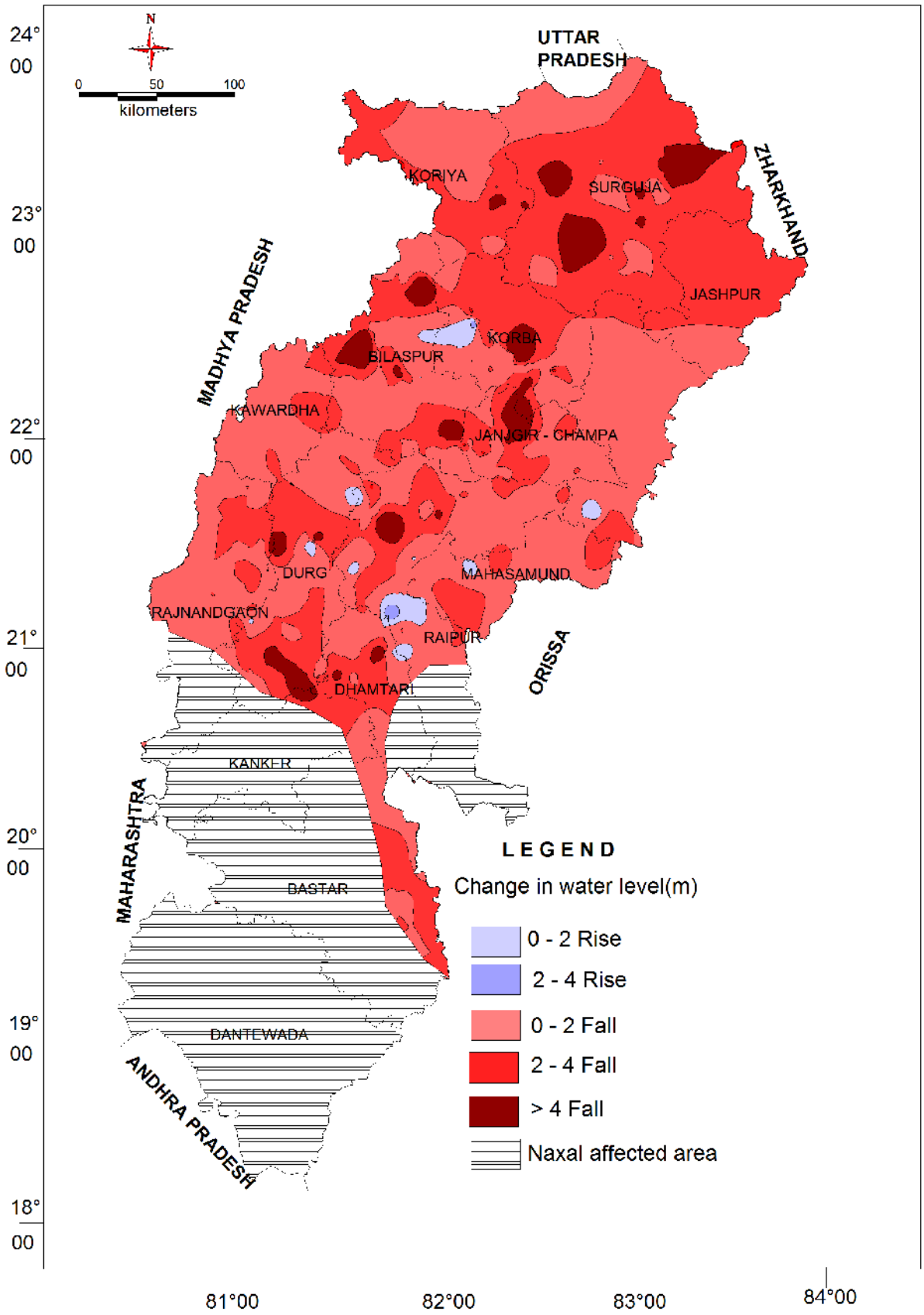

Fig 7.8 Water level fluctuation(January'2015 Vs January'2016)

Water Level Fluctuation with Reference To Pre monsoon Water Level

7.3.1 May 2015 vs August 2015

There is mostly a rise in water levels in August' 2015 when compared with the water levels of May, 2015. About 96% of the monitored wells exhibits rise in the water level. Out of this, about 18% of the monitored wells exhibits rise of water level in the range of 0-2 m covering parts of almost all the districts except Kanker district. In 30 % of the monitored wells, the water levels show rise in the range of 2-4 m covering parts of all the districts monitored while the remaining 48 % of the observation wells also show rise of more than 4 m covering parts of all the districts monitored. Fall of water level as compared to May'15 is observed in about 4% of the observation wells monitored. Most of the wells exhibit fall in the range of 0-5m.

The district wise frequency for different fluctuation ranges is presented in Table 7.9. Fluctuation of water level (May' 2015 vs Aug' 2015) is represented on a map appended as fig 7.9.

7.2.5 May 2015 vs November 2015

There is mostly a rise in water level in November 2015 when compared to water level in May 2015. About 84.35% of the monitored wells exhibit rise in the water level. Out of this, about 30.56% of the monitored wells exhibit rise in the water level in the range of 0-2 m in parts of all the districts. In 29.82 % of the monitored wells the water levels show rise in the range of 2-4 m in most of the districts while the remaining 23.96% of the observation wells show rise of more than 4 m mostly in Bilaspur,Dhamtari, ,Janjgir-champa, Rajnandgaon, Surguja, Raipur, Durg etc. Fall of water level as compared to May'15 is observed in about 14.91% of the observation wells monitored. Most of the wells exhibit fall in the range of 0-2m.

The district wise distribution of different fluctuation ranges is presented in Table 7.10 and is also shown in Fig. 7.10.

7.2.6 May 2015 vs January 2016

The water levels in nearly 56.19% of the observation wells were showing a rise for the month of January 2016 in comparison to that of the water levels measured during the month of May 2015. The rise in water levels in the range of 0 to 2 m was observed in nearly 34.71% of the observations wells and in 14.25% of the observation wells it was in the range of 2 to 4 m. The rise in water level more than 4 m was recorded in 7.23% of observation wells. The fall in water levels was recorded in 43.18 % of the observation wells in Durg, Janjgir Champa, Jashpur, Korba, Raigarh, Surguja and Bilaspur, districts.

The district wise distribution of different fluctuation ranges is presented in Table 7.11 and is also shown in Fig. 7.11.

Table 7.9 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other May 2015 vs Aug 2015

SN	District	No. of Wells	No of wells Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation							
			Rise		Fall		Rise			Fall			Total No. of Wells	
			Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
1	Bastar	10	0.1	9.84	4.07	4.25	3 30.00%	2 20.00%	3 30.00%	0	0	2 20.00%	8	2
2	Bilaspur	67	0.76	29.54	1.28	1.95	13 19.40%	16 23.88%	36 53.73%	2 2.99%	0	0	65	2
3	Dhamtari	15	0.09	17.3	0.28	0.28	6 40.00%	4 26.67%	4 26.67%	1 6.67%	0	0	14	1
4	Durg	40	0.45	15.27	-	-	17 42.50%	9 22.50%	14 35.00%	0	0	0	40	0
5	Janjgir - champa	44	0.83	11.98	-	-	8 18.18%	10 22.73%	26 59.09%	0	0	0	44	0
6	Jashpur	45	0.66	10.3	0.19	0.82	4 8.89%	17 37.78%	22 48.89%	24.44%	0	0	43	2
7	Kanker	1	4.4	4.4	-	-	0	0	1 100.00%	0	0	0	1	0
8	Kawardha	17	0.66	16.58	-	-	2 11.76%	5 29.41%	10 58.82%	0	0	0	17	0
9	Korba	38	1.65	9	-	-	1 2.63%	15 39.47%	21 55.26%	0	0	0	37	0
10	Koriya	12	0.62	6.66	4.23	4.23	1 8.33%	5 41.67%	5 41.67%	0	0	1 8.33%	11	1
11	Mahasamund	18	0.32	6.3	0.11	4.51	6 33.33%	4 22.22%	3 16.67%	4 22.22%	0	1 5.56%	13	5
12	Raigarh	60	0.64	15.47	-	-	8 13.33%	22 36.67%	30 50.00%	0	0	0	60	0

Table 7.9 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other May 2015 vs Aug 2015

13	Raipur	51	0.35	13	0.09	2.88	13 25.49%	15 29.41%	17 33.33%	5 9.80%	1 1.96%	0	45	6
14	Rajnandgaon	32	0.49	8.67	-	-	7 21.88%	11 34.38%	14 43.75%	0	0	0	32	0
15	Surguja	53	1.65	11	2.43	2.43	4 7.55%	14 26.42%	34 64.15%	0	1 1.89%	0	52	1
	Total	503	4.4	4.4	0	4.51	93	149	240	14	2	4	482	20

Table 7.10 District wise frequency for different fluctuation ranges between May 2015 vs November 2015

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	10	1.04	4.56	0.71	5.75	2 20.00%	3 30.00%	1 10.00%	3 30.00%	0	1 10.00%	6	4
BILASPUR	68	0.64	13.47	0.90	1.62	27 39.71%	23 33.82%	15 22.06%	2 2.94%	0	0	65	2
DHAMTARI	20	0.07	15.06	0.32	0.63	9 45.00%	1 5.00%	7 35.00%	3 15.00%	0	0	17	3
DURG	41	0.18	9.46	0.12	5.84	17 41.46%	8 19.51%	9 21.95%	4 9.76%	2 4.88%	1 2.44%	34	7
JANJGIR - CHAMPA	44	0.08	7.80	0.75	1.46	12 27.27%	15 34.09%	15 34.09%	2 4.55%	0	0	42	2
KANKER	4	0.05	2.91	0.33	0.33	2 50.00%	1 25.00%	0	1 25.00%	0	0	3	1
KAWARDHA	11	0.83	14.57	-	-	1 9.09%	6 54.55%	4 36.36%	0	0	0	11	0
KORBA	42	0.48	9.11	0.33	3.4	9 21.43%	13 30.95%	13 30.9%	3 7.14%	2 4.76%	0	35	5
KORIYA	12	1.16	10.84	-	-	3 25.00%	5 41.67%	4 33.33%	0	0	0	12	0
MAHASAMUND	20	0.33	4.56	0.46	2.28	7 35.00%	3 15.00%	2 10.00%	6 10.00%	2 10.00%	0	12	8
RAIGARH	8	0.33	3.57	0.66	2.66	4 50.00%	2 25.00%	0	0	1 12.50%	0	6	2
RAIPUR	59	0.01	9.70	0.05	6.98	13 22.03%	15 25.42%	10 16.65%	14 16.95%	6 10.17%	1 1.69%	38	21
RAJNANDGAON	28	0.17	7.61	1.30	2.63	12 42.86%	8 28.57%	6 21.43%	1 21.43%	1 3.57%	0	26	2
SURGUJA	42	0.26	9.96	0.06	8.22	7 16.67%	19 45.24%	12 28.57%	2 28.57%	1 2.38%	1 2.38%	38	4
Total	**409**	**1.16**	**2.91**	**0.00**	**8.22**	**125**	**122**	**98**	**42**	**15**	**4**	**345**	**61**

Table 7.11 District wise frequency for different fluctuation ranges between May 2015 vs January 2016

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	10	0.05	3.87	0.05	3.72	3 30.00%	1 10.00%	0	4 40.00%	2 20.00%	0	4	6
BILASPUR	71	0.05	10.67	0.10	3.25	27 38.03%	11 15.49%	7 9.86%	20 28.17%	4 5.63%	0	45	24
DHAMTARI	10	0.33	5.63	0.80	2.06	1 10.00%	1 10.00	1 10.00%	6 60.00%	1 10.00%	0	3	7
DURG	41	0.09	8.14	0.01	7.44	8 19.51%	5 12.20%	4 9.76%	16 39.02%	2 4.88%	6 14.63%	17	24
JANJGIR - CHAMPA	47	0.28	4.51	0.05	4.60	15 31.91%	10 21.28%	3 6.38%	15 31.91%	3 6.38%	1 2.13%	28	19
JASHPUR	45	0.04	5.92	0.08	2.00	28 62.22%	4 8.89%	1 2.22%	12 26.67%	0	0	33	12
KANKER	4	1.37	1.37	0.70	5.47	1 25.00%	0	0	1 25.00%	1 25.00%	1 25.00%	1	3
KAWARDHA	10	0.52	13.09	0.67	0.67	4 40.00%	2 20.00%	3 30.00%	1 10.00%	0	0	9	1
KORBA	38	0.20	6.69	0.05	2.65	12 31.58%	9 23.68%	2 5.26%	13 34.21%	1 2.63%	0	23	14
KORIYA	12	0.54	9.01	0.01	5.55	2 16.67%	1 8.33%	2 16.67%	5 41.67%	1 8.33%	1 8.33%	5	7
MAHASAMUND	15	0.33	2.55	0.68	5.23	4 26.67%	1 6.67%	0	2 13.33%	5 33.33%	3 20.00%	5	10
RAIGARH	59	0.02	8.82	0.04	12.50	19 32.20%	10 16.95%	4 6.78%	22 37.29%	3 5.08%	1 1.69%	33	26
RAIPUR	43	0.12	7.89	0.28	7.16	10 23.26%	5 11.63%	3 6.98%	10 23.26%	11 25.58%	4 9.30%	18	25
RAJNANDGAON	27	0.22	5.43	0.05	2.89	9 33.33%	4 14.81%	4 14.81%	7 25.93%	3 11.11%	0	17	10
SURGUJA	52	0.10	4.74	0.11	10.07	25 48.08%	5 9.62%	1 1.92%	14 26.92%	1 1.92%	6 11.54%	31	21
Total	**484**	**1.37**	**1.37**	**0.01**	**12.50**	**168**	**69**	**35**	**148**	**38**	**23**	**272**	**209**

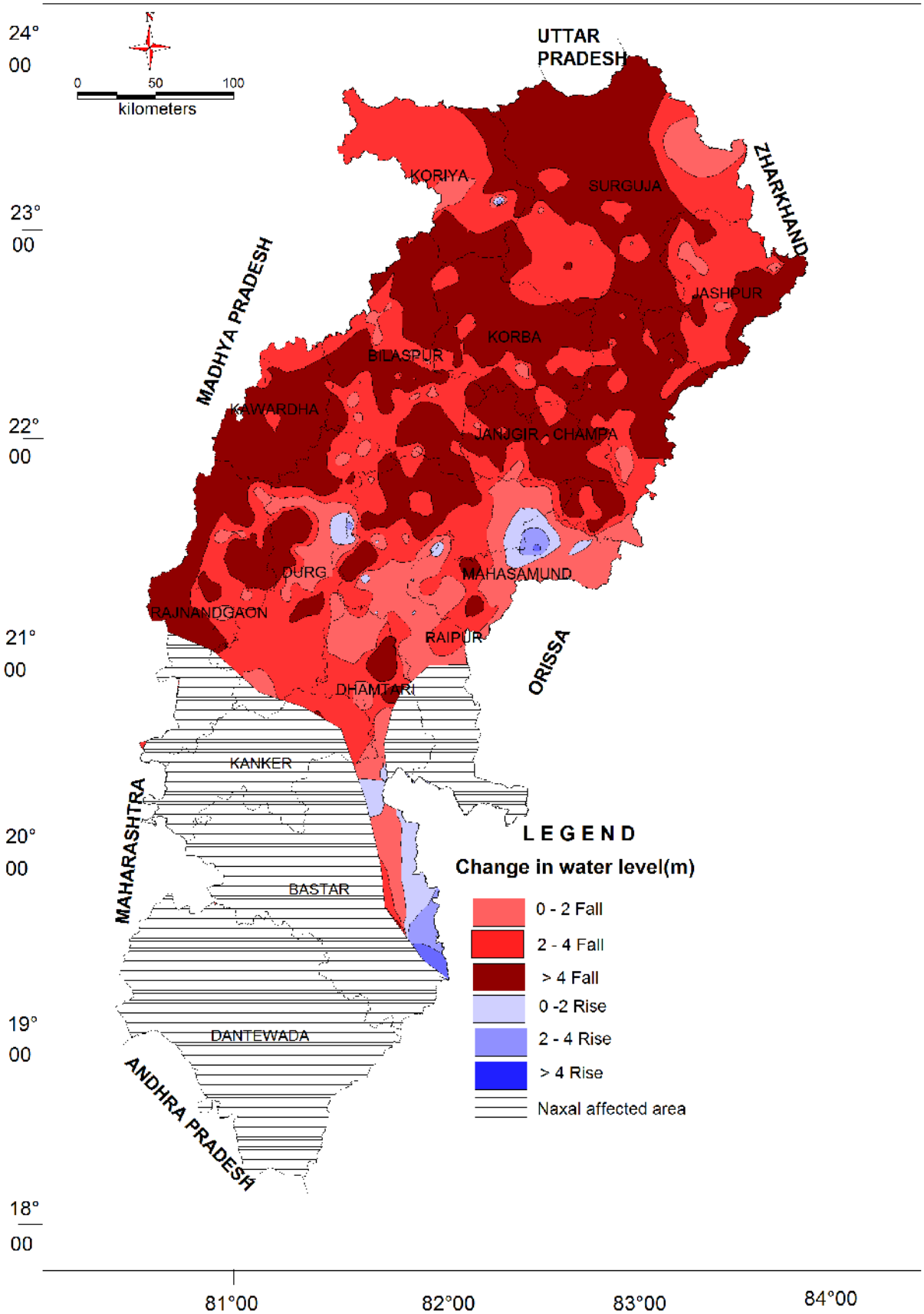

Fig 7.9 Water level fluctuation(May'2015 Vs Aug'2015)

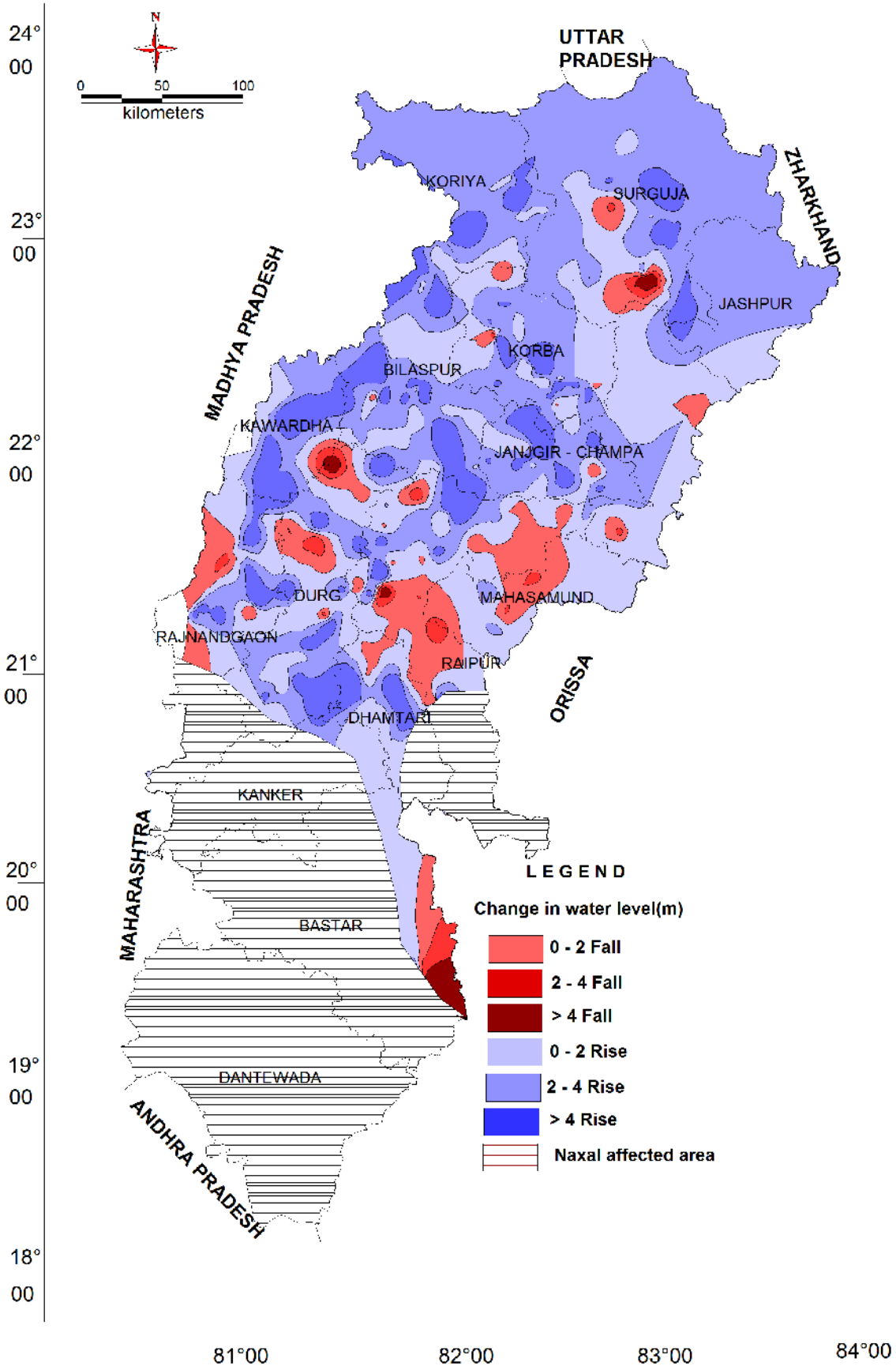

Fig 7.10 Water level fluctuation(May'2015 Vs Nov'2015)

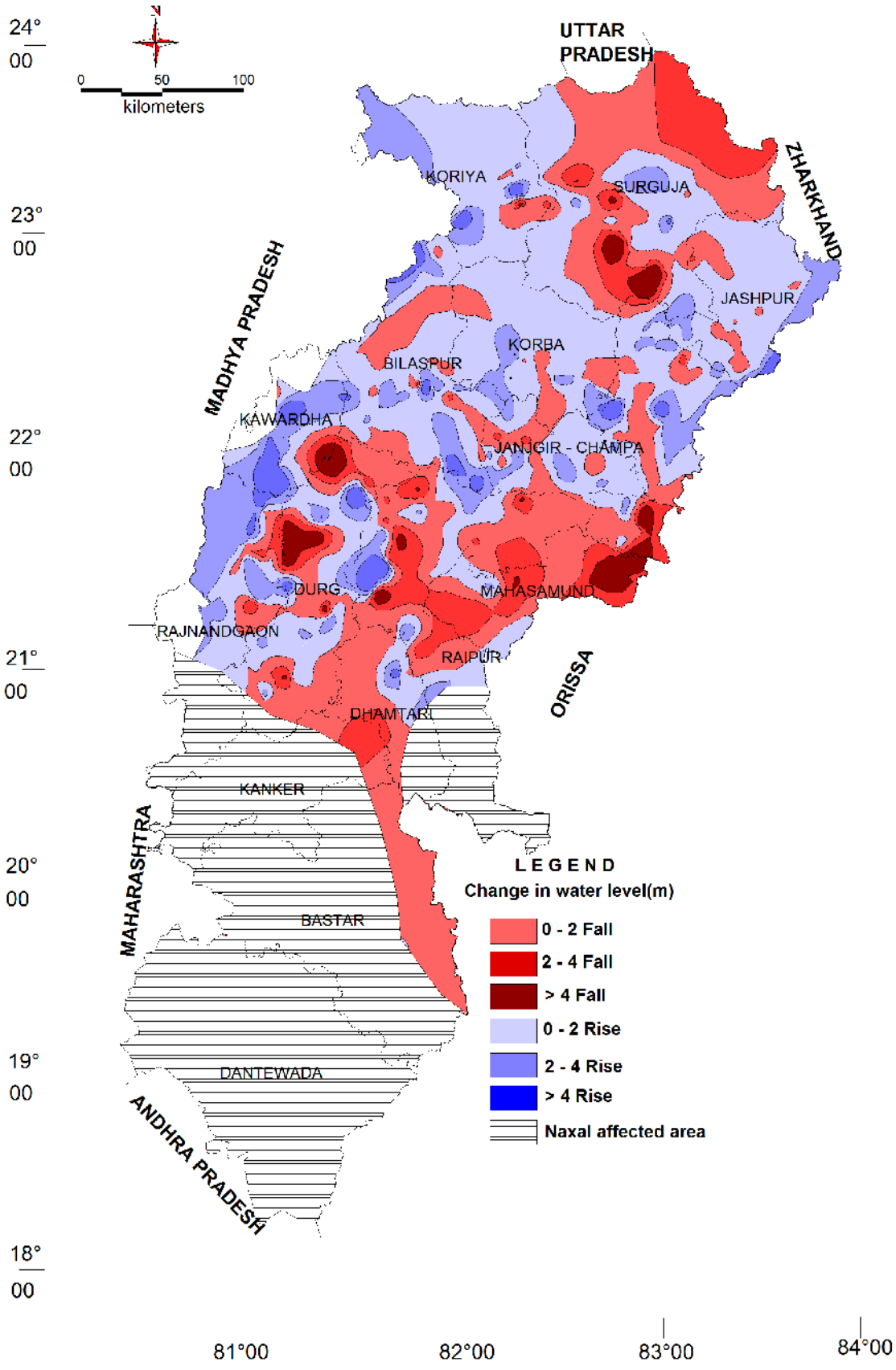

Fig 7.11 Water level fluctuation(May'2015 Vs Jan'2016)

7.3 Water Level Fluctuation With Reference To Decadal Mean

7.4.1 Mean of May (May 2005 to May 2014) Vs May 2015

When compared to the decadal mean water level (May' 2005 to May'2014), 42.60% of observation wells are showing a fall in water level in May'2015. Out of the wells monitored, 32.44% of the wells are showing a fall upto 2 m, 6.06% between 2 to 4 metres and 4.09% of the monitored wells are showing a fall in water level of more than 4 m. Fall of water level as compared to the decadal mean by more than 4m is observed in Bilaspur, Dhamtari, Janjgir-Champa, Raigarh, Rajnadgaon, Raipur, Kawardha, Koriya and Surguja districts. Nearly 56.14% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (33.15%). About 13.54% of the monitored wells are showing a rise in the range of 2-4 metre whereas 9.44% of the monitored wells are showing a rise of more than 4 m.The district wise categorisation of decadal change in water level is presented in Table 7.12. The decadal range of fluctuation has been shown in the Fig 7.12.

7.4.2 Mean of August (Aug 2005 to August 2014) Vs August 2015

When compared to the decadal mean water level (August 2005 to August 2014), 59% of observation wells are showing a fall in water level in August 2015. Out of the wells monitored, 42% of the wells are showing a fall upto 2 m, 13% between 2 to 4 metres and 4% of the monitored wells are showing a fall in water level of more than 4 m. Fall of water level as compared to the decadal mean by more than 4m is observed in Koriya, Mahasamund, Durg, Dhamtari, Bastar, Kawardha, Rajnandgaon, Raigarh and Jashpur districts. Nearly 41% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (34%). About 5% of the monitored wells are showing a rise in the range of 2-4 metre whereas 2% of the monitored wells are showing a rise of more than 4 m.

The district wise categorisation of decadal change in water level is presented in Table 7.13. The decadal range of fluctuation has been shown in the Fig 7.13

7.4.3 Mean of November (Nov 2005 to November 2014) Vs November 2015

When compared to the decadal mean water level (November'2005 to November'2014), 64.35% of observation wells are showing a fall in water level in November'2015. Out of the wells monitored, 47.2% of the wells are showing a fall upto 2 m, 12.27% between 2 to 4 metres and 4.75% of the monitored wells are showing a fall in water level of more than 4 m. Fall of water level as compared to the decadal mean by more than 4m is observed in Bastar, Kanker, Dhamtari, Janjgir-Champa, Mahasamundand & Rajnandgaon districts. Nearly 35.44% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (31.28%). About 2.77% of the monitored wells are showing a rise in the range of 2-4 metre whereas 1.36% of the monitored wells are showing a rise of more than 4 m. The district wise categorisation of decadal change in water level is presented in Table 7.14. The decadal range of fluctuation has been shown in the Fig 7.14.

7.4.4 Mean of January (January 2006 to January 2015) Vs January 2016

When compared to the decadal mean water level (January' 2006 to January'2015), 78.93% of observation wells are showing a fall in water level in January'2016. Out of the wells monitored, 50.34% of the wells are showing a fall upto 2 m, 19.69% between 2 to 4 metres and 8.9% of the monitored wells are showing a fall in water level of more than 4 m. Fall of water level as compared to the decadal mean by more than 4m is observed in Bilaspur, Dhamtari, Durg, Janjgir-Champa, Raigarh, Raipur, Koriya, Mahasamund and Surguja districts. Nearly 21.06% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (16.26%). About 3.59% of the monitored wells are showing a rise in the range of 2-4 metre whereas 1.19% of the monitored wells are showing a rise of more than 4 m.

Water level fluctuations during January 2014 with respect to the decadal mean(January 2006 to January 2015) are shown in Table 7.15 and Fig 7.15.

