भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास व गंगा संरक्षण विभाग
केंद्रीय भूमिजल बोर्ड

GOVERNMENT OF INDIA
MINISTRY OF JALSHAKTI
DEPT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
CENTRAL GROUND WATER BOARD

वार्षिक भूजल पुस्तिका

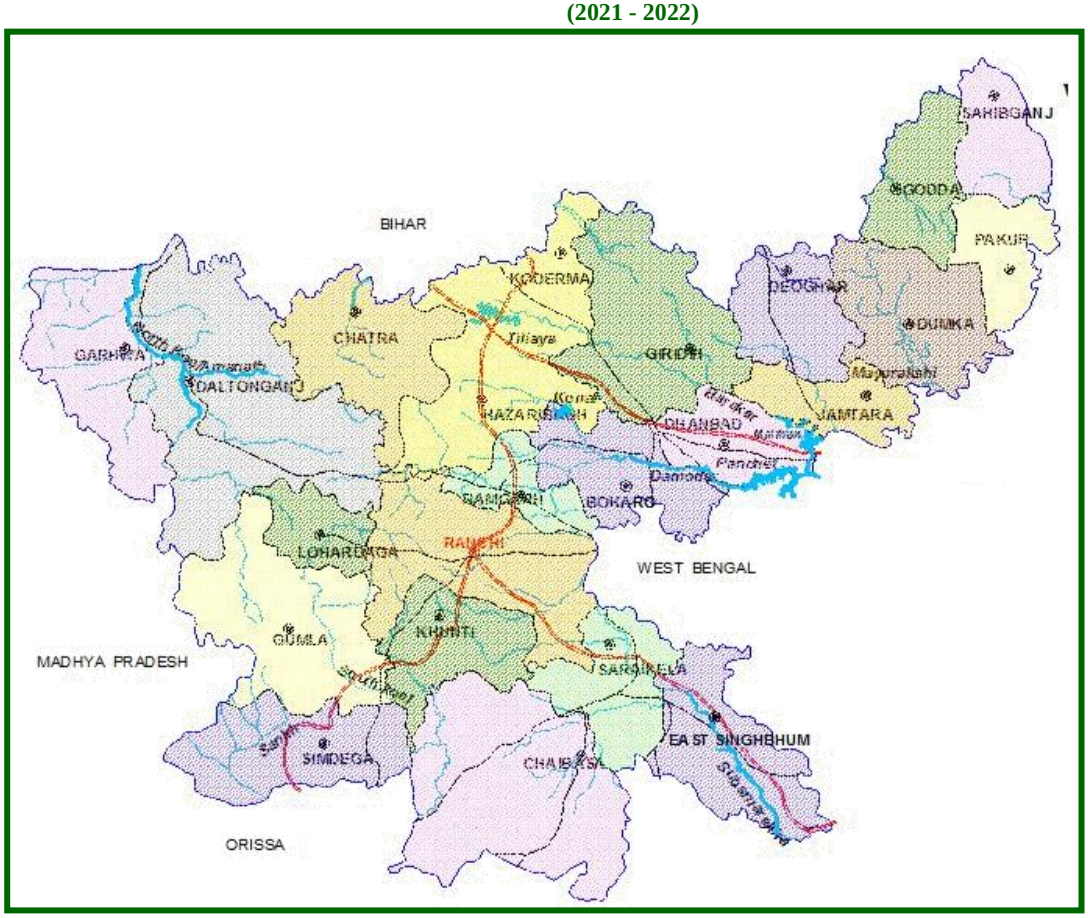
झारखण्ड

(2021 - 2022)

GROUND WATER YEAR BOOK

JHARKHAND

(2021 - 2022)



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September, 2022

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GROUND WATER YEAR BOOK
JHARKHAND
(2021-2022)

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FOREWORD

To understand the groundwater situations in diverse hydrogeological environments, changes in various facets of ground water, like variation in water level and water quality are to be monitored. A regular monitoring of ground water regime through a network of observation wells i.e., Ground water Monitoring Well (GWMW) is being carried out by Central Ground Water Board, MER Patna for the state of Jharkhand. Initially the task was taken up with the help of a few GWMW but gradually the numbers of stations were increased, which is now totals 452 GWMW (as on March 2022) which represents all 24 districts and almost all blocks of the state.

This is an attempt to make a presentation in the form of a report for Jharkhand State where the scenarios of water levels for the year 2021-2022 have been produced. The comparisons with decadal mean, seasonal & annual fluctuations, chemical quality of ground water, different maps along with data have been incorporated.

Periodic water level measurements were taken 4 times in a year in 2021-2022, (i.e., in the months of May, 2021, August, 2021, November, 2021 and January, 2022). Water samples from the GWMW were collected during the month of May-2021 to study the changes in hydrochemical regime.

The scientific officers and technical personnel of the state unit office Ranchi of Jharkhand, systematically collected field data from the GWMW as required for monitoring purposes and collected water samples during the pre-monsoon period which were analysed in the chemical lab of this region.

The compilation and analyzing data, its retrieval, evaluation, preparation of suitable maps and their reproduction in the form of present report has been carried out by **Dr. Anukaran kujur, Scientist-B, Mrs Sulekha Bhaya, Scientist-B & Dr. Sudhanshu Shekhar, Scientist-D**, in supervision of Shri R. R. Shukla, Scientist-E & Officer-in-Charge, CGWB, SUO, Ranchi.

It is sincerely hoped that the appended write up, maps and basic information in this report would be very useful to the Planners and concerned beneficiaries in Jharkhand State

(T.B.N. Singh)
Regional Director

GROUND WATER YEAR BOOK-JHARKHAND 2021-22

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EXECUTIVE SUMMARY

In Jharkhand state ground water levels of 452 Ground Water Monitoring Wells (GWMW) were monitored four times in the year 2021 - 2022 as a part of regime monitoring of phreatic aquifer in different hydrogeological and agro-climatic zones. The water level monitoring was carried out in the months of May'21, August'21, November'21 and January'2022 and ground water samples were collected in pre-monsoon period (May, 2021) for chemical analysis. In the state the phreatic aquifer consists of weathered mantle and saprolite zone. Over 78% area of the state is underlain by rocks of Chotanagpur Granitic Gneissic Complex (CGGC) suit. Hence, most of the GWMW represented water level in weathered CGGC. A few GWMW represented water level of phreatic aquifer of Gondwana Super Group, Basalts, Limestones, Tertiary Formation and recent alluvium.

The observed water level data had been grouped into four categories viz. 0 -2m, 2-5m, 5-10m and >10m. Thematic maps depicting ground water levels measured in different periods have been prepared. The water levels have been further analysed to study its change with respect to measurement of pre-monsoon period of the same year, previous year water level data of corresponding period, and decadal mean water level data of the corresponding period. The fluctuations have been shown under rise and fall categories. In each category there are three groups viz. 0-2 m, 2-4 m and >4 m. Thematic maps have been prepared for each category.

The depth to water level data of all the Ground Water Monitoring Wells collected during the four measurements are also presented along with the general well information. The water samples were collected during May, 2021 chemical analysis report is under progress.

During pre-monsoon 2021, only 119 monitoring wells have benn monitored in 7 districts, due to countrywide locked down for covid situation. The minimum and the maximum depth to water levels during pre-monsoon period have been recorded as 0.03 m bgl and 9.7 m bgl at Hazaribagh and Koderma. In general, the water level throughout the State varies in the range of 2 – 5 m bgl and has been observed in the 57 wells (59%) out of 119 analysed wells. Water level 0 - 2 m bgl has been observed in the 20 wells (18%). The water level in the range of 5 - 10 m bgl has been observed in the 42 wells (23%).

Fluctuation in water level for August 2021 compared with August 2020 May, 2020 shows rise in water level 33 and fall in 48 wells. When compare the data of November 2021 with respect to November 2020, it shows fall in 56% GWMW as well as rise in 44% GWMW of the total 174 analysed wells. Jnauary 2021 data compared to January 2020 shows the major part of the state shows fall in 71% GWMW as well as rise in 27% GWMW of the total 184 analysed wells.

The fluctuation of water level of August, 2021 with respect to decadal mean water level of August 2011 to August 2020 indicate 74% (159) wells shows rise and 26% (55) wells shows fall out of 214 well analysed. The fluctuation of water level of November 2021 with respect to decadal mean water level of November 2011 to November 202 rise in 150 wells (76%) and fall in 48 wells (24%) out of 198 wells analysed. The fluctuation of water level of January 2022 with respect to decadal mean water level of January 2012 to January 2021 indicates 84 % rise and 16% fall out of 253 well analysed.