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Table 7.12 District wise categorization of decadal change in water level(May' 2005- 2014 Vs May' 2015)

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	11	0.41	4.24	0.01	0.28	2 18.18%	5 45.45 %	2 18.18%	2 18.18 %	0	0	9	2
BILASPUR	71	0.03	5.70	0.01	6.49	27 38.03%	6 8.45%	21 29.58%	21 29.58 %	7 9.86%	4 5.63%	37	32
DHAMTARI	20	0.76	5.40	0.36	9.10	9 45.00	2 10.00 %	2 10.00%	2 10.00 %	1 5.00%	3 15.00 %	14	6
DURG	48	0.06	12.29	0.04	3.76	18 37.50%	7 14.58 %	16 33.33%	16 33.33 %	2 4.17%	0	30	18
JANJGIR – CHAMPA	47	0.11	7.81	0.04	8.02	20 40.55%	6 12.77 %	12 25.53%	12 25.53 %	3 6.38%	4 8.51%	28	19
JASHPUR	50	0	5.14	0.02	2.41	20 40.00%	1 2.00%	25 50.00%	25 50.00 %	2 4.00%	0	22	27
KANKER	4	1.74	5.66	0.37	0.37	1 25.00%	1 25.00 %	1 25.00%	1 25.00 %	0	0	3	1
KAWARDHA	18	0.36	3.42	0.06	12.04	6 33.33%	3 16.67 %	0	6 33.33 %	0	3 16.67 %	9	9
KORBA	44	0.02	2.97	0.04	3.62	16 36.36%	3 6.82%	0	20 45.45 %	3 6.82%	0	19	23
KORIYA	9	0.30	0.30	0.22	8.90	2 22.22%	0	0	4 44.44 %	2 22.22 %	1 11.11 %	2	7
MAHASAMUND	25	1.15	11.29	0.18	1.56	4 16.00%	8 32.00 %	10 40.00%	3 12.00 %	0	0	22	3
RAIGARH	64	0.09	7.93	0.03	4.99	21 32.81%	5 7.81%	1 1.56 %	24 37.50 %	6 9.38%	5 7.81%	27	35
RAIPUR	63	-	12.31	0.36	2.59	18 28.57%	18 28.57 %	16 25.40%	10 15.87 %	1 1.59%	0	52	11
RAJNANDGAON	36	0.30	5.10	0.02	4.37	13 36.11%	9 25.00 %	1 2.78 %	8 22.22 %	4 11.11 %	1 2.78%	23	13
SURGUJA	51	0.03	10.84	-	6.76	9 17.65%	2 3.92%	7 13.73%	28 54.90 %	3 5.88%	2 3.92%	18	33
Total	**561**	**0.03**	**12.29**	**0.01**	**12.04**	**186**	**76**	**53**	**182**	**34**	**23**	**315**	**239**

Table 7.13 District wise categorization of decadal change in water level(Aug' 2004- 2013 Vs Aug' 2014)

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	17	0.01	2.11	0.05	5.95	7 41.18%	1 5.88%	0	6 35.29%	2 11.76%	1 5.88%	8	9
BILASPUR	67	0.00	8.86	0.00	2.93	32 47.76%	7 10.45%	4 5.97%	17 25.37%	7 10.45%	0	43	24
DHAMTARI	15	0.16	0.16	0.03	5.60	1 6.67%	0	0 3.57%	10 66.67%	3 20.00%	1 6.67%	1	14
DURG	50	0.03	14.54	0.02	8.96	8 16.00%	1 2.00%	3 6.00%	25 50.00%	9 18.00%	4 8.00%	12	38
JANJGIR - CHAMPA	45	0.03	2.83	0.01	3.74	24 53.33%	1 2.22%	0	16 35.56%	4 8.89%	0	25	20
JASHPUR	52	0.04	7.91	0.06	5.38	19 36.54%	3 5.77%	1 1.92%	21 40.38%	6 11.54%	2 3.85%	23	29
KANKER	1	-	-	0.38	0.38	0	0	0	1 100.00%	0	0	0	1
KAWARDHA	18	0.29	2.02	0.04	6.48	7 38.89%	1 5.56%	0	6 33.33%	3 16.67%	1 5.56%	8	10
KORBA	42	0.08	3.61	0.04	3.56	15 35.71%	4 9.52%	0	19 45.24%	4 9.52%	0	19	23
KORIYA	23	0.32	0.32	0.02	10.78	1 4.35%	0	0	7 30.43%	11 47.83%	4 17.39%	1	22
MAHASAMUND	19	0.04	0.48	0.16	5.11	3 15.79%	0	0	9 47.37%	4 21.05%	3 15.79%	3	16
RAIGARH	66	0.03	10.07	0.04	12.01	29 43.94%	5 7.58%	1 1.52%	27 40.91%	1 1.52%	3 4.55%	35	31
RAIPUR	58	0.01	2.36	0.04	7.54	20 34.48%	1 1.72%	0	30 51.72%	6 10.34%	1 1.72%	21	37
RAJNANDGAON	35	0.05	1.14	0.01	6.84	10 28.57%	0	0	16 45.71%	7 20.00%	2 5.71%	10	25
SURGUJA	60	0.03	9.29	0.01	5.32	19 31.67%	2 3.33%	4 6.67%	28 46.67%	6 10.00%	1 1.67%	25	35
Total	**568**	**0.16**	**0.32**	**0.00**	**12.01**	**195**	**26**	**13**	**238**	**73**	**23**	**234**	**334**

Table 7.14 District wise categorisation of decadal change in water level(Nov' 2005- 2014 Vs Nov' 2015)

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	20	0.06	4.64	0.51	5.65	4 20.00%	0	1 5.00%	7 35.00%	6 30.00%	2 10.00%	5	15
BILASPUR	72	0.02	5.32	-	7.50	28 38.89%	3 4.17%	2 2.78%	30 41.67%	6 8.33%	3 4.17%	33	39
DANTEWADA	4	-	-	1.53	2.11	0	0	0	3 75.00%	1 25.00%	0	0	4
DHAMTARI	30	0.04	2.91	0.04	3.79	11 36.67%	1 3.33%	0	15 50.00%	3 10.00%	0	12	18
DURG	48	0.05	9.03	0.03	7.28	8 16.67%	1 2.08%	2 4.17%	29 60.42%	5 10.42%	3 6.25%	11	37
JANJGIR - CHAMPA	45	0.01	1.63	0.01	11.83	20 44.44%	0	0	17 37.78%	5 11.11%	3 6.67%	20	25
KANKER	16	0.12	1.98	0.42	5.63	4 25.00%	0	0	4 25.00%	5 31.25%	3 18.75%	4	12
KAWARDHA	11	0.12	1.41	0.15	3.48	6 54.55%	0	0	4 36.36%	1 9.09%	0	6	5
KORBA	48	0.03	2.42	0.01	4.08	12 25.00%	2 4.17%	0	24 50.00%	8 16.67%	1 2.08%	14	33
KORIYA	25	0.31	2.09	0.04	4.48	5 20.00%	1 4.00%	0	15 60.00%	3 12.00%	1 4.00%	6	19
MAHASAMUND	29	0.23	10.53	0.05	5.21	9 31.03%	0	1 3.45%	13 44.83%	4 13.79%	2 6.90%	10	19
RAIPUR	78	0.03	10.22	0.02	8.09	27 34.62%	1 1.28%	1 1.28%	43 55.13%	3 3.85%	3 3.85%	29	49
RAJNANDGAON	29	0.07	2.58	0.23	5.86	7 24.14%	2 6.90%	0	12 41.38%	6 20.69%	2 6.90%	9	20
SURGUJA	50	0.06	3.69	0.13	8.04	17 34.00%	3 6.00%	0	23 46.00%	6 12.00%	1 2.00%	20	30
Total	**505**	**1.41**	**0.31**	**0.00**	**11.83**	**158**	**14**	**7**	**239**	**62**	**24**	**179**	**325**

Table 7.15 District wise categorisation of decadal change in water level(Jan' 2006- 2015 Vs Jan' 2016)

District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	32	0.05	6.09	0.04	3.74	5 21.74%	1 4.35%	2 8.70%	10 43.48%	5 21.74%	0	8	15
BILASPUR	76	0.05	5.59	0.02	7.94	18 23.68%	3 3.95% %	3 3.95%	32 42.11%	14 18.42%	6 7.89%	24	52
DANTEWADA	3	-	-	1.81	3.34	0	0	0	1 33.33%	2 66.67%	0	0	3
DHAMTARI	12	0.27	0.27	0.08	4.31	1 8.33%	0	0	9 75.00%	0	2 16.67%	1	11
DURG	50	5.60	5.60	0.11	8.64	5 10..00 %	2 4.00%	1 2.00%	27 54.00%	9 18.00%	6 12.00%	8	42
JANJGIR – CHAMPA	49	2.03	2.03	0.01	11.17	10 20.41%	1 2.04%	0	27 55.10%	5 10.20%	6 12.24%	11	38
JASHPUR	50	3.27	3.27	0.22	4.46	3 6.00%	1 2.00%	0	36 72.00%	8 16.00%	2 4.00%	4	46
KANKER	14	2.17	2.17	0.55	4.57	0	1 7.14%	0 7.69%	4 28.57%	8 57.14%	1 7.14%	1	13
KAWARDHA	11	0.23	2.59	0.04	2.31	4 36.36%	2 18.18%	0	4 36.36%	1 9.09%	0	6	5
KORBA	45	0.04	2.62	0.19	6.87	11 24.44%	1 2.22%	0	25 55.56%	6 13.33%	2 4.44%	12	33
KORIYA	26	0.27	0.27	0.56	9.07	1 3.85%	0	0	11 42.31%	9 34.62%	5 19.23%	1	25
MAHASAMUND	19	0.77	3.50	0.12	6.97	3 15.79%	2 10.53%	0	9 47.37%	3 15.79%	2 10.53%	5	14
RAIGARH	65	0.03	5.33	0.03	30.34	8 12.31%	1 1.54%	1 1.54%	37 56.92%	9 13.85%	9 13.85%	10	55
RAIPUR	51	0.18	3.81	0.04	7.63	14 27.45%	2 3.92%	0 1.61%	23 45.10%	10 19.61%	2 3.92%	16	35
RAJNANDGAON	28	0.10	2.70	0.27	3.52	7 25.00%	2 7.14%	0	13 46.43%	6 21.43%	0	9	19
SURGUJA	62	0.07	2.62	0.04	6.20	5 8.06%	2 3.23%	0 3.13%	26 41.94%	20 32..26 %	9 14.52%	7	55
Total	**584**	**0.27**	**2.17**	**0.01**	**30.34**	**95**	**21**	**7**	**294**	**115**	**52**	**123**	**461**

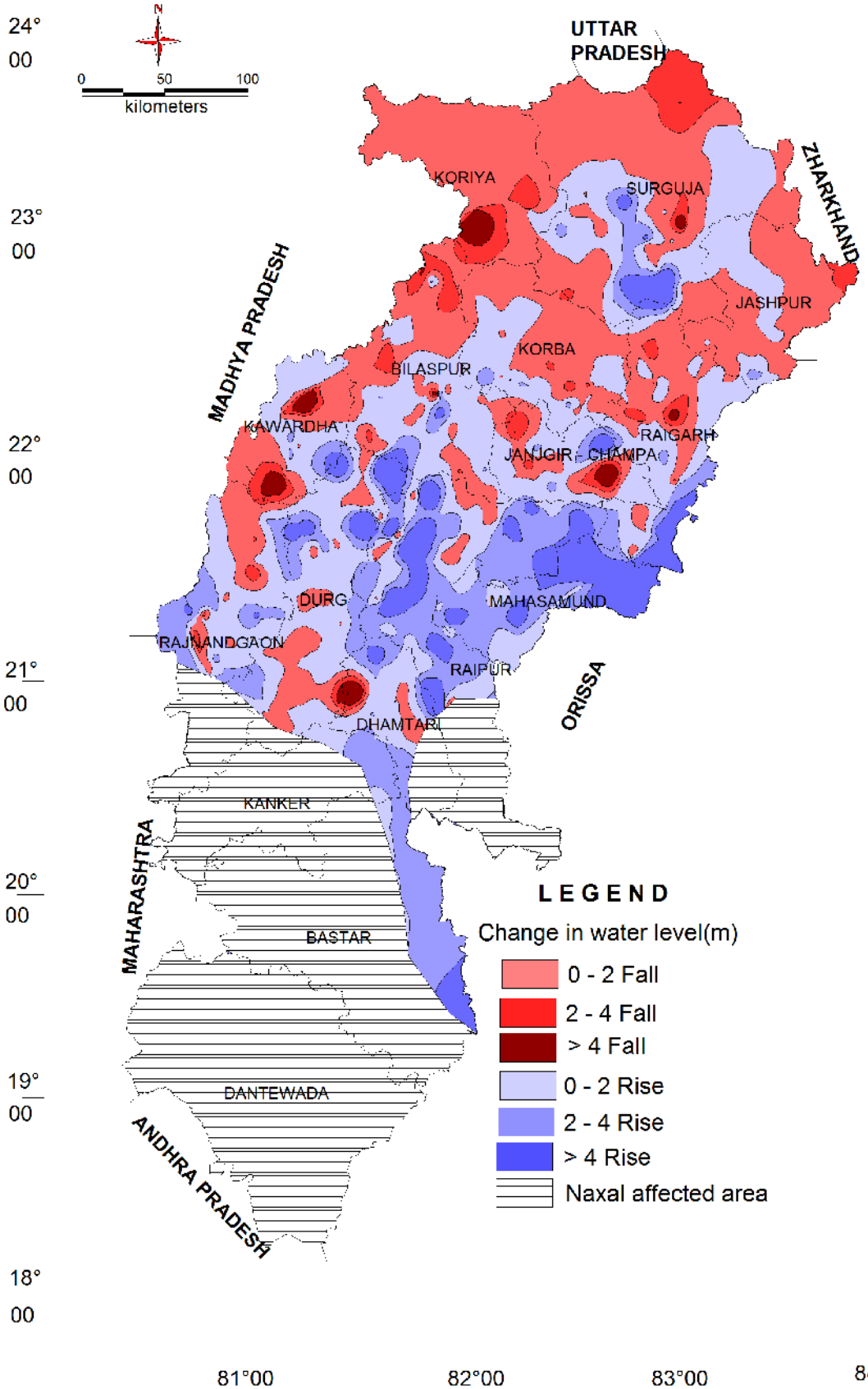

Fig 7.12 Water level fluctuation, Decadal mean(May'2005-2014 Vs May'2015)

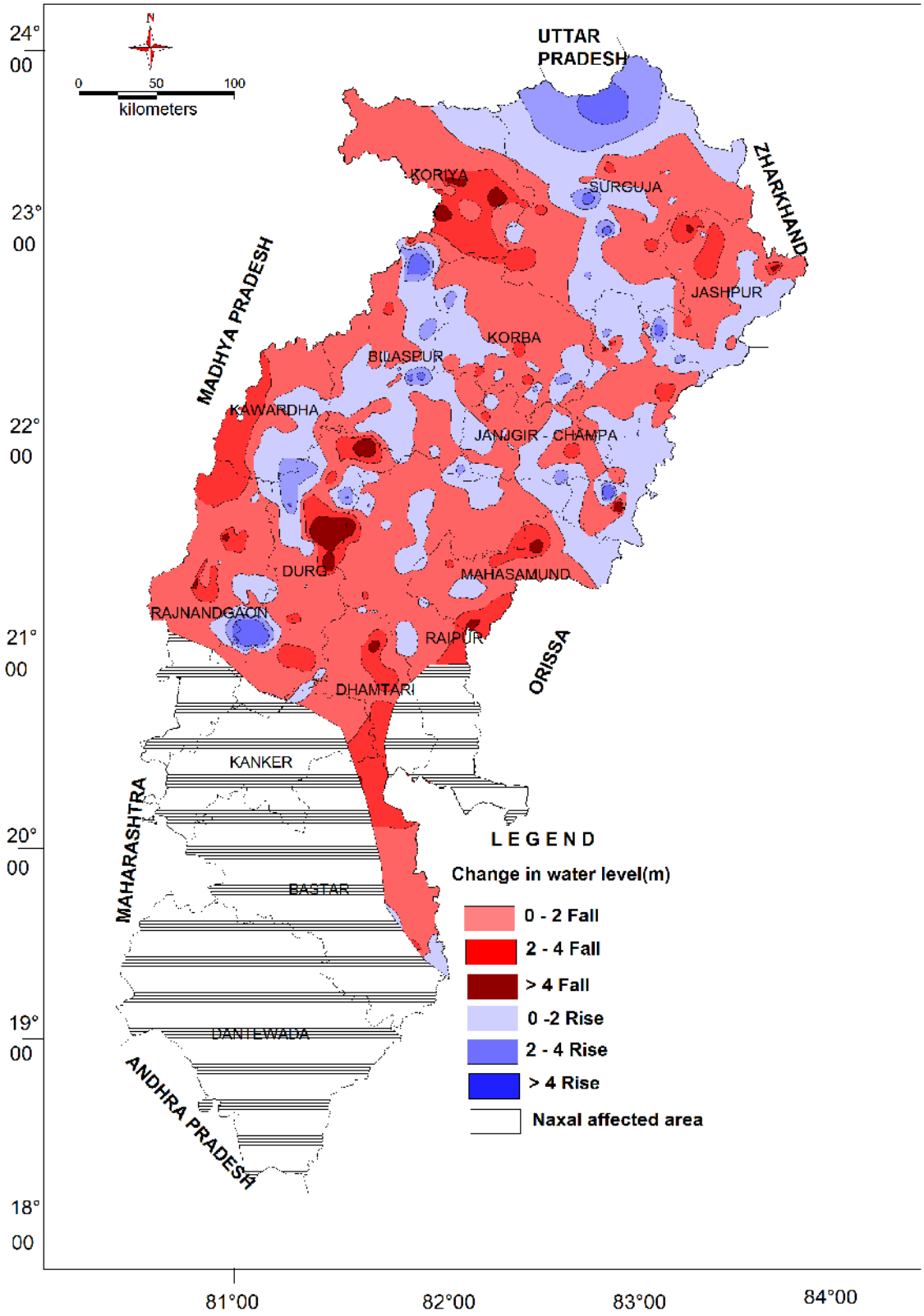

Fig 7.13 Water level fluctuation, Decadal mean(August'2005-2014 Vs August'2015)

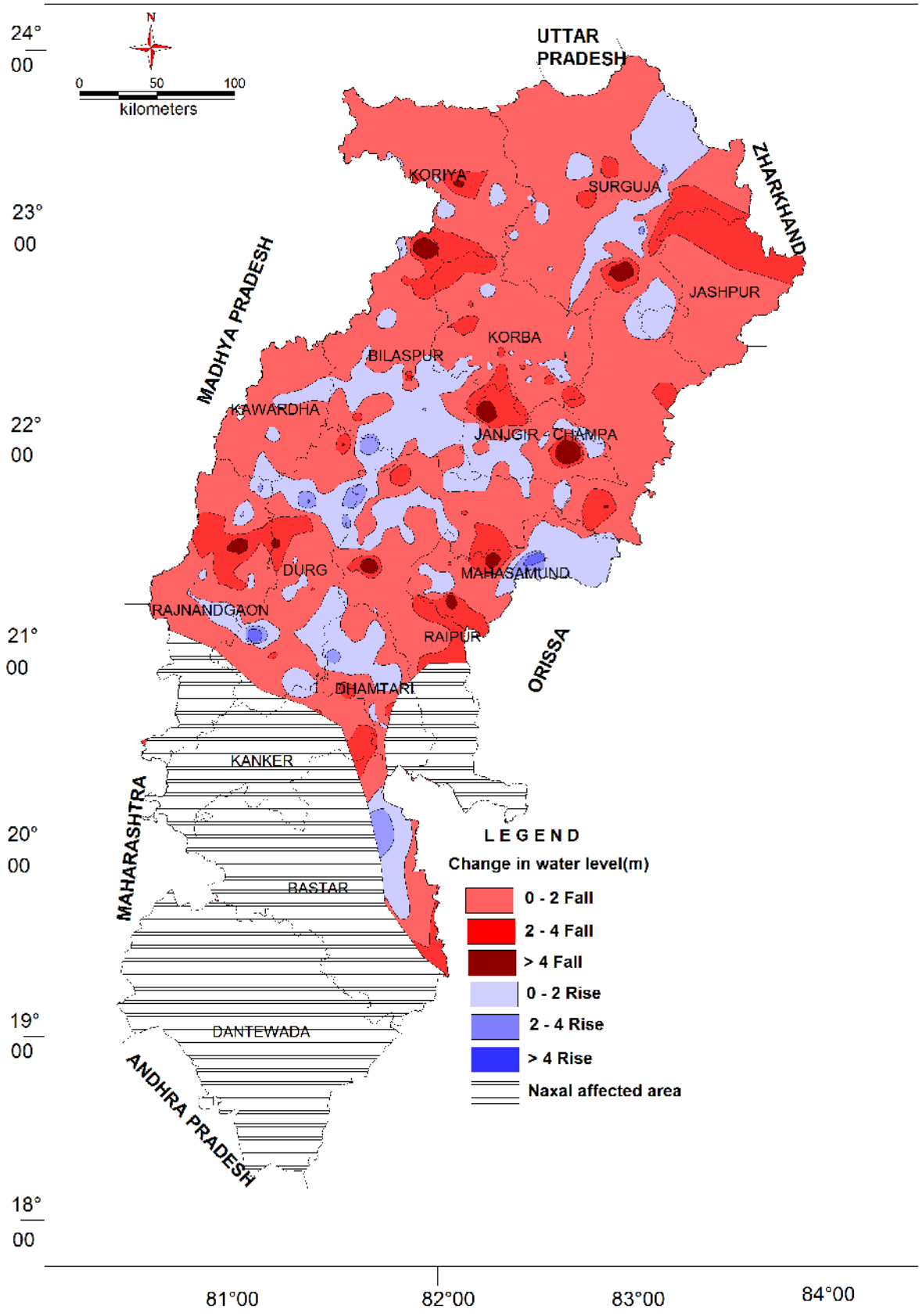

Fig 7.14 Water level fluctuation, Decadal mean(Nov'2005-2014 Vs Nov'2015)

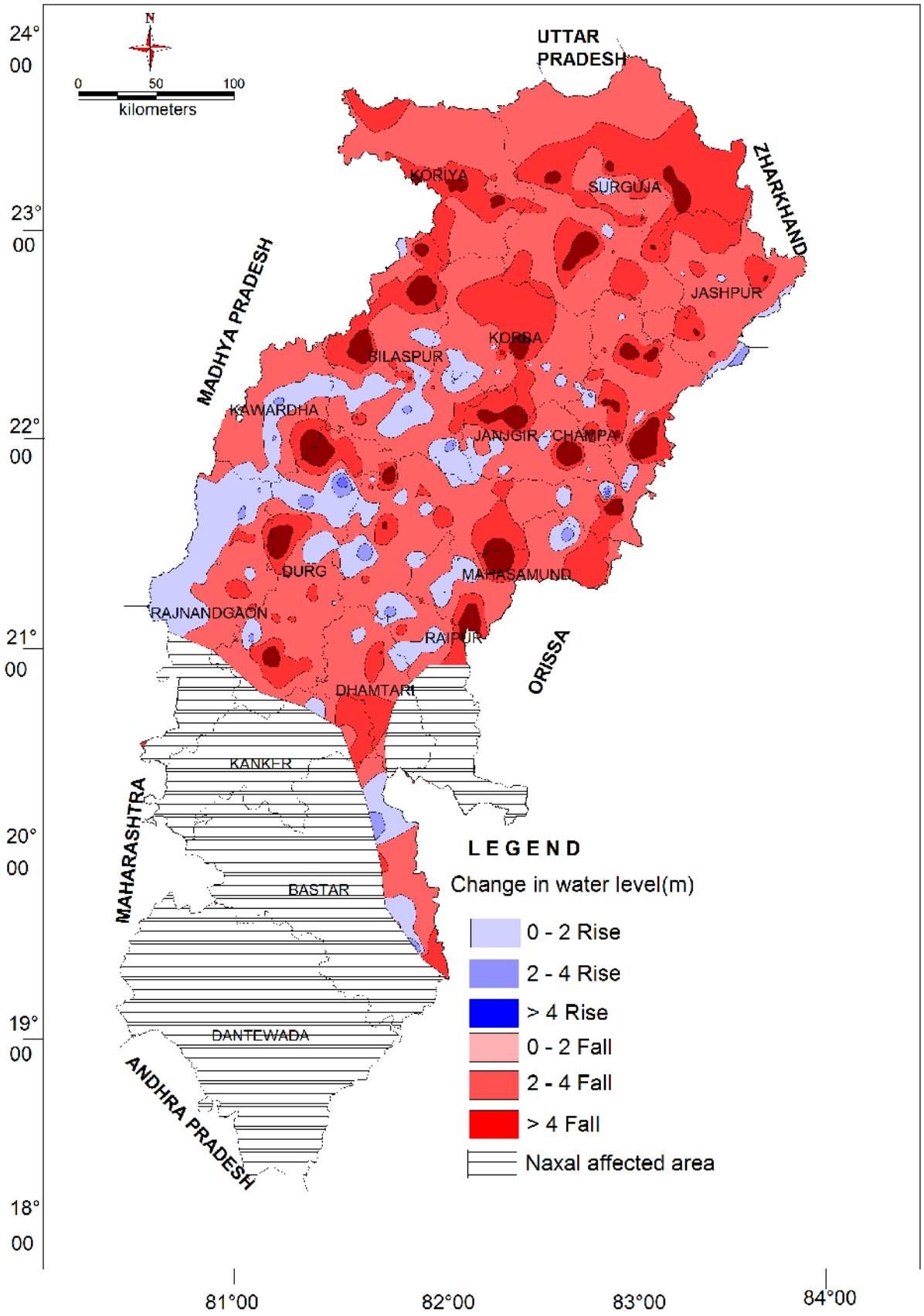

Fig 7.15 Water level fluctuation, Decadal mean(Jan'2006-2015 Vs Jan2016)

7.5 Long Term Water Level Trend (2006-2015)

The long term water level trend (2006-2015) of the phreatic aquifer was plotted for both the pre and post monsoon periods. **.**For the pre monsoon period, the major part of Chhattisgarh shows water level trend between -10 to +10 cm/yr which can be categorized as safe but many parts of Jashpur, Surguja, Korba, Janjgir-Champa,Kawardha, Rajnandgaon show significant falling trend of more than 20 cm/yr which is a cause of concern.

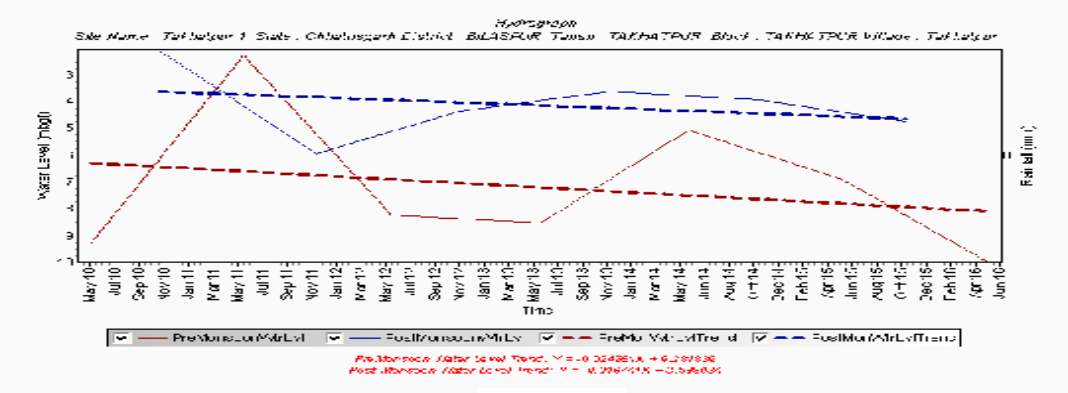

Fig 7.16

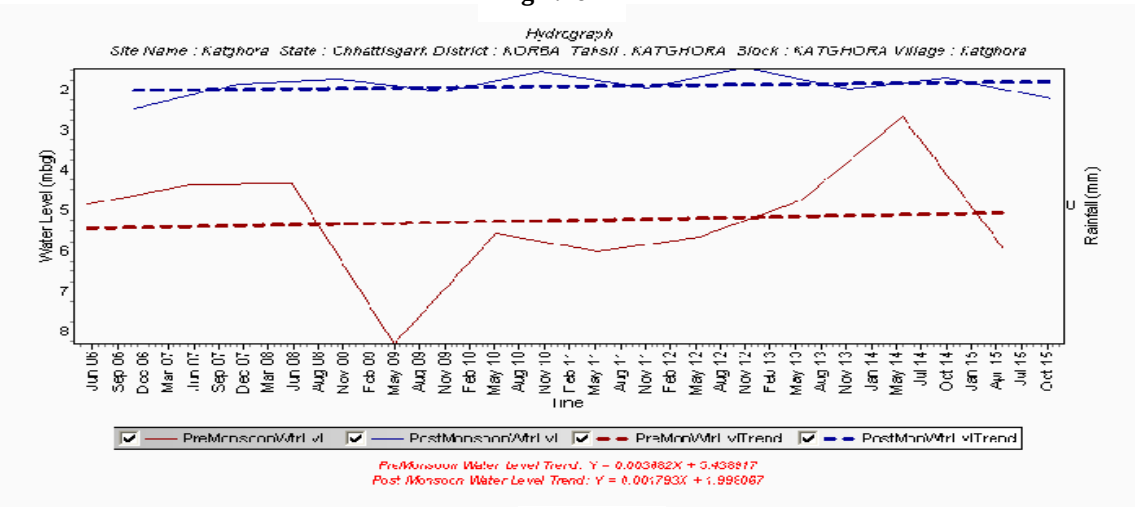

Fig 7.17

The post monsoon decadal water level trend map of the phreatic aquifer presents a more alarming picture. It shows large tracts of Surguja, Koriya, Jashpur, Kawardha, Rajnandgaon etc with significant decline in water level of more than 20 cm/yr during the last 10 years.This long term trend is also depicted from the individual hydrographs of network stations. Some representative hydrographs are given above.

8. GROUNDWATER QUALITY MONITORING

8.1 Factors controlling ground water quality

The factors contributing to the ground water quality are the chemical composition of the rainwater, the soil types and the mineralogy of the rock formations. The geochemical processes in the soil zone and in the underlying unsaturated and saturated zones, temperature, pressure, duration of contact of the percolating water and the surrounding media, and other associated factors determine the chemical composition of the ground water. Pollution from near surface sources arising out of the human activities like industrial wastes disposal, use of fertilizers, pesticides also influence the ground water quality.

Climate and precipitation: The temperature and precipitation influence weathering, climate, vegetation, soil types and the composition of the water draining the area. The rainwater containing SiO_2, CO_2, O_2 picks up organic acids after reaching the earth's surface and reacts with the minerals, which get dissolved. In humid temperate climate the bicarbonates are predominant and are rather high in arid climate. The wet and dry climate promotes release of considerable soluble inorganic matter through weathering. Very cold climate inhibit weathering and restrict solute concentration in water.

Soil forming process : The geochemical reactions involved in the soil forming processes also dictate the chemical composition of the ground water. In soils dissolution of CO_2 and the H^+, HCO_3 CO_3^{2-} ions in percolatin water control pH of water and thereby increaseing its capacity to react with rocks and minerals.

Geological factors : The mineral constituents in rock influence the geochemical evolution of water passing through the rock. The mineralogical sources of major ions are listed in Table 8.1.

Table 8.1: Mineralogical Sources of Major Chemical Constituents

Chemical constituents	Source Minerals
Silica	Feldspars, Feldspathoids, Amphiboles, Pyroxenes, Mica.
Iron	Pyroxenes, Amphiboles, Mica, Pyrites, Chalcopyrite, Magnetite and Haematite.
Mn	Common Mn. bearing minerals in metamorphic & sedimentary rocks as oxides, hydroxides, carbonates, silicates.
Ca	Plagioclase, Pyroxene, Amphibole, among igneous and metamorphic rocks. Limestone, dolomite, gypsum among sedimentary rocks.
Mg	Dunites, Pyroxinites, Amphibolites, Basalt, Talc, Tremolite Schists, Dolomite.
Na	Sodium salts in soils, sea water ingress, ground water, also due to base exchange reactions with clays.
K	Orthoclase, Microcline, Nephaline, Lucite, Biotite in igneous and metamorphic rocks, Evaporites in sedimentary rocks.
HCO_3 & CO_3	Dissolved CO_2 in rains, water charged with CO_2 dissolves carbonate minerals, in solid rocks to give bicarbonate.
SO_4	Sulphides of heavy metals igneous and metamorphic rocks. Gypsum and hydrite in sedimentary rocks.
Cl	Atmospheric sources and sea water contamination.
F	Fluorite, Apatite, Amphiboles and Micas.

Human activities *:* The untreated industrial effluents discharged through nearby streams and unlined drains may percolate underground and reaches the aquifers on the downstream side thereby affecting the quality of ground water. The migration of the pollutant to the saturated zone is considerable in sandy strata. The urban areas in India also generate substantial quantity of wastewater and find its way into the natural water courses causing contamination of surface and ground water. The solid waste dumped in low-lying areas becomes a potential source of ground water pollution.

Organic and inorganic fertilizers, pesticides, insecticides and other chemicals used in the agricultural fields, are often leached to the ground water. Nitrate, potassium and phosphate are the common fertilizer used in agriculture land and are the potential pollutants in the ground water. The major contaminants associated with the waste disposal practices are summarized in Table 8.2.

Table 8.2: Contaminants Associated With the Waste Disposal Practices

Source	Possible contaminants
Landfills:	
Municipal	Heavy metals, chlorides, sodium, calcium
Industrial	Wide variety of inorganic and organic constituents.
Hazardous waste disposal sites	Wide variety of inorganic (particularly heavy metals) and organic compounds (pesticides, priority pollutants, etc).
Liquid waste storage ponds (Lagoons, leaching ponds, compounds reaching basins)	Heavy metals, Solvents, inorganic, Compounds
Subsurface sewage disposal systems	Organic compounds (degreasers, solvents), nitrogen compounds, sulphates, sodium, microbiological contaminants.
Deep-well waste injection.	Variety of inorganic and/or organic compounds.
Agricultural activities.	Fertilizers, herbicides, pesticides.
Land application (sludge, waste water)	Heavy metals, inorganic compounds, organic compounds.
Urban runoff infiltration.	Inorganic compounds, heavy metals, petroleum products.
Decaying activities.	Chlorides, sodium, calcium radioactivity.
Radioactive wastes.	Radioactive wastes and radionuclides.