GROUND WATER YEAR BOOK OF JHARKHAND

2021 – 2022

JHARKHAND AT A GLANCE

Geographical Area (sq. km.)	79714
Population (Census 2011)	3,29,66,238
Population density (Persons/Sqkm)	413
Male Population (Million)	16.93
Female Population (Million)	16.03
Decadal Growth (2001-2011)	22.3%
Literacy Rate	67.63%
Sex ratio	947 females to 1000 males
No. of Districts	24
No. of Blocks	260
Normal Annual Rainfall (mm)	1251.2
Net sown area (in hectare)-2014-15	13,84515
Area under forest (in hectare) -2014-15	2339481
Barren and uncultivated area (in hectare)-2014-15	568009
Cultivable waste land (in hectare)-2014-15	352871
Cropping intensity (%) – 2011	114 %
Annual Replenishable Ground Water Resource in BCM (2020)	6.15
Net ground water availability in BCM (2020)	5.64
Annual Ground Water Draft for Domestic & Industrial use in BCM	0.78
Gross annual ground water draft in BCM (2020)	1.58
Stage of ground water development (in %) (2020)	27.73
Number of over-exploited blocks (as on 2020)	3
Number of critical blocks (as on 2020)	2
Number of semi critical blocks (as on 2020)	10
Number of Safe block (as on March-2020)	245
Ground Water Quality	In general, chemical Constituents are within permissible limit except fluoride Contamination in parts of Palamu, Garhwa, Koderma, Pakur Districts and Arsenic contamination in parts of Sahebganj district

GROUND WATER YEAR BOOK OF JHARKHAND

2021 – 2022

1.0 INTRODUCTION:

Jharkhand state, was created on 15th November, 2000, consists of districts falling on Chotanagpur Plateau of erstwhile Bihar on the birthday of legendary tribal freedom fighter Birsa Munda. Presently it consists of 24 districts and 260 administrative blocks. The capital of the state is Ranchi. The state spreads over 79714 sq km, between Latitude 21º 55' 00" and 25º 15' 00" and Longitude 83º 15' 00"and 87º 55' 00". The state is bounded by Bihar in the north and by West Bengal in the east. The other two sides, west and south, are bounded by Chhattisgarh and Orissa states respectively (Plate-I).

The population of the state as per 2011 census is 03.30 crore. The population density is 414 person/km^2. The urban population is 7.912 million and the rural population is 25.05 million. The tribal population constitutes about 28% of total population. The state is moderately urbanized with Ranchi as its capital city. Nearly 24% of total population of the state lives in urban areas. Important urban centers are in the state are Jamshedpur, Dhanbad, Hazaribagh, Daltonganj, Dumka and Deoghar.

To acquire a detailed knowledge vis–a–vis scenario of ground water level with respect to behaviour, availability and quality, Ground Water monitoring is essential in time and space. Thus, the data so collected during monitoring gives an important input for ground water management. Periodical monitoring of ground water regime covering different geomorphic, hydrogeological units is an effort to get information on the behaviour of ground water levels and chemical quality of formation water through representative sampling. Monitoring of ground water regime includes:

(a) Monitoring of ground water levels
(b) Monitoring of ground water quality and
(c) Temperature of ground water.

Monitoring is being carried out by establishing suitable *Ground Water Monitoring Well* (GWMW) based on Geomorphology, Geology, Hydrogeology and status of ground water resource of the area with a view to observe the trend of water level and change of chemical quality with time and space. It is also very useful to estimate the dynamic ground water resources and to demarcate the water logged as well as drought prone areas.

2.0 BACKGROUND:

The Central Ground Water Board, State Unit office, Ranchi, is at present monitoring 452 GWMW (Ground water monitoring wells) to delineate the behaviour of ground water level with time and space covering 24 districts in the State of Jharkhand (Plate-I) four times a year, viz January (from 1st to 10th), May (from 20th to 30th), August (from 20th to 30th) and November (from 1st to 10th). The locations of GWMW are shown in Plate - II.

The district-wise status of GWMW in Jharkhand during the period from May 2021 to January, 2022 is given in Table 1. The district-wise water level data of GWMW for the period May, 2021, August, 2021, November, 2021 and January, 2022 are given in Annexure- I.

3.0 GEOLOGY AND HYDROGEOLOGY:

The generalized geological succession of Jharkhand state is given Table 1 - Generalized geological succession of Jharkhand state.

Table 1. General Stratigraphic sequences of geological formations in Jharkhand State

Age	Formation	Broad Lithology
Quaternary	Alluvial deposits	Sand, clay, silt and occasional gravel
Tertiary	Dhalbhumgarh Gravel beds	Sandstone, conglomerate, clay-stone, gravel
Upper Jurassic to Lower Cretaceous	Rajmahal Volcanics	Basalt flows with inter-trappean sedimentary beds
Upper Jurassic to Carboniferous	Gondwana Supergroup	Sandstone, shale, clay, conglomerate with coal beds
Lower Cambrian to Proterozoic	Vindhyan Supergroup	Sandstone, dolomite, chart, shale *etc.*
Proterozoic	Rocks of Singhbhum-Greenstone-Granite domain, basic volcanics and Chhotanagpur Gneiss Granulite Complex including BMB	Granites, granite-gneiss, schists, phyllites, dolomites, basic and ultrabasic lavas, amphibolites
Archaean	Older Metamorphic Gneiss, Older Metamorphic Tonalite Gneiss	Gneiss, schists, arenites, amphibolites

GRANITE - GNEISS, SCHIST, PHYLLITE, AND OTHER ROCKS BELONGING TO CGGC

It covers nearly 85 % of the geographical area of the state. The phreatic aquifer in this formation consists of weathered mantle and underlying secondary porosities like fractures, joints and fissures. In general, the thickness of weathered zone varies between 10 and 25 m, however in localized patches it is > 35 m. The weathered zone is the main repository of ground water. Exploratory wells of CGWB reveal that the fractures underlying the weathered zones form the potential aquifer. The fracture zones (generally beyond 100 m depth) are exploited particularly in urban areas. In general, 2-5 sets of fractures have been encountered within 150 m bgl. In a few wells, fractures have been encountered beyond 150 m depth. The ground water occurs under semi-confined to confined condition in the fractures situated at a deeper level. In this formation discharge from negligible to 30 lps has been recorded from the bore wells.

VINDHYAN SUPERGROUP

The rocks of this group are exposed in Palamu and Garhwa districts over a limited aerial extent, in the south of the river Son. The sandstones are hard and compact. The ground water occurs within the secondary porosities like fractures and joints. The fractured sandstone has good ground water potential in comparison to the shale. The ground water occurs under unconfined condition in weathered zone. The yield potential of sandstone is poorer than granite gneiss.

VOLCANIC ROCKS

The volcanic rocks occur mainly in the northeastern part of the state in Sahebganj, Pakur, Dumka and Godda districts as Rajmahal Traps and in southeastern part of the state in East & West Singhbhum, and Saraikela districts as other volcanics. The Rajmahal trap is a series of basaltic flows horizontally disposed. In an individual flow, the lower part is massive and the upper part is vesicular. In some cases, vesicles are filled with secondary material. Partially filled interconnected vesicles form the potential aquifers. Thin inter-trappean beds are also observed between the flows. The ground water occurs under unconfined conditions in upper vesicular flows, which are exposed generally at the ground level. In the vesicular layers disposed at deeper levels the ground water occurs under semi-confined to confined condition.

GONDWANA SUPERGROUP

The Gondwana Super Group ranging in age from Upper Carboniferous to Cretaceous is considered as semi-consolidated formation. Ground water occurs within inter-granular space as well as within the secondary porosities like fractures and joints. Rocks of this unit are exposed as patches in the districts of Hazaribagh, Dhanbad, Giridih, Bokaro, Ranchi, Dumka, Jamtara, Latehar, Godda and Garhwa districts. The sandstones form repository of ground water. The exploratory drilling of CGWB and other agencies indicate that ground water occur in semi-confined to confined condition in aquifers situated at deeper

level, and under unconfined condition at shallow level. At few places, the piezometric head rises above the ground level to give rise to auto flow condition.

LATERITES AND TERTIARY SEDIMENTS

The Dhalbhumgarh Formation of Tertiary age occur in Chakulia- Bahragora-Dhalbhumgarh tract of East Singhbhum district. Exploration to a depth of 120 m indicates presence of 2 to 4 sedimentary layers. Laterite formations also occur as cappings in some parts of the state. These sedimentary layers are repository of ground water, which occurs under unconfined condition in aquifers disposed at shallow level and under confined to semi-confined condition in aquifers situated at deeper levels.

YOUNGER ALLUVIUM

The Younger Alluvium deposits are confined mainly to the bordering area of the state and occur in patches in the districts of Godda, Sahebganj and Pakur in the northeast and in Latehar, Palamu, Deoghar and Garhwa districts. In the bordering areas alluvial patches is extension of the Gangetic Plain. There is a patch of alluvial deposit in Ranchi district also. The ground water occurs under unconfined condition in aquifer disposed at shallow level. The depth of dug wells ranges between 10 –15 m in general while the depth of shallow tube well ranges between 20 - 30 m. The hydrogeological map & Geological map of Jharkhand is given in Plate III & IV.