8.2 Hydrochemical quality evolution

As ground water moves along the flow paths in the saturated zone, it is enriched with total dissolved solids and with major ions. The shallow zone is charactrerized by active ground water flushing through relatively well-leached rocks has HCO_3^- as the

dominant anion and is low in total dissolved solids. The intermediate zone has less active ground water circulation, and higher total dissolved solids while sulphate is normally the dominant anion in this zone. The lower zone with very little ground water flushing has high Cl^- concentration and high total dissolved solids. The HCO_3^- content in ground water is normally derived from soil zone CO_2 and from dissolution of calcite and dolomite. There are several soluble sedimentary minerals that release SO_4^- or Cl^- upon dissolution. The process of evolution from stage to stage is controlled by the availability of minerals along the ground water flow paths. In some ground water flow system the water does not evolve past the HCO_3^- stage or past the SO_4^-.

The notable in this regard is the increase in HCO_3^- and decrease in SO_4^- that can occur as a result of biochemical SO_4^- reduction. Large variations in major cations occur in ground water flow systems because of cation exchange process.

8.3 Ground water quality sampling

The purpose of ground water quality sampling are varied viz. evaluation of regional water quality, detection and assessment of the extent of the contaminant release. In this context the important attributes are location and number of monitoring wells for ground water sampling. The information from the ground water sampling network is related to the number of stations to be sampled and the frequency of sampling. Due to slow rate of ground water movement, the ground water quality does not change rapidly. Similarly in contrast to unconfined aquifers, the quality change in confined aquifer is rather slow.

Sample location: The factors that influence sampling location are site geology, hydrology, source characteristic, contaminant characteristic and size of the area under investigation. The degree and details of temporal and spatial variations, which also characterise sub-surface hydrogeochemical conditions, are also considered. The existing wells may be used to gather information on the regional ground water quality and ambient trends. Disused wells are not selected for water sampling. Hydrogeological information on ground water flow paths and gradients will initially guide the sampling network. The vertical control of sampling location is another important factor for sampling the ground water.

Sampling frequency: *More* the water quality varies, the more samples will be required to obtain reliable estimate of statistical parameters used to describe its behavior. Variance should determine sampling frequency. The commonly used statistical parameter for water quality variable in selecting sampling frequencies is the "mean". The approach is to select a sampling frequency, which yields an estimate of the "mean" within a prescribed degree of accuracy (confidence limits). The "population mean" of random variable will lie within a certain interval (the confidence interval) around the "sample mean". The confidence limit on the mean quantitatively relates sampling frequency to the variation in water quality.

The simplest case of sampling frequency design would be to select the sampling frequency, which results in the desired confidence intervals width about the annual mean for a specified water quality variable at a specified station.

In case of single station and multiple variable separate sampling frequencies for each water quality variable may be computed and then all such values averaged to decide the designed frequency.

In general, changes in the ground water quality take place much slower than the surface water quality. Experience shows that the changes in ground water quality usually can be described satisfactorily by seasonal or annual sampling schedules. Studies corroborate that the quality of the ground water outside the influence of the polluting sources, hardly shows any short-term changes. Hence, the current annual sampling schedule in the month of May serves the purpose of regional background monitoring and for study of long-term quality changes.

8.4 Results and Discussion

The chemical quality of ground water was determined from 415 water samples collected from the phreatic aquifer randomly distributed throughout Chhattisgarh. The samples were collected in pure cleaned polythene containers after rinsing with the water samples and were stored in cool place. These samples were collected during

the month of May 2013 in the pre monsoon period, when the concentrations of ions were maximum. The water samples were analyzed for the major ions viz. pH, EC, CO_3, HCO_3, CI, Ca, Mg, TH, TA, Na, K, SO_4, NO_3 and F. The TDS, Total alkalinity were calculated by the obtained conductivity value and carbonate, bi carbonate ion concentration. The chemical analysis data are given in Annexure III. From the annexure it may be seen that the chemical quality of the ground water is suitable for drinking, domestic, industrial and agriculture uses in most of the places whereas in few places instinct of contamination is observed that is due to local phenomena.

The chemical analysis shows that the ground water is neutral to low alkaline in nature. The pH value was determined with direct reading pH meter. The determination of pH is an important factor because the solubility of CO_2 and the concentration of the various carbonate species depend on the pH value. The pH value is in between 6.5 and 8.5. The electrical conductivity of water is also expressed as inverse of the electrical resistance across one cm cube of water. It is related to the TDS because it is a function of concentration of all ionic solutes. The EC is temperature dependent and all the readings are related to the equivalent reading at 25° C. The EC values for the groundwater in Chhattisgarh varied between 34 and 2530 micro-Siemens/cm at 25° C. In around 90% of the water samples (376 samples), the EC values are found less than 1000 micro-Siemens/cm at 25° C (i.e. 650 mg/l TDS) and is within the prescribed BIS limit for drinking purposes. In about 9% (36 samples) water samples the EC values are found in between 1000 and 2000 micro-Siemens/cm at 25° C. Exceptionally higher EC values are observed at Pindri (2530 micro-siemens/cm at 25° C) observation well in Raigarh district and Patharia (Chorbhatti) (2150 microsiemens/cm at 25° C) in Mungeli district. Distribution of EC in the State is presented as contour map in Fig 8.1.

Calcium (Ca^{+2}) was the predominant ion in the ground water of the state and in certain regions Magnesium (Mg^{+2}) was high. As per the BIS guidelines the acceptable and permissible limits for Ca in drinking water are 75 mg/l and 200 mg/l, respectively. The concentration of Ca in about 88% (366 samples) of the samples was within the acceptable limits (< 75 mg/l) and in only around 12% (48 samples) the concentration was greater than the acceptable and within the permissible limits (75 – 200 mg/l). Only at one location Pindri (Raigarh district) were high Ca concentration was found 220 mg/l.

Similarly the acceptable limit for Mg in drinking water is 30 mg/l and permissible limit is 100 mg/l. The undesirable affect outside the acceptable limit include encrustation in water supply structure and adverse affects on domestic uses. The concentration of Mg in about 88% (364 samples) of the samples was within the acceptable limit and in the remaining samples (50 samples) the concentration was greater than the acceptable limit. A very high concentration of Mg was found in Beltara (103 mg/l) of Bilaspur district. The Ca and Mg when combined with HCO_3, SO_4 and other ions contribute to the hardness in the water. As per the BIS guidelines the acceptable and permissible limits for the hardness as $CaCO_3$ are 200 and 600 mg/l, respectively. In about 70% (290 samples) of the ground water samples, hardness was within the acceptable limit and in 29% (121 samples) of the samples, the hardness was greater than the acceptable and within the permissible limit thereby indicating that the ground water is soft or moderately hard in nature. Only in 3% of samples (4 samples) the hardness values are above the BIS limits. The high hardness values are found at Beltara (840 mg/l) in Bilaspur district, Bitkuli (760 mg/l) in Bemetara district, Pindri (705 mg/l) in Raigarh district and Patharia (Chorbhatti) (635 mg/l) in Mungeli district. The sodium concentration varies from 2 mg/l to 213 mg/l and Potassium concentration varies from <0.1 mg/l to 93.5 mg/l.

The chloride (Cl^-) concentration in the ground water was within the BIS prescribed limits for drinking purposes. Acceptable and maximum permissible limit (IS 10500: 2012) in drinking water are 250 and 1000 mg/l respectively. In about 97% of the analysed samples, Cl concentration were observed in below 250 mg/l and in the remaining 3% water samples (14 samples), the Cl concentration was above acceptable limit and within permissible limit. The distribution of chloride in the State is shown in Fig. 8.2.

Higher content of Sulphate (SO_4^{-2}) in drinking water causes gastrointestinal irritation. The SO_4 concentration in the State was found between < 0.1 mg/l and 721.9 mg/l. As per the BIS guidelines the acceptable and permissible limits for SO_4 in drinking water are 200mg/l and 400 mg/l, respectively. The Sulphate concentration in 99% of the water samples was within the acceptable limits and only in around 1% of cases (2 samples) it was within permissible limits. In just two water samples, the SO_4

concentration were beyond the permissible limits in Bitkuli (721.9 mg/l) of Bemetara district and Pindri (577 mg/l) of Raigarh district. The villages where the high concentration of sulphate is due to the dissolution of gypsum veins present within shale formation. The distribution of Sulphate is shown in Fig. 8.3.

The acceptable and maximum permissible limit (IS 10500: 2012) of total alkalinity in drinking water are 200 and 600 mg/l respectively. In the study area the total alkalinity in the ground water was observed within the prescribed limits in about 8% water samples (35 samples) and in rest of the 92% of water samples the total alkalinity value was observed less than the Acceptable limit for drinking purposes. The carbonate alkalinity was observed only at 11% ground water sample. The highest carbonate concentration (36 mg/l) was observed at Achanakmar of Mungeli district. The bicarbonate concentration was observed in between 18 and 476 mg/l. A high concentration of Bicarbonate was observed at Pindri (476 mg/l) of Raigarh district.

Very high value of fluoride in ground water causes mottling of teeth and fluorosis. High values also cause dental carries and teeth decay. In 90% (376 samples) of samples the fluoride concentration was observed < 1.0 mg/l. In 6% water samples (24 samples) the fluoride concentration was obosved within the acceptable range (1-1.5 mg/l) recommended by BIS and only in 4% (15 samples) of samples the fluoride concentration was more than the prescribed limits (>1.5 mg/l). The maximum fluoride concentration was recorded at Bataipali (5.3 mg/l) in Raigarh district, Palidih (3.1 mg/l) in Jashpur district and Karighasi (2.0 mg/l) in bore wells of Raigarh district . The distribution of fluoride is shown in Fig. 8.3.

The higher concentration of nitrate (NO_3) in ground water is due to the anthropogenic activities (animal waste disposal) and it causes methemoglobinemia (Blue babies syndrome). At very high concentrations it causes gastric cancer and adversely affects central nervous system and cardiovascular system. There is no relaxation beyond the acceptable limit of 45 mg/l for nitrate. In about 88% (364 samples) of the samples the NO_3 concentration was observed less the permissible limit. Very high values of nitrate were observed at Amerikanpa (176.9 mg/l) in Patharia block, Chhaparwa (170.9 mg/l) in Lormi block of Mungeli district and Paththalgaon (148 mg/l) in Jashpur district. The nitrate values are shown in Fig. 8.3.

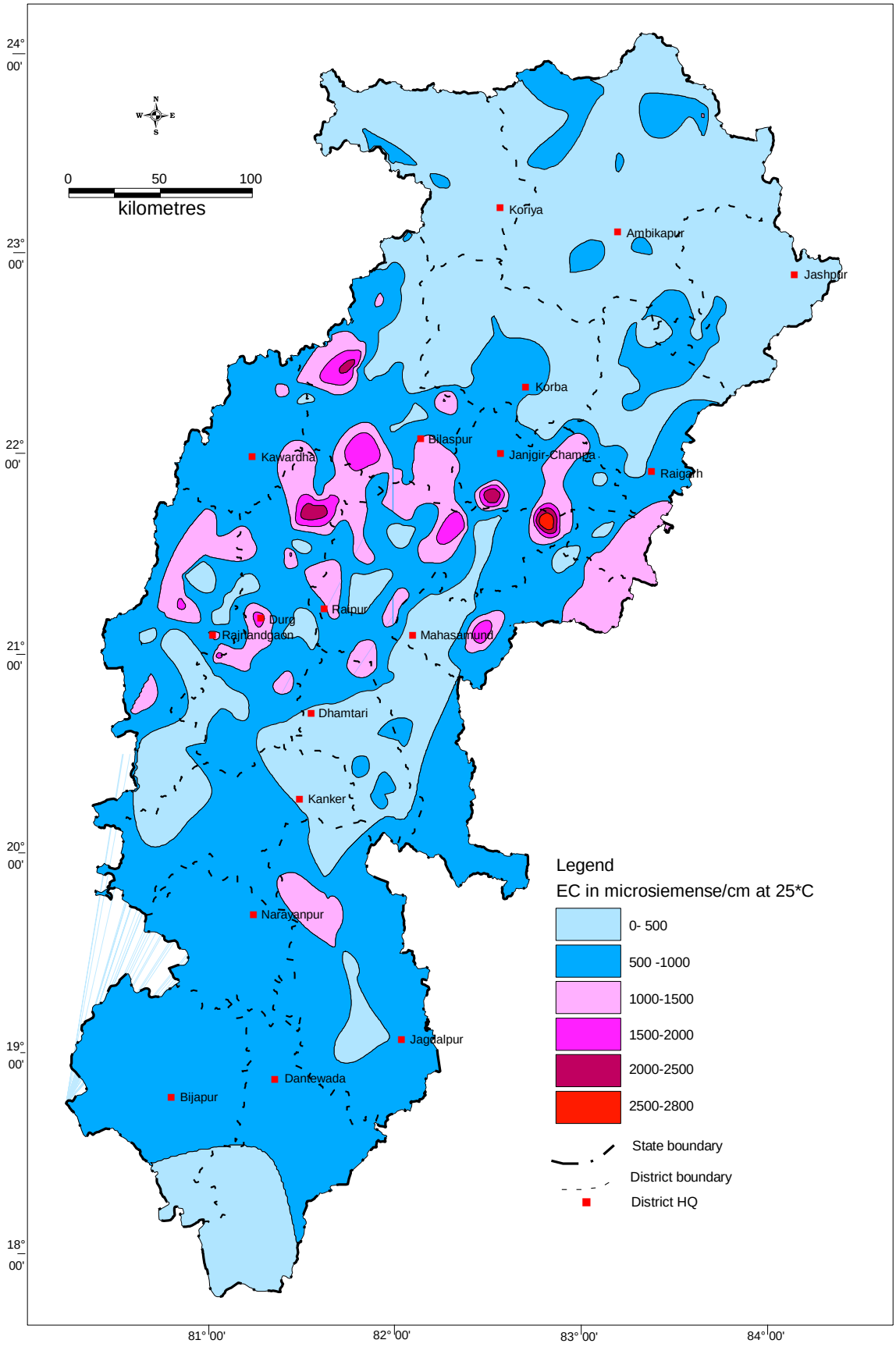

Fig 8.1 EC distribution in Chhattisgarh State

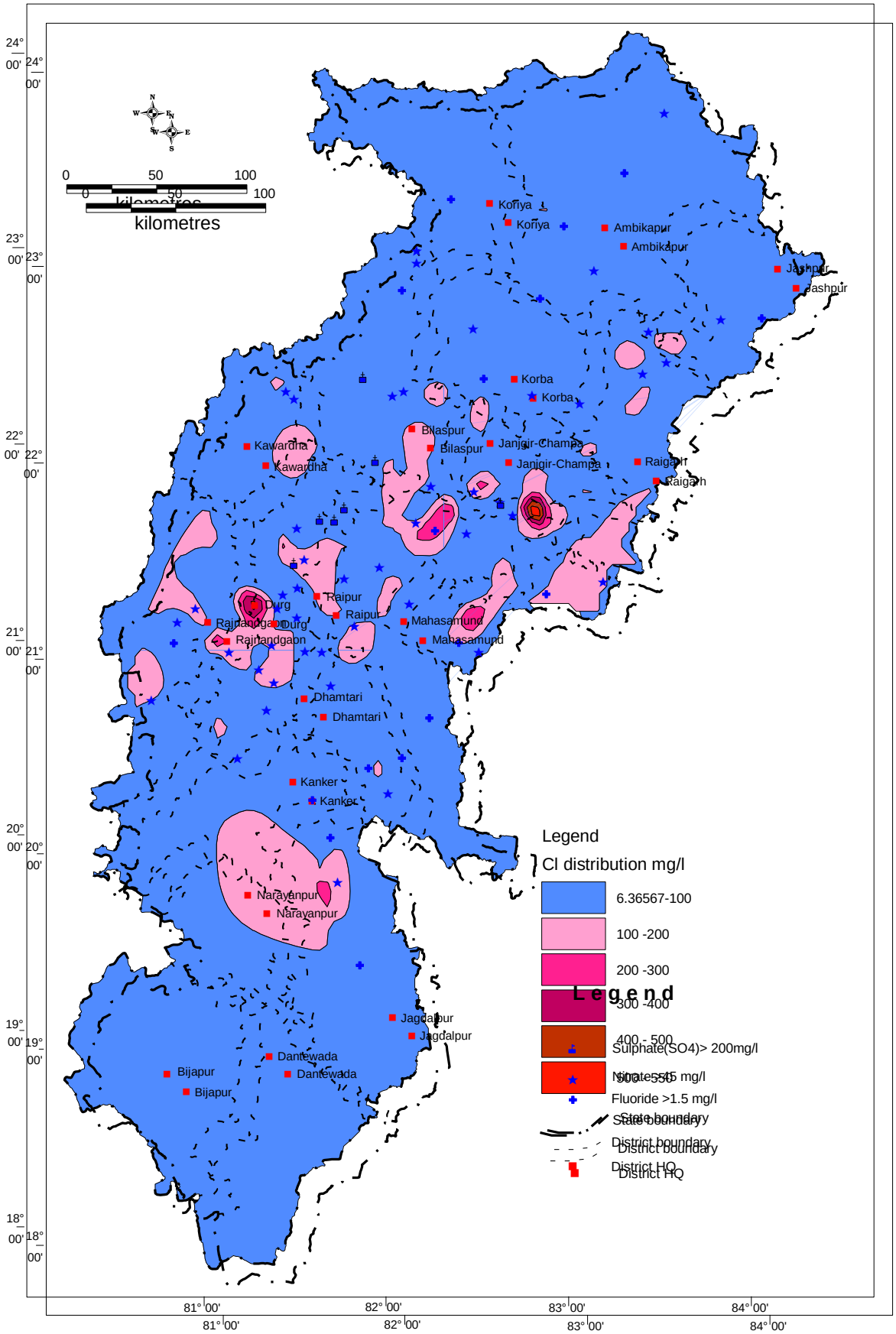

Fig 8.2 Chloride distribution in Chhattisgarh State

Fig 8.3 Fluoride, NO_3 and SO_4 distribution in Chhattisgarh State

Annexure I

Details of National Hydrographs Stations

SN	Location	Depth of well	Basin	Geology
1	Arjunda	17.25	Mahanadi	Shale
2	Armarikalan	8.18	Mahanadi	Limestone/Dolomite
3	Baklitola	8	Mahanadi	Quartzite
4	Balod	11.65	Mahanadi	Compact Sandstone
5	Balod Gahan	7.1	Mahanadi	Compact Sandstone
6	Batera	5.43	Mahanadi	Compact Sandstone
7	Bharnabhat	15.22	Mahanadi	Limestone Cavernous
8	Danitola	7.8	Mahanadi	Quartzite
9	Delli Rajhara	3.55	Mahanadi	Conglomerate/Metasedimentaries
10	Dondi	13.75	Mahanadi	Gneiss/Amphibolite/Granulite
11	Gunderdehi	10.3	Mahanadi	Shale
12	Gunderdehi1	48.66	Mahanadi	Shale
13	Gurur	12.17	Mahanadi	Compact Sandstone
14	Gurur-s	24.28	Mahanadi	Compact Sandstone
15	Jagtara	12.45	Mahanadi	Compact Sandstone
16	Kodiya	13.3	Mahanadi	Limestone Cavernous
17	Kusumkasa	9.3	Mahanadi	Acidic Rocks
18	Lohara	7.5	Mahanadi	Granite Gneiss
19	Markatola	10.27	Mahanadi	Compact Sandstone
20	Nahalda	7.75	Mahanadi	Shale
21	Paplatola	8.7	Mahanadi	Quartzite
22	Sambalpur	25.5	Mahanadi	Not Available
23	Sambalpur Pz I	151.9	Mahanadi	Maniyari shale
24	Sambalpur Pz Ii	63	Mahanadi	Maniyari shale
25	Sambalpur2	42.49	Mahanadi	Not Available
26	Sikosa	6.14	Mahanadi	Limestone/Dolomite
27	Umradah	12.5	Mahanadi	Shale With Limestone/Sandstone Band/Lens
28	Aouri	9.8	Mahanadi	Compact Sandstone
29	Arjuni	10.8	Mahanadi	Not Available
30	Arjuni S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
31	Baloda bazar	15.4	Mahanadi	Shale
32	Baloda bazar1	67.15	Mahanadi	Limestone Cavernous
33	Bhatgaon	9.05	Mahanadi	Not Available
34	Bhattapara-S	28	Mahanadi	Limestone/Dolomite
35	Biladi	18	Mahanadi	Limestone
36	Bilaigarh	5.35	Mahanadi	Limestone/Dolomite

Annexure I

Details of National Hydrographs Stations

37	Bilaigarh S	50	Mahanadi	Limestone/Dolomite
38	Chanderi	9.8	Mahanadi	Limestone Cavernous
39	Chandi	7	Mahanadi	Not Available
40	Chicholi	15.5	Mahanadi	Limestone Cavernous
41	Darchura	10.7	Mahanadi	Shell Limestone/Limestone
42	Dhamarkhera	11.36	Mahanadi	Limestone/Dolomite
43	Haswa	14.83	Mahanadi	Limestone/Dolomite
44	Kasdol	9.27	Mahanadi	Limestone/Dolomite
45	Kasdol-d	75	Mahanadi	Limestone/Dolomite
46	Kasdol-s PZ	33.5	Mahanadi	Limestone/Dolomite
47	Khapri	13.5	Mahanadi	Not Available
48	Kharora	12.1	Mahanadi	Limestone/Dolomite
49	Lahaud	10.9	Mahanadi	Shale
50	Lahaud S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
51	Lawan	9.69	Mahanadi	Limestone/Dolomite
52	Mahasamund-s PZ	36.5	Mahanadi	Shale
53	Mudhipar	6.9	Mahanadi	Limestone Cavernous
54	Pandan Bhata	10.45	Mahanadi	Limestone
55	Panderbhata S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
56	Raita Satna Ni Para	10	Mahanadi	Limestone
57	Risda	12	Mahanadi	Limestone
58	Saragaon	7.2	Mahanadi	Limestone/Dolomite
59	Sarsiwa	10.14	Mahanadi	Granite/Granodiorite
60	Sel	9.3	Mahanadi	Limestone
61	Simga	10.43	Mahanadi	Shale
62	Simga-s	30.93	Mahanadi	Shale
63	Suhela	13.5	Mahanadi	Limestone Cavernous
64	Tarenga	17.11	Mahanadi	Shale
65	Tarpongi	8.25	Mahanadi	Limestone/Dolomite
66	Tatibandh MVM	13.1	Mahanadi	Limestone
67	Tilda	10.9	Mahanadi	Not Available
68	Tilda Purani Basti	15.53	Mahanadi	Limestone
69	Tilda S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
70	Tundei	10.45	Mahanadi	Limestone
71	Urela	11.6	Mahanadi	Conglomerate/Metasedimentaries
72	Alkadih	3	Mahanadi	Granite Gneiss
73	Amdih	7.8	Mahanadi	Granite Gneiss

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Details of National Hydrographs Stations

74	Aragahi	11.2	Lower Ganges	Granite/Granodiorite
75	Bachwar	8	Lower Ganges	Gneiss/Amphibolite/Granulite
76	Bagra	8.35	Mahanadi	Sandstone
77	Balrampur	18	Lower Ganges	Granite/Granodiorite
78	Balrampur D	50	Lower Ganges	Granite Gneiss
79	Balrampur S	32.55	Lower Ganges	Granite Gneiss
80	Basin	7.5	Mahanadi	Granite Gneiss
81	Bhadori	6.75	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
82	Bulga	11	Lower Ganges	Compact Sandstone
83	Chandora	7.01	Lower Ganges	Compact Sandstone
84	Dhamni	11.7	Lower Ganges	Gneiss/Amphibolite/Granulite
85	Dhaurpur	9	Lower Ganges	Gneiss/Amphibolite/Granulite
86	Dhaurpur S	50	Lower Ganges	Granite Gneiss
87	Gonda	16.47	Lower Ganges	Compact Sandstone
88	Jagannathpur	8.35	Lower Ganges	Sandstone
89	Karmdiha	10.17	Lower Ganges	Gneiss/Amphibolite/Granulite
90	Kurji	9.15	Mahanadi	Sandstone
91	Lamgaon	6.7	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
92	Lundra	10	Lower Ganges	Gneiss/Amphibolite/Granulite
93	Lundra S	50	Lower Ganges	Granite Gneiss
94	Mahavirganj	8.6	Lower Ganges	Granite/Granodiorite
95	Mahewa	9.85	Lower Ganges	Compact Sandstone
96	Makanpur	12.2	Lower Ganges	Sandstone
97	Nawdih	10.5	Mahanadi	Limestone
98	Pasta	12	Lower Ganges	Granite/Granodiorite
99	Pasta S	50	Lower Ganges	Granite Gneiss
100	Pratappur	12	Lower Ganges	Granite/Granodiorite
101	Pratappur - 1	12	Lower Ganges	Granite/Granodiorite
102	Rajpur	14.56	Lower Ganges	Compact Sandstone
103	Rajpur1	30.9	Lower Ganges	Schist/Talc
104	Ramanujganj	12.8	Lower Ganges	Gneiss/Amphibolite/Granulite
105	Reonti	13.05	Lower Ganges	Sandstone
106	Sargaon	9.4	Mahanadi	Granite Gneiss
107	Shankargarh S	50	Lower Ganges	Granite Gneiss
108	Songara	15	Lower Ganges	Compact Sandstone
109	Songara1	31	Lower Ganges	Compact Sandstone
110	Tattapani	12.9	Lower Ganges	Compact Sandstone
111	Tattapani1	30.52	Lower Ganges	Granite Gneiss
112	Veria	11	Mahanadi	Sandstone With Shale/Coal Partings

Annexure I

Details of National Hydrographs Stations

113	Wadrafnagar	14	Lower Ganges	Compact Sandstone
114	Bare arapur	20	Godavari	Gneiss/Amphibolite/Granulite
115	Bastar	14	Godavari	Limestone/Dolomite
116	Bhanpuri	6.55	Godavari	Limestone/Dolomite
117	Bhanpuri-d	42.53	Godavari	Limestone/Dolomite
118	Bhanpuri-s	30.92	Godavari	Limestone/Dolomite
119	Chhapanbhanpuri	9.4	Godavari	Limestone/Dolomite
120	Chitrakot	9.9	Godavari	Compact Sandstone
121	Jagdalpur	11	Godavari	Limestone/Dolomite
122	Jagdalpur.1	8.17	Godavari	Not Available
123	Jagdalpur-s PZ	28.07	Godavari	Alluvium
124	Karpawand	8.5	Godavari	Limestone/Dolomite
125	Kumharwand	9.5	Godavari	Limestone/Dolomite
126	Markel	9.86	Godavari	Shale
127	Nagarnar1	9.3	Godavari	Shaly Limestone
128	Neganar	12.58	Godavari	Limestone/Dolomite
129	Sonarpal	9.75	Godavari	Compact Sandstone
130	Andhiyarkhor	12.02	Mahanadi	Compact Sandstone
131	Ashoga	10.95	Mahanadi	Limestone/Dolomite
132	Bemetara New	16.78	Mahanadi	Shale
133	Bemetera-s	39.83	Mahanadi	Shale
134	Berla	7.4	Mahanadi	Limestone/Dolomite
135	Bitkuli	8.8	Mahanadi	Shale
136	Dadhi1	12	Mahanadi	Shale
137	Deorbija	9.63	Mahanadi	Limestone/Dolomite
138	Ganiya	5.55	Mahanadi	Shale
139	Gatapar	9.5	Mahanadi	Limestone/Dolomite
140	Jamgaon	9.5	Mahanadi	Limestone/Dolomite
141	Kathiya	16.1	Mahanadi	Shale With Sandstone Partings
142	Kedwa	6.6	Mahanadi	Limestone/Dolomite
143	Khati	8.23	Mahanadi	Shale
144	Khurmuri	14	Mahanadi	Shale
145	Medasar	10.7	Mahanadi	Quartzite
146	Nawagarh1	8.5	Mahanadi	Shale
147	Nawagarh-d	75.62	Mahanadi	Shale
148	Nawagarh-s	30.5	Mahanadi	Shale
149	Ninwa	11.32	Mahanadi	Shale
150	Parpoda	14	Mahanadi	Limestone/Dolomite
151	Saja Pz Ii	51.3	Mahanadi	Maniyari shale
152	Saja Pzi	151.9	Mahanadi	Maniyari shale
153	Semariya	151.3	Mahanadi	Maniyari shale

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Details of National Hydrographs Stations

154	bakarkuda	0	Mahanadi	Limestone
155	Bansajhal	8.33	Mahanadi	Compact Sandstone
156	Bansajhal1 PZ	37.22	Mahanadi	Schist/Talc
157	Bartoli	9.45	Mahanadi	Limestone
158	Belgahana	11	Mahanadi	Phyllite
159	Beltara	9.65	Mahanadi	Compact Sandstone
160	Bilaspur	15.5	Mahanadi	Limestone/Dolomite
161	Bilha	13.7	Mahanadi	Limestone/Dolomite
162	Chakrabhata-d PZ	54.8	Mahanadi	Limestone/Dolomite
163	Chandkhuri (d)	74.4	Mahanadi	Not Available
164	Chandkhuri (s)	50	Mahanadi	Not Available
165	Chilhati	10.2	Mahanadi	Limestone/Dolomite
166	chilhati	50	Mahanadi	Limestone
167	Dagauri	11.38	Mahanadi	Not Available
168	Danikundi	20	Lower Ganges	Granite/Granodiorite
169	Dhanpur	10.8	Lower Ganges	Granite/Granodiorite
170	Ganiyari	50	Mahanadi	Not Available
171	Ganiyari.2	11.4	Mahanadi	Shale
172	Gatori	6.45	Mahanadi	Limestone/Dolomite
173	Gaurela	8.79	Lower Ganges	Granite/Granodiorite
174	Hemu Nagar	7.92	Mahanadi	Limestone/Dolomite
175	Hirri	11.15	Mahanadi	Limestone/Dolomite
176	Jhingatpur	9.1	Mahanadi	Phyllite
177	Jogipur	12.1	Mahanadi	Quartzite
178	Kargikhurud	13.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
179	Kenda	10.9	Mahanadi	Phyllite
180	Keonchi	10.56	Mahanadi	Granite/Granodiorite
181	Keonchi (D)	100	Mahanadi	Not Available
182	Keonchi (s)	50	Mahanadi	Not Available
183	Khamharia1	17	Mahanadi	Shale
184	Khamharia2	10.9	Mahanadi	Quartzite
185	Kota PZ	31.07	Mahanadi	Shale
186	Kota(kargi)	19.82	Mahanadi	Limestone/Dolomite
187	Kotmi.1	17.75	Mahanadi	Granite/Granodiorite
188	Madanpur	15.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
189	Malhar	7.85	Mahanadi	Limestone/Dolomite
190	Marwahi	14.12	Lower Ganges	Compact Sandstone
191	Masturi	12	Mahanadi	Shale
192	Masturi1	10.95	Mahanadi	Shale