4.0 GROUND WATER SCENARIO

4.1 DEPTH TO WATER LEVELS IN JHARKHAND DURING 2021 - 2022

May 2021

Water levels during May, 2021 were monitored from 119 wells (out of 452 existing wells). Due to countrywide locked down during Covid situation, limited number of wells has been monitored. The district-wise status of distribution of Ground Water Monitoring Wells with different ranges of depth to water level is presented in *Table-2*

The minimum and the maximum depth to water levels have been recorded as 0.03 m bgl in Hazaribagh district and 9.70 m bgl in Koderma district. In general, the water level throughout the State varies in the range of 2 – 5 m bgl and has been observed in the 57 wells (59%) out of 119 analysed wells. Water level 0 - 2 m bgl has been observed in the 20 wells (18%). The water level in the range of 5 - 10 m bgl has been observed in the 42 wells (23%).

August 2021

Water levels during August, 2021 were monitored from 217 Dug wells. The district-wise status of distribution of Ground Water Monitoring Wells with different ranges of depth to water level is presented in Table 3**.**

The minimum and the maximum depth to water levels have been recorded as 0.50 m bgl and 12.25 m bgl both in Ranchi district. About 54% of wells have water level ranging between 2 to 5 mbgl. 79, 20 and 1 well shows depth to water level within 0 to 2 m bgl, 5 to 10 m bgl and >10 m bgl respectively.

November 2021

A total of 205 GWMW has been monitored during post-monsoon period in November 2021, six groupings were made based on the range of water level data viz. 0-2, 2-5, 5-10, 10-20, 20-40 and > 40 m bgl. The district-wise status of distribution of network hydrograph stations with different ranges of depth to water level is presented *in Table 4*.

Minimum and the maximum depth to water levels have been recorded as 0.35 m bgl and 10.09 m bgl in Pakur and Hazaribagh district respectively. Out of 205 wells 145 (68%) of GWMW, water level ranges 2 - 5 m bgl which covers almost entire Jharkhand State. The water level in the range of 5-10 m bgl has been observed in the 33 wells (19%). Ground water level of 0 – 2 m bgl depth range has been observed only in 26 wells (13%) at different locations. Only 3 wells (1%) have shown water level more than 10 m bgl**. (**Plate VI).

January 2022

To study the water levels of recession period data were collected during January, 2022 from 254 wells. The district-wise status of distribution of network hydrograph stations with different ranges of depth to water level is presented *in Table 5.*

The minimum and the maximum depth to water levels in the State have been recorded 0.3 m bgl in Gumla district and 11.85 m bgl in Purbi-Singhbhum district. The water level in the range of 2 - 5 m bgl has been observed in the 155 wells (53.33%) covered almost entire State. And 5-10 m ranges in 79 wells about 47%. Water level range from 10 to 20 m bgl has been observed. 4 wells. The water level below 2 m has been observed in 16 wells Plate VII.

4.2 SCENARIO OF ANNUAL FLUCTUATIONS IN JHARKHAND DURING 2010-21 TO 2021-22

The annual fluctuation in water levels for the periods of (1) August 2020 and August 2021, (2) November 2020 and November 2021 and (3) January 2021 and January 2022 have been analysed to study the net status of ground water conditions during the previous and current year

August 2020 and August 2021

The annual fluctuation in water level between Aug, 2020 and Aug, 2021 indicates the status of ground water condition during the previous year and current monsoon measurement The district wise statement

of frequency of distribution of network hydrograph stations falling in different ranges of water level fluctuation is presented in Table 8.

A general fall in water level (48 wells) has been found in major part of the state whereas rise in 33 wells has been observed. Water level rise is recorded in 41% of wells and fall in 59% wells. 39% wells shows fall within the range of 0 to 2 m whereas 27% of wells shows rise in water level within range of 0 to 2m. only 8 numbers of well showing fall 2 to 4 m, and 1 wells shows fall >4m.

November 2020 And November 2021

The Annual fluctuation in water level between November 2020 and November 2021 indicates the net status of ground water conditions during the previous and current post-monsoon year and the same is presented in Plate XI. The district-wise statement of distribution of network hydrograph stations in different ranges of water level fluctuation is presented in *Table 9.*

The comparison of fluctuation in water level between November 2020 and November 2021 shows fall in 56% GWMW as well as rise in 44% GWMW of the total 174 analysed wells during the period. The major part of the state shows a general fall in water level within 2.00 m. Out of 174 wells fall of water level within 0 – 2m has been observed in 84 wells (48%) Water level rise ranging from 0 to 2 m has been observed in 70 wells. Only 8 and 5 wells show water level fall within range of 2 to 4 m and >4m respectively.

January 2021 And January 2022

The annual fluctuation in water level between January 2021 and January 2022 indicates the status of ground water condition during the previous year and current measurement and the same is presented in Plate XII. The district wise statement of frequency of distribution of network hydrograph stations falling in different ranges of water level fluctuation is presented in *Table 10.*

The major part of the state shows fall in 71% GWMW as well as rise in 27% GWMW of the total 184 analysed wells 100 wells showing rise in water level between 0 to 2m. 37 wells shows fall in range of 0 to 2 m. Only 25 wells and 6 wells show rise in water level within range of 2 to 4 m and >4m respectively.

4.3 SCENARIO OF DECADAL WATER LEVEL FLUCTUATIONS WITH THE GROUND WATER YEAR 2021 – 2022

Decadal Mean and August 2020

Water level fluctuation has been compared the water level data of 214 wells for August Mean (2011-2020) with the depth to water level data August 2021. The district wise statement of frequency distribution of network hydrograph stations falling in different ranges of water level fluctuation is presented in *Table 11*.

74% (159) wells show rise and 26% (55) wells shows fall out of 214 well analysed. 118 numbers of wells show rise within 0 to 2 m. 33 numbers of well show rise in water level within 2 to 4 m. 47 number of well shows fall in water level within 0 to 2m. Only 6 and 2 wells show fall in water level 2 to 4 m and >4m respectively.

However, overall regional fluctuation of water level in the entire state is mainly restricted within 2 m only which is normal phenomenon and no abnormal rise or fall in water level is observed except in few localized well. Fall > 2 mbgl may be due to irregularities of rainfall during last 3 to 4 years.

Decadal Mean and November 2021

The fluctuation map of water level between November Mean and November 2021 (Plate XIV) has been prepared on the basis of available Mean water level data (198 wells) of November for last 10 years (2011-2020) with the present water level data for Jharkhand. The district-wise statement of distribution of network hydrograph stations in different ranges of water level fluctuation is presented in *Table 12.*

The fluctuation of water level of November 2021 with respect to decadal mean water level of November 2011 to November 2020 shows rise in 150 wells (76%) and fall in 48 wells (24%) out of 198 wells analysed. 132 wells show rise within 0 to 2 m. 17 wells show rise in water level within 2 to 4m. 45 (23%) and 3 (2%) wells shows fall in water level within 0 to 2 m and 2 to 4m respectively.
However, overall regional fluctuation of water level in the entire state is mainly restricted within 2 m only which is normal phenomenon and no abnormal rise or fall in water level is observed except in few localized well.

Decadal Mean and January 2022

Water level fluctuation map (Plate XV) has been prepared by comparing the water level data (253 wells) for January Mean (2012-2021) with the depth to water level data January, 2022. The district wise statement of frequency distribution of network hydrograph stations falling in different ranges of water level fluctuation is presented in *Table 13.*

The fluctuation of water level of January, 2022 with respect to decadal mean water level of January, 2012 to January 2021 indicates 84 % rise and 16% fall out of 253 well analysed. 171 and 37 wells show rise in water level within 0 to 2 m and 2 to 4m respectively. Only 35 and 5 wells show fall in water level within 0 to 2 m and 2 to 4m respectively.

4.4 TREND OF GROUND WATER LEVEL

The Trend of ground water level data is presented **in Annexure-II.**
The observation shows the rising trend of ground water level in 119 wells and falling trend in 80 wells. The trend of ground water level of the entire state is mainly restricted within 0.5 m only which is normal phenomenon and no abnormal rise or fall in water level is observed in the well of the state.

5.0 HYDROCHEMESTRY:

The chemical quality of groundwater is dependent on the source of water and on the course over which it flow. Ground water carries a higher mineral content than surface water due to the slow circulation and longer period of contact with the rocks formation. In order to assess the chemical quality of ground water of phreatic aquifers of Jharkhand state ground water samples have been analysed for major 15 parameters viz. EC, pH, HCO_3, CO_3, Cl, TH, Ca, Mg, K, Na, F, SiO_2, PO_4 and NO_3. The chemical analysis data of ground water samples collected (132) during the period May 2021.

As limited (only 6 districts- Ranchi, Bokaro, Hazaribagh, Gumla. Lohardaga, Ramgarh) samples have been collected during the year 2021-2022, due to locked down situation of covid, the analysis on the basis of those is as follows:

Ground water samples throughout the state found to be slightly alkaline in nature as the pH mostly varies between 7.20-8.23. The quality of ground water in most of part of the state is potable with low mineral contents having electrical conductance varying from 124.8 (Iragaon at Lohardaga, Khunti) to 2060 (at Pindrajora, Chas, Bokaro) µS/cm at 25^0c. The samples found to be suitable for drinking and irrigation purposes. Only 1 sample having electrical conductivity greater than 2000 µS/cm, which can be treated as brackish water. Spatially in major part of the state EC rested in the range of 400-1000 µS/cm. In most of the samples the concentration of chloride is within the desirable limit of drinking water (250 mg/l). Concentration of chloride in ground water >250 mg/l is recorded in 5 number of samples in Bokaro and Hazaribagh district.

Thus it is observed that the quality of ground water in shallow aquifers in the given six districts is suitable for drinking, irrigation and industrial purposes except in arsenic & fluoride infested areas.

Table - 1

DISTRICT-WISE STATUS OF NHNS AS On March 2021

SN	District	DW	Pz		
			Total	Confined	Unconfined
1	Bokaro	14	_		
2	Chatra	10	_		
3	Deoghar	7	_		
4	Dhanbad	24	_		
5	Dumka	17	_		
6	E. Singhbhum	31	_		
7	Garhwa	11	_		
8	Giridih	17	_		
9	Godda	17	_		
10	Gumla	15	_		
11	Hazaribagh	29	_		
12	Jamtara	10	_		
13	Khunti	36	1	1	
14	Koderma	8	_		
15	Latehar	11	_		
16	Lohardaga	11	_		
17	Pakur	12	_		
18	Palamu	19	_		
19	Ramgarh	17	2	2	
20	Ranchi	53	14	14	
21	Sahibganj	21	_		
22	Saraikela	12	_		
23	Simdega	14	_		
24	W Singhbhum	19	_		
Total		**435**	**17**		

Table 2: ***District wise categorisation of depth to water level - May, 2021***

Depth to Water Table
Distribution of Percentage of Observation Wells
2021/May

Jharkhand / BOKARO
Lower Ganges / Kasai To Damodar On Rb Of Bhagirathi

State : Jharkhand

District	No. ofWells Analysed	Depth to		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0 to 2	2 to 5	5 to 10	10 to 20	20 to 40	>40
BOKARO	12	0.89	9.50	3 25.00%	6 50.00%	3 25.00%	0	0	0
CHATRA	8	3.64	9.20	0	2 25.00%	6 75.00%	0	0	0
GUMLA	21	0.25	8.40	3 14.29%	4 19.05%	14 66.67%	0	0	0
HAZARIBAG	23	-0.03	8.81	6 26.09%	15 65.22%	2 8.70%	0	0	0
KODARMA	5	1.60	9.70	1 20.00%	2 40.00%	2 40.00%	0	0	0
LOHARDAGA	11	2.80	9.40	0	5 45.45%	6 54.55%	0	0	0
RANCHI	39	1.30	9.10	7 17.95%	23 58.97%	9 23.08%	0	0	0
Total	119	-0.03	9.70	20	57	42	0	0	0

Table 3: ***District wise categorisation of depth to water level – August, 2021***

Depth to Water Table
Distribution of Percentage of Observation Wells
2021/Aug

Jharkhand / BOKARO
Lower Ganges / Kasai To Damodar On Rb Of Bhagirathi

State : Jharkhand

District	No. ofWells Analysed	Depth to		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0 to 2	2 to 5	5 to 10	10 to 20	20 to 40	>40
BOKARO	10	0.94	5.91	5 50.00%	3 30.00%	2 20.00%	0	0	0
CHATRA	6	2.10	8.80	0	5 83.33%	1 16.67%	0	0	0
DEOGHAR	4	1.03	1.90	4 100.00%	0	0	0	0	0
DHANBAD	8	1.12	7.60	2 25.00%	5 62.50%	1 12.50%	0	0	0
DUMKA	22	0.73	6.55	8 36.36%	13 59.09%	1 4.55%	0	0	0
GARHWA	5	1.20	5.40	1 20.00%	3 60.00%	1 20.00%	0	0	0
GIRIDIH	6	1.35	2.05	5 83.33%	1 16.67%	0	0	0	0
GODDA	10	1.35	5.09	2 20.00%	7 70.00%	1 10.00%	0	0	0
GUMLA	23	0.50	5.85	11 47.83%	11 47.83%	1 4.35%	0	0	0
HAZARIBAG	25	0.60	5.80	3 12.00%	10 40.00%	1 3.70%	0	0	0
LOHARDAGA	5	2.30	5.80	0	3 60.00%	2 40.00%	0	0	0
PAKAUR	10	0.60	6.80	4 40.00%	4 40.00%	2 20.00%	0	0	0
PALAMU	22	1.10	8.70	7 31.82%	12 54.55%	3 13.64%	0	0	0
RANCHI	41	0.50	12.25	15 36.59%	22 53.66%	3 7.32%	1 2.44 %	0	0
SAHIBGANJ	13	1.20	6.56	5 38.46%	7 53.85%	1 7.69%	0	0	0
Total	217	0.50	12.25	79	117	20	1	0	0

Table 4: ***District wise categorisation of depth to water level – November, 2021***

Depth to Water Table
Distribution of Percentage of Observation Wells
2021/Nov

Jharkhand / BOKARO
Lower Ganges / Kasai To Damodar On Rb Of Bhagirathi

State : Jharkhand

District	No. ofWells Analysed	Depth to		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0 to 2	2 to 5	5 to 10	10 to 20	20 to 40	>40
BOKARO	10	1.49	6.02	5 50.00%	4 40.00%	1 10.00%	0	0	0
CHATRA	4	4.05	6.20	0	1 25.00%	3 75.00%	0	0	0
DEOGHAR	5	1.80	4.94	1 20.00%	4 80.00%	0	0	0	0
DUMKA	21	1.40	6.50	1 4.76%	16 76.19%	4 19.05%	0	0	0
GARHWA	6	3.20	8.70	0	5 83.33%	1 16.67%	0	0	0
GIRIDIH	5	2.33	3.55	0	5 100.00%	0	0	0	0
GODDA	7	1.60	5.43	1 14.29%	5 71.43%	1 14.29%	0	0	0
GUMLA	23	0.50	6.19	5 21.74%	16 69.57%	2 8.70%	0	0	0
HAZARIBAG	29	1.36	10.09	1 3.45%	23 79.31%	4 13.79%	1 3.45 %	0	0
KODERMA	5	3.88	6.30	0	3 60.00%	2 40.00%	0	0	0
PAKAUR	10	0.35	8.20	3 30.00%	4 40.00%	3 30.00%	0	0	0
PALAMU	24	2.10	9.20	0	19 79.17%	5 20.83%	0	0	0
RANCHI	36	0.87	6.63	7 19.44%	26 72.22%	3 8.33%	0	0	0
SAHIBGANJ	16	1.80	6.66	2 12.50%	11 68.75%	3 18.75%	0	0	0
Total	205	0.35	10.09	26	145	33	1	0	0

Table 5: ***District wise categorisation of depth to water level – January, 2022***

Depth to Water Table
Distribution of Percentage of Observation Wells
2022/Jan

Jharkhand / BOKARO
Lower Ganges / Kasai To Damodar On Rb Of Bhagirathi

State : Jharkhand

District	No. ofWells Analysed	Depth to		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0 to-2	2 to-5	5 to 10	10 to 20	20 to-40	>40
BOKARO	9	2.35	7.42	0	7 77.78%	2 22.22%	0	0	0
CHATRA	6	4.10	10.60	0	4 66.67%	1 16.67%	1 16.67 %	0	0
DEOGHAR	6	4.31	6.05	0	3 50.00%	3 50.00%	0	0	0
DHANBAD	8	1.65	6.88	1 12.50%	3 37.50%	4 50.00%	0	0	0
DUMKA	21	1.50	6.40	1 4.76%	14 66.67%	6 28.57%	0	0	0
GARHWA	6	3.60	8.80	0	4 66.67%	2 33.33%	0	0	0
GIRIDIH	13	3.15	7.10	0	12 92.31%	1 7.69%	0	0	0
GODDA	8	2.50	6.23	0	6 75.00%	2 25.00%	0	0	0
GUMLA	24	0.30	6.80	5 20.83%	8 33.33%	11 45.83%	0	0	0
HAZARIBAG	29	2.96	14.80	1 3.45%	18 62.07%	9 31.03%	1 3.45 %	0	0
LOHARDAGA	8	2.60	6.50	0	4 50.00%	4 50.00%	0	0	0
PAKAUR	10	1.65	10.75	1 10.00%	6 60.00%	2 20.00%	1 10.00 %	0	0
PALAMU	23	3.10	9.80	0	13 56.52%	10 43.48%	0	0	0
PASHCHIMI	18	1.02	9.04	3 16.67%	13 72.22%	2 11.11%	0	0	0
PURBI	5	2.20	11.85	0	2 40.00%	2 40.00%	1 20.00 %	0	0
RANCHI	40	0.80	7.14	4 10.00%	25 62.50%	11 27.50%	0	0	0
SAHIBGANJ	15	2.35	7.80	0	8 53.33%	7 46.67%	0	0	0
Total	254	0.30	11.85	16	155	79	4	0	0