Annexure I

Details of National Hydrographs Stations

193	Neora	12.6	Mahanadi	Limestone Cavernous
194	Nimdha	8.5	Lower Ganges	Granite Gneiss
195	Panchpedi	10.4	Mahanadi	Limestone/Dolomite
196	Patera	6.8	Mahanadi	Granite Gneiss
197	Pendra Road	50	Lower Ganges	Not Available
198	Piparkhuti	7	Mahanadi	Granite/Granodiorite
199	Piperkhutinew	6.8	Mahanadi	Granite Gneiss
200	Ranka Pz I	149.2	Mahanadi	Maniyari shale
201	Ranka Pz Ii	51.6	Mahanadi	Maniyari shale
202	Ratanpur	10.78	Mahanadi	Shale
203	Rupandand	4.8	Mahanadi	Granite Gneiss
204	Saraipalli	11.3	Mahanadi	Granite/Granodiorite
205	Seoni	11.6	Lower Ganges	Granite/Granodiorite
206	Sewra	8.8	Lower Ganges	Granite Gneiss
207	Shivtarai New	10.5	Mahanadi	Granite Gneiss
208	Sipat	50	Mahanadi	Shaly Limestone
209	Takhatpur.1	10	Mahanadi	Sandy Shale
210	Tendumuda	13.2	Lower Ganges	Sandstone
211	Tenduwa	11.1	Mahanadi	Granite/Granodiorite
212	Tikthi	12	Lower Ganges	Compact Sandstone
213	Udaypur	7.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
214	Arsi-kanhar	12	Mahanadi	Granite/Granodiorite
215	Banraud - I	7	Mahanadi	Compact Sandstone
216	Banraud D	81	Mahanadi	Quartzite
217	Banraud S	50	Mahanadi	Quartzite
218	Banspani	12.54	Mahanadi	Granite/Granodiorite
219	Bhoyana	8.7	Mahanadi	Limestone Cavernous
220	Birgudi	11	Mahanadi	Granite/Granodiorite
221	Budepara	7.6	Mahanadi	Sandstone
222	Chataud S	50	Mahanadi	Compact Sandstone
223	Chhati	10.65	Mahanadi	Limestone/Dolomite
224	Chhati S	50	Mahanadi	Limestone Cavernous
225	Dhamtari1 PZ	51.75	Mahanadi	Limestone Cavernous
226	Dorgardula	11.21	Mahanadi	Granite/Granodiorite
227	Dugli	7.8	Mahanadi	Granite/Granodiorite
228	Dugli - I	7.7	Mahanadi	Granite/Granodiorite
229	Gangrel S	50	Mahanadi	Granite Gneiss
230	Gattasilli	9.1	Mahanadi	Not Available
231	Jabarra	6.1	Mahanadi	Not Available
232	Keregaon	8	Mahanadi	Granite/Granodiorite

Annexure I

Details of National Hydrographs Stations

233	Kondapar	10.6	Mahanadi	Shale
234	Kosmarra	8.2	Mahanadi	Not Available
235	Kurud S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
236	Kurud.1	9.4	Mahanadi	Limestone Cavernous
237	Magarlod	12	Mahanadi	Compact Sandstone
238	Magarlod D	61	Mahanadi	Shaly Limestone
239	Magarlod S	36.66	Mahanadi	Shaly Limestone
240	Marod	10.66	Mahanadi	Laterite
241	Mega	11	Mahanadi	Limestone
242	Murrumsilli S	50	Mahanadi	Granite Gneiss
243	Nagari PZ	36.58	Mahanadi	Granite/Granodiorite
244	Nagri	7.25	Mahanadi	Granite/Granodiorite
245	Nagri-1	10.05	Mahanadi	Granite/Granodiorite
246	Sankra	11.5	Mahanadi	Granite/Granodiorite
247	Seadei	7.6	Mahanadi	Sandstone
248	Sihawa	7.12	Mahanadi	Granite/Granodiorite
249	Singhpur	10.68	Mahanadi	Compact Sandstone
250	Ahiwara	10.55	Mahanadi	Limestone/Dolomite
251	Anda	7.12	Mahanadi	Shale
252	Anda-I	9	Mahanadi	Shale
253	Bhailai	8.2	Mahanadi	Limestone/Dolomite
254	Charoda	7.05	Mahanadi	Limestone/Dolomite
255	Dargaon	8.65	Mahanadi	Limestone/Dolomite
256	Dhamdha-s	30.55	Mahanadi	Limestone Cavernous
257	Durg	10.23	Mahanadi	Limestone/Dolomite
258	Funda	9.44	Mahanadi	Limestone/Dolomite
259	Ganiyari	13.1	Mahanadi	Limestone/Dolomite
260	Girhola	20.5	Mahanadi	Shale
261	Jeora Sirsa	9.8	Mahanadi	Limestone/Dolomite
262	Kachundur	8.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
263	Kandraka	8.6	Mahanadi	Limestone
264	Kumhari	30.46	Mahanadi	Limestone/Dolomite
265	Litai	14	Mahanadi	Limestone/Dolomite
266	Marra	11.2	Mahanadi	Limestone/Dolomite
267	Motipur	9.83	Mahanadi	Limestone/Dolomite
268	Paoowara	9.45	Mahanadi	Limestone Cavernous
269	Patan	14.4	Mahanadi	Shale
270	Pawa Pz	149.2	Mahanadi	Maniyari shale
271	Pendri	9.3	Mahanadi	Limestone

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272	Powara	7.4	Mahanadi	Limestone Cavernous
273	Ravelidih	9.3	Mahanadi	Limestone/Dolomite
274	Selud1	10	Mahanadi	Limestone/Dolomite
275	Selud2	27.03	Mahanadi	Limestone/Dolomite
276	Tarkori	9.05	Mahanadi	Shale With Limestone/Sandstone Band/Lens
277	Utai-Adarshnagar	6	Mahanadi	Shale With Limestone/Sandstone Band/Lens
278	Bindra nawagarh	8.75	Mahanadi	Granite/Granodiorite
279	Chhura	11.25	Mahanadi	Granite/Granodiorite
280	Gariabandh-s	75.62	Mahanadi	Granite/Granodiorite
281	Gariyaband	10.55	Mahanadi	Granite/Granodiorite
282	Gariyaband -1	10.75	Mahanadi	Granite/Granodiorite
283	Gohrapadar - 1	7.35	Mahanadi	Granite/Granodiorite
284	Indagaon	8.1	Mahanadi	Granite/Granodiorite
285	Jalkhamar	9.35	Mahanadi	Granite/Granodiorite
286	Jhariabara	10.6	Mahanadi	Granite Gneiss
287	Joba	6.52	Mahanadi	Granite/Granodiorite
288	Panduka	10.77	Mahanadi	Compact Sandstone
289	Adbhar	8.3	Mahanadi	Shale
290	Akaltara	13.76	Mahanadi	Limestone/Dolomite
291	Akaltara S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
292	Baloda -r	14.83	Mahanadi	Limestone/Dolomite
293	Baloda S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
294	Bamhani	15.4	Mahanadi	Gneiss/Amphibolite/Granulite
295	Bamnidihi	10	Mahanadi	Shale
296	Baradwar D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
297	Baradwar S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
298	Budena	13.1	Mahanadi	Granite Gneiss
299	Champa	12.3	Mahanadi	Limestone/Dolomite
300	Champa-d PZ	65.5	Mahanadi	Shaly Limestone
301	Champa-s PZ	41.87	Mahanadi	Shaly Limestone
302	Chandrapur1	23.32	Mahanadi	Alluvium
303	Dabra	9.87	Mahanadi	Compact Sandstone
304	Damau	7.92	Mahanadi	Sandstone
305	Dhardei	11.48	Mahanadi	Shale

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306	Dhurkot Nhs	12.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
307	Dongakahrod	13.9	Mahanadi	Limestone/Dolomite
308	Ghoghari	8.52	Mahanadi	Shale
309	Hasoud	9.54	Mahanadi	Shale
310	Jaijaipur	12.13	Mahanadi	Shale
311	Jaijaipur D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
312	Jaijaipur S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
313	Janjgir	19.95	Mahanadi	Shale
314	Janjgir S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
315	Jewara	12.14	Mahanadi	Limestone
316	Jhulan Pakariya	11.8	Mahanadi	Limestone/Dolomite
317	Kera	8.73	Mahanadi	Shale
318	Khartal	10.72	Mahanadi	Limestone/Dolomite
319	Konargarh	6.36	Mahanadi	Shale
320	Latesara	10.52	Mahanadi	Shale
321	Loharsi	10.2	Mahanadi	Granite Gneiss
322	Malkhroda	15.37	Mahanadi	Shale
323	Mulmula	10	Mahanadi	Limestone Cavernous
324	Pamgarh	18.33	Mahanadi	Shale
325	Pamgarh D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
326	Pamgarh S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
327	Sakti	20.81	Mahanadi	Shale
328	Sakti S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
329	Saliabhata	13.1	Mahanadi	Granite Gneiss
330	Sapos	10.5	Mahanadi	Granite Gneiss
331	Saragaon2	13.12	Mahanadi	Shale
332	Sasaha	6.9	Mahanadi	Shale
333	Semra	15.4	Mahanadi	Limestone/Dolomite
334	Seorinarayan	11.4	Mahanadi	Alluvium
335	Seorinarayan1 PZ	30.15	Mahanadi	Alluvium
336	Somthi	10.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
337	Sukda	7.4	Mahanadi	Compact Sandstone
338	Thathari	11.3	Mahanadi	Shale

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339	Amatolli	5.2	Mahanadi	Granite/Granodiorite
340	Bagbahar S	50	Mahanadi	Granite Gneiss
341	Bagicha	6.82	Mahanadi	Gneiss/Amphibolite/Granulite
342	Bagicha PZ	41.63	Mahanadi	Gneiss/Amphibolite/Granulite
343	Balachhappar	12.25	Mahanadi to Ganges Water Resources Region	Granite Gneiss
344	Bandarchuwa	10.75	Mahanadi	Granite/Granodiorite
345	Banderchua S	50	Mahanadi	Granite Gneiss
346	Bangaon	8.24	Mahanadi	Granite/Granodiorite
347	Bangaon B	50	Mahanadi	Granite Gneiss
348	Bataikela	8.87	Mahanadi	Gneiss/Amphibolite/Granulite
349	Bewrapali	8	Mahanadi	Not Available
350	Bildagi	8.5	Mahanadi	Granite Gneiss
351	Binjapur	7.5	Mahanadi	Granite/Granodiorite
352	Bthighara	12.1	Mahanadi	Granite Gneiss
353	Chhapartoli	7.5	Mahanadi	Not Available
354	Dhodidand	6.6	Mahanadi	Granite/Granodiorite
355	Farsabahar	4.65	Mahanadi	Not Available
356	Farsakanhi	8.44	Mahanadi	Granite/Granodiorite
357	Ghatmunda	9.4	Mahanadi	Granite/Granodiorite
358	Jakba	10	Mahanadi to Ganges Water Resources Region	Granite Gneiss
359	Jashpurnagar	10.35	do	Granite/Granodiorite
360	Kachhor	9.8	Mahanadi	Granite Gneiss
361	Kandaibahar	6.1	Mahanadi	Granite Gneiss
362	Kandora	10.5	Mahanadi	Granite Gneiss
363	Kansabel	12.3	Mahanadi	Granite/Granodiorite
364	Kasawel S	50	Mahanadi	Granite Gneiss
365	Kersai	7.98	Mahanadi	Granite/Granodiorite
366	Khutsera	7.45	Mahanadi	Not Available
367	Kotba	6.85	Mahanadi	Granite/Granodiorite
368	Kunjara	7.8	Mahanadi	Granite/Granodiorite
369	Kunkuri S	50	Mahanadi	Granite Gneiss
370	Kunkuri1	7.4	Mahanadi	Granite/Granodiorite
371	Lavakera	9.25	Mahanadi	Gneiss/Amphibolite/Granulite
372	Lavakera1	41.5	Mahanadi	Gneiss/Amphibolite/Granulite
373	Ludeg	6.99	Mahanadi	Gneiss/Amphibolite/Granulite

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374	Maini	8.5	Mahanadi	Granite/Granodiorite
375	Mauhadih	9.1		Gneiss/Amphibolite/Granulite
376	Muskuti	7.99	Mahanadi	Granite/Granodiorite
377	Narayanbaheli	8.25	Mahanadi	Granite Gneiss
378	Narayanpur S	50	Mahanadi	Granite Gneiss
379	Nawaguda	9.6	Mahanadi	Granite Gneiss
380	Palidih	10.5	Mahanadi	Granite Gneiss
381	Pathalgaon	14.23	Mahanadi	Granite/Granodiorite
382	Pathalgaon S	50	Mahanadi	Granite Gneiss
383	Pathalgaon1 PZ	26.93	Mahanadi	Gneiss/Amphibolite/Granulite
384	Patratoli	7.8	Mahanadi	Granite Gneiss
385	Peta	7.73	Mahanadi	Granite Gneiss
386	Phooldih	6	Lower Ganges	Granite Gneiss
387	Raikera	7	Mahanadi	Granite/Granodiorite
388	Raikera(Kunkuri)	7.75	Lower Ganges	Granite Gneiss
389	Raoni	5.65	Mahanadi	Granite Gneiss
390	Rupsera	7.79	Mahanadi to Ganges Water Resources Region	Granite/Granodiorite
391	Sanna	14.8	Lower Ganges	Granite Gneiss
392	Saraipani	8.3	Mahanadi	Granite/Granodiorite
393	Sarhapani	9.8	Lower Ganges	Gneiss/Amphibolite/Granulite
394	Sarkardih	9.93	Mahanadi to Ganges Water Resources Region	Granite/Granodiorite
395	Sonquari	16	Mahanadi	Granite Gneiss
396	Srishringa	6.9	Mahanadi	Granite/Granodiorite
397	Surangpani New	8.4	Mahanadi	Granite/Granodiorite
398	Tapkara	11	Mahanadi	Granite/Granodiorite
399	Tapkara S	50	Mahanadi	Granite Gneiss
400	Charama2	8.82	Mahanadi	Granite/Granodiorite
401	Govindpur	7.15	Mahanadi	Gneiss/Amphibolite/Granulite
402	Kanker	14	Mahanadi	Gneiss/Amphibolite/Granulite
403	Kanker1 PZ	30.56	Mahanadi	Granite/Granodiorite
404	Kulgaon	9.9	Mahanadi	Gneiss/Amphibolite/Granulite
405	Bharamdeo D	100	Mahanadi	Shale
406	Bharamdeo S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
407	Bodla	14.5	Mahanadi	Limestone/Dolomite
408	Bodla1 PZ	27.73	Mahanadi	Schist/Talc

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409	Chilpi	9.85	Narmada	Schist/Talc
410	Danganiya	10.3	Mahanadi	Limestone/Dolomite
411	Dhandgaon	12.4	Mahanadi	Limestone
412	Kapada	10	Mahanadi	Limestone/Dolomite
413	Kawardha S	50	Mahanadi	Shale
414	Kawardha1	11	Mahanadi	Limestone/Dolomite
415	Khadoula	8.75	Mahanadi	Shale
416	Kharoda Kalan	9.2	Mahanadi	Limestone/Dolomite
417	Kui	9.75	Mahanadi	Granite/Granodiorite
418	Lohara-d PZ	52	Mahanadi	Shale
419	Lohara-s PZ	24.56	Mahanadi	Shale
420	Munmuna	9.8	Mahanadi	Phyllite
421	Rajnanwagaon	5.52	Mahanadi	Schist/Talc
422	Sagona S	27.9	Mahanadi	Granite Gneiss
423	Sahaspur lohara	6.39	Mahanadi	Limestone/Dolomite
424	Sahaspur Lohara.1	11.15	Mahanadi	Not Available
425	Sarai Patera S	16	Mahanadi	Granite Gneiss
426	Saroda Dadar S	50	Mahanadi	Granite Gneiss
427	Singhari D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
428	Singhari S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
429	Uria Khurud	9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
430	Batrail	9.07	Godavari	Gneiss/Amphibolite/Granulite
431	Ghodagaon	9.6	Godavari	Compact Sandstone
432	Joba	8	Godavari	Compact Sandstone
433	Keskal	9	Mahanadi	Gneiss/Amphibolite/Granulite
434	Kondagon New	12.1	Godavari	Granite/Granodiorite
435	Lanjora	11	Godavari	Granite/Granodiorite
436	Murwand1	10	Godavari	Granite Gneiss
437	Pharasgaon	9.9	Godavari	Granite/Granodiorite
438	Pharasgaon1 PZ	27.4	Godavari	Schist/Talc
439	Andhiarkhor Pz I	51.3	Mahanadi	Maniyari shale
440	Banbandha	5.36	Mahanadi	Compact Sandstone
441	Bandhakhar	6.82	Mahanadi	Sandstone
442	Batati Junction	11.27	Mahanadi	Sandstone
443	Bhilai Nagar Pz Ii	92	Mahanadi	Sandstone With Shale/Coal Partings
444	Chaitama	15	Mahanadi	Compact Sandstone
445	Champa Mode	7.5	Mahanadi	Sandstone
446	Charmar	9.4	Mahanadi	Sandstone

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447	Churi	12.8	Mahanadi	Granite Gneiss
448	Dhegurdih Manzipara	9.4	Mahanadi	Sandstone
449	Dhourabhata	8.37	Mahanadi	Sandstone
450	Dumardih New	8.86	Mahanadi	Sandstone
451	Gopalpur	12.71	Mahanadi	Granite/Granodiorite
452	Jamchuwa	9.5	Mahanadi	Sandstone
453	Jatgan	11.4	Mahanadi	Granite/Granodiorite
454	Jhabar	8.35	Mahanadi	Sandstone With Shale/Coal Partings
455	Jhingatpur	10.3	Mahanadi	Sandstone
456	Jogipali	10.4	Mahanadi	Sandstone
457	Kartala	10.95	Mahanadi	Compact Sandstone
458	Katghora	11.65	Mahanadi	Compact Sandstone
459	Khodri	4.8	Mahanadi	Granite Gneiss
460	Korba	14.47	Mahanadi	Compact Sandstone
461	Korba Home Gaurd Pz Ii	37.48	Mahanadi	Compact Sandstone
462	Korba-S	193	Mahanadi	Sandstone With Shale/Coal Partings
463	Korkoma Junction	8.15	Mahanadi	Sandstone
464	Kotmer Upper	8.2	Mahanadi	Sandstone
465	Kurtha	8.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
466	Lenga	9.98	Mahanadi	Granite Gneiss
467	Madai	8.73	Mahanadi	Compact Sandstone
468	Morga	14	Mahanadi	Compact Sandstone
469	Nagai	11.77	Mahanadi	Compact Sandstone
470	Naktikhar	10.27	Mahanadi	Sandstone With Shale/Coal Partings
471	Naraibodh	7.5	Mahanadi	Sandstone
472	Nawapara	7.3	Mahanadi	Sandstone
473	Nonbirra	10.5	Mahanadi	Sandstone
474	Nonbirra	8.2	Mahanadi	Sandstone
475	Nonbirra New	13.2	Mahanadi	Granite Gneiss
476	Numera	12.17	Mahanadi	Sandstone With Shale/Coal Partings
477	Nunera Pz I	142.25	Mahanadi	Sandstone With Shale/Coal Partings
478	Nunera Pz II	70.41	Mahanadi	Sandstone With Shale/Coal Partings
479	Pali	10.25	Mahanadi	Compact Sandstone
480	Pasan	13.88	Mahanadi	Granite/Granodiorite
481	Pasarkhet	7.6	Mahanadi	Sandstone
482	Pondi	115	Mahanadi	Sandstone With Shale/Coal Partings
483	Ponri	12.98	Mahanadi	Granite/Granodiorite
484	Rajkamma	72.53	Mahanadi	Sandstone With Shale/Coal Partings
485	Ralia Pz Ii	6.95	Mahanadi	Sandstone

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486	Ralia Pz Iii	12.1	Mahanadi	Granite Gneiss
487	Rampur	150	Mahanadi	Sandstone With Shale/Coal Partings
488	Ramtarai Pz I	105	Mahanadi	Sandstone With Shale/Coal Partings
489	Ramtarai Pz Ii	6.98	Mahanadi	Sandstone
490	Ramtarai Pz Iii	78	Mahanadi	Sandstone With Shale/Coal Partings
491	Rewa	150	Mahanadi	Sandstone With Shale/Coal Partings
492	Rishdi	50.82	Mahanadi	Sandstone With Shale/Coal Partings
493	Sakdukala	11.1	Mahanadi	Granite Gneiss
494	Salihabhata	7.29	Mahanadi	Sandstone
495	Sindhiya	8.61	Mahanadi	Sandstone
496	Sirki Pz I	7.7	Mahanadi	Compact Sandstone
497	Sirki Pz Ii	9.32	Mahanadi	Sandstone
498	Sutarra	161	Mahanadi	Sandstone With Shale/Coal Partings
499	Sutera	85	Mahanadi	Sandstone With Shale/Coal Partings
500	Tikeja	11.68	Mahanadi	Sandstone
501	Tiwarta Pz I	9.3	Mahanadi	Sandstone With Shale/Coal Partings
502	Tiwarta Pz Ii	10.6	Mahanadi	Granite Gneiss
503	Tuman	15.55	Mahanadi	Granite/Granodiorite
504	Tuman	11.5	Mahanadi	Granite Gneiss
505	Urga.1	7.05	Mahanadi	Gneiss/Amphibolite/Granulite
506	Baharsi.1	5.52	Lower Ganges	Compact Sandstone
507	Baikunthpur	7	Mahanadi	Compact Sandstone
508	Baikunthpur-s	24.67	Mahanadi	Compact Sandstone
509	Banjaridad S	50	Mahanadi	Sandstone
510	Belbehra	7.28	Mahanadi	Compact Sandstone
511	Biharpur	15.3	Mahanadi	Sandstone
512	Bikrampur	6.4	Mahanadi	Sandstone With Shale/Coal Partings
513	Chutki	5.4	Lower Ganges	Compact Sandstone
514	Garundol	11	Mahanadi	Sandstone With Shale/Coal Partings
515	Girjapur	3	Mahanadi	Sandstone
516	Jamgahana	6.5	Mahanadi	Sandstone
517	Janakpur	10	Lower Ganges	Compact Sandstone
518	Kelhari	11.52	Lower Ganges	Compact Sandstone
519	Khadgaon	13.2	Mahanadi	Compact Sandstone
520	Khadgaon - 1	11.6	Mahanadi	Compact Sandstone
521	Khatgori	15.74	Mahanadi	Compact Sandstone
522	Kiwarpur	9.35	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
523	Manendragarh	10.48	Mahanadi	Compact Sandstone
524	Mansukha	12	Mahanadi	Shale
525	Pendri	8.36	Mahanadi	Compact Sandstone

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526	Pouri	11.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
527	Ranai	13.06	Lower Ganges	Compact Sandstone
528	Ranai1	14	Lower Ganges	Compact Sandstone
529	Sarbhoka	8.89	Mahanadi	Compact Sandstone
530	Sonhat	7	Mahanadi	Compact Sandstone
531	Tarabahara	8.83	Lower Ganges	Compact Sandstone
532	Tilokhan	10	Lower Ganges	Compact Sandstone
533	Ujiyarpur1	10.36	Mahanadi	Compact Sandstone
534	Awaradawri S	50	Mahanadi	Granite Gneiss
535	Bag bahera	11.26	Mahanadi	Granite/Granodiorite
536	Bagbahara S	50	Mahanadi	Granite Gneiss
537	Baldidih	9.75	Mahanadi	Granite Gneiss
538	Barbaspur	8.55	Mahanadi	Granite Gneiss
539	Basna	11.65	Mahanadi	Granite Gneiss
540	Basna S	50	Mahanadi	Granite Gneiss
541	Belsunda	14.85	Mahanadi	Shell Limestone/Limestone
542	Jagdishpur	10.76	Mahanadi	Granite/Granodiorite
543	Jhalap	9.35	Mahanadi	Granite/Granodiorite
544	Jhalap S	32.8	Mahanadi	Granite Gneiss
545	Jogideepa D	64.4	Mahanadi	Granite Gneiss
546	Jogideepa S	50	Mahanadi	Granite Gneiss
547	Jogidipa	10.65	Mahanadi	Granite Gneiss
548	Keshwa S	50	Mahanadi	Compact Sandstone
549	Khallari	5.35	Mahanadi	Not Available
550	Mahasamund Contractual S	50	Mahanadi	Compact Sandstone
551	Mahasamund.	14.32	Mahanadi	Compact Sandstone
552	Mahasamund.1	14.32	Mahanadi	Compact Sandstone
553	Mandalpur	6.6	Mahanadi	Quartzite
554	Marban	8.4	Mahanadi	Sandstone
555	Palsipani - 1	10.05	Mahanadi	Granite/Granodiorite
556	Patsenduri	9.59	Mahanadi	Compact Sandstone
557	Phusera	12.1	Mahanadi	Limestone/Dolomite
558	Pithora	11.4	Mahanadi	Granite/Granodiorite
559	Pithora - 1	12.85	Mahanadi	Granite/Granodiorite
560	Pithora PZ	27.43	Mahanadi	Granite/Granodiorite
561	Sagrapali	8.5	Mahanadi	Compact Sandstone
562	Sakra S	50	Mahanadi	Granite Gneiss
563	Saraipali	12.48	Mahanadi	Compact Sandstone
564	Saraipalli-S PZ	30.58	Mahanadi	Shale

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565	Sirpur	13.15	Mahanadi	Limestone/Dolomite
566	Sirpur1 PZ	60	Mahanadi	Limestone/Dolomite
567	Suarmar	13.95	Mahanadi	Granite/Granodiorite
568	Suarmar1 PZ	42.94	Mahanadi	Granite/Granodiorite
569	Tendukonda	12.98	Mahanadi	Granite/Granodiorite
570	Tumgaon	11.31	Mahanadi	Compact Sandstone
571	Tumgaon S	50	Mahanadi	Granite Gneiss
572	Achanakmar1	10.3	Mahanadi	Phyllite
573	Amadob	9.15	Mahanadi	Sandy Shale
574	Amerikhapa	8.44	Mahanadi	Sandstone With Shale/Coal Partings
575	Attaria	11.5	Mahanadi	Granite Gneiss
576	Baitalpur	14.99	Mahanadi	Limestone/Dolomite
577	Barighat	13.08	Mahanadi	Compact Sandstone
578	Bindabal	13.5	Mahanadi	Granite Gneiss
579	Chattan	9.2	Mahanadi	Granite Gneiss
580	Chhaparwa	16.87	Mahanadi	Granite/Granodiorite
581	Chirhula	16	Mahanadi	Limestone/Dolomite
582	Darhi Pz I	57.5	Mahanadi	Maniyari shale
583	Darhi Pz Ii	121.8	Mahanadi	Maniyari shale
584	Deori	9.3	Mahanadi	Limestone/Dolomite
585	Godkhami	9.2	Mahanadi	Shale With Limestone/Sandstone Band/Lens
586	Kanteli.1	11.2	Mahanadi	Shale
587	Karesara Pz I	149.2	Mahanadi	Maniyari shale
588	Karesara Pz Ii	57.7	Mahanadi	Maniyari shale
589	Lamni	16	Mahanadi	Granite/Granodiorite
590	lormi	16.3	Mahanadi	Shale
591	Lormi (d)	70	Mahanadi	Not Available
592	Lormi1	4.95	Mahanadi	Shale
593	Mungeli	13.5	Mahanadi	Limestone/Dolomite
594	Mungeli(d)	100	Mahanadi	Not Available
595	Mungeli(s)	50	Mahanadi	Not Available
596	Pali	9.2	Mahanadi	Shale With Limestone/Sandstone Band/Lens
597	Patharia (chorbhatti)	15.4	Mahanadi	Shale
598	Saragaon1	7	Mahanadi	Shale
599	Setganga	6.2	Mahanadi	Limestone/Dolomite
600	Sitalkunda	9.4	Mahanadi	Limestone/Dolomite
601	Tilaidabra	10.8	Mahanadi	Granite Gneiss
602	Chhal	7.9	Mahanadi	Granite Gneiss

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603	Amapali	10.5	Mahanadi	Granite Gneiss
604	Amlipur Amlitikra	5.7	Mahanadi	Sandstone
605	Auranar	13.9	Mahanadi	Sandstone
606	Bakaruma	11.25	Mahanadi	Granite/Granodiorite
607	Bamsjer	7.8	Mahanadi	Sandstone
608	Baramkela	15.5	Mahanadi	Limestone/Dolomite
609	Baramkela S	37	Mahanadi	Shale With Limestone/Sandstone Band/Lens
610	Barpali	11.48	Mahanadi	Compact Sandstone
611	Bartapali	11.4	Mahanadi	Sandstone
612	Bataupali	9	Mahanadi	Compact Sandstone
613	Bayasi	7.5	Mahanadi	Granite Gneiss
614	Behramar	8.6	Mahanadi	Gneiss/Amphibolite/Granulite
615	Bhangari	11.5	Mahanadi	Not Available
616	Bhupdeopur S	50	Mahanadi	Compact Sandstone
617	Bijapara	10.4	Mahanadi	Sandstone
618	Bojia	9.2	Mahanadi	Sandstone
619	Bonda	10	Mahanadi	Limestone/Dolomite
620	Boro	10.5	Mahanadi	Sandstone
621	Chaple	10.36	Mahanadi	Limestone/Dolomite
622	Chaple S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
623	Charmar	9.8	Mahanadi	Gneiss/Amphibolite/Granulite
624	Chimtapani	14.15	Mahanadi	Compact Sandstone
625	Chunkunidad	11.8	Mahanadi	Sandstone
626	Damdarha	9.85	Mahanadi	Compact Sandstone
627	Deridih	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
628	Derpani	4.8	Mahanadi	Granite Gneiss
629	Dharamjaigarh PZ	29.91	Mahanadi	Compact Sandstone
630	Dharan Pz Ii	56	Mahanadi	Sandstone With Shale/Coal Partings
631	Dharmajaigarh	12.55	Mahanadi	Compact Sandstone
632	Dharmajaigarh	12.55	Mahanadi	Compact Sandstone
633	Dongabhona	7.5	Mahanadi	Gneiss/Amphibolite/Granulite
634	Duliamuda	9.4	Mahanadi	Gneiss/Amphibolite/Granulite
635	Dumarpali	9.3	Mahanadi	Granite Gneiss
636	Durgapur	9.7	Mahanadi	Sandstone
637	Edu	7.56	Mahanadi	Compact Sandstone
638	Farkanara	11.25	Mahanadi	Sandstone
639	Gare Nhs	10	Mahanadi	Sandstone With Shale/Coal Partings
640	Gersa	12.5	Mahanadi	Gneiss/Amphibolite/Granulite
641	Gharghoda	13.38	Mahanadi	Compact Sandstone

Annexure I

Details of National Hydrographs Stations

642	Golabuda	10.2	Mahanadi	Granite/Granodiorite
643	Hati	9.56	Mahanadi	Compact Sandstone
644	Hirri1	9.72	Mahanadi	Limestone/Dolomite
645	Kanakbira	11	Mahanadi	Granite/Granodiorite
646	Kandadand	10.4	Mahanadi	Sandstone
647	Kapu	9.75	Mahanadi	Granite/Granodiorite
648	Kedar S	50	Mahanadi	Limestone Cavernous
649	Keradih	3.95	Mahanadi	Sandstone
650	Kerajhar	12.36	Mahanadi	Compact Sandstone
651	Kerigarhi	11.5	Mahanadi	Sandstone
652	Khadgaon1	13.5	Mahanadi	Laterite
653	Kharasia S	50	Mahanadi	Compact Sandstone
654	Kharsia	17.63	Mahanadi	Compact Sandstone
655	Kondatalai S	50	Mahanadi	Compact Sandstone
656	Kotra	9.46	Mahanadi	Limestone/Dolomite
657	Kurekela	14.55	Mahanadi	Compact Sandstone
658	Lailunga1	11.22	Mahanadi	Granite/Granodiorite
659	Lailunga2	46.62	Mahanadi	Granite/Granodiorite
660	Lakha.1	8.55	Mahanadi	Not Available
661	Lakshmipur	4.4	Mahanadi	Sandstone
662	Laripani	10.35	Mahanadi	Compact Sandstone
663	Lendra S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
664	Lipti	7.5	Mahanadi	Granite Gneiss
665	Malda B	9.27	Mahanadi	Granite/Granodiorite
666	Milupara-Sidarpara	13.8	Mahanadi	Gneiss/Amphibolite/Granulite
667	Mumund	6.2	Mahanadi	Granite Gneiss
668	Nawadih	8.2	Mahanadi	Gneiss/Amphibolite/Granulite
669	Nawagaon	6.5	Mahanadi	Gneiss/Amphibolite/Granulite
670	Nawapara Pz	48.79	Mahanadi	Sandstone With Shale/Coal Partings
671	Ongana	8.4	Mahanadi	Gneiss/Amphibolite/Granulite
672	Pakargaon	5.8	Mahanadi	Granite/Granodiorite
673	Pandripani	12.3	Mahanadi	Gneiss/Amphibolite/Granulite
674	Phuthamuda	7.3	Mahanadi	Gneiss/Amphibolite/Granulite
675	Pindri	7.97	Mahanadi	Granite/Granodiorite
676	Porda Pz	30	Mahanadi	Sandstone With Shale/Coal Partings
677	Potiya	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
678	Pusalda	11.8	Mahanadi	Gneiss/Amphibolite/Granulite
679	Raigarh	17.66	Mahanadi	Compact Sandstone
680	Raiharg S	50	Mahanadi	Compact Sandstone

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Details of National Hydrographs Stations

681	Rajpur.1	8.6	Mahanadi	Not Available
682	Rajpur2	8.16	Mahanadi	Gneiss/Amphibolite/Granulite
683	Ramnagar	5.6	Mahanadi	Gneiss/Amphibolite/Granulite
684	Rera	8.5	Mahanadi	Granite Gneiss
685	Salkhiya	7.8	Mahanadi	Granite/Granodiorite
686	Samaruma	6.67	Mahanadi	Sandstone
687	Saraipali	13.2	Mahanadi	Gneiss/Amphibolite/Granulite
688	Sarangarh	12.62	Mahanadi	Compact Sandstone
689	Sarangarh S	50	Mahanadi	Limestone Cavernous
690	Sarangarh1	34.21	Mahanadi	Compact Sandstone
691	Saria1	12	Mahanadi	Limestone/Dolomite
692	Shahpur Colony	12	Mahanadi	Sandstone
693	Sirsinga Temple	8.2	Mahanadi	Granite/Granodiorite
694	Sisringa	13.6	Mahanadi	Compact Sandstone
695	Sithra New	11.5	Mahanadi	Sandstone
696	Sukwasuava	8.4	Mahanadi	Granite/Granodiorite
697	Tadola	6.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
698	Taraimal1.1	8	Mahanadi	Compact Sandstone
699	Taraimar	10.4	Mahanadi	Gneiss/Amphibolite/Granulite
700	Tendumar	6.8	Mahanadi	Gneiss/Amphibolite/Granulite
701	Tetla	13.17	Mahanadi	Compact Sandstone
702	Abhanpur	19.9	Mahanadi	Shale
703	Abhanpur D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
704	Abhanpur S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
705	Amapara NHS	8	Mahanadi	Limestone
706	Amera	8	Mahanadi	Shale With Sandstone Partings
707	Amethi	6.4	Mahanadi	Limestone Cavernous
708	Arang	9.15	Mahanadi	Limestone/Dolomite
709	Arang S	50	Mahanadi	Limestone Cavernous
710	Bajrangpur	12.45	Mahanadi	Shale
711	Bohardih Pzi	149.2	Mahanadi	Maniyari shale
712	Bohardih Pzii	51.6	Mahanadi	Maniyari shale
713	Bothi Pzi	100.3	Mahanadi	Maniyari shale
714	Bothi Pzii	39.4	Mahanadi	Maniyari shale
715	Charauda	7.8	Mahanadi	Limestone
716	Devpuri	14.04	Mahanadi	Limestone/Dolomite
717	Devri	11.5	Mahanadi	Limestone Cavernous
718	Dharsiwa	13	Mahanadi	Limestone/Dolomite

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Details of National Hydrographs Stations

719	Dharsiwa S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
720	Dumartarai	11.2	Mahanadi	Limestone
721	Fingeshwar- I	10.5	Mahanadi	Limestone/Dolomite
722	Kanekera	3.9	Mahanadi	Compact Sandstone
723	Kanki	7.25	Mahanadi	Sandy Shale
724	Kanki D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
725	Kanki S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
726	Kusrangi	7.85	Mahanadi	Sandy Shale
727	Manabasti	12.2	Mahanadi	Limestone/Dolomite
728	Mandhar	7.2	Mahanadi	Limestone
729	Mandhar D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
730	Mandhar S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
731	Mandirhasud	14.5	Mahanadi	Limestone/Dolomite
732	Palari	11.5	Mahanadi	Shale
733	Palari D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
734	Palari S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
735	Raipur	16.87	Mahanadi	Limestone/Dolomite
736	Raipur (IGKV)-S	122.08	Mahanadi	Limestone/Dolomite
737	Rajim	10.95	Mahanadi	Shale
738	Rajim-s PZ	27.38	Mahanadi	Shale
739	Ranisagar	7.85	Mahanadi	Not Available
740	Rsu Raipur	10.4	Mahanadi	Limestone
741	Sakara	21.55	Mahanadi	Limestone
742	Sandi	10.9	Mahanadi	Shale
743	Sandi1	30.8	Mahanadi	Shale
744	Semariya	11.15	Mahanadi	Limestone
745	Sursabandha	8.16	Mahanadi	Alluvium
746	Umaria station	8.84	Mahanadi	Shale
747	Badaitola	14.3	Mahanadi	Sandstone
748	Baigatola	8.3	Mahanadi	Granite/Granodiorite
749	Birampurkala	7.9	Mahanadi	Limestone
750	Chinohola	11.7	Mahanadi	Granite Gneiss
751	Chirchari	12.02	Mahanadi	Granite/Granodiorite
752	Chuikhadan	12	Mahanadi	Phyllite

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Details of National Hydrographs Stations

753	Dhaba	13	Mahanadi	Limestone Cavernous
754	Dhaneli	9	Mahanadi	Limestone
755	Dhara	9.3	Mahanadi	Granite/Granodiorite
756	Diwanbhedi	9.8	Mahanadi	Granite Gneiss
757	Dongargaon.1	10.52	Mahanadi	Granite/Granodiorite
758	Dongargarh	11.4	Mahanadi	Granite/Granodiorite
759	Dongargarh-d PZ	51.59	Mahanadi	Granite/Granodiorite
760	Dongargarh-sPZ	30.44	Mahanadi	Granite/Granodiorite
761	Gandaipandaria	10.05	Mahanadi	Limestone/Dolomite
762	Govindpur	8	Mahanadi	Granite/Granodiorite
763	Khairagarh	8	Mahanadi	Compact Sandstone
764	Lal bhadurnagar	12.02	Mahanadi	Granite/Granodiorite
765	Madrakuhi	7.2	Mahanadi	Limestone
766	Mohgaon	13	Mahanadi	Compact Sandstone
767	Mutpar	10	Mahanadi	Granite Gneiss
768	Narmada	9.65	Mahanadi	Limestone
769	Rajnandgaon	11.8	Mahanadi	Shale
770	Rajnandgaon-S PZ	30.46	Mahanadi	Shale
771	Ramatola	13.5	Mahanadi	Granite/Granodiorite
772	Rampur	7.4	Mahanadi	Shaly Sandstone
773	Rangkathera	10.81	Mahanadi	Shale
774	Ranitarai	10.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
775	Ravagahan	9.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
776	Reevagaon	10.75	Mahanadi	Granite/Granodiorite
777	Sahaspur Dalli	16	Mahanadi	Shale With Sandstone Partings
778	Salgapat	10.18	Mahanadi	Rhyolite
779	Salhe Bara	12.45	Mahanadi	Compact Sandstone
780	Saloni	12.25	Mahanadi	Shale
781	Singhola	6.5	Mahanadi	Limestone/Dolomite
782	Somni	13.88	Mahanadi	Shale
783	Talai	15	Mahanadi	Limestone/Dolomite
784	Tappa	12.71	Mahanadi	Gneiss/Amphibolite/Granulite
785	Uraidabritola	12.05	Mahanadi	Shale With Limestone/Sandstone Band/Lens
786	Ajabnagar	6	Lower Ganges	Compact Sandstone
787	Badsara	10.3	Lower Ganges	Sandy Shale
788	Bhaiyathan	31.01	Lower Ganges	Gneiss/Amphibolite/Granulite
789	Deonagar	8.3	Lower Ganges	Compact Sandstone
790	Ganeshpur	14.06	Mahanadi	Compact Sandstone

Annexure I

Details of National Hydrographs Stations

791	Jaynagar	10.28	Lower Ganges	Compact Sandstone
792	Jhasi	10.2	Lower Ganges	Compact Sandstone
793	Kalyanpur	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
794	Kanakpur	9.7	Mahanadi	Sandstone With Shale/Coal Partings
795	Latori	11.08	Lower Ganges	Compact Sandstone
796	Odigi	8	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
797	Premnagar	13.65	Mahanadi	Compact Sandstone
798	Premnagar D	50	Mahanadi	Granite Gneiss
799	Ramanuj nagar	12.05	Mahanadi	Compact Sandstone
800	Sirsi	8.5	Lower Ganges	Quartzite
801	Surajpur	10	Lower Ganges	Compact Sandstone
802	Tara	15.44	Mahanadi	Compact Sandstone
803	Tara1	37.04	Mahanadi	Compact Sandstone
804	Ambikapur	11.14	Lower Ganges	Compact Sandstone
805	Ambikapur-D	49.1	Lower Ganges	Compact Sandstone
806	Ambikapur-s	30.94	Lower Ganges	Compact Sandstone
807	Baghima	6	Lower Ganges	Compact Sandstone
808	Bandana	9.43	Mahanadi	Granite/Granodiorite
809	Batauli	10	Mahanadi	Granite/Granodiorite
810	Batauli S	50	Mahanadi	Granite Gneiss
811	Chatakpur	5.7	Mahanadi	Sandstone
812	Dandgaon	7.71	Mahanadi	Compact Sandstone
813	Darima	8.35	Lower Ganges	Sandstone With Shale/Coal Partings
814	Ghorghadi	8	Mahanadi	Granite Gneiss
815	Kakalo	9.55	Mahanadi	Sandstone
816	Kamleswarpur	21.27	Mahanadi	Basalt
817	Kunni	9.7	Lower Ganges	Granite/Granodiorite
818	Laxmanpur	14	Lower Ganges	Compact Sandstone
819	Mangari	10.4	Mahanadi	Granite/Granodiorite
820	Nagadand	20	Mahanadi	Granite Gneiss
821	Nawapara	9.1	Lower Ganges	Gneiss/Amphibolite/Granulite
822	Parsa	10	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
823	Pratapgarh	11.3	Mahanadi	Granite/Granodiorite
824	Rajpari	7	Mahanadi	Sandstone
825	Sitapur-s	30.94	Mahanadi	Compact Sandstone
826	Udaipur	14.58	Lower Ganges	Compact Sandstone
827	Udaipur Dhah	10.6	Lower Ganges	Compact Sandstone
828	Udaipur-s	30.99	Lower Ganges	Compact Sandstone

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
Bastar					
1	Bakawand - I	NA	NA	NA	NA
2	Bare arapur	NA	NA	NA	NA
3	Bastar	7.7	1.22	4.55	7.65
4	Batrail	NM	0.75	3.26	5.27
5	Bhanpuri	1.55	1.16	2.35	3.2
6	Bhanpuri-d	11.23	1.39	6.67	7.36
7	Bhanpuri-s	NM	1.14	6.68	5.92
8	Chhapanbhanpuri	NM	0.90	6.58	1.85
9	Chitrakot	NM	1.82	NM	7.2
10	Ghodagaon	2.4	2.30	NM	6.12
11	Jagdalpur	NM	NM	7.71	NM
12	Jagdalpur.1	0.47	4.72	6.22	NM
13	Jagdalpur-s PZ	NM	NM	NM	8.74
14	Joba	5.43	2.45	3.45	6.32
15	Keskal	7.9	4.64	5.29	7.15
16	Kilepal - 1	NM	NM	4.28	5.96
17	Kondagon New	NM	NM	NM	NM
18	Kumharwand	NM	1.02	5.49	2.95
19	Lanjora	8.25	3.39	4.41	8.3
20	Markel	NM	0.22	4.45	6.63
21	Pharasgaon	2.92	6.99	3.71	5.19
22	Pharasgaon1 PZ	13.03	NM	13.74	11.65
23	Sonarpal	3.64	1.90	2.60	4.48
Bilaspur					
24	Achanakmar	6.5	0.7	3.15	5.75
25	Amadob	6.44	1.96	4.49	5.35
26	Amerikhapa	6	NM	5.15	5.05
27	Attaria	3.8	0.76	2.50	4.1
28	Baitalpur	4	0.07	1.35	4.2
29	Bakarkuda	NM	NM	NM	6.15
30	Bansajhal	2.4	0.76	1.45	2.62
31	Bansajhal1 PZ	3.89	2.18	2.85	5.15
32	Barighat	8.75	3.23	6.22	8.7
33	Bartoli	9.45	0.86	2.43	3.85
34	Belgahana	5.75	4.47	4.35	5.9
35	Beltara	4.15	0.94	1.79	2.9
36	Bilaspur	6.5	3.63	5.25	7
37	Bilha	8.35	2.05	4.68	6.1

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DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
38	Bindabal	7.8	3.45	4.92	6.4
39	Chakrabhata-d PZ	30.1	16.57	17.90	22.2
40	Chandkhuri (d)	17.9	NM	14.70	16.2
41	Chandkhuri (s)	21.15	NM	17.20	18.1
42	Chattan	6.7	3.19	4.00	5.15
43	Chhaparwa	15.77	8.4	8.35	16.87
44	Chilhati	9.1	1.98	3.85	4.15
45	chilhati	10.4	0.92	NM	5.15
46	Chirhula	2.9	0.10	2.00	3.2
47	Dagauri	4.87	3.98	4.03	6.25
48	Danikundi	19	4.42	14.90	15.6
49	Deori	8.5	5.86	5.50	6.1
50	Dhanpur	6.3	1.79	4.93	6.1
51	Ganiyari.2	3.1	1.68	0.52	1.65
52	Gatori	2.95	1.17	1.84	3.1
53	Gaurela	5.65	1.14	2.79	5.65
54	Godkhami	6.65	1.97	3.87	5.1
55	Hemu Nagar	7.25	NM	NM	NM
56	Hirri	7.75	1.34	4.05	8.2
57	Jhingatpur	6.3	1.02	2.67	3.15
58	Jogipur	11.6	2.98	8.30	8.25
59	Kanteli	8.5	NM	NM	NM
60	Kanteli.1	8.5	7.66	6.70	6.8
61	Kargikhurud	6.9	1.20	3.50	4.8
62	Kenda	7.45	1.08	6.40	6.1
63	Keonchi	8.36	3.3	3.50	4.9
64	Keonchi (D)	4.6	6.55	5.50	7.25
65	Keonchi (s)	8.36	3.47	4.90	7.95
66	Khamharia1	4.52	1.36	2.72	3.55
67	Kota PZ	31.07	1.53	17.60	20.4
68	Kota(kargi)	2.8	0.55	1.24	2.35
69	Kotmi.1	17	NM	9.75	17.75
70	Lamni	15.55	8.37	8.30	16
71	lormi	NM	0.72	1.65	NM
72	Lormi (d)	4.6	3.84	6.22	7.85
73	Lormi1	4.45	1.33	NM	4.95
74	Madanpur	2.3	0.75	NM	5.35
75	Malhar	3.85	1.66	2.25	3.25
76	Marwahi	13.07	3.29	13.07	14.12

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
77	Masturi	NM	NM	0.54	6.15
78	Mungeli	NM	NM	NM	NM
79	Mungeli(d)	17.17	13.80	15.60	18.8
80	Mungeli(s)	14.04	15.32	13.40	13.3
81	Neora	4.05	0.92	2.60	3.85
82	Nimdha	7.9	3.56	1.78	3.15
83	Pali	6.9	1.48	3.88	4.95
84	Panchpedi	9.6	1.6	4.15	5.8
85	Patera	2.1	0.63	0.58	5.1
86	Patharia (chorbhatti)	3.48	0.59	1.88	3.8
87	Pendra Road	NM	4.43	4.82	8.52
88	Piparkhuti	NM	NM	2.63	4.8
89	Piperkhutinew	6.54	3.81	NM	NM
90	Ratanpur	7.85	2.07	4.08	5.35
91	Rupandand	3.7	2.87	2.30	4.8
92	Saragaon1	NM	NM	NM	NM
93	Saraipalli	8.9	1.44	3.45	8.1
94	Seoni	10.97	3.31	3.47	4.85
95	Sewra	8.2	3.32	6.65	7.8
96	Shivtarai New	6.8	1.20	1.00	6.8
97	Sipat	3.4	1.04	2.33	3.95
98	Sitalkunda	4.9	0.82	1.60	3.15
99	Takhatpur.1	6.9	2.19	4.75	5.9
100	Tendumuda	6.55	3.24	3.67	4.82
101	Tenduwa	7.15	1.81	2.20	4.15
102	Tikthi	9	3.79	7.22	8.12
103	Tilaidabra	4.1	3.2	2.45	4.2
104	Udaypur	6.7	NM	1.30	2.9
Dhamtari		NM	NM	NM	NM
105	Arsi-Kanhar	NM	NM	5.92	NM
106	Banraud - I	4.05	1.63	3.98	5.7
107	Banraud D	NM	NM	3.55	NM
108	Banraud S	NM	NM	3.82	NM
109	Banspani	NM	NM	2.14	NM
110	Birgudi	4.49	NM	2.94	NM
111	Budepara	NM	NM	NM	NM
112	Chhati	0.99	0.9	1.41	2.65
113	Dhamtari1 PZ	29.25	NM	14.19	NM
114	Dorgardula	7.17	6.37	6.45	8.57

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DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
115	Dugli	NM	NM	NM	4.87
116	Dugli - I	7.1	2.12	2.30	NM
117	Gangrel S	NM	NM	7.25	11.9
118	Keregaon	4.31	3.41	4.07	6.37
119	Kondapar	4.68	0.50	3.54	5.8
120	Kosmarra	NM	NM	NM	NM
121	Kurud.1	1.5	1.40	1.82	2.3
122	Magarlod	6.03	NM	5.21	5.7
123	Magarlod D	22.5	NM	10.88	16.87
124	Magarlod S	20.7	3.40	8.1	NM
125	Marod	1.4	0.89	2.03	NM
126	Mega	8.3	7.6	4.69	NM
127	Nagari PZ	6.66	0.53	1.89	4.1
128	Nagri	4.3	1.80	3.53	NM
129	Nagri-1	4.49	NM	NM	NM
130	Sankra	5.93	4.77	3.42	NM
131	Seadei	4.48	2.67	1.70	NM
132	Sihawa	4.48	NM	4.35	6.05
133	Singhpur	9.78	6.20	4.54	NM
Durg					
134	Ahiwara	2.81	0.82	4.14	2.2
135	Anda	2.64	1.69	1.92	2.93
136	Anda-I	NM	NM	NM	NM
137	Andhiarkhor	11.5	10.73	11.62	13.67
138	Arjunda	NM	1.49	2.82	4.96
139	Armarikalan	4.9	NM	2.88	5.15
140	Baklitola	6.11	5.66	4.60	6.79
141	Balod	5.83	2.97	5.16	10.33
142	Balod Gahan	NM	1.20	2.81	3.81
143	Batera	4.09	0.91	2.52	5.42
144	Bemetara New	NM	NM	NM	NM
145	Bemetera-s	NM	17.94	NM	NM
146	Berla	NM	NM	NM	NM
147	Bhailai	3.7	2.43	NM	3.61
148	Bharnabhat	4.96	NM	2.09	4.61
149	Bitkuli	5.65	NM	5.89	8.03
150	Bohardih Pzi	4.48	NM	NM	NM
151	Dadhi	5.85	6.40	11.69	13.29
152	Dadhi1	NM	NM	NM	NM

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
153	Dargaon	2.25	NM	5.66	7.75
154	Delli Rajhara	2.97	2.00	2.42	3.55
155	Deorbija	NM	NM	NM	NM
156	Dhamdha-s	18.81	3.54	NM	NM
157	Dondi	NM	2.74	NM	NM
158	Dondi 1	NM	5.66	NM	NM
159	Durg	2.64	1.27	1.75	3.29
160	Funda	5.97	1.58	2.10	4.2
161	Ganiyari	12.5	2.87	4.92	6.74
162	Gatapar	3.82	3.01	5.81	8.12
163	Girhola	NM	7.11	4.08	8.7
164	Gunderdehi	3.85	0.67	1.35	4.15
165	Gunderdehi1	16.74	11.20	7.28	12.33
166	Gurur	NM	NM	2.76	5.96
167	Gurur-s	NM	9.62	8.64	11.46
168	Jagtara	NM	NM	4.32	6
169	Jamgaon	2.8	1.59	NM	NM
170	Jeora Sirsa	7.02	2.16	5.67	7.39
171	Kachundur	3.64	0.24	1.06	1.45
172	Kedwa	NM	NM	NM	NM
173	Khati	6.14	0.21	5.88	NM
174	Khurmuri	13.5	NM	NM	5.36
175	Kodiya	7.4	1.86	4.92	7.41
176	Kumhari	7.99	7.02	3.28	5.36
177	Kusumkasa	8.9	NM	3.71	5.93
178	Litai	8.94	0.86	7.80	14
179	Lohara	4.64	NM	1.91	4.19
180	Markatola	5.65	1.75	0.91	6.44
181	Marra	7.45	1.27	1.76	4.32
182	Motipur	3.25	1.17	2.23	3.69
183	Nahalda	7.03	NM	4.60	4.19
184	Nawagarh1	7.62	7.17	7.44	8.5
185	Nawagarh-d	19.41	13.97	18.00	20.68
186	Nawagarh-s	17.39	13.36	NM	NM
187	Parpoda	11.79	11.3	5.17	7.52
188	Patan	2.15	0.91	1.49	2.6
189	Powara	4.45	0.98	NM	NM
190	Ranka Pz I	12.22	9.47	NM	NM
191	Ravelidih	2.17	1.13	1.70	2.98

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
192	Sambalpur	NM	3.37	8.40	NM
193	Sambalpur Pz I	23.03	21.40	16.07	NM
194	Selud1	NM	1.52	2.11	4.24
195	Selud2	4.16	2.61	7.19	10.24
196	Sikosa	2.2	0.17	0.83	1.45
197	Tarkori	9.05	NM	NM	NM
198	Umradah	8.36	4.87	3.25	7.04
199	Utai-Adarshnagar	1.9	0.80	1.34	1.91
	Janjgir-Champa				
200	Adbhar	NM	NM	0.68	2.1
201	Akaltara	1.5	0.17	0.85	2.35
202	Akaltara S	0.8	0.14	0.72	5.4
203	Baloda -r	11.85	3.04	6.83	7.5
204	Baloda S	14.78	NM	11.60	14.5
205	Bamhani	12.35	4.24	10.13	10.8
206	Bamnidihi	6.3	1.89	4.18	5.45
207	Baradwar D	8.85	3.04	6.30	8.4
208	Baradwar S	12	3.82	4.92	8.3
209	Budena	2.4	0.47	1.18	4
210	Champa	10.45	1.05	NM	12.3
211	Champa-d PZ	16.58	4.60	8.82	17.8
212	Champa-s PZ	17.58	5.78	NM	17.1
213	Chandrapur1	NM	7.04	NM	10.73
214	Dabra	5.65	1.06	2.49	3.85
215	Damau	5.8	3.81	5.08	5.42
216	Dhardei	4.55	0.51	1.55	3.6
217	Dhurkot Nhs	7.35	0.87	2.03	6.7
218	Dongakahrod	4.45	0.73	1.05	1.7
219	Ghoghari	8.52	1.14	3.95	6.1
220	Hasoud	7.1	2.15	6.01	6.5
221	Jaijaipur	11.23	2.75	5.83	6.72
222	Jaijaipur D	10.6	2.52	4.12	7.5
223	Jaijaipur S	10.5	3.12	4.14	7.1
224	Janjgir	4.2	1.02	4.07	7
225	Janjgir S	3.6	0.79	4.35	7.25
226	Jewara	5.36	2.40	2.32	2.9
227	Jhulan Pakariya	7.25	0.83	2.52	3.1
228	Kera	5.35	2.02	3.22	6.5
229	Khartal	2.48	1.43	1.88	4.32

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SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
230	Konargarh	4.85	0.05	2.02	6.36
231	Latesara	5.5	0.89	NM	4.35
232	Loharsi	4.5	0.23	2.00	3.4
233	Malkhroda	12.47	4.19	13.93	14.5
234	Mulmula	6.9	0.58	2.38	3.9
235	Pamgarh	2.1	0.32	1.60	2.5
236	Pamgarh D	10.62	1.58	4.52	11
237	Pamgarh S	10.4	1.33	3.48	10.6
238	Sakti	2.35	0.65	1.25	3.15
239	Sakti S	9.6	0.10	1.80	5.95
240	Saliabhata	8.7	NM	4.50	5.8
241	Sapos	NM	NM	NM	NM
242	Saragaon2	2.72	0.05	0.77	2.8
243	Sasaha	6.2	2.34	2.50	3.8
244	Semra	7.45	3.79	3.87	7.5
245	Seorinarayan	9.3	8.47	8.15	9.6
246	Seorinarayan1 PZ	8.81	NM	7.18	9.6
247	Somthi	7.63	3.43	1.85	6.3
248	Sukda	4.3	1.11	0.83	2.42
249	Thathari	4.35	0.7	1.42	2.42
Jashpur					
250	Amatoli	4.86	1.05	4.00	4.17
251	Bagbahar S	NM	3.47	NM	7.5
252	Bagicha	2.85	1.65	6.09	3.66
253	Bagicha PZ	5.72	2.87	NM	4.28
254	Bahora	8.05	0.85	NM	NM
255	Balachhappar	9.8	2.25	9.24	10.12
256	Bandarchuwa	7.62	3.8	6.28	6.83
257	Banderchua S	8.12	9.03	NM	7.62
258	Bangaon	7.63	4.64	5.60	8.24
259	Bangaon B	7.83	NM	NM	6.44
260	Bataikela	8.62	4.15	5.90	7.5
261	Bewrapali	6	4.6	NM	8
262	Bildagi	NM	NM	NM	NM
263	Binjapur	5.68	0.75	NM	5.98
264	Chhapartoli	5.85	2.60	4.90	5.32
265	Dhodidand	6.2	NM	5.70	5.96
266	Farsabahar	2.97	0.25	3.01	2.2
267	Farsakanhi	6.94	5.54	7.20	7.67

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DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
268	Ghatmunda	7.32	NM	6.10	6.82
269	Jakba	7.21	7.4	6.96	NM
270	Jashpurnagar	NM	3.4	6.61	8.88
271	Kachhor	9.05	0.52	6.12	7.16
272	Kandaibahar	4.8	2.15	3.62	4.05
273	Kandora	7.6	1.90	4.42	5.52
274	Kasawel S	12.82	6.42	NM	12.14
275	Kersai	4.44	0.14	3.80	4.2
276	Khutsera	4.93	0.95	3.97	5.73
277	Kotba	5.01	1.35	4.24	4.97
278	Kunjara	7.25	3.85	6.22	6.78
279	Kunkuri	3.53	NM	NM	NM
280	Kunkuri S	17.27	12.80	4.90	16.8
281	Kunkuri1	NM	2.15	6.86	5.1
282	Lavakera	8.35	2.00	NM	2.43
283	Lavakera1	5.65	2.05	3.69	7.42
284	Ludeg	5.5	1.13	8.69	4.28
285	Maini	6.89	1.65	NM	8.5
286	Mauhadih	NM	NM	4.72	NM
287	Muskuti	6.62	2.29	6.10	5.32
288	Narayanbaheli	6.24	2.10	NM	6.32
289	Narayanpur S	NM	3.64	6.3	4.25
290	Nawaguda	6.89	2.45	6.6	5.88
291	Palidih	9.9	0.40	NM	6.98
292	Pathalgaon	10.93	6.63	NM	9.87
293	Pathalgaon1 PZ	NM	NM	5.05	NM
294	Patratoli	7	0.40	6.26	5.76
295	Peta	7.2	4.75	2.40	6.55
296	Phooldih	4.32	0.80	5.65	3.12
297	Raikera	6.05	2.95	5.28	5.96
298	Raikera(Kunkuri)	6.45	0.70	5.37	6.05
299	Raoni	3.46	2.80	NM	4.17
300	Rupsera	7.05	1.86	NM	4.02
301	Sanna	14.28	10.48	2.76	NM
302	Saraipani	7.3	4.40	NM	7.03
303	Sarhapani	NM	NM	6.02	NM
304	Sarkardih	NM	2.18	NM	NM
305	Sonquari	9.19	5.64	NM	NM
306	Srishringa	6.18	3.70	4.76	6.76

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
307	Surangpani New	8.4	NM	7.22	4.7
308	Tapkara	8.83	3.15	NM	8.08
Kanker					
309	Bhanupratappur	NM	NM	8.05	8.73
310	Bhanbera	NM	NM	9.46	7.9
311	Devri	NM	2.00	7.21	7.89
312	Dudhawa	NM	NM	5.56	6.17
313	Ghotia	NM	NM	8.90	9.18
314	Govindpur	5.73	1.78	2.82	4.36
315	Kachhe	NM	NM	3.73	5.05
316	Kanker	3.58	1.20	3.07	9.05
317	Kanker1 PZ	5.86	2.10	6.19	8.28
318	Korar	NM	NM	8.70	NM
319	Kulgaon	5.56	1.56	5.51	6.26
320	Markatola1	NM	NM	9.13	10.65
321	Murpar-1	NM	NM	4.21	NM
322	Narharpur	NM	NM	4.62	7.78
Kawardha					
323	Bhoramdeo D	19.3	15.20	NM	NM
324	Bharamdeo S	18.77	15.12	NM	NM
325	Bodla	13.88	4.40	5.47	7.12
326	Chilpi	7.67	3.39	6.84	8.34
327	Danganiya	5.59	1.45	1.82	2.93
328	Kapada	9.4	5.69	3.79	4.97
329	Kawardha S	20.88	14.10	17.37	NM
330	Kawardha1	4.9	1.59	1.86	3.49
331	Kharoda Kalan	8.55	2.40	3.77	5.87
332	Kui	6.66	3.03	4.31	6.14
333	Lohara-d PZ	18.02	1.44	NM	4.93
334	Lohara-s PZ	17.51	0.98	4.20	NM
335	Munmuna	7.17	3.01	3.79	5.23
336	Rajnanwagaon	4.04	3.38	NM	NM
337	Sahaspur Lohara.1	3.83	1.97	NM	NM
338	Saroda Dadar S	22	19.00	NM	NM
339	Singhari D	19.25	2.89	NM	NM
340	Uria Khurud	8.08	NM	5.18	7.29
Korba					
341	Banbandha	3.1	0.48	0.72	2.8
342	Bandhakhar	6.82	4.32	2.35	2.95

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
343	Batati Junction	8.23	3.95	5.58	8.7
344	Chaitama	6.7	1.32	3.76	4.8
345	Champa Mode	2.7	0.55	3.10	4.6
346	Charmar		3.94	5.50	5.92
347	Churi	3.8	1.69	2.54	2.9
348	Dhegurdih Manzipara	8.7	NM	4.63	5.6
349	Dhourabhata	7.61	3.86	4.74	5.15
350	Dumardih New	5.96	NM	4.48	5.6
351	Gopalpur	11.8	3.93	2.69	12.71
352	Jamchuwa	9.17	4.54	9.17	9.5
353	Jatgan	10.5	5.34	6.60	10.5
354	Jhabar	8	4.14	NM	NM
355	Jhingatpur	9.84	3.06	2.00	3.15
356	Jogipali	NM	4.42	8.10	8.8
357	Kartala	9.25	2.65	5.33	8.7
358	Katghora	5.95	1.20	2.23	3.6
359	Khodri	2.2	0.55	5.60	2
360	Korba	13.47	13.47	13.47	14.47
361	Korba-S	NM	NM	NM	6.5
362	Korkoma Junction	7.59	4.30	1.92	3.45
363	Kotmer Upper	NM	NM	1.38	NM
364	Kurtha	7.27	NM	8.35	NM
365	Lenga	7.42	0.90	5.66	7.8
366	Madai	7.39	NM	5.48	NM
367	Morga	10.93	NM	NM	NM
368	Nagai	9.74	5.34	5.04	9.8
369	Naktikhar	9.52	1.97	3.75	6.1
370	Naraibodh	4.85	1.7	7.10	7.5
371	Nawapara	6.7	NM	2.52	NM
372	Nonbirra	NM	2.10	5.80	5.95
373	Nonbirra	7.37	4.06	4.70	6.1
374	Numera	10.58	3.97	6.75	7.9
375	Nunera Pz I	7.3	4.64	NM	NM
376	Nunera Pz II	NM	NM	NM	NM
377	Pali	4.55	0.48	1.69	3.1
378	Pasan	10.15	8.09	9.67	10.2
379	Pasarkhet	3.9	1.23	3.35	4.8
380	Pondi	4.61	NM	2.38	NM
381	Ponri	NM	1.85	2.86	4.1