Table 6: ***District wise categorisation of fluctuation (Annual) in water level and frequency Distribution of August 2021 wrt August 2020***

District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other

From Year: 2020/Aug - To Year: 2021/Aug

State : Jharkhand

DistrictNa	No. of	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		
BOKARO	7 (3.59)	0.26	3.59	0.14	0.44	2 28.57%	3 42.86 %	0	2 28.57%	0	0	5	2
CHATRA	2 0.00	-	-	1.05	1.70	0	0	0	2 100%	0	0	0	2
GUMLA	13 (2.30)	0.20	2.30	0.30	1.95	4 30.77%	1 7.69 %	0	8 61.54%	0	0	5	8
HAZARIBAG	17 (4.37)	0.05	4.37	0.14	2.65	9 52.94%	0	1 5.88%	4 23.53%	3 17.65%	0	10	7
KODARMA	2 (3.40)	3.40	3.40	0.44	0.44	0	1 50.00 %	0	1 50.00%	0	0	1	1
LOHARDAGA	4 (1.10)	0.15	1.10	0.82	0.82	3 75.00%	0	0	1 25.00%	0	0	3	1
PALAMU	2 (1.65)	1.65	1.65	0.61	0.61	1 50.00%	0	0	1 50.00%	0	0	1	1
RANCHI	34 (1.90)	0.09	1.90	0.10	5.60	8 23.53%	0	0	20 58.82%	5 14.71%	1 2.94%	8	26
Total	81	3.40	1.10			27	5	1	39	8	1	33	48

Table 7: ***District wise categorisation of fluctuation (Annual) in water level and frequency Distribution of November 2021 wrt November 2020***

District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other

From Year: 2020/Nov - To Year: 2021/Nov

State : Jharkhand

DistrictNa	No. of	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		
BOKARO	9 (2.07)	0.11	2.07	0.01	0.49	6 66.67%	1 11.11 %	0	2 22.22%	0	0	7	2
CHATRA	3 (1.20)	1.00	1.20	2.70	2.70	2 66.67%	0	0	0	1 33.33%	0	2	1
DEOGHAR	3 (0.19)	0.19	0.19	0.30	0.70	1 33.33%	0	0	2 66.67%	0	0	1	2
DUMKA	19 (1.33)	0.15	1.33	0.08	1.75	8 42.11%	0	0	11 57.89%	0	0	8	11
GARHWA	6 (0.60)	0.60	0.60	0.70	2.40	1 16.67%	0	0	4 66.67%	1 16.67%	0	1	5
GIRIDIH	5 (0.91)	0.17	0.91	0.82	0.85	3 60.00%	0	0	2 40.00%	0	0	3	2
GODDA	7 0.00	-	-	0.35	1.75	0	0	0	7 100%	0	0	0	7
GUMLA	19 (1.93)	0.05	1.93	0.10	1.62	13 68.42%	0	0	6 31.58%	0	0	13	6
HAZARIBAG	20 (3.64)	0.09	3.64	0.01	3.08	6 30.00%	1 5.00 %	0	12 60.00%	1 5.00%	0	7	13
KODARMA	3 0.00	-	-	2.00	2.05	0	0	0	1 33.33%	1 33.33%	0	0	2
LOHARDAGA	4 (1.10)	1.10	1.10	0.28	1.60	1 25.00%	0	0	3 75.00%	0	0	1	3
PAKAUR	10 0.00	-	-	0.25	9.10	0	0	0	8 80.00%	0	1 10.00%	0	9
PALAMU	23 (2.80)	0.10	2.80	0.10	4.10	5 21.74%	2 8.70 %	0	13 56.52%	1 4.35%	1 4.35%	7	15
RANCHI	29 (1.70)	0.08	1.70	0.30	3.04	22 75.86%	0	0	5 17.24%	2 6.90%	0	22	7
SAHIBGANJ	14 (0.75)	0.55	0.75	0.05	7.20	2 14.29%	0	0	8 57.14%	1 7.14%	3 21.43%	2	12
Total	174	1.10	0.19			70	4	0	84	8	5	74	97

Table 8: ***District wise categorisation of fluctuation (Annual) in water level and frequency Distribution of January 2022 wrt January 2021***

District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other

From Year: 2021/Jan - To Year: 2022/Jan

State : Jharkhand

DistrictNa	No. of	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		
BOKARO	8 (2.40)	0.26	2.40	0.26	0.58	4 50.00%	1 12.50 %	0	3 37.50%	0	0	5	3
CHATRA	6 (2.40)	0.10	2.40	-	-	4 66.67%	2 33.33 %	0	0	0	0	6	0
DEOGHAR	6 (3.51)	0.10	3.51	0.15	0.46	2 33.33%	1 16.67 %	0	3 50.00%	0	0	3	3
DHANBAD	5 (0.10)	0.03	0.10	1.75	2.00	2 40.00%	0	0	3 60.00%	0	0	2	3
DUMKA	19 (5.10)	0.04	5.10	0.15	4.20	12 63.16%	2 10.53 %	1 5.26%	3 15.79%	0	1 5.26%	15	4
GARHWA	5 (0.70)	0.20	0.70	0.30	0.50	2 40.00%	0	0	3 60.00%	0	0	2	3
GIRIDIH	5 (2.01)	1.53	2.01	0.38	1.68	2 40.00%	1 20.00 %	0	2 40.00%	0	0	3	2
GODDA	8 (1.30)	0.50	1.30	0.20	0.90	5 62.50%	0	0	2 25.00%	0	0	5	2
GUMLA	21 (2.80)	0.31	2.80	0.06	3.70	16 76.19%	1 4.76 %	0	2 9.52%	1 4.76%	0	17	3
HAZARIBAG	18 (3.85)	0.10	3.85	0.70	8.75	6 33.33%	3 16.67 %	0	2 11.11%	3 16.67%	4 22.22%	9	9
KODARMA	3 (8.48)	0.85	8.48	2.02	2.02	1 33.33%	0	1 33.33%	0	1 33.33%	0	2	1
LOHARDAGA	8 (1.55)	0.40	1.55	0.20	1.37	5 62.50%	0	0	3 37.50%	0	0	5	3
PAKAUR	10 (5.25)	0.30	5.25	0.08	1.63	6 60.00%	1 10.00 %	1 10.00%	2 20.00%	0	0	8	2
PALAMU	22 (3.00)	0.30	3.00	0.30	1.00	16 72.73%	2 9.09 %	0	3 13.64%	0	0	18	3
PASHCHIMI SINGHBHUM	16 (7.94)	0.10	7.94	1.25	2.49	7 43.75%	6 37.50 %	1 6.25%	1 6.25%	1 6.25%	0	14	2
PURBI SINGHBHUM	4 (4.65)	0.47	4.65	1.21	1.21	1 25.00%	1 25.00 %	1 25.00%	1 25.00%	0	0	3	1
RANCHI	7 (2.43)	0.90	2.43	0.65	2.40	1 14.29%	3 42.86 %	0	2 28.57%	1 14.29%	0	4	3
SAHIBGANJ	13 (7.55)	0.01	7.55	0.75	4.55	8 61.54%	1 7.69 %	1 7.69%	2 15.38%	0	1 7.69%	10	3
Total	184	1.53	0.10			100	25	6	37	7	6	131	50

Table 9: ***District wise categorisation of fluctuation (Decadal) in water level and frequency Distribution between August (2011-2020 mean) - August, 2021***