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
382	Rajkamma	6.4	0.22	1.75	3.25
383	Rampur	5.22	1.50	2.55	3.6
384	Ramtarai Pz I	6	NM	3.70	6.15
385	Rewa	7.75	2.93	3.87	7.4
386	Rishdi	6.01	1.62	4.35	4.95
387	Sakdukala	7.6	1.85	5.73	6.1
388	Salihabhata	6.3	1.91	NM	NM
389	Sindhiya	NM	NM	2.68	5.65
390	Sirki Pz I	NM	NM	NM	NM
391	Sirki Pz Ii	NM	NM	NM	NM
392	Sutarra	8.7	2.09	3.90	4.55
393	Sutera	NM	NM	NM	NM
394	Tikeja	3.65	0.69	3.98	5.1
395	Tiwarta Pz I	NM	7.30	NM	NM
396	Tiwarta Pz Ii	NM	8.15	NM	NM
397	Tuman	10.24	3.42	4.80	5.9
398	Tuman	5.65	2.32	4.09	6.5
399	Urga.1	6.4	4.27	1.83	7.05
Koriya					
400	Baikunthpur	5.23	1.66	3.88	6.39
401	Baikunthpur-s	10.69	14.92	6.53	16.24
402	Belbehra	6.55	5.93	3.60	5.81
403	Biharpur	NM	10.46	11.05	12.41
404	Bikrampur	5.91	3.20	4.75	6.2
405	Ghugra	11.06	NM	7.60	11.07
406	Girjapur	NM	0.41	0.85	2.9
407	Jamgahana	5.9	3.31	3.85	6.27
408	Kelhari	NM	3.54	7.54	10.97
409	Khadgaon	NM	7.22	8.09	10.26
410	Khadgaon - 1	NM	NM	NM	NM
411	Khatgori	11.66	5	0.82	2.65
412	Manendragarh	9.7	5.24	0.56	3.94
413	Mansukha	9.43	6.55	7.09	10.69
414	Pendri	NM	1.53	NM	8.12
415	Pouri	NM	5.53	5.99	7.64
416	Ranai	10.35	3.75	8.56	13
417	Ranai1	NM	NM	NM	NM
418	Sarbhoka	NM	1.81	2.74	5.36
419	Sonhat	6.4	1.91	2.10	4.26

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
420	Tarabahara		2.96	2.60	5.21
421	Ujiyarpur1	9.7	6.12	7.37	9.16
Mahasamund					
422	Awaradawri S	11.06	NM	6.50	NM
423	Bag bahera	7.92	1.62	5.57	9.16
424	Baldidih	3.82	5.20	6.10	NM
425	Barbaspur	2.96	NM	NM	NM
426	Basna	2.1	0.74	1.77	2.78
427	Belsunda	1.08	1.19	1.73	3.82
428	Jagdishpur	3.73	8.24	4.19	NM
429	Jhalap	6.82	1.35	4.83	4.27
430	Jhalap S	18.58	NM	14.27	NM
431	Jogideepa D	6.53	4.22	5.80	NM
432	Jogideepa S	NM	NM	4.66	NM
433	Jogidipa	6.83	3.65	5.36	6.5
434	Keshwa S	NM	NM	12.05	NM
435	Khallari	0.89	0.31	1.81	4.7
436	Mahasamund Contractual S	8.86	3.25	8.15	NM
437	Mahasamund.1	6.26	4.08	8.21	9.86
438	Mahasamund-s PZ	NM	NM	7.00	NM
439	Marban	3.11	NM	NM	NM
440	Patsenduri	0.2	0.15	NM	4.32
441	Phusera	NM	NM	NM	NM
442	Pithora	6.89	4.93	8.61	11.1
443	Pithora PZ	NM	NM	NM	NM
444	Sakra S	NM	NM	6.01	NM
445	Saraipali	2.8	NM	1.43	NM
446	Saraipalli-S PZ	10.12	NM	NM	15.35
447	Sirpur	6.91	8.05	8.85	NM
448	Sirpur1 PZ	10.7	NM	8.60	9.65
449	Suarmar	7.09	6.40	6.14	5.9
450	Suarmar1 PZ	8.73	5.07	5.83	7.36
451	Tendukonda	1.27	0.95	3.54	4.98
452	Tumgaon	2.92	1.32	NM	4.98
453	Tumgaon S	NM	NM	3.09	NM
Raigarh					
454	Amapali	6.95	3.65	6.43	7.02
455	Amlipur Amlitikra	NM	NM	NM	NM

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DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
456	Auranar	10.7	5.12	10.13	11.18
457	Bakaruma	10.3	7.8	7.95	7.58
458	Bamsjer	6.46	5.05	4.21	4.35
459	Baramkela	4.13	0.50	2.58	6.22
460	Baramkela S	24.5	17.50	7.38	37
461	Barpali	7.48	4.06	6.81	7.23
462	Bartapali	8.78	NM	NM	8.4
463	Bataupali	3.4	150	6.06	4.62
464	Bayasi	4.08	2.20	5.10	5.35
465	Bhangari	8.97	4.85	7.72	10.38
466	Bhupdeopur S	NM	5.30	NM	15.92
467	Bijapara	NM	NM	NM	NM
468	Bojia	5.68	1.17	1.60	5.78
469	Bonda	2.05	0.4	1.61	2.22
470	Boro	9.6	3.65	7.76	8.78
471	Chaple	4.8	0.75	3.31	4.72
472	Chaple S	NM	3.56	NM	6.28
473	Chimtapani	12.49	3.35	5.05	10.19
474	Chunkunidad	NM	NM	NM	NM
475	Damdarha	9.1	6.40	7.87	9.85
476	Derpani	3.9	1.05	4.51	2.62
477	Dharamjaigarh PZ	5.31	1.67	NM	4.75
478	Dharmajaigarh	6.63	2.85	4.92	5.88
479	Duliamuda	9.1	6.00	8.60	9.4
480	Dumarpali	5.6	3.60	6.02	6.9
481	Durgapur	9	2.95	7.01	8.82
482	Edu	6.82	3.26	5.90	6.3
483	Farkanara	7.52	4.35	7.86	9.22
484	Gare Nhs	8.06	1.40	5.98	6.23
485	Gersa	7.64	2.35	6.23	6.06
486	Gharghoda	12.73	3.45	6.23	6.88
487	Golabuda	10.2	4.6	6.71	7.62
488	Hati	8.18	2.90	6.85	8.32
489	Hirri1	8.94	0.36	3.38	6.18
490	Kanakbira	10.1	1.8	NM	7.63
491	Kandadand	9.7	1.40	4.91	7.78
492	Kapu	9.2	1.80	5.84	6.66
493	Kedar S	8.57	3.20	NM	NM
494	Kerajhar	4.25	0.9	4.47	4.76

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
495	Kerigarhi	10.6	NM	6.31	NM
496	Khadgaon1	12.62	8.89	11.31	12.6
497	Kharasia S	18.3	2.83	NM	13.82
498	Kharsia	2.55	0.25	2.56	2.05
499	Kondatalai s	16.5	NM	NM	NM
500	Kotra	1.18	0.40	2.28	1.78
501	Kurekela	13.9	8.25	9.85	5.08
502	Lailunga1	6.63	2.69	6.64	7.47
503	Lailunga2	6.32	2.7	NM	6.58
504	Lakha	NM	0.55	NM	NM
505	Lakshmipur	NM	2.26	4.43	4
506	Laripani	9.7	2.25	8.96	10.35
507	Lendra S	3.35	1.55	NM	7.35
508	Lipti	6.05	1.62	4.36	5.08
509	Malda B	8.42	1.75	7.21	9.1
510	Milupara-Sidarpara	9.55	6.2	10.21	NM
511	Mumund	4.35	0.75	4.31	4.66
512	Pakargaon	4.45	0.10	3.75	4.02
513	Pindri	5.56	NM	NM	2.93
514	Raigarh	2.22	1.55	3.91	3.82
515	Raiharg S	18.4	14.1	NM	NM
516	Rajpur.1	4.84	1.4	4.01	8.6
517	Rera	3.34	0.90	6.05	3.47
518	Salkhiya	7.3	1.95	NM	6.4
519	Samaruma	5.25	3	4.92	5.29
520	Sarangarh	NM	2.63	NM	NM
521	Sarangarh S	NM	NM	NM	NM
522	Shahpur Colony	9.49	NM	7.31	8.35
523	Sirsinga Temple	NM	NM	5.77	7.47
524	Sisringa	12.01	1.94	NM	NM
525	Sithra New	NM	NM	NM	NM
526	Sukwasuava	NM	NM	NM	NM
527	Tadola	3.3	0.20	NM	2.84
528	Taraimal1.1	7.44	NM	3.87	4.55
529	Tetla	2.01	1.37	1.42	2.32
Raipur					
530	Abhanpur	NM	NM	4.25	6
531	Abhanpur D	7.52	4.20	6.14	8.25
532	Abhanpur S	5.88	NM	NM	NM

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
533	Amera	2.8	0.38	2.65	2.53
534	Amethi	NM	NM	NM	NM
535	Aouri	4.17	1.75	3.52	NM
536	Arang	1.56	0.46	3.73	5.4
537	Arjuni	5.89	1.18	2.95	5.7
538	Bajrangpur	0.33	0.47	1.07	2.5
539	Baloda bazar	14.4	1.40	4.70	NM
540	Bhatgaon	2.34	1.55	3.45	4.3
541	Bhattapara-S	7.18	3.03	10.54	11.4
542	Biladi	3.93	1.44	4.12	6.3
543	Bilaigarh	0.98	0.24	0.38	1.35
544	Bilaigarh S	NM	1.10	3.51	NM
545	Chanderi	8.34	0.7	3.10	4.38
546	Chandi	3.24	0.1	1.22	4.7
547	Charauda	2.83	4.31	1.46	NM
548	Chhura	4.45	1.55	4.50	5.06
549	Chicholi	4.74	0.43	2.05	9.78
550	Darchura	2.31	0.75	1.98	3.2
551	Devpuri	13.24	3.10	8.10	7.39
552	Devri	4.35	1.19	5.20	7.36
553	Dhamarkhera	4.03	1.95	1.88	6.47
554	Dharsiwa	7.65	5.24	2.14	4.24
555	Dumartarai	7.81	1.20	2.95	NM
556	Fingeshwar- I	1.27	1.36	NM	NM
557	Gariabandh-s	14.57	NM	9.33	NM
558	Gariyaband	NM	NM	NM	5.8
559	Gariyaband -1	1.85	1.50	4.00	NM
560	Gariyaband-d	14.75	NM	NM	11.17
561	Haswa	2.02	0.93	2.78	6.58
562	Jalkhamar	NM	NM	NM	NM
563	Kanekera	1.43	1	4.55	4.1
564	Kanki	2.7	1.42	3.10	NM
565	Kanki D	2.82	NM	3.20	NM
566	Kanki S	NM	2.3	2.95	NM
567	Kasdol	5.22	0.62	2.43	3.65
568	Kasdol-d	5.2	0.83	3.14	4.65
569	Khapri	9.06	4.25	6.33	NM
570	Kharora	4.98	1.28	3.50	8.2
571	Kusrangi	NM	NM	NM	3.3

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
572	Lahaud	7.53	0.79	2.58	4.48
573	Lawan	4.41	NM	1.34	3.46
574	Manabasti	1.29	2.48	4.42	8.45
575	Mandalpur	NM	0.75	1.61	2.25
576	Mandirhasud	5.59	NM	12.57	NM
577	Mudhipar	2.38	0.35	3.9	4.53
578	Palari	6.7	1.99	3.01	NM
579	Pandan Bhata	5.22	8.1	1.6	4.2
580	Panderbhata S	7.81	NM	1.92	NM
581	Panduka	1.6	0.66	2.89	2.22
582	Raipur	1.83	NM	3.89	NM
583	Raita Satna Ni Para	5.69	NM	2.22	NM
584	Rajim	8.32	6.22	7.65	4.22
585	Ranisagar	2.34	0.2	2.33	2.22
586	Risda	3.39	0.85	2.59	5.1
587	Sandi	8.75	0.55	3.2	NM
588	Sandi1	5.85	0.34	3.11	NM
589	Saragaon	1.35	1.69	1.68	4.74
590	Sarsiwa	5.52	NM	3.28	5.8
591	Sel	1.28	0.54	1.35	2.95
592	Semariya	10.27	0.7	1.2	2.38
593	Simga	3.94	0.62	3.72	2.38
594	Suhela	5.63	0.9	2.56	3.2
595	Sursabandha	NM	NM	NM	NM
596	Tarenga	13.52	6.7	NM	17.11
597	Tarpongi	4.64	3.45	1.28	3.53
598	Tatibandh MVM	5.11	NM	3.75	NM
599	Tilda	5.14	NM	NM	NM
600	Tilda Purani Basti	NM	NM	1.66	2.6
601	Tundei	2.54	1.32	NM	NM
602	Umaria station	1.64	0.25	2.5	4.85
603	Urela	4.18	NM	NM	NM
Rajnandgaon		NM	NM	NM	NM
604	Ambagarh chowki	10.98	NM	NM	NM
605	Badaitola	12.68	4.01	7.95	9.21
606	Baigatola	2.01	0.83	4.64	NM
607	Bandha Bazar	6.9	NM	NM	NM
608	Chhuria	12.9	NM	NM	NM
609	Chinohola	9.5	6.72	5.53	6.21

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
610	Chirchari	3.78	NM	5.08	NM
611	Chuikhadan	10.74	4.29	3.13	5.74
612	Dhaneli	6.49	5.89	5.3	8.72
613	Dhara	6.52	3.27	NM	5.19
614	Dongargaon.1	3.25	2.21	1.3	2.93
615	Dongargarh	6.5	3.5	3.98	6.23
616	Dongargarh-d PZ	7.04	1.8	3.66	5.36
617	Dongargarh-sPZ	7.15	1.47	NM	NM
618	Gandaipandaria	6.85	5.76	3.27	4.88
619	Govindpur	6.2	3.6	3.89	4.91
620	Khairagarh	7.25	5.48	5.98	8.98
621	Kumarada 1	6.44	0.51	NM	NM
622	Lal bhadurnagar	8.31	0.71	1.47	2.88
623	Madrakuhi	6.61	2.04	5.76	9.5
624	Mohgaon	12.2	4.52	NM	NM
625	Narmada	3.43	0.74	2.21	3.48
626	Rajnandgaon	2.32	1.42	1.82	3.77
627	Rajnandgaon-S PZ	6.52	2.17	5.56	8.62
628	Ramatola	13.2	10.25	7.01	8.29
629	Rangkathera	4.96	1.73	3.83	4.74
630	Ranitarai	3.2	0.35	1.55	3.96
631	Ravagahan	4.88	0.34	4.71	6.39
632	Reevagaon	7.45	5.25	4.62	5.54
633	Salgapat	8.55	4.63	7.61	9.61
634	Salhe Bara	9.47	8.98	NM	NM
635	Saloni	5.95	1.81	3.54	4.81
636	Singhola	NM	0.95	2.02	3.68
637	Somni	5.13	0.85	3.87	5.28
638	Talai	9.5	1.55	2.4	5.49
639	Tappa	9.51	3.89	4.38	6.42
640	Uraidabritola	8.55	5.24	5.09	5.94
Surguja					
641	Ajabnagar	NM	NM	NM	NM
642	Alkadih		2.11	3.29	3.93
643	Ambikapur	9.14	2.74	4.96	7.73
644	Ambikapur-D	16.33	11.28	12.1	16.9
645	Ambikapur-s	16.05	10.46	12.79	15.87
646	Amdih	6.43	1.87	3.12	5.41
647	Bachwar	6.95	2.75	3.8	6.12

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
648	Badsara	7.81	2.3	4.1	6.46
649	Baghima	3.71	0.59	1.85	3.61
650	Balrampur	10.99	13.42	NA	18
651	Balrampur D	NM	11.27	NM	15.81
652	Balrampur S	15.46	11.58	NM	16.21
653	Bandana	8.65	4.21	6.5	8.95
654	Basin	7.1	2.46	3.22	NM
655	Batauli	NM	NM	5.8	NM
656	Batauli S	NM	NM	5.2	NM
657	Bhadori	5.95	NM	NM	6.12
658	Bhaiyathan	7.53	4.69	6.3	11.72
659	Bulga	7.27	2.9	2.67	5.54
660	Chandora	6.53	1.29	3.94	5.81
661	Chatakpur	5.15	3.24	3.53	5.26
662	Dandgaon	3.77	1.75	3.83	4.28
663	Darima	7.4	3.04	5.6	8.32
664	Deonagar	5.54	3.89	2.02	5.38
665	Dhaurpur	7.9	0.75	3.7	6.49
666	Dhaurpur S	14.16	3.16	4.2	9.42
667	Ganeshpur	7.33	2.6	3.68	5.83
668	Ghorghadi	NM	4.84	5.9	8
669	Gonda	6.5	1.54	2.09	5.24
670	Jagannathpur	7.15	2.21	4.2	4.17
671	Jaynagar	9.71	5.56	NM	10.26
672	Jhasi	9.85	3.16	NM	6.91
673	Kakalo	8.53	2.41	NM	6.76
674	Kalyanpur	5.75	2.11	NM	6.42
675	Kamleswarpur	6.41	1.66	NM	13.09
676	Kanakpur	9	4.54	NM	8.27
677	Kunni	3.93	1.68	4.37	6.97
678	Kurji	NM	1.12	NM	7.64
679	Lamgaon	6.3	4.47	4.91	6.1
680	Latori	NM	NM	NM	NM
681	Laxmanpur	NM	NM	NM	NM
682	Lundra	8.5	4.11	3.15	6.81
683	Lundra S	NM	NM	NM	NM
684	Mahewa	NM	NM	5.8	7.05
685	Makanpur	11.8	3.51	6.02	8.31
686	Mangari	7.82	3.15	5.2	6.92

ANNEXURE II

DEPTH TO WATER LEVELS OF NATIONAL HYDROGRAPH STATIONS

SN	District	DTW May 2015	DTW August 2015	DTW November 2015	DTW January 2016
687	Nagadand	7.05	2.12	15.27	NM
688	Nawapara	7.26	2.48	4.67	NM
689	Nawdih	7.85	NA	NA	NA
690	Odigi	NA	NA	NA	NA
691	Parsa	9.4	5.78	6.2	9.51
692	Pasta	8.26	4.39	4.75	8.02
693	Pasta S	NM	3.06	5.21	9.72
694	Pratapgarh	10.41	3.03	5.02	7.51
695	Pratappur	NM	6.01	8.5	12
696	Pratappur - 1	NM	NM	NM	NM
697	Premnagar	13.1	9.6	9.89	12.27
698	Premnagar D	16.38	10.44	13.14	15.42
699	Rajpari	NM	NM	NM	3.55
700	Rajpur	13.64	3.57	NM	10.66
701	Rajpur1	11.59	3.69	5.97	10.89
702	Ramanuj nagar	7.05	4.18	NM	6.31
703	Reonti	11.2	2.07	9.96	12.48
704	Sargaon	NM	3.68	3.98	5.23
705	Shankargarh S	NM	9.72	12.08	15.82
706	Sirsi	7.85	4.62	NM	8.36
707	Songara	6.61	1.71	9.08	11.31
708	Surajpur	NM	NM	NM	NM
709	Tara	15.32	12.9	12.26	14.19
710	Tara1	15.77	12.55	11.75	13.96
711	Udaipur	11.77	8.21	7.22	11.63
712	Udaipur Dhah	3.44	1.52	3.18	10.5
713	Udaipur-s	14.33	9.22	10.7	16.26
714	Wadrafnagar	11.14	2.3	8.58	NM

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
1	Balod	Balod	Balod	81.2000	20.7292	HP	8	616	400	0.1	67	11.7	71.1	0	159	130	195	46	19.2	50	4.6
2	Balod	Balod	Batera	81.0642	20.7806	DW	7.6	189	123	0.0	28	0.0	6.2	0	61	50	75	24	3.6	8	4.2
3	Balod	Balod	Umaradah	81.2472	20.7361	HP	7.9	554	360	0.7	71	11.8	50.8	0	140	115	160	40	14.4	54	2.5
4	Balod	Dondilohara	Bharnabhat	80.9972	20.8875	HP	7.9	239	155	0.2	14	9.1	3.1	0	110	90	100	28	7.2	10	1.4
5	Balod	Doundi	Dalli Rajhara	81.0778	20.5861	DW	8	271	176	0.1	25	14.8	7.6	0	98	80	95	24	8.4	17	2.6
6	Balod	Doundi	Baklitola	81.0898	20.6994	HP	8	662	430	0.7	82	38.5	30.2	0	183	150	205	44	22.8	56	0.7
7	Balod	Guderdehi	Sikosa	81.2889	20.8764	DW	7.8	731	475	0.1	114	73.0	34.1	0	122	100	225	72	10.8	52	4.7
8	Balod	Guderdehi	Kachandur	81.2969	20.9789	DW	8.1	552	359	0.3	64	5.6	29.5	0	189	155	120	32	9.6	69	13.2
9	Balod	Gunderdehi	Arjunda	81.2056	20.9431	HP	8	348	226	0.2	28	2.4	9.1	0	146	120	100	36	2.4	30	0.5
10	Balod	Gunderdehi	Gunderdehi	81.2958	20.9444	HP	7.1	1400	910	0.5	369	19.2	52.2	0	140	115	440	84	55.2	125	1.5
11	Baloda bazar	Baloda bazar	Arjuni	82.0653	21.6917	HP	7.8	526	342	0.2	82	0.0	38.8	0	92	75	175	58	7.2	29.5	1.4
12	Baloda bazar	Baloda bazar	Lahod	82.2583	21.6542	DW	8	611	397	0.4	89	3.0	12.0	0	201	165	180	36	21.6	51.2	2
13	Baloda bazar	Baloda bazar	Lawan	82.3417	21.6389	HP	7.9	1474	958	0.4	273	5.4	103.7	0	153	125	300	72	28.8	175	6.8
14	Baloda bazar	Bhatapara	Tarenga	81.8856	21.7509	HP	8.1	775	504	0.3	67	5.0	125.5	0	171	140	270	40	40.8	63.4	1.6
15	Baloda bazar	Bhilaigarh	Bajrangpur	81.8111	20.9833	HP	8.1	426	277	0.2	14	24.9	4.6	0	268	220	125	20	18	55.9	1
16	Baloda bazar	Bhilaigarh	Baloda bazar	82.1667	21.6556	HP	8	178	116	0.1	14	6.6	1.2	0	104	85	80	18	8.4	10.2	0.3
17	Baloda bazar	Bhilaigarh	Mandalpur	82.9228	21.4875	HP	8.2	832	541	0.2	170	4.7	62.3	0	92	75	185	36	22.8	94.9	1.9
18	Baloda bazar	Kasdol	Aourai	82.2667	21.4208	HP	8.3	401	261	0.2	46	10.4	2.6	6	153	135	155	28	20.4	16.5	2.5
19	Baloda bazar	Kasdol	Devri	81.9558	20.8828	DW	8.3	543	353	0.1	25	19.8	3.4	15	256	235	210	66	10.8	31.9	7.1
20	Baloda bazar	Kasdol	Haswa	82.5611	21.6875	HP	8	423	275	0.0	71	5.1	4.7	0	73	60	140	54	1.2	10.8	2.4
21	Baloda bazar	Kasdol	Kasdol	82.4333	21.6167	DW	7.8	463	301	0.3	57	0.0	21.1	0	153	125	140	44	7.2	33.5	2.7
22	Baloda bazar	Kasdol	Mudipar	82.2833	21.4667	HP	7.9	555	361	0.0	75	25.1	44.7	0	146	120	165	54	7.2	45.6	0.9
23	Baloda bazar	Kasdol	Sel	82.4915	21.6522	DW	8.2	933	606	1.0	156	3.8	33.3	0	275	225	260	34	42	95.3	2.3
24	Baloda bazar	Kasdol	Tundri	82.6434	21.6493	DW	8.1	950	618	0.6	170	0.0	40.7	0	189	155	220	40	28.8	113	3
25	Balodabazar	Simga	Udela	81.8500	21.6083	DW	8.1	723	470	0.0	85	31.6	40.2	0	262	215	235	26	40.8	64.1	2.4
26	Balodabazar	Simga	Simga	81.7041	21.6262	HP	7.8	635	413	0.1	25	4.8	115.5	0	183	150	280	48	38.4	19.6	16.6
27	Balodabazar	Simga	Damakheda	81.7594	21.7006	HP	7.8	894	581	0.1	89	31.2	126.2	0	177	145	375	78	43.2	31.6	11.6
28	Balrampur	Balrampur	Balrampur	83.6167	23.5903	HP	8.2	395	257	0.1	28	12.1	11.9	0	177	145	120	44	2.4	30.6	0.8
29	Balrampur	Balrampur	Pasta	83.5250	23.4500	HP	8	179	116	0.1	18	9.3	1.7	0	79	65	55	20	1.2	15.9	0.6
30	Balrampur	Rajpur	Makenpur	83.3233	23.4133	HP	7.9	191	124	0.3	11	6.5	0.8	0	104	85	75	24	3.6	8	2.5

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
31	Balrampur	Rajpur	Rajpur	83.4042	23.3375	HP	8.2	303	197	0.1	18	28.0	11.0	0	116	95	120	36	7.2	12.1	0.7
32	Balrampur	Ramchandrapur	Aragahi	83.6833	23.7542	HP	8.3	279	181	0.2	21	0.0	5.1	0	146	120	95	36	1.2	19.7	1.9
33	Balrampur	Ramchandrapur	Nawdihi	83.4083	23.8167	DW	8.2	332	216	0.0	28	4.3	9.5	0	140	115	130	34	10.8	13.9	0.6
34	Balrampur	Ramchandrapur	Mahavirganj	83.5792	23.7708	HP	8	581	378	1.5	75	5.8	49.9	0	128	105	80	22	6	87.5	2.5
35	Balrampur	Ramchandrapur	Ramanujganj	83.6833	23.7944	HP	7.9	636	413	0.3	60	46.1	35.7	0	189	155	210	54	18	42.7	1.5
36	Balrampur	Ramchandrapur	Tattanpani	83.6583	23.6889	HP	8.2	280	182	0.6	18	0.1	6.1	0	153	125	90	28	4.8	22	2.3
37	Balrampur	Wadrafnagar	Karamdiha	83.2806	23.8139	DW	7.8	452	294	0.1	46	17.6	18.8	0	153	125	185	58	12	8.6	5.4
38	Balrampur	Wadrafnagar	Wadrafnagar	83.1958	23.7667	HP	7.7	109	71	0.0	11	17.0	1.1	0	31	25	35	4	6	5.9	6.8
39	Bemetara	Bemetara	Bitkuli	81.6675	21.7750	HP	7.9	1453	944	1.4	25	81.7	721.9	0	140	115	760	158	87.6	94	2
40	Bemetara	Bemetara	Khurmuri	81.6139	21.7125	HP	7.9	898	584	0.0	39	0.0	341.8	0	165	135	350	84	33.6	58	23.6
41	Bemetara	Bemetara	Chilpi	81.0583	22.1667	DW	7.5	98	64	0.0	11	1.3	1.8	0	37	30	35	12	1.2	2	2.7
42	Bemetara	Berla	Parpoda	81.4014	21.5881	DW	8.1	560	364	0.4	53	11.3	11.2	0	232	190	185	34	24.0	49	2.1
43	Bemetara	Nawagarh	Andhiyarkhor	81.5975	21.8383	HP	8.2	534	347	0.4	18	11.1	96.5	0	171	140	195	32	27.6	40	1.5
44	Bemetara	Nawagarh	Ganiya	81.5648	21.9466	HP	8.1	636	413	0.1	28	9.7	92.2	0	232	190	220	36	31.2	59	1.4
45	Bemetara	Saja	Deorbija	81.4141	21.6639	HP	7.9	1022	664	0.1	96	93.9	136.4	0	195	160	365	84	37.2	66	5.8
46	Bilaspur	Bilha	Bartoli	82.1475	21.8797	HP	8.1	1155	751	0.0	192	48.4	86.1	0	207	170	455	94	52.8	12.2	25.6
47	Bilaspur	Bilha	Bilha	82.0860	21.9585	HP	8.3	1007	655	0.1	142	29.3	80.5	9	183	165	285	44	42	88	15.3
48	Bilaspur	Bilha	Dagauri	82.0706	21.8939	TW	7.9	1016	660	0.3	64	3.4	240.0	0	183	150	340	46	54	89.5	11.7
49	Bilaspur	Bilha	Bilaspur (Hemunagar)	82.1864	22.0533	HP	8.1	1236	803	0.4	224	3.1	48.3	0	275	225	335	46	52.8	117.5	4
50	Bilaspur	Bilha	Hirri	82.0500	21.9708	HP	8.4	511	332	0.4	43	0.0	38.9	12	195	180	220	26	37.2	18.3	2.8
51	Bilaspur	Bilha	Madanpur	82.1472	22.2411	HP	8.1	647	421	0.2	89	15.6	36.5	0	189	155	240	64	19.2	27.9	1.4
52	Bilaspur	Kota	Belgahana	82.0333	22.4333	HP	8.4	312	203	1.0	14	0.2	10.8	9	134	125	130	28	14.4	15	1.1
53	Bilaspur	Kota	Jhingatpur	81.9972	22.3667	HP	7.9	492	320	0.4	53	46.4	17.8	0	122	100	180	52	12	20.2	1.2
54	Bilaspur	Kota	Jogipur	82.0750	22.2958	HP	8.2	559	363	0.5	46	21.1	21.1	0	220	180	175	52	10.8	40.8	0.4
55	Bilaspur	Kota	Kota (kargi)	82.0250	22.2889	HP	7.9	659	428	0.3	89	8.4	21.2	0	171	140	215	54	19.2	39.1	1.7
56	Bilaspur	Kota	Ratanpur	82.1778	22.2806	HP	8.1	487	317	0.3	67	12.3	17.2	0	153	125	170	44	14.4	25	0.6
57	Bilaspur	Kota	Saraipalli	81.9361	22.3417	TW	8.2	682	443	0.3	103	65.5	30.6	0	128	105	235	56	22.8	36.8	1.5
58	Bilaspur	Kota	Tenduwa	81.8833	22.2542	HP	8.3	383	249	0.3	32	5.0	10.8	9	153	140	160	36	16.8	15.4	0.9
59	Bilaspur	Kota	Patera	81.9317	22.3094	HP	8.1	369	240	0.2	18	12.9	21.6	0	244	200	190	18	34.8	26.1	17.5