District Wise - Fluctuation of Water Level with Mean and Selected Period

10 Years Mean (2011 Aug - 2020 Aug) - 2021/Aug

State : Jharkhand

DistrictNa	No. of	Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise (m)		Fall (m)		Rise (m)			Fall (m)			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BOKARO	10	0.23	3.96	0.06	0.47	7 70.00 %	1 10.00%	0	2 20.00%	0	0	8	2
CHATRA	6	0.98	4.28	-	-	3 50.00 %	2 33.33%	1 16.67%	0	0	0	6	0
DEOGHAR	4	3.05	6.07	-	-	0	3 75.00%	1 25.00%	0	0	0	4	0
DHANBAD	8	0.36	2.34	0.20	3.65	4 50.00 %	1 12.50%	0	2 25.00%	1 12.50 %	0	5	3
DUMKA	22	0.09	4.38	0.27	0.27	16 72.73 %	3 13.64%	2 9.09%	1 4.55%	0	0	21	1
GARHWA	5	0.07	2.74	0.15	0.15	2 40.00 %	2 40.00%	0	1 20.00%	0	0	4	1
GIRIDIH	6	0.80	3.51	-	-	2 33.33 %	4 66.67%	0	0	0	0	6	0
GODDA	9	0.29	4.62	0.73	0.73	4 44.44 %	1 11.11%	3 33.33%	1 11.11%	0	0	8	1
GUMLA	23	0.16	3.45	0.31	1.39	13 56.52 %	2 8.70%	0	8 34.78%	0	0	15	8
HAZARIBAG	27	0.05	4.45	0.20	2.92	14 51.85 %	4 14.81%	1 3.70%	6 22.22%	2 7.41 %	0	19	8
KODARMA	5	0.42	2.94	-	-	3 60.00 %	2 40.00%	0	0	0	0	5	0
LOHARDAGA	4	0.55	1.58	2.27	2.27	3 75.00 %	0	0	0	1 25.00 %	0	3	1
PAKAUR	10	0.04	1.14	0.05	4.87	7 70.00 %	0	0	2 20.00%	0	1 10.00%	7	3
PALAMU	21	0.04	3.29	0.20	0.89	13 61.90 %	4 19.05%	0	4 19.05%	0	0	17	4
RANCHI	41	0.21	2.44	0.10	6.59	19 46.34 %	2 4.88%	0	17 41.46%	2 4.88 %	1 2.44%	21	20
SAHIBGANJ	13	0.07	2.52	0.06	0.63	8 61.54 %	2 15.38%	0	3 23.08%	0	0	10	3
Total	214	1.14	3.05		6.59	118	33	8	47	6	2	159	55

Table 10: ***District wise categorisation of fluctuation (Decadal) in water level and frequency Distribution between November (2011-2020 mean) - November, 2021***

District Wise - Fluctuation of Water Level with Mean and Selected Period

10 Years Mean (2011 Nov - 2020 Nov) - 2021/Nov

State : Jharkhand

DistrictNa	No. of	Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise (m)		Fall (m)		Rise (m)			Fall (m)			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BOKARO	10	0.29	3.62	0.05	0.05	7 70.00 %	2 20.00%	0	1 10.00%	0	0	9	1
CHATRA	4	1.11	2.24	0.33	0.98	1 25.00 %	1 25.00%	0	2 50.00%	0	0	2	2
DEOGHAR	3	1.16	2.15	-	-	2 66.67 %	1 33.33%	0	0	0	0	3	0
DUMKA	21	0.22	2.19	0.04	0.69	15 71.43 %	1 4.76%	0	5 23.81%	0	0	16	5
GARHWA	6	0.16	1.37	0.01	1.68	4 66.67 %	0	0	2 33.33%	0	0	4	2
GIRIDIH	5	0.34	3.21	-	-	3 60.00 %	2 40.00%	0	0	0	0	5	0
GODDA	7	0.13	3.00	0.29	0.37	4 57.14 %	1 14.29%	0	2 28.57%	0	0	5	2
GUMLA	22	0.06	2.15	0.53	1.38	17 77.27 %	1 4.55%	0	4 18.18%	0	0	18	4
HAZARIBAG	28	0.02	3.78	0.45	3.19	19 67.86 %	3 10.71%	0	5 17.86%	1 3.57 %	0	22	6
KODARMA	5	0.02	0.80	0.10	1.04	3 60.00 %	0	0	2 40.00%	0	0	3	2
LOHARDAGA	4	0.43	1.13	0.10	0.10	3 75.00 %	0	0	1 25.00%	0	0	3	1
PAKAUR	10	0.08	0.66	0.06	2.90	4 40.00 %	0	0	5 50.00%	1 10.00 %	0	4	6
PALAMU	23	0.01	4.06	0.01	1.79	13 56.52 %	2 8.70%	1 4.35%	7 30.43%	0	0	16	7
RANCHI	34	0.06	3.26	0.24	2.58	28 82.35 %	3 8.82%	0	2 5.88%	1 2.94 %	0	31	3
SAHIBGANJ	16	0.19	0.90	0.03	1.97	9 56.25 %	0	0	7 43.75%	0	0	9	7
Total	198	0.66	1.16		3.19	132	17	1	45	3	0	150	48

Table 11: ***District wise categorisation of fluctuation (Decadal) in water level and frequency Distribution between January (2012-2021 mean) - January, 2022***

2.1

District Wise - Fluctuation of Water Level with Mean and Selected Period

10 Years Mean (2012 Jan - 2021 Jan) - 2022/Jan

State : Jharkhand

DistrictNa	No. of	Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise (m)		Fall (m)		Rise (m)			Fall (m)			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BOKARO	9	0.28	2.08	0.09	0.18	6 66.67 %	1 11.1%	0	2 22.23%	0	0	7	2
CHATRA	6	0.48	2.64	-	-	4 66.67 %	2 33.33%	0	0	0	0	6	0
DEOGHAR	6	0.35	3.30	-	-	5 83.33 %	1 16.67%	0	0	0	0	6	0
DHANBAD	8	0.06	4.20	0.53	2.22	3 37.50 %	0	1 12.50%	3 37.50%	1 12.50 %	0	4	4
DUMKA	21	0.04	5.01	0.06	0.06	14 66.67 %	5 23.8%	1 4.76%	1 4.76%	0	0	20	1
GARHWA	6	0.59	1.31	0.54	1.17	4 66.67 %	0	0	2 33.33%	0	0	4	2
GIRIDIH	13	0.35	3.16	0.11	0.46	7 53.85 %	3 23.08%	0	3 23.08%	0	0	10	3
GODDA	8	0.47	2.56	0.01	1.02	5 62.50 %	1 12.50%	0	2 25.00%	0	0	6	2
GUMLA	24	0.08	3.30	0.07	3.35	18 75.00 %	1 4.17%	0	4 16.67%	1 4.17 %	0	19	5
HAZARIBAG	29	0.17	3.24	0.40	6.59	18 62.07 %	4 13.79%	0	5 17.24%	1 3.45 %	1 3.45%	22	7
KODARMA	5	0.26	4.01	0.31	0.31	3 60.00 %	0	1 20.00%	1 20.00%	0	0	4	1
LOHARDAGA	8	0.22	2.46	1.48	1.48	6 75.00 %	1 12.50%	0	1 12.50%	0	0	7	1
PAKAUR	10	-	1.82	0.10	2.66	8 80.00 %	0	0	1 10.00%	1 10.00 %	0	8	2
PALAMU	23	0.15	2.95	0.54	0.67	17 73.91 %	3 13.04%	0	3 13.04%	0	0	20	3
PASHCHIMI SINGHBHUM	18	0.93	5.45	1.48	1.57	11 61.11 %	4 22.23%	1 5.56%	2 11.1%	0	0	16	2
PURBI SINGHBHUM	5	0.95	3.75	-	-	3 60.00 %	2 40.00%	0	0	0	0	5	0
RANCHI	39	0.02	3.53	0.07	2.47	28 71.79 %	8 20.5%	0	2 5.1%	1 2.56 %	0	36	3
SAHIBGANJ	15	0.11	2.02	0.61	1.62	11 73.33 %	1 6.67%	0	3 20.00%	0	0	12	3
Total	253	1.31	0.95		6.59	17	37	4	35	5	1	212	41