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
60	Bilaspur	Kota	Shivtarai	81.9342	22.3489	HP	8.3	513	333	0.4	53	2.2	20.3	12	195	180	185	30	26.4	32.5	0.6
61	Bilaspur	Kota	Kargi khurd	81.9586	22.2675	HP	8.4	428	278	0.2	25	12.2	14.5	6	189	165	195	30	28.8	20.6	3.9
62	Bilaspur	Marwahi	Danikundi	82.0667	22.9292	TW	8.4	419	272	0.3	39	52.3	16.6	9	92	90	155	46	9.6	25.6	1.9
63	Bilaspur	Marwahi	Dhanpur	81.9861	22.8833	TW	7.9	610	397	1.8	82	15.0	49.8	0	146	120	185	66	4.8	40.2	0.7
64	Bilaspur	Marwahi	Kotmi.1	82.0875	22.8111	HP	8.2	852	554	0.3	114	50.4	24.2	0	220	180	300	72	28.8	25.9	7.9
65	Bilaspur	Marwahi	Marwahi	82.0694	23.0200	HP	8.2	472	307	0.3	53	10.5	10.3	0	122	100	150	56	2.4	27.3	4.6
66	Bilaspur	Marwahi	Seoni	81.9583	23.0125	TW	8.3	278	181	1.0	18	3.9	4.7	9	134	125	90	30	3.6	24.5	0.6
67	Bilaspur	Marwahi	Tikthi	82.0694	23.0844	HP	8.3	409	266	0.1	60	35.8	14.8	6	61	60	150	48	7.2	12.3	1.4
68	Bilaspur	Marwahi	Nimdha	81.9450	22.9469	HP	8.2	239	155	0.7	28	6.6	11.5	0	73	60	60	18	3.6	22.8	0.5
69	Bilaspur	Marwahi	Tendumuda	82.0122	23.0581	HP	8.4	502	326	0.3	28	3.9	19.3	9	238	210	65	14	7.2	82.5	1.4
70	Bilaspur	Marwahi	Shekhwa	82.0889	22.8417	HP	7.7	217	141	0.2	25	28.4	0.3	0	61	50	55	20	1.2	21.3	1.7
71	Bilaspur	Masturi	Chilhati	82.3136	21.7794	HP	8.5	760	494	0.6	18	7.6	8.9	18	433	385	40	10	3.6	186.5	1.5
72	Bilaspur	Masturi	Malhar	82.2858	21.8914	HP	8.3	513	333	0.3	60	2.6	9.3	9	189	170	170	38	18	26.4	18.4
73	Bilaspur	Masturi	Masturi	82.2667	21.9903	HP	8.1	1581	1028	0.1	291	114.9	88.5	0	159	130	475	106	50.4	100	5
74	Bilaspur	Masturi	Panchpedi	82.2700	21.8281	HP	8.3	572	372	0.2	75	32.8	15.3	6	153	135	240	56	24	17.3	0.9
75	Bilaspur	Pendra Road	Gaurela	81.9111	22.7542	HP	8.2	1137	739	0.0	249	12.0	48.6	0	128	105	295	78	24	91.5	1.5
76	Bilaspur	Pendra Road	Keonchi	81.7708	22.6208	HP	8.3	274	178	1.5	18	4.4	6.3	6	146	130	80	22	6	32.3	1.3
77	Bilaspur	Pendra Road	Piperkhuti	81.8833	22.6639	HP	8.4	432	281	1.1	43	16.9	26.1	6	116	105	130	50	1.2	28.5	1.4
78	Bilaspur	Pendra Road	Rupandand	81.8933	22.6975	HP	7.9	384	250	1.7	28	0.0	10.1	0	146	120	25	6	2.4	74.9	0.7
79	Bilaspur	Pendra Road	Sewra	81.9806	22.8517	HP	8.1	185	120	0.5	21	2.5	2.9	0	73	60	65	18	4.8	12.2	1.1
80	Bilaspur	Takhatpur	Beltara	82.2681	22.2722	HP	7.8	2010	1307	0.0	458	63.7	107.0	0	98	80	840	164	103.2	35	1.2
81	Bilaspur	Takhatpur	Ganiyari.2	82.0417	22.1861	HP	8.1	380	247	1.0	11	15.4	2.3	0	214	175	190	36	24	6.6	0.6
82	Bilaspur	Takhatpur	Khamharia1	81.9875	22.1222	HP	7.9	903	587	0.2	67	2.3	141.7	0	238	195	400	108	31.2	36.9	1.9
83	Bilaspur	Takhatpur	Sipat	82.2792	22.1458	HP	8.2	1168	759	0.2	149	96.5	55.2	0	250	205	300	70	30	46	93.5
84	Bilaspur	Takhatpur	Neora	81.9317	22.2125	HP	8.2	392	255	0.3	14	6.3	2.1	0	226	185	175	36	20.4	11.1	0.7
85	Bilaspur	Takhatpur	Udaypur	81.7544	22.2725	HP	8.1	338	220	0.6	21	8.1	10.4	0	159	130	135	34	12	16.3	0.5
86	Dhamtari	Dhamtari	Bhoyana	81.7153	20.4537	DW	8	786	511	0.1	114	38.0	33.2	0	183	150	215	78	4.8	62.2	32.8
87	Dhamtari	Dhamtari	Chhati	81.6667	20.7792	DW	7.6	362	235	0.3	36	0.0	3.7	0	177	145	150	46	8.4	21.1	1.7
88	Dhamtari	Dhamtari	Kosmarra	81.5986	20.8597	HP	7.9	924	601	0.1	174	4.9	64.6	0	159	130	235	60	20.4	99.5	2.1
89	Dhamtari	Dhamtari	Mega	81.8005	20.7833	HP	8.1	252	164	0.4	18	0.0	0.0	0	146	120	115	40	3.6	10	2.4

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
90	Dhamtari	Kurud	Kondapar	81.7250	21.0042	DW	8.1	622	404	0.3	114	10.7	17.7	0	153	125	200	42	22.8	50	3.3
91	Dhamtari	Kurud	Kurud	81.7189	20.8275	DW	8.3	866	563	0.3	103	32.5	31.0	12	250	225	265	76	18	54.3	1.9
92	Dhamtari	Kurud	Marod	81.6889	20.9028	HP	8	582	378	0.2	103	0.0	4.1	0	177	145	185	36	22.8	58.3	1.3
93	Dhamtari	Magarload	Magarload	81.8583	20.7472	DW	7.6	229	149	0.0	32	34.7	0.0	0	37	30	55	16	3.6	16.4	3.5
94	Dhamtari	Magarlod	Singhpur	81.8778	20.5819	HP	8.4	354	230	0.4	14	4.5	0.0	12	214	195	180	30	25.2	15.1	1.6
95	Dhamtari	Sihawa	Dorgardula	81.9111	20.4056	HP	8	405	263	1.3	36	18.9	4.3	0	165	135	160	54	6	19.4	0.9
96	Dhamtari	Sihawa	Dugli	81.8708	20.4917	HP	8.1	399	259	1.3	43	18.2	4.2	0	159	130	170	50	10.8	20	0.9
97	Dhamtari	Sihawa	Keregaon	81.7375	20.5486	HP	7.9	220	143	0.3	21	0.0	5.4	0	110	90	85	24	6	19.8	4.2
98	Dhamtari	Sihawa	Nagri	81.9583	20.3333	DW	7.8	885	575	0.2	181	3.3	39.5	0	140	115	240	90	3.6	65.1	9.1
99	Dhamtari	Sihawa	Sankra	81.9903	20.2931	DW	8.1	600	390	0.2	57	59.0	27.6	0	183	150	205	76	3.6	37.4	11.1
100	Durg	Dhamdha	Ahiwara	81.4167	21.3611	HP	7.7	586	381	0.1	89	56.9	13.4	0	122	100	215	72	8.4	28	1.8
101	Durg	Dhamdha	Dargaon	81.3944	21.4917	HP	8.2	615	400	0.3	43	7.3	88.5	0	195	160	215	34	31.2	52	2.1
102	Durg	Dhamdha	Ravelidih	81.3375	21.3250	HP	7.9	470	306	0.0	57	55.2	1.8	0	122	100	190	68	4.8	12	1
103	Durg	Dhamdha	Kodiya	81.3539	21.3586	HP	7.9	223	145	0.1	14	0.6	0.7	0	110	90	100	36	2.4	5	0.4
104	Durg	Durg	Anda	81.2750	21.0667	HP	7.8	1248	811	0.1	284	70.9	88.2	0	92	75	470	142	27.6	67	6.7
105	Durg	Durg	Durg	81.2750	21.1917	HP	8	527	343	0.2	71	2.4	47.2	0	134	110	150	42	10.8	44	7.9
106	Durg	Durg	Selud	81.4194	21.1000	HP	8.1	368	239	1.2	25	0.0	8.6	0	177	145	80	26	3.6	53	0.8
107	Durg	Durg	Utai (Adarsh)	81.3889	21.1167	HP	8.1	398	259	0.3	43	7.8	15.1	0	134	110	160	52	7.2	11	0.4
108	Durg	Durg	Bhilai	81.4139	21.2072	HP	8.1	166	108	0.1	11	0.0	3.2	0	85	70	65	20	3.6	8	1.9
109	Durg	Durg	Jeora-sirsa	81.3064	21.2564	HP	7.9	685	445	0.0	121	67.5	31.6	0	92	75	220	66	13.2	35	21.2
110	Durg	Durg	Powara	81.33	21.10	DW	7.8	856	556	0.2	156	58.1	63.0	0	92	75	280	90	13.2	43	10.9
111	Durg	Patan	Sandi	82.08	21.45	HP	8	1171	761	0.4	231	68.0	32.2	0	165	135	335	56	46.8	88	1.1
112	Durg	Patan	Ashoga	81.55	21.96	HP	8.1	361	235	0.5	36	0.4	4.6	0	165	135	135	30	14.4	30	0.9
113	Durg	Patan	Funda	81.48	21.08	HP	7.9	355	231	0.1	46	15.3	16.7	0	85	70	130	46	3.6	9	0.3
114	Durg	Patan	Marra	81.46	21.04	HP	7.8	655	426	0.1	117	1.9	37.5	0	146	120	230	58	20.4	33	3.1
115	Durg	Patan	Motipur	81.55	21.17	DW	7.7	614	399	0.0	103	7.6	57.3	0	110	90	185	56	10.8	41	4.3
116	Durg	Patan	Patan	81.55	21.03	HP	7.8	683	444	0.0	107	51.8	36.5	0	128	105	175	56	8.4	60	17.6
117	Gariyabandh	Chhura	Amethi	82.14	20.93	HP	7.8	906	589	0.2	167	5.6	64.2	0	153	125	240	56	24	91	2
118	Gariyabandh	Chhura	Bhatgaon	82.81	21.65	HP	7.8	908	590	0.2	167	5.1	62.0	0	153	125	220	54	20.4	88	1.9
119	Gariyabandh	Chhura	Gariaband	82.07	20.63	HP	7.8	454	295	0.3	64	2.8	21.8	0	116	95	150	46	8.4	26.5	1.4

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
120	Gariyabandh	Gariyabandh	Chicholi	81.87	21.47	HP	7.7	593	385	0.0	103	1.2	36.4	0	92	75	215	70	9.6	23.2	2.2
121	Gariyabandh	Gariyabandh	Devpuri	81.68	21.21	HP	7.8	752	489	0.0	121	28.5	45.6	0	110	90	205	60	13.2	58.7	2.9
122	Gariyabandh	Rajim	Panduka	81.95	20.78	DW	8.1	289	188	0.4	21	3.4	4.4	0	134	110	115	44	1.2	10.6	2.8
123	Gariyabandh	Rajim	Rajim	81.88	20.97	HP	7.8	1090	709	0.2	181	33.4	47.5	0	220	180	280	78	20.4	59.6	42.5
124	Janjgir-Champa	Akaltara	Akaltara	82.42	22.03	HP	8.1	740	481	0.1	82	34.7	48.5	0	220	180	195	60	10.8	47.4	34.3
125	Janjgir-Champa	Akaltara	Konargarh	82.34	21.93	HP	8	286	186	0.2	25	4.9	17.6	0	122	100	140	36	12	10.2	1.5
126	Janjgir-Champa	Bamnidih	Bamnidihi	82.72	21.92	HP	8.2	300	195	0.2	14	6.8	12.5	0	128	105	130	48	2.4	11.6	1.1
127	Janjgir-Champa	Bamnidih	Champa	82.66	22.04	HP	7.9	973	632	0.1	178	54.5	56.0	0	116	95	315	102	14.4	38.2	5.8
128	Janjgir-Champa	Bamnidih	Saragaon	82.75	21.98	HP	8.1	469	305	0.5	53	9.1	17.8	0	159	130	125	28	13.2	43.7	0.8
129	Janjgir-Champa	Bamnidih	Sonthi	82.70	21.98	HP	8.1	369	240	0.4	21	0.0	19.1	0	165	135	100	22	10.8	37	1
130	Janjgir-Champa	Dabhra	Latesara	83.19	21.74	HP	8.1	327	213	0.4	28	9.2	13.7	0	140	115	140	40	9.6	16.1	0.5
131	Janjgir-Champa	Dabhra	Sukda	83.09	21.87	HP	8.1	337	219	0.6	21	5.9	6.5	0	146	120	110	30	8.4	17.2	0.1
132	Janjgir-Champa	Dabhra	Sapos	83.16	21.74	HP	8.1	1070	696	0.1	217	59.7	63.9	0	85	70	375	64	51.6	45.8	8.4
133	Janjgir-Champa	Dabra	Dabra	83.08	21.78	HP	8.1	907	590	0.2	89	13.8	106.9	0	226	185	305	62	36	45	23.9
134	Janjgir-Champa	Jaijaipur	Jaijaipur	82.82	21.83	HP	8.2	559	363	0.2	71	14.4	18.3	0	207	170	235	38	33.6	18.3	0.8
135	Janjgir-Champa	Malkharoda	Adbhar	83.02	21.96	HP	8.1	633	411	0.6	25	0.5	95.6	0	214	175	225	54	21.6	22.1	17.4
136	Janjgir-Champa	Malkharoda	Ghoghari	83.01	21.78	HP	8.1	476	309	0.3	50	5.4	20.6	0	207	170	215	42	26.4	19.5	1.2
137	Janjgir-Champa	Nawagarh	Dhardei	82.53	21.80	HP	7.9	847	551	0.2	124	7.4	51.6	0	207	170	275	90	12	48.4	1.7
138	Janjgir-Champa	Nawagarh	Janjgir	82.58	22.01	HP	7.9	1019	662	0.0	185	61.1	58.1	0	104	85	375	100	30	22.5	6.5
139	Janjgir-Champa	Nawagarh	Kera	82.71	21.75	HP	8.1	433	281	0.3	32	8.8	19.4	0	153	125	120	28	12	42.8	2.2

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
140	Janjgir-Champa	Nawagarh	Khartal	82.67	21.80	HP	8.1	858	558	0.3	114	19.7	35.3	0	323	265	330	64	40.8	29.8	27.7
141	Janjgir-Champa	Nawagarh	Semra	82.63	21.86	HP	8.1	303	197	0.2	50	13.7	11.2	0	61	50	115	42	2.4	10.2	0.3
142	Janjgir-Champa	Nawagarh	Seorinarayan	82.59	21.73	HP	7.9	793	515	0.2	103	52.8	35.3	0	159	130	210	44	24	46.7	9.9
143	Janjgir-Champa	Nawagarh	Jhulanpakariya	82.44	21.92	HP	8.2	491	319	0.1	89	11.9	23.5	0	79	65	155	42	12	27.1	5.3
144	Janjgir-Champa	Nawagarh	Dhurkot	82.62	21.93	HP	8.4	849	552	0.4	117	0.7	37.7	9	146	135	70	12	9.6	139.5	3.1
145	Janjgir-Champa	Nawagarh	Budena	82.62	21.90	HP	8.3	360	234	0.5	25	0.0	15.4	12	146	140	100	22	10.8	39.4	1.1
146	Janjgir-Champa	Pamgarh	Jewara	82.38	21.85	HP	8	692	450	0.3	78	94.6	34.2	0	134	110	230	68	14.4	21.3	33
147	Janjgir-Champa	Pamgarh	Pamgarh	82.45	21.87	HP	8	504	328	0.1	71	44.2	12.3	0	104	85	140	46	6	40.8	7.7
148	Janjgir-Champa	Pamgarh	Sasaha	82.38	21.78	HP	8.3	376	244	0.3	39	3.4	18.8	0	140	115	120	24	14.4	32.3	0.5
149	Janjgir-Champa	Pamgarh	Loharsi	82.56	21.77	HP	8	831	540	0.2	156	46.4	46.4	0	73	60	295	78	24	39.2	1.6
150	Janjgir-Champa	Pamgarh	Dongakahrod	82.46	21.85	HP	7.7	1311	852	0.2	270	16.9	97.5	0	134	110	290	78	22.8	130.5	42
151	Janjgir-Champa	Sakti	Damau	82.86	22.14	HP	8.2	284	185	0.3	18	0.0	4.8	0	183	150	150	34	15.6	6.9	2.1
152	Janjgir-Champa	Sakti	Sakti	82.96	22.02	HP	7.9	949	617	0.3	213	6.3	59.3	0	73	60	295	78	24	47.7	0.7
153	Janjgir-Champa	Sakti	Thathari	82.83	21.93	HP	8	906	589	0.1	174	27.6	38.2	0	116	95	330	46	51.6	26.9	1
154	Janjgir-Champa	Sakti	Saliabhata	82.85	22.14	HP	8.1	211	137	0.1	14	0.7	5.1	0	98	80	80	20	7.2	8.7	0.3
155	Jashpur	Bagicha	Mahuadih	83.64	22.93	DW	7.7	114	74	0.6	11	25.0	0.0	0	37	30	30	8	2	13	1
156	Jashpur	Bagicha	Phooldih	83.63	22.90	DW	7.9	194	126	0.8	14	1.0	0.0	0	98	80	65	16	6	15	1
157	Jashpur	Bagicha	Peta	83.60	22.96	DW	8.2	238	155	0.4	25	2.0	6.0	0	98	80	90	26	6	13	3
158	Jashpur	Bagicha	Bagicha	83.65	22.98	HP	8	301	196	0.4	18	20.0	12.0	0	122	100	110	28	10	16	3
159	Jashpur	Bagicha	Rauni	83.66	23.01	HP	8	70	46	0.0	7	6.0	0.0	0	31	25	35	6	5	2	2
160	Jashpur	Bagicha	Raikora	83.65	22.93	DW	7.7	106	69	0.2	7	0.0	0.0	0	55	45	35	10	2	7	2

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
161	Jashpur	Bagicha	Bhetgara	83.71	22.92	HP	7.9	301	196	1.0	21	37.0	6.0	0	92	75	100	32	5	12	2
162	Jashpur	Bagicha	Bewrapali	83.75	22.91	DW	7.9	267	174	0.4	28	19.0	1.0	0	104	85	80	24	5	21	6
163	Jashpur	Duldula	Kunjara	83.96	22.67	HP	8.2	741	482	0.1	75	44.0	33.0	0	195	160	275	94	10	35	1
164	Jashpur	Duldula	Kersai	83.96	22.60	DW	8.2	325	211	0.4	21	3.0	9.0	0	159	130	100	36	2	31	1
165	Jashpur	Farsabahar	Tapkara	83.95	22.50	HP	8.1	240	156	0.1	25	18.0	1.0	0	92	75	85	26	5	16	1
166	Jashpur	Farsabahar	Shirshringa	83.80	22.52	HP	8.2	322	209	0.3	11	0.0	0.0	0	201	165	110	38	4	23	1
167	Jashpur	Farsabahar	Pharsabahav	83.86	22.51	DW	8.1	384	250	0.2	32	12.0	9.0	0	146	120	140	40	10	25	1
168	Jashpur	Farsabahar	Kandaibahav	83.90	22.50	DW	8.1	377	245	0.1	36	23.0	7.0	0	146	120	150	46	8	15	1
169	Jashpur	Jashpur	Raikera	83.65	22.93	HP	8	143	93	0.5	14	8.0	0.0	0	61	50	40	10	4	15	1
170	Jashpur	Jashpur	Binjapur	84.03	22.77	HP	8	70	46	1.5	11	0.0	0.0	0	37	30	25	4	4	11	0
171	Jashpur	Jashpur	Jashpur	84.14	22.88	HP	8.1	199	129	0.0	32	6.0	0.0	0	55	45	55	18	2	19	2
172	Jashpur	Kansabel	Kansabel	83.74	22.64	HP	8	215	140	0.1	25	27.0	1.0	0	61	50	75	20	6	12	3
173	Jashpur	Kansabel	Sarhapani	83.67	22.79	DW	8	477	310	0.3	50	36.0	5.0	0	146	120	175	68	1	14	1
174	Jashpur	Kansabel	Muskuti	83.68	22.86	HP	8.1	280	182	0.4	28	5.0	2.0	0	110	90	100	30	6	18	3
175	Jashpur	Kansabel	Narayanbehli	83.78	22.65	HP	8.2	324	211	0.3	25	7.0	7.0	0	159	130	100	30	6	28	2
176	Jashpur	Kansabel	Bataikela	83.73	22.73	HP	7.9	255	166	0.4	21	0.0	0.0	0	128	105	95	34	2	13	2
177	Jashpur	Kansabel	Saraipani	83.67	22.79	HP	8	235	153	0.5	21	27.0	2.0	0	79	65	85	30	2	11	2
178	Jashpur	Kunkuri	Narayanpur	83.90	22.86	HP	8.3	197	128	0.5	14	2.0	0.0	3	98	85	65	20	4	16	2
179	Jashpur	Kunkuri	Chhapartoli	83.92	22.81	HP	8.2	127	83	0.5	7	22.0	0.0	0	49	40	50	16	2	9	1
180	Jashpur	Kunkuri	Ghatmunda	83.93	22.79	HP	8.2	258	168	0.5	25	24.0	5.0	0	67	55	85	20	8	15	2
181	Jashpur	Kunkuri	Dhodidand	83.96	22.78	HP	8.1	73	47	0.3	7	0.0	0.0	0	43	35	25	6	2	8	1
182	Jashpur	Kunkuri	Kunkuri	83.95	22.74	DW	7.8	271	176	0.5	46	35.0	4.0	0	18	15	50	10	6	32	4
183	Jashpur	Kunkuri	Kandora	83.97	22.76	HP	8.1	176	114	1.7	7	0.0	0.0	0	104	85	55	18	2	18	0
184	Jashpur	Kunkuri	Farsakanhi	83.90	22.70	HP	8.1	286	186	0.5	11	0.0	0.0	0	171	140	115	36	6	20	1
185	Jashpur	Kunkuri	Bandarchuwa	83.86	22.69	HP	8.1	395	257	0.2	28	10.0	9.0	0	171	140	150	56	2	19	2
186	Jashpur	Manora	Sarkadih	84.03	22.97	HP	8.1	71	46	0.2	7	0.0	0.0	0	31	25	20	6	1	5	2
187	Jashpur	Patthalgaon	Pathalgnon	83.46	22.55	HP	7.7	1360	884	0.1	277	148.0	10.0	0	146	120	545	136	49	40	5
188	Jashpur	Patthalgaon	Palidih	83.51	22.56	HP	8.2	363	236	3.1	18	1.0	18.0	0	189	155	85	20	8	44	4
189	Jashpur	Patthalgaon	Bildengi	83.62	22.57	HP	8.1	471	306	0.3	50	35.0	3.0	0	153	125	195	62	10	12	2
190	Jashpur	Patthalgaon	Bangaon-B	83.68	22.60	HP	8	213	138	0.3	21	10.0	0.0	0	92	75	70	18	6	18	1

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S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
191	Jashpur	Patthalgaon	Surangpani	83.69	22.41	HP	7.9	794	516	0.2	128	40.0	40.0	0	140	115	225	88	1	52	1
192	Jashpur	Patthalgaon	Ludeg	83.60	22.55	HP	7.7	753	489	0.2	128	2.0	30.0	0	165	135	275	60	30	26	2
193	Jashpur	Patthalgaon	Kotba	83.74	22.43	HP	7.9	793	515	0.1	117	33.0	40.0	0	153	125	210	82	1	50	1
194	Jashpur	Patthalgaon	Bagbahav	83.74	22.54	HP	8	222	144	0.2	25	15.0	2.0	0	79	65	80	28	2	11	1
195	Kawardha	Kawardha	Kawardha	81.24	22.01	HP	8.1	1250	813	0.4	213	0.0	42.5	0	433	355	315	44	49.2	162	16.7
196	Kawardha	Kawardha	Rajnawagaon	81.21	22.07	DW	8.1	448	291	0.2	18	2.5	4.6	0	244	200	115	24	13.2	56	2.9
197	Kawardha	Pandariya	Munmuna	81.40	22.33	HP	7.8	452	294	0.3	53	8.4	16.6	0	146	120	160	46	10.8	24	0.9
198	Kawardha	Sahaspurlohara	Sahaspur lohara	81.13	21.83	DW	7.9	1353	879	0.2	266	100.4	89.8	0	165	135	325	90	24.0	169	1.9
199	Korba	Kartala	Kartala	82.96	22.30	HP	8	442	287	0.2	46	2.3	21.9	0	177	145	150	54	3.6	34.6	12.1
200	Korba	Kartala	Salihabhata	82.83	22.27	HP	7.9	204	133	0.1	21	28.9	3.5	0	61	50	80	22	6	10.5	8.3
201	Korba	Kartala	Tilkeja	82.76	22.23	HP	8.3	787	512	0.4	99	15.3	65.2	12	214	195	300	72	28.8	45.3	4.8
202	Korba	Kartala	Sakdukala	82.88	22.28	HP	7.6	143	93	0.1	25	13.3	5.3	0	37	30	55	12	6	7.6	8.5
203	Korba	Kartala	Kotmer Upper	82.92	22.29	HP	7.8	165	107	0.1	14	2.6	10.6	0	67	55	60	22	1.2	7.3	13.3
204	Korba	Kartala	Tuman	82.42	22.58	HP	7.8	205	133	0.1	14	0.0	3.6	0	110	90	90	34	1.2	9.3	0.5
205	Korba	Katghora	Chaitama	82.43	22.43	HP	7.9	737	479	1.3	64	45.9	54.8	0	220	180	270	78	18	27.2	1.8
206	Korba	Katghora	Gopalpur	82.65	22.43	HP	7.9	483	314	0.1	53	18.5	30.1	0	165	135	195	60	10.8	25.6	1.3
207	Korba	Katghora	Katghora	82.52	22.51	HP	7.8	215	140	0.2	14	1.0	8.7	0	110	90	80	26	3.6	21.2	2.1
208	Korba	Katghora	Jhabar	82.54	22.36	HP	7.6	203	132	0.0	21	28.8	3.7	0	61	50	70	24	2.4	8.6	8.9
209	Korba	Katghora	Suttara	82.51	22.47	HP	8	599	389	0.3	75	1.7	45.7	0	171	140	105	34	4.8	96.5	7.3
210	Korba	Katghora	Champa mode	82.99	22.31	HP	8.2	443	288	0.2	43	3.6	21.5	0	183	150	150	50	6	36.7	12.1
211	Korba	Katghora	Chhuri	82.62	22.48	HP	7.8	411	267	1.4	50	4.0	27.2	0	140	115	115	40	3.6	45.1	0.9
212	Korba	Katghora	Kurtha	82.45	22.93	HP	8.2	462	300	0.2	28	13.3	14.1	0	214	175	175	64	3.6	20.8	1.7
213	Korba	Korba	Korba	82.70	22.35	HP	8.4	848	551	0.1	103	59.6	60.3	9	195	175	245	52	27.6	95.5	13.6
214	Korba	Korba	Urga.1	82.73	22.28	HP	7.7	319	207	0.4	50	8.2	29.6	0	79	65	125	18	19.2	37.1	1.7
215	Korba	Korba	Naktikhar	82.77	22.34	HP	8.1	134	87	0.0	7	0.0	1.4	0	92	75	70	14	8.4	2.5	4.3
216	Korba	Korba	Rishdi	82.76	22.37	HP	7.7	51	33	0.0	7	0.0	3.3	0	24	20	20	6	1.2	2.1	4.4
217	Korba	Korba	Dhegurdih manzipara	82.84	22.35	HP	7.7	124	81	0.0	18	11.9	11.1	0	37	30	50	8	7.2	3.5	8.7
218	Korba	Korba	Korkoma junction	82.87	22.34	HP	8.1	170	111	0.2	11	0.0	2.7	0	104	85	80	22	6	3.7	5.4

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S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
219	Korba	Korba	Batati Junction	82.92	22.35	HP	7.6	173	112	0.0	21	39.4	3.1	0	31	25	70	18	6	7.8	5.3
220	Korba	Pali	Banbandha	82.38	22.39	HP	8.2	233	151	0.1	28	0.0	2.8	0	122	100	110	22	13.2	8.6	1.7
221	Korba	Pali	Pali	82.32	22.37	HP	8.2	342	222	0.3	28	0.0	13.3	0	177	145	130	34	10.8	23.9	9.2
222	Korba	Pali	Nunera	82.43	22.36	HP	8	374	243	0.0	46	17.1	9.5	0	134	110	145	54	2.4	15.4	8.3
223	Korba	Pali	Dhourabhata	82.37	22.37	HP	7.8	110	72	0.1	18	7.7	2.0	0	49	40	55	12	6	4.6	3.9
224	Korba	Pali	Nonbirra-4	82.86	22.27	HP	7.3	143	93	0.0	25	23.1	1.2	0	24	20	55	16	3.6	6.7	9.6
225	Korba	Pali	Rajkamma	82.48	22.45	HP	8.1	495	322	1.0	71	19.6	25.0	0	128	105	180	58	8.4	28.8	1.4
226	Korba	Pondi	Jatga	82.38	22.69	HP	8.1	370	241	1.0	43	3.8	26.5	0	134	110	55	18	2.4	75	0.9
227	Korba	Pondi	Madai	82.53	22.72	HP	8.4	529	344	1.8	57	2.9	33.8	12	146	140	55	18	2.4	106.5	1.2
228	Korba	Pondi	Pasan	82.20	22.84	HP	7.9	393	255	0.4	53	33.4	11.8	0	134	110	130	48	2.4	36.3	1
229	Korba	Pondi	Tuman	82.79	22.20	HP	8.2	377	245	1.7	18	0.0	6.5	0	226	185	50	14	3.6	95	0.3
230	Korba	Pondi	Rawa	82.39	22.63	HP	7.7	158	103	0.4	14	11.2	4.9	0	79	65	50	14	3.6	21.5	0.8
231	Korba	Pondi	Lenga	82.26	22.76	HP	7.9	487	317	1.2	25	28.5	16.5	0	177	145	160	48	9.6	39.8	1.1
232	Korba	Pondi	Khodri	82.40	22.60	HP	7.3	403	262	0.2	39	6.2	16.0	0	171	140	125	32	10.8	31.6	12.2
233	Korba	Pondi	Madai	82.53	22.72	HP	8.1	377	245	0.1	11	0.0	5.1	0	226	185	145	54	2.4	19.5	0.3
234	Korba	Pondi	Morga	82.66	22.75	HP	7.9	129	84	0.1	11	38.2	0.4	0	18	15	40	10	3.6	3.3	7.1
235	Korba	Pondi	Nawapara	82.49	22.77	HP	8.4	333	216	0.2	18	0.0	5.7	6	171	150	130	42	6	17.2	3.5
236	Korba	Pondi	Pondi	82.56	22.59	HP	8.1	824	536	0.2	78	48.5	56.8	0	250	205	290	82	20.4	36.3	18.9
237	Korba	Pondi	Gurasia	82.53	22.66	HP	7.9	386	251	0.3	18	0.0	5.8	0	220	180	150	56	2.4	18.9	0.3
238	Koriya	Baikunthpur	Mansukha	82.49	23.23	HP	8.1	514	334	0.1	25	13.2	44.7	0	226	185	195	68	6	23.8	2
239	Koriya	Baikunthpur	Ranai	82.70	23.28	HP	8	562	365	0.1	60	24.8	21.7	0	189	155	160	42	13.2	39.4	8.5
240	Koriya	Khadgaon	Khadgaon	82.38	23.11	HP	7.8	616	400	0.1	43	28.9	29.7	0	250	205	195	64	8.4	43.3	3.6
241	Mahasamund	Baghbahera	Bag bahera	82.41	21.03	HP	7.7	500	325	0.7	75	10.3	7.4	0	146	120	160	46	10.8	32.5	0.8
242	Mahasamund	Baghbahera	Khallari	82.30	21.08	DW	8.3	354	230	1.8	11	10.5	1.6	9	195	175	160	56	4.8	15	1.3
243	Mahasamund	Baghbahera	Suarmar	82.50	20.97	HP	8	483	314	1.5	43	2.4	17.7	0	226	185	150	42	10.8	45.6	2.4
244	Mahasamund	Baghbahera	Tendukonda	82.47	21.11	HP	8.1	535	348	0.7	75	1.6	7.9	0	171	140	195	62	9.6	32.7	0.8
245	Mahasamund	Basna	Basna	82.83	21.27	DW	8.1	662	430	0.3	85	6.8	68.7	0	183	150	220	80	4.8	41.5	4.8
246	Mahasamund	Mahasamund	Belsunda	82.03	21.16	HP	7.9	894	581	0.4	170	32.7	32.7	0	128	105	225	54	21.6	90	2
247	Mahasamund	Mahasamund	Jhalap	82.38	21.22	HP	7.9	348	226	0.5	39	17.5	10.9	0	128	105	140	46	6	15.8	0.7
248	Mahasamund	Mahasamund	Kanera	82.08	21.04	DW	8.2	347	226	0.3	28	1.0	2.6	0	183	150	110	40	2.4	29	3.9