PLATE I

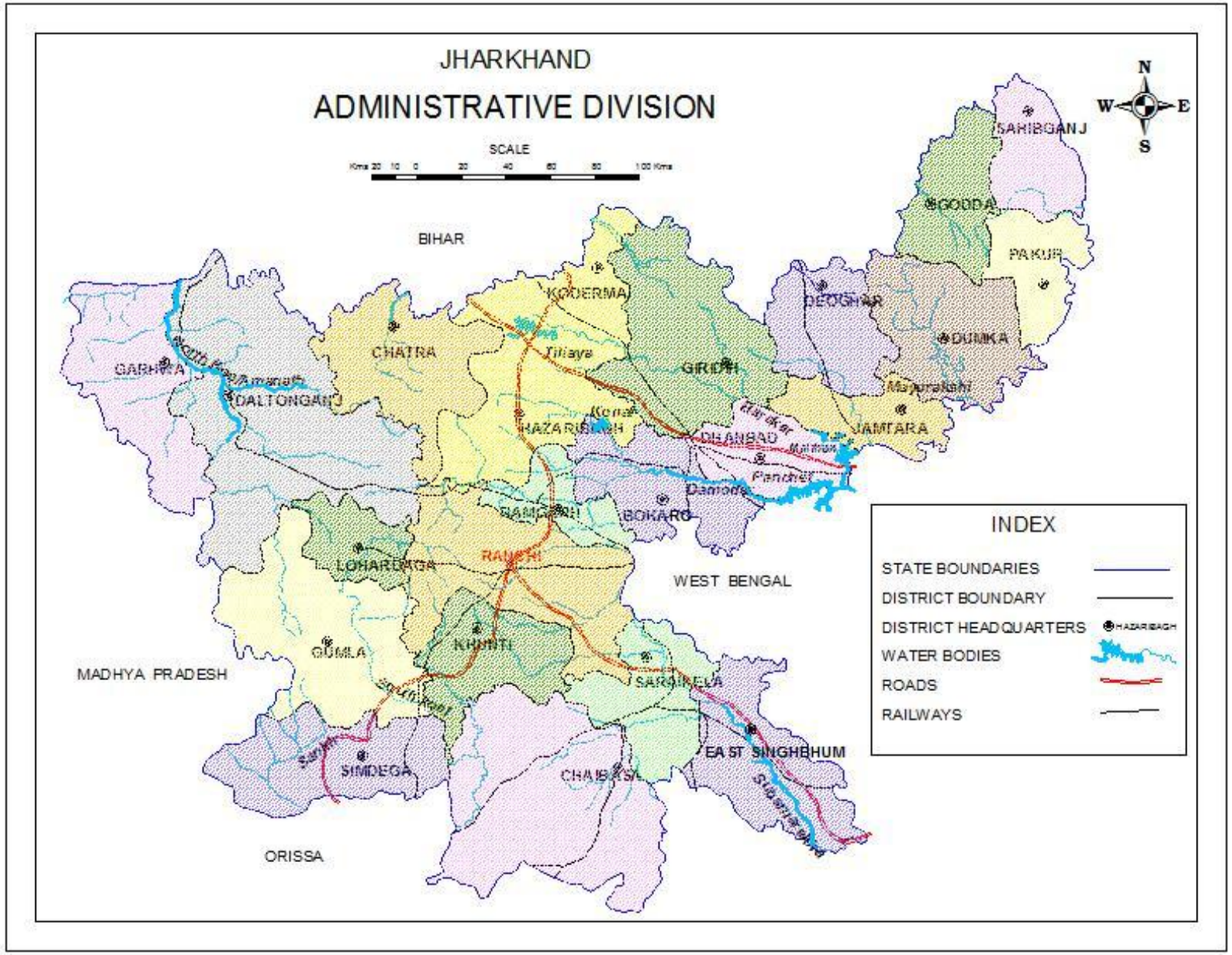

JHARKHAND
ADMINISTRATIVE DIVISION
SCALE
Kms 20 10 0 20 40 60 80 100 Kms
N
W
E
S
BIHAR
SAHIBGANJ
GODDA
PAKUR
KODERMA
DEOGHAR
DUMKA
CHATRA
GARHWA
DALTONGANJ
GIRIDH
HAZARIBAGH
DHANBAD
JAMTARA
BOKARO
RAMGARH
LOHARDAGA
RANCHI
WEST BENGAL
GUMLA
KHUNTI
SARAIKELA
MADHYA PRADESH
SIMDEGA
CHAIBASA
EAST SINGHBHUM
ORISSA
INDEX
STATE BOUNDARIES
DISTRICT BOUNDARY
DISTRICT HEADQUARTERS
HAZARIBAGH
WATER BODIES
ROADS
RAILWAYS

PLATE II

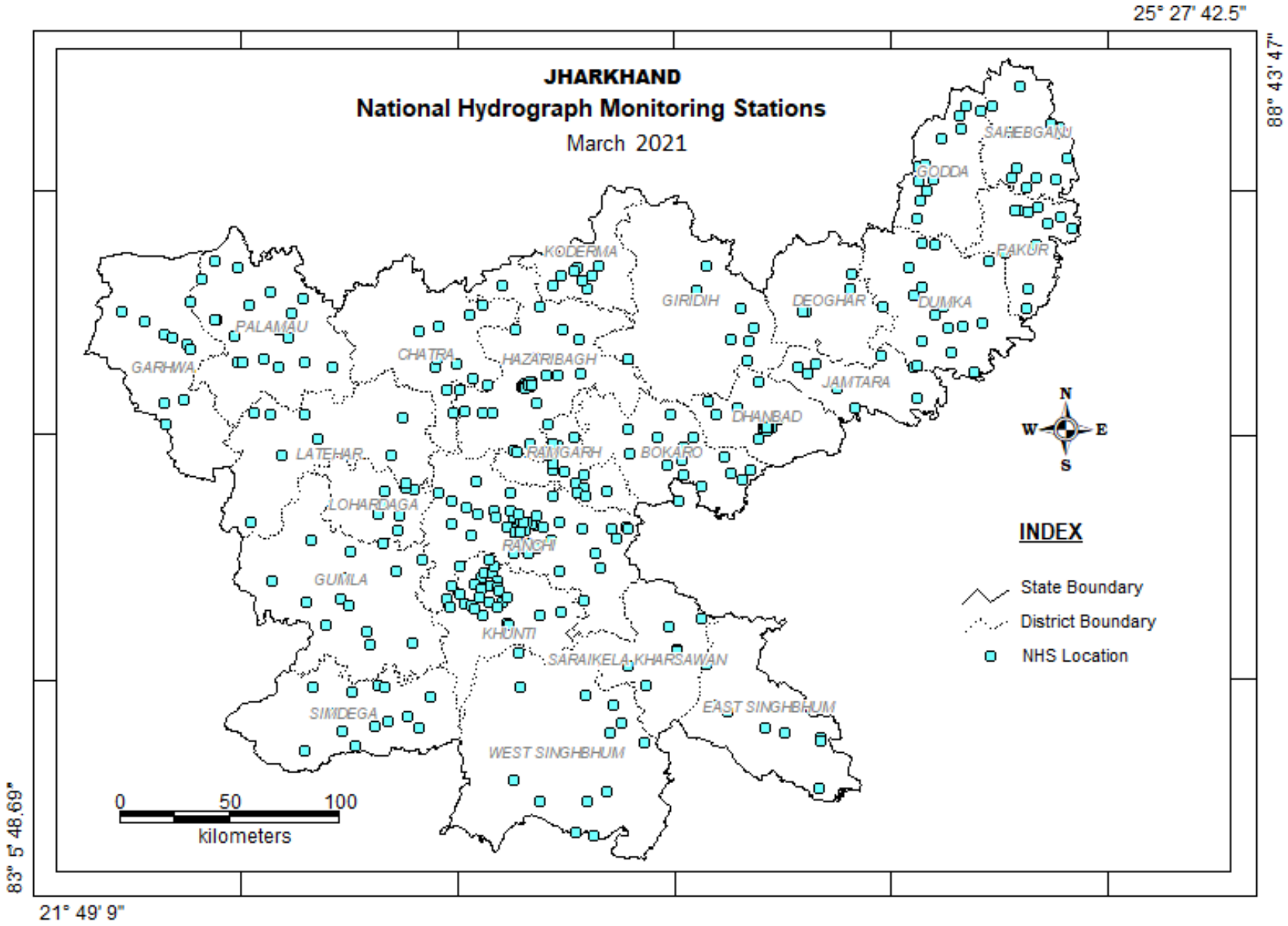
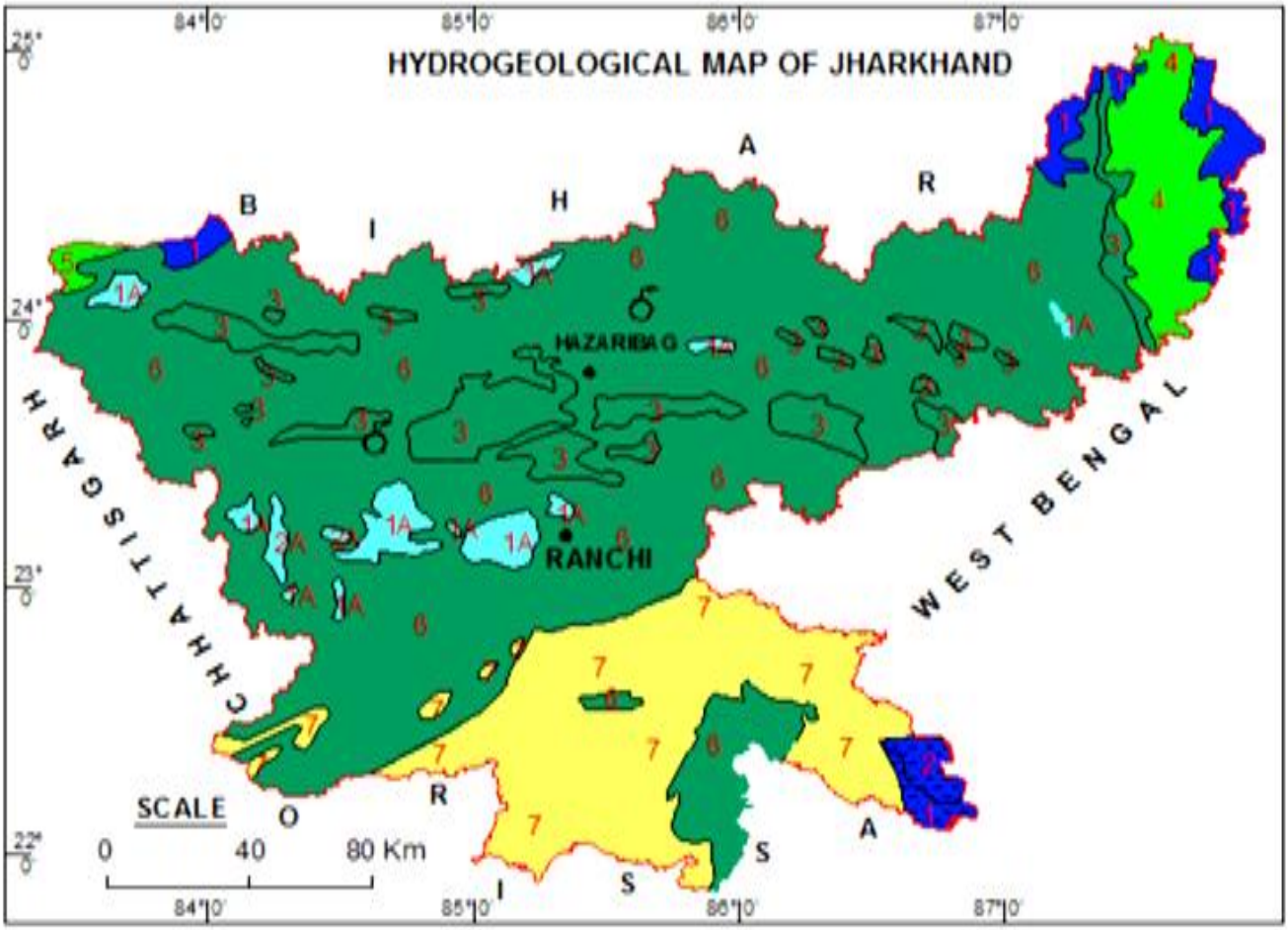