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CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
249	Mahasamund	Mahasamund	Mahasamund.1	82.10	21.11	DW	7.9	272	177	0.4	21	6.2	13.2	0	134	110	110	42	1.2	16.7	2.5
250	Mahasamund	Mahasamund	Phusera	82.21	21.29	HP	8.2	217	141	0.2	11	7.3	1.2	0	134	110	105	32	6	10.1	1.9
251	Mahasamund	Mahasamund	Tumgaon	82.12	21.19	DW	7.3	250	163	0.0	36	29.6	1.2	0	43	35	85	26	4.8	14.6	3
252	Mahasamund	Pithora	Baldidih	82.64	21.29	HP	8.1	387	252	0.3	67	29.1	5.6	0	110	90	125	38	7.2	29.6	2.6
253	Mahasamund	Pithora	Pithora	82.52	21.25	HP	8.1	342	222	0.8	46	23.5	11.8	0	92	75	115	38	4.8	24.2	1.2
254	Mahasamund	Saraipali	Patsendri	83.08	21.37	HP	8.2	642	417	0.1	96	9.0	21.0	0	165	135	215	60	16	42	4
255	Mahasamund	Saraipali	Bodesara	83.09	21.39	HP	7.9	1338	870	0.1	277	81.0	43.0	0	171	140	490	128	41	68	3
256	Mahasamund	Saraipalli	Saraipali	83.01	21.32	HP	7.8	899	584	0.4	167	31.9	65.9	0	140	115	220	58	18	96	2
257	Mungeli	Lormi	Achanakmar	81.86	22.41	HP	8.3	341	222	0.5	36	0.1	8.2	36	85	130	125	44	3.6	28.3	5.4
258	Mungeli	Lormi	Chhaparwa	81.77	22.44	HP	8	1218	792	0.5	178	170.9	59.1	0	146	120	425	106	38.4	38.7	7.6
259	Mungeli	Lormi	Lamni	81.75	22.54	HP	8	391	254	0.2	46	17.0	7.3	0	122	100	155	42	12	13.7	3.8
260	Mungeli	Lormi	Lormi	81.71	22.27	HP	8.3	457	297	0.4	39	8.0	8.3	12	183	170	160	38	15.6	26	0.7
261	Mungeli	Lormi	Amadob	81.73	22.63	HP	8.3	796	517	1.4	78	16.4	45.0	12	268	240	120	36	7.2	117	1.7
262	Mungeli	Lormi	Barighat	81.90	22.38	HP	8.4	417	271	0.4	25	1.6	4.6	15	214	200	180	70	1.2	20	1.5
263	Mungeli	Lormi	Pali (Lormi)	82.32	22.37	HP	8.3	611	397	0.3	75	4.3	22.9	15	201	190	200	36	26.4	46.1	1.3
264	Mungeli	Lormi	Tilaidabra	81.80	22.50	HP	8.2	520	338	0.3	39	44.2	31.3	0	177	145	200	42	22.8	20.1	1.8
265	Mungeli	Lormi	Attaria	81.76	22.57	HP	8.2	297	193	0.3	21	0.0	9.6	0	159	130	125	32	10.8	16.7	0.8
266	Mungeli	Lormi	Godkhami	81.65	22.28	HP	8.3	373	242	0.4	21	2.9	7.1	9	195	175	125	18	19.2	41	1.1
267	Mungeli	Mungeli	Kanteli.1	81.65	22.15	HP	8.3	400	260	0.2	7	0.3	0.2	9	244	215	135	38	9.6	33.5	0.9
268	Mungeli	Mungeli	Mungeli	81.67	22.08	HP	8.2	875	569	0.1	46	2.6	138.3	0	226	185	345	78	36	41.3	2
269	Mungeli	Mungeli	Setganga	81.54	22.13	HP	8.3	756	491	0.3	82	2.0	48.1	15	256	235	180	28	26.4	84.5	1.4
270	Mungeli	Mungeli	Deori	81.67	22.12	HP	8.5	1174	763	0.6	99	78.5	48.5	30	451	420	325	18	67.2	151	0.6
271	Mungeli	Mungeli	Sitalkunda	81.64	22.08	HP	8.5	1328	863	0.3	114	0.0	151.3	15	415	365	280	24	52.8	175.5	1.4
272	Mungeli	Mungeli	Chirhula	81.72	22.01	HP	8.1	669	435	0.3	36	9.8	113.1	0	189	155	265	72	20.4	38.1	1
273	Mungeli	Pathriya	Baitalpur	81.92	21.86	HP	8	885	575	0.8	36	1.9	180.5	0	207	170	350	72	40.8	40.4	2.8
274	Mungeli	Pathriya	Patharia (chorbhatti)	81.84	22.02	HP	8.3	2150	1398	0.2	408	52.3	132.8	12	177	165	635	120	80.4	174.5	6.9
275	Mungeli	Pathriya	Saragaon	81.97	21.90	TW	8.3	542	352	0.4	32	9.6	6.8	9	287	250	275	62	28.8	8.3	1
276	Mungeli	Pathriya	Amerikapa (Tala)	82.03	21.90	HP	8	1604	1043	0.3	259	176.2	100.9	0	189	155	480	44	88.8	120	5.5

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
277	Raigarh	Baramkela	Bonda	83.30	21.72	HP	7.9	427	278	0.5	7	0.0	21.0	0	214	175	170	14	32	6	2
278	Raigarh	Baramkela	Saria	83.30	21.56	HP	8	410	267	0.6	14	0.0	10.0	0	195	160	150	32	17	13	2
279	Raigarh	Baramkela	Baramkela	83.26	21.53	HP	8.1	458	298	1.2	18	3.0	4.0	0	275	225	225	54	22	5	2
280	Raigarh	Dharamjaigarh	Barpali	83.27	22.33	DW	8	136	88	0.0	18	10.0	2.0	0	43	35	50	12	5	5	4
281	Raigarh	Dharamjaigarh	Amapali	83.23	22.37	HP	7.9	45	29	0.0	7	0.0	0.0	0	18	15	20	4	2	3	1
282	Raigarh	Dharamjaigarh	Amatoli	83.74	22.47	HP	8.1	159	103	0.3	11	0.0	0.0	0	92	75	60	20	2	15	1
283	Raigarh	Dharamjaigarh	Sithra	83.11	22.34	DW	8	182	118	0.1	21	9.0	0.0	0	61	50	65	24	1	7	4
284	Raigarh	Dharamjaigarh	Khadgaon	83.12	22.38	HP	8.2	359	233	0.3	14	0.0	4.0	0	207	170	95	20	11	28	22
285	Raigarh	Dharamjaigarh	Bijapara	83.18	22.43	HP	8.1	120	78	0.1	14	0.0	1.0	0	61	50	50	12	5	5	4
286	Raigarh	Dharamjaigarh	Bayasi	83.17	22.44	HP	7.9	115	75	0.0	21	16.0	0.0	0	18	15	35	2	7	8	5
287	Raigarh	Dharamjaigarh	Sisringa	83.31	22.46	DW	7.9	854	555	0.3	160	38.0	18.0	0	128	105	245	78	12	53	12
288	Raigarh	Dharamjaigarh	Sukwasupra	83.41	22.51	HP	8.1	232	151	0.5	21	0.0	1.0	0	122	100	95	32	4	14	1
289	Raigarh	Dharamjaigarh	Nawaguda	83.44	22.59	DW	8	312	203	0.1	28	1.0	9.0	0	128	105	120	42	4	12	3
290	Raigarh	Dharamjaigarh	Gulabuda	83.40	22.63	HP	8	141	92	0.8	14	6.0	0.0	0	61	50	45	12	4	12	3
291	Raigarh	Dharamjaigarh	Lipti	83.38	22.65	DW	7.9	67	44	0.2	18	0.0	0.0	0	18	15	20	4	2	9	3
292	Raigarh	Dharamjaigarh	Kapu	83.34	22.67	HP	7.8	184	120	0.2	25	29.0	0.0	0	37	30	50	10	6	13	3
293	Raigarh	Dharamjaigarh	Derpani	83.29	22.64	DW	8	222	144	0.6	14	0.0	0.0	0	116	95	75	24	4	16	1
294	Raigarh	Dharamjaigarh	Bakarmuda	83.44	22.51	HP	7.9	805	523	0.2	96	106.0	26.0	0	171	140	305	116	4	20	5
295	Raigarh	Dharamjaigarh	Dharamjaigarh	83.21	22.46	HP	7.8	545	354	0.1	78	27.0	18.0	0	134	110	140	40	10	41	20
296	Raigarh	Dharamjaigarh	Sahpur	83.18	22.48	HP	7.7	118	77	0.1	11	17.0	0.0	0	43	35	50	10	6	2	4
297	Raigarh	Dharamjaigarh	Karigashi	83.14	22.51	HP	7.5	932	606	2.0	160	0.0	127.0	0	49	40	375	78	43	11	2
298	Raigarh	Dharamjaigarh	Boro	83.11	22.56	HP	7.6	391	254	0.0	60	72.0	2.0	0	31	25	100	22	11	18	27
299	Raigarh	Dharamjaigarh	Karadih	83.13	22.50	HP	8.1	307	200	0.5	25	11.0	8.0	0	134	110	95	30	5	26	4
300	Raigarh	Dharamjaigarh	Edu	83.13	22.08	HP	7.8	165	107	0.2	36	1.0	0.0	0	49	40	75	14	10	7	6
301	Raigarh	Dharamjaigarh	Chhal	83.11	22.13	HP	7.9	377	245	0.4	39	0.0	6.0	0	165	135	150	36	14	18	1
302	Raigarh	Dharamjaigarh	Hati	83.10	22.30	HP	7.7	144	94	0.1	18	25.0	0.0	0	31	25	45	12	4	8	9
303	Raigarh	Dharamjaigarh	Amlipur	83.19	22.50	HP	8	367	239	0.4	14	10.0	4.0	0	214	175	160	50	8	18	1
304	Raigarh	Dharamjaigarh	Auranava	83.16	22.15	HP	6.5	163	106	0.0	25	39.0	0.0	0	18	15	45	14	2	8	11
305	Raigarh	Dharamjaigarh	Munund	83.09	22.24	DW	7.8	60	39	0.0	7	1.0	0.0	0	24	20	20	6	1	4	3
306	Raigarh	Dharamjaigarh	Bansjev	83.22	22.49	HP	7.8	381	248	0.7	21	8.0	6.0	0	195	160	115	34	7	32	2

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
307	Raigarh	Dharamjaigarh	Kantadand	83.20	22.54	HP	8.1	196	127	0.4	14	8.0	0.0	0	98	80	75	20	6	11	4
308	Raigarh	Dharamjaigarh	Lakshmipur	83.21	22.51	HP	8.1	298	194	1.4	11	0.0	3.0	0	165	135	75	28	1	31	2
309	Raigarh	Dharamjaigarh	Kudekela	83.10	22.20	HP	8	210	137	0.4	7	0.0	0.0	0	134	110	85	18	10	12	6
310	Raigarh	Dharamjaigarh	Chunchunidand	83.20	22.52	HP	8.1	198	129	0.5	4	2.0	0.0	0	116	95	85	24	6	12	1
311	Raigarh	Dharamjaigarh	Kachhav	83.54	22.56	HP	8.1	213	138	1.2	14	3.0	4.0	0	104	85	60	18	4	20	1
312	Raigarh	Dharamjaigarh	Bojia	83.16	22.13	HP	7.9	326	212	0.2	50	37.0	0.0	0	55	45	110	30	8	12	5
313	Raigarh	Ghargoda	Ghargoda	83.35	22.17	HP	8	443	288	0.3	25	0.0	1.0	0	244	200	180	34	23	12	23
314	Raigarh	Ghargoda	Dumarpali	83.28	22.29	HP	8	539	350	0.2	89	42.0	4.0	0	85	70	160	32	19	38	8
315	Raigarh	Kharsiya	Farkanar	83.11	22.02	DW	7.9	503	327	0.1	46	43.0	17.0	0	128	105	150	46	8	19	29
316	Raigarh	Kharsiya	Kharsiya	83.10	21.99	HP	7.5	1094	711	0.2	199	2.0	67.0	0	195	160	255	86	10	94	3
317	Raigarh	Kharsiya	Chaple	83.20	21.98	HP	7.9	759	493	0.3	131	34.0	2.0	0	165	135	210	68	10	57	2
318	Raigarh	Lailunga	Rajpur	83.49	22.44	HP	7.8	115	75	0.4	7	1.0	0.0	0	61	50	35	12	1	9	1
319	Raigarh	Lailunga	Lailunga	83.58	22.38	HP	7.7	532	346	0.1	71	41.0	36.0	0	92	75	160	52	7	37	3
320	Raigarh	Pusaur	Tetla	83.33	21.79	DW	8	799	519	0.2	36	0.0	174.0	0	207	170	275	72	23	66	2
321	Raigarh	Pusaur	Tadola	83.38	21.80	HP	7.9	575	374	0.2	11	0.0	102.0	0	183	150	215	78	5	38	2
322	Raigarh	Raigarh	Kotra	83.31	21.87	DW	7.8	1486	966	0.0	142	3.0	189.0	0	317	260	355	94	29	106	83
323	Raigarh	Raigarh	Kerajhar	83.30	21.96	DW	7.9	694	451	0.3	71	3.0	22.0	0	268	220	190	36	24	40	62
324	Raigarh	Sarangarh	Kanakbira	83.12	21.46	HP	8.2	972	632	1.0	89	6.0	37.0	0	439	360	285	32	49	103	5
325	Raigarh	Sarangarh	Bataipali	83.13	21.54	HP	8.3	1008	655	5.3	96	0.0	47.0	15	348	310	45	4	8	213	2
326	Raigarh	Sarangarh	Sarangarh	83.08	21.59	HP	8.1	809	526	0.4	138	4.0	38.0	0	171	140	280	66	28	51	3
327	Raigarh	Sarangarh	Reda	83.09	21.63	HP	8.1	488	317	0.4	50	13.0	5.0	0	201	165	210	76	5	16	2
328	Raigarh	Sarangarh	Hirri	83.11	21.64	DW	8.1	380	247	0.5	25	11.0	8.0	0	177	145	160	44	12	17	1
329	Raigarh	Sarangarh	Pindri	83.16	21.66	DW	8.2	2530	1645	0.3	60	52.0	577.0	0	476	390	705	220	37	210	60
330	Raigarh	Sarangarh	Malda-B	83.20	21.56	HP	7.7	545	354	0.3	71	18.0	23.0	0	98	80	180	48	14	22	2
331	Raigarh	Tamnar	Samarunc	83.35	22.08	HP	8.2	34	22	0.0	7	7.0	0.0	0	18	15	25	6	2	2	1
332	Raipur	Abhanpur	Abhanpur	81.75	21.05	HP	8.3	648	421	0.2	71	22.8	25.9	12	177	165	200	66	8.4	42.4	12.5
333	Raipur	Arang	Sirpur	82.18	21.34	HP	7.9	521	339	1.2	43	38.0	15.8	0	232	190	110	26	10.8	71.8	4.2
334	Raipur	Arang	Arang	81.98	21.19	HP	7.8	321	209	0.4	36	2.4	4.8	0	140	115	135	38	9.6	11.6	0.3
335	Raipur	Arang	Kusrangi	81.98	21.37	HP	8.2	481	313	0.4	75	0.0	16.7	0	146	120	155	30	19.2	37.9	1.1
336	Raipur	Arang	Ranisagar	82.03	21.28	HP	8.1	318	207	0.4	14	0.0	1.2	0	195	160	105	26	9.6	28.5	0.8

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
337	Raipur	Arang	Umaria station	81.87	21.20	HP	7.7	251	163	0.0	43	28.4	1.2	0	49	40	100	22	10.8	13.9	2.9
338	Raipur	Dharsiwa	Chhura	82.21	20.81	DW	7.6	233	151	0.0	32	8.8	9.1	0	55	45	75	24	3.6	17.6	1.1
339	Raipur	Dharsiwa	manabasti	81.73	21.17	HP	7.9	468	304	0.3	60	13.3	18.1	0	146	120	180	50	13.2	18.3	0.6
340	Raipur	Dharsiwa	Mandirhasud	81.77	21.22	HP	7.6	254	165	0.0	46	1.0	1.5	0	43	35	75	24	3.6	14.4	3.1
341	Raipur	Dharsiwa	Semoriya	81.76	21.33	HP	8	355	231	0.2	25	11.7	11.3	0	140	115	135	52	1.2	10.3	0.4
342	Raipur	Dharsiwa	Dharsiwa	81.67	21.41	HP	7.4	1093	710	0.2	160	122.0	77.6	0	140	115	365	112	20.4	59.9	16.7
343	Raipur	Magarlod	Banraud	81.66	20.60	DW	6.8	60	39	0.0	14	0.0	0.0	0	24	20	35	12	1.2	2.9	1.7
344	Raipur	Tilda	Bilaigarh	82.73	21.64	HP	7.5	901	586	0.1	131	10.1	43.6	0	165	135	250	78	13.2	72.5	7.1
345	Raipur	Tilda	Jalkhamar	82.14	20.70	HP	7.9	315	205	1.7	28	23.9	8.2	0	110	90	115	32	8.4	15.9	0.8
346	Raipur	Tilda	Kharora	81.92	21.39	HP	7.9	943	613	0.0	170	0.0	60.7	0	171	140	250	64	21.6	93.5	1.9
347	Raipur	Tilda	Pandan Bhata	81.65	21.44	HP	8.1	864	562	0.1	170	7.4	62.3	0	110	90	195	42	21.6	93.4	1.9
348	Raipur	Tilda	Raita	81.72	21.44	HP	7.9	903	587	0.3	167	5.1	57.9	0	146	120	215	54	19.2	93.2	1.9
349	Raipur	Tilda	Saragaon	81.81	21.37	DW	7.9	276	179	0.2	21	10.0	3.2	0	128	105	120	36	7.2	10.5	0.4
350	Raipur	Tilda	Tilda	81.80	21.55	HP	8.2	421	274	0.4	50	2.4	22.2	0	153	125	135	32	13.2	40.7	5.8
351	Raipur	Tilda	Tarpongi	81.69	21.49	HP	7.9	384	250	0.3	32	4.5	12.2	0	171	140	160	28	21.6	16.2	1.7
352	Raipur	Tilda	Bhumiya	81.71	21.55	HP	7.9	429	279	0.1	36	15.6	101.8	0	85	70	180	40	19.2	13.6	4.6
353	Raipur	Tilda	Chanderi	81.75	21.50	HP	8	1104	718	0.2	149	57.2	142.5	0	183	150	335	52	49.2	79	23.6
354	Rajnandgaon	Chuikadan	Gandaipandaria	81.10	21.66	HP	7.9	596	387	0.0	92	21.2	23.8	0	140	115	180	42	18.0	44	1
355	Rajnandgaon	Chuikadan	Narmada	81.07	21.62	HP	8.1	454	295	0.2	60	0.0	11.2	0	165	135	145	30	16.8	39	2.6
356	Rajnandgaon	Churiya	Chirchari	80.59	21.08	HP	8.1	731	475	0.2	114	49.4	25.7	0	159	130	270	70	22.8	36	0.8
357	Rajnandgaon	Dongargarh	Dhara	80.86	21.26	DW	8.3	1329	864	1.1	188	21.7	74.7	21	397	360	450	30	90.0	139	23.2
358	Rajnandgaon	Dongargarh	Lal bhadurnagar	80.69	21.10	DW	8.1	427	278	0.2	53	2.2	22.1	0	140	115	130	36	9.6	31	15.7
359	Rajnandgaon	Dongarhgarh	Dongargarh	80.76	21.18	HP	7.9	823	535	0.3	131	44.3	64.4	0	146	120	260	68	21.6	67	0.4
360	Rajnandgaon	Dongarhgarh	Tappa	80.82	21.08	HP	8.2	609	396	0.8	92	0.0	38.4	0	220	180	305	82	24.0	21	1.5
361	Rajnandgaon	Dongarhgarh	Chikohola	80.74	21.07	DW	7.9	367	239	1.6	50	1.0	12.2	0	116	95	85	26	4.8	42	0.8
362	Rajnandgaon	Dongarhgarh	Govindpur	80.70	21.10	DW	7.9	885	575	1.0	160	53.8	30.6	0	165	135	260	68	21.6	79	1.9
363	Rajnandgaon	Dongarhgarh	Ramatola	80.71	21.13	DW	8.2	748	486	1.4	107	12.1	30.5	0	226	185	190	32	26.4	90	0.9
364	Rajnandgaon	Dongarhgarh	Reevagahan	80.83	21.22	HP	8.2	534	347	0.2	50	0.0	13.0	0	250	205	150	24	21.6	64	0.4
365	Rajnandgaon	Khairagarh	Khairagarh	80.97	21.43	DW	7.8	484	315	0.1	32	32.9	10.1	0	189	155	165	50	9.6	31	1.2

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
366	Rajnandgaon	Khairagarh	Rangkathera	81.11	21.37	HP	8	408	265	0.2	39	25.1	3.5	0	153	125	100	22	10.8	48	0.5
367	Rajnandgaon	Khairagarh	Salgapat	80.91	21.32	HP	8.3	639	415	0.3	25	0.0	45.2	12	329	290	125	16	20.4	100	20
368	Rajnandgaon	Khairagarh	Badaitola	80.98	21.35	DW	8.2	944	614	0.1	146	1.9	46.6	0	268	220	240	32	38.4	87	39.4
369	Rajnandgaon	Khairagarh	Dhaneli	81.01	21.41	DW	8	936	608	0.5	142	44.2	61.2	0	207	170	300	58	37.2	71	14.5
370	Rajnandgaon	Khairagarh	Madrakuhi	81.07	21.39	HP	8	421	274	0.1	43	20.4	5.9	0	146	120	140	44	7.2	20	9.5
371	Rajnandgaon	Rajnandgaon	Rajnandgaon	81.04	21.09	DW	8.3	978	636	0.7	135	0.0	70.4	15	293	265	165	28	22.8	147	5.6
372	Rajnandgaon	Rajnandgaon	Singhola	81.04	21.03	HP	7.9	1124	731	0.2	270	8.9	54.8	0	146	120	385	66	52.8	84	1
373	Rajnandgaon	Rajnandgaon	Somni	81.15	21.12	HP	7.8	1111	722	0.2	249	69.0	69.9	0	85	70	385	110	26.4	71	2.2
374	Rajnandgaon	Rajnandgaon	Revagahan	81.01	21.12	DW	8.1	1280	832	0.6	305	0.0	46.0	0	244	200	295	50	40.8	161	7.5
375	Rajnandgaon	Rajnandgaon	Ranitarai	81.05	21.00	HP	7.8	1368	889	0.3	320	111.6	54.9	0	104	85	505	134	40.8	77	7.7
376	Surajpur	Odigi	Odigi	82.81	23.47	HP	7.6	1188	772	0.2	213	76.0	53.8	0	159	130	470	100	52.8	27.7	0.8
377	Surajpur	Pratappur	Chandora	83.16	23.51	HP	7.8	275	179	0.2	32	29.8	8.3	0	73	60	110	26	10.8	14.3	2.1
378	Surajpur	Pratappur	Gonda	83.06	23.43	HP	7.8	81	53	0.1	7	15.3	0.4	0	24	20	25	6	2.4	4.4	4.4
379	Surajpur	Pratappur	Jagannathpur	83.20	23.38	HP	8.1	284	185	0.2	14	0.4	1.9	0	165	135	120	36	7.2	9.3	3.5
380	Surajpur	Pratappur	Pratappur	83.20	23.48	HP	7.7	247	161	0.3	21	28.2	6.4	0	73	60	80	22	6	16.3	1.5
381	Surajpur	Pratappur	Reonti	83.18	23.65	HP	8.1	326	212	0.1	28	0.0	17.0	0	146	120	130	30	13.2	14.1	4.5
382	Surajpur	Pratappur	Songara	83.08	23.30	HP	7.7	81	53	0.1	11	14.9	0.5	0	18	15	25	6	2.4	4.8	5.3
383	Surajpur	Premnagar	Premnagar	82.70	22.97	HP	8.1	610	397	0.2	64	49.8	18.9	0	177	145	220	60	16.8	28.2	1.1
384	Surajpur	Premnagar	Tara	82.74	22.84	HP	7.5	90	59	0.3	11	14.1	0.4	0	24	20	25	4	3.6	4.7	7.7
385	Surajpur	Ramanujnagar	Ganeshpur	82.64	23.08	HP	7.8	556	361	0.5	67	17.8	17.3	0	183	150	155	38	14.4	45.2	1.3
386	Surajpur	Ramanujnagar	Ramanujnagar	82.73	23.15	HP	8.2	396	257	0.1	46	1.3	11.4	0	159	130	165	42	14.4	23.4	0.8
387	Surajpur	Surajpur	Badsara	82.77	23.34	DW	7.7	497	323	0.2	25	51.4	25.2	0	92	75	155	44	10.8	17.9	16.6
388	Surajpur	Surajpur	Deonagar	82.80	23.24	HP	8	493	320	0.2	25	0.0	45.5	0	177	145	120	28	12	49	6
389	Surajpur	Surajpur	Jaynagar	82.97	23.18	HP	7.7	510	332	0.1	82	68.5	2.3	0	61	50	145	46	7.2	30.6	4.9
390	Surajpur	Surajpur	Jhasi	82.87	23.29	HP	7.9	252	164	0.2	25	16.6	2.2	0	85	70	95	34	2.4	9.3	0.9
391	Surajpur	Surajpur	Latori	83.19	23.24	HP	7.7	115	75	0.1	18	20.5	0.6	0	24	20	35	10	2.4	6.6	9.7
392	Surajpur	Surajpur	Sirsi	82.86	23.35	HP	7.8	190	124	0.1	18	10.9	5.0	0	79	65	75	20	6	12.6	0.8
393	Surajpur	Surajpur	Surajpur	82.87	23.21	HP	7.7	346	225	0.3	39	27.7	2.5	0	116	95	135	46	4.8	11	1.3
394	Surajpur	Surajpur	Ajabnagar	83.11	23.15	HP	7.6	512	333	0.1	46	63.3	2.8	0	128	105	140	44	7.2	33.9	6.1
395	Surajpur	Surajpur	Kalyanpur	83.20	23.25	HP	7.5	145	94	0.0	14	19.0	0.6	0	37	30	45	10	4.8	4.8	7

Annexure III

CHEMICAL ANALYSIS OF WATER SAMPLES OF NATIONAL HYDROGRAPH NETWORK STATIONS

S. No.	District	Block	Location	Long	Lat	Source	pH	EC in µS/cm	TDS	F^-	Cl^-	NO_3^-	SO_4^{2-}	CO_3^-	HCO_3^-	TA	TH	Ca^{2+}	Mg^{2+}	Na^+	K^+
396	Surguja	Ambikapur	Ambikapur	83.20	23.11	HP	7.8	779	506	0.2	114	42.8	33.1	0	177	145	235	56	22.8	47.3	1.4
397	Surguja	Ambikapur	Baghima	83.31	23.24	HP	8.1	365	237	0.1	25	8.0	9.7	0	189	155	170	46	13.2	6.6	1.2
398	Surguja	Ambikapur	Darima	83.23	23.00	HP	7.6	97	63	0.2	11	11.3	1.0	0	31	25	30	8	2.4	8	0.8
399	Surguja	Ambikapur	Nawapara	83.26	22.95	HP	8.2	292	190	0.4	11	5.0	3.1	0	177	145	115	28	10.8	17.6	1.2
400	Surguja	Ambikapur	Parsa	83.27	23.19	HP	8.2	466	303	0.1	25	23.4	21.8	0	189	155	190	54	13.2	14.5	0.9
401	Surguja	Batauli	Bandana	83.41	22.85	HP	8	226	147	0.1	21	17.5	1.3	0	85	70	90	26	6	13.1	0.6
402	Surguja	Batauli	Batauli	83.41	22.98	HP	8.2	457	297	0.3	57	33.3	1.8	0	128	105	175	48	13.2	12.2	1.8
403	Surguja	Batauli	Mangari	83.45	22.91	HP	8.1	368	239	0.2	32	25.4	8.0	0	134	110	150	46	8.4	13.1	1.2
404	Surguja	Lakhanpur	Kunni	83.07	22.87	HP	7.8	621	404	0.1	53	104.5	27.8	0	122	100	215	72	8.4	27.6	0.6
405	Surguja	Lakhanpur	Lakhanpur	83.04	22.98	HP	7.9	424	276	0.2	43	2.1	35.5	0	134	110	150	38	13.2	22.9	2.4
406	Surguja	Lakhanpur	Udaipur Dhah	83.10	23.06	DW	7.7	115	75	0.2	11	0.7	2.5	0	55	45	45	12	3.6	8.3	2.2
407	Surguja	Lundra	Bulga	83.35	23.10	HP	8.2	377	245	0.1	36	12.4	18.2	0	146	120	180	40	19.2	5.4	4.7
408	Surguja	Lundra	Dhaurpur	83.44	23.20	HP	7.9	323	210	0.2	18	9.4	1.4	0	165	135	145	40	10.8	4.1	3.5
409	Surguja	Lundra	Sisila	83.38	23.03	HP	7.8	166	108	0.2	7	4.0	3.5	0	85	70	55	16	3.6	12.6	0.6
410	Surguja	Lundra	Lundra	83.41	23.12	HP	8.2	296	192	0.1	11	1.9	3.1	0	183	150	100	10	18	26.1	1.4
411	Surguja	Mainpat	Kamleswarpur	83.29	22.83	HP	8.1	204	133	0.2	11	0.3	0.4	0	122	100	60	18	3.6	19.7	0.7
412	Surguja	Mainpat	Nagadandi	83.29	22.90	HP	8	108	70	0.0	11	6.6	0.4	0	49	40	55	12	6	4.3	1.3
413	Surguja	Sitapur	Pratapgarh	83.48	22.73	HP	8.1	468	304	0.5	71	20.1	13.0	0	116	95	150	56	2.4	25.9	1.8
414	Surguja	Udaipur	Dandgaon	82.86	22.90	DW	8.1	166	108	0.4	28	1.1	8.4	0	43	35	25	4	3.6	23.8	1.3
415	Surguja	Udaipur	Udaipur	82.95	22.91	HP	7.1	262	170	0.3	36	8.9	0.4	0	73	60	60	10	8.4	17.8	11.5