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
National Hydrograph Monitoring Stations
March 2021
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA-KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
State Boundary
District Boundary
NHS Location
0
50
100
kilometers

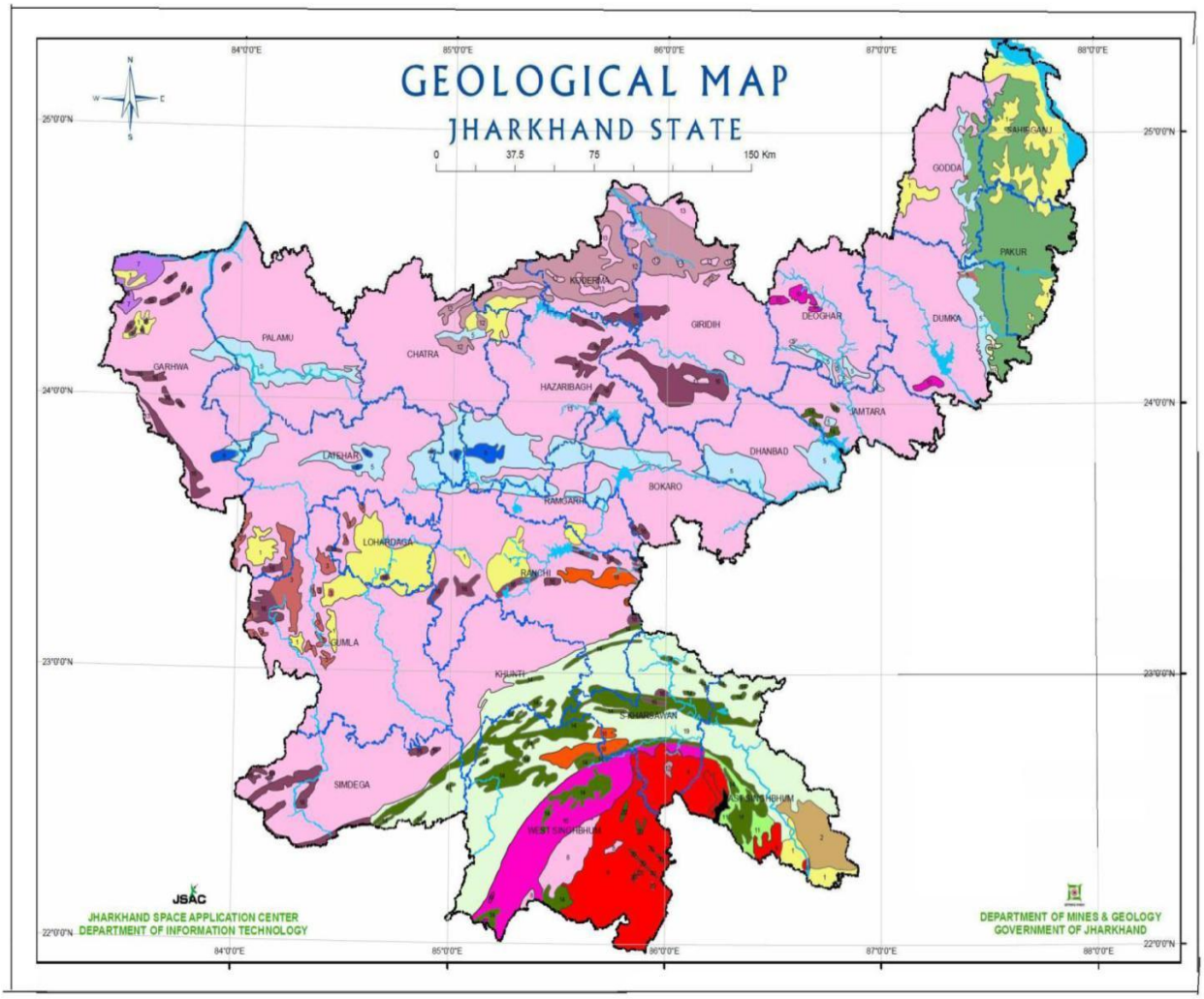
PLATE III



FISSURED & SEMI-CONSOLIDATED FORMATIONS

UNITS	AGE GROUP	FORMATION	COLOUR	LITHOLOGY	GROUN WATER POTENTIAL
1	QUATERNARY	ALLUVIUM		CLAY, SILT, GRAVEL, PEBBLES & CALC	>40 m³/hr
1A	QUATERNARY	ALLUVIUM		CLAY, SILT & SAND	1-10 m³/hr
2	PLEISTOCENE TERTIARY	LATERITES		LATERITES & LITHOMARGE	1-10 m³/hr
2A	PLEISTOCENE TERTIARY	TERTIARY		SAND, SILT, CLAY, PABLE & GRAVEL	10-40 m³/hr
3	CARBONIFEROUS CRETACEOUS	GONDWANA		CLAY, SILT, GRIT, SANDSTONE & SHALE	1->25 m³/hr
4	JURASSIC & CRETACEOUS	RAJMAHAL BASALT		BASALT FLOWS WITH INTERTRAPPEANS	1-25 m³/hr
5	PROTEROZOIC & CAMBRIAN	VINDHYAN		QUARTZITE, LIMESTONE, SANDSTONE, DOLOMITE & SHALE	1-25 m³/hr
6	PROTEROZOIC ARCHEAN	CHHOTNAGPUR GNEISSIC COMPLEX		GNEISSES & GRANITES	1->25 m³/hr
7	PROTEROZOIC ARCHEAN	VOLCANO-SEDIMENTARY		SCHISTS, PHYLLITES, BASIC & ACIDIC INTRUSIVES	1-15 m³/hr

PLATE IV



INDEX

1, Alluvium, Soil/Boulder Conglomerate, Older Alluvium & Laterite
2, Tertiary Gravels
3, Laterite
4, Rajmahal Trap/Intertrappean Beds/Trap Dykes
5, Lower Gondwana System/Carbonaceous Shale/Sandstone/Coal Seams
6, Upper Godwana System/Sandstone/Red Clay
7, Lower Vindhyan System/Limestone/Shale
8, Kolhan Series/Limestone/Sandstone/Quartzite
9, Singhbhum Granite
10, BHQ/BHJ/Metavolcanics/Metasedimentary
11, Dhanjori Quartzite and Conglomerate
12, Micaschist, Phyllite, Quartzite/Metamorphic of Chhotanagpur
13, Chhotanagpur Gneiss & Granophyre
14, Dhanjori Lava/Dalma Lava/ Basic rocks
15, Sandstone, Shale (Dubrajpur Formation)
16, Basic & Ultrabasic
17, Gabbro -Anorthosite
18, Granite
19, Volcanogenic Meta-sediments and Metasedimentary rocks
20, Newer Dolerite
River/Water Body
District Boundary
State Boundary

PLATE V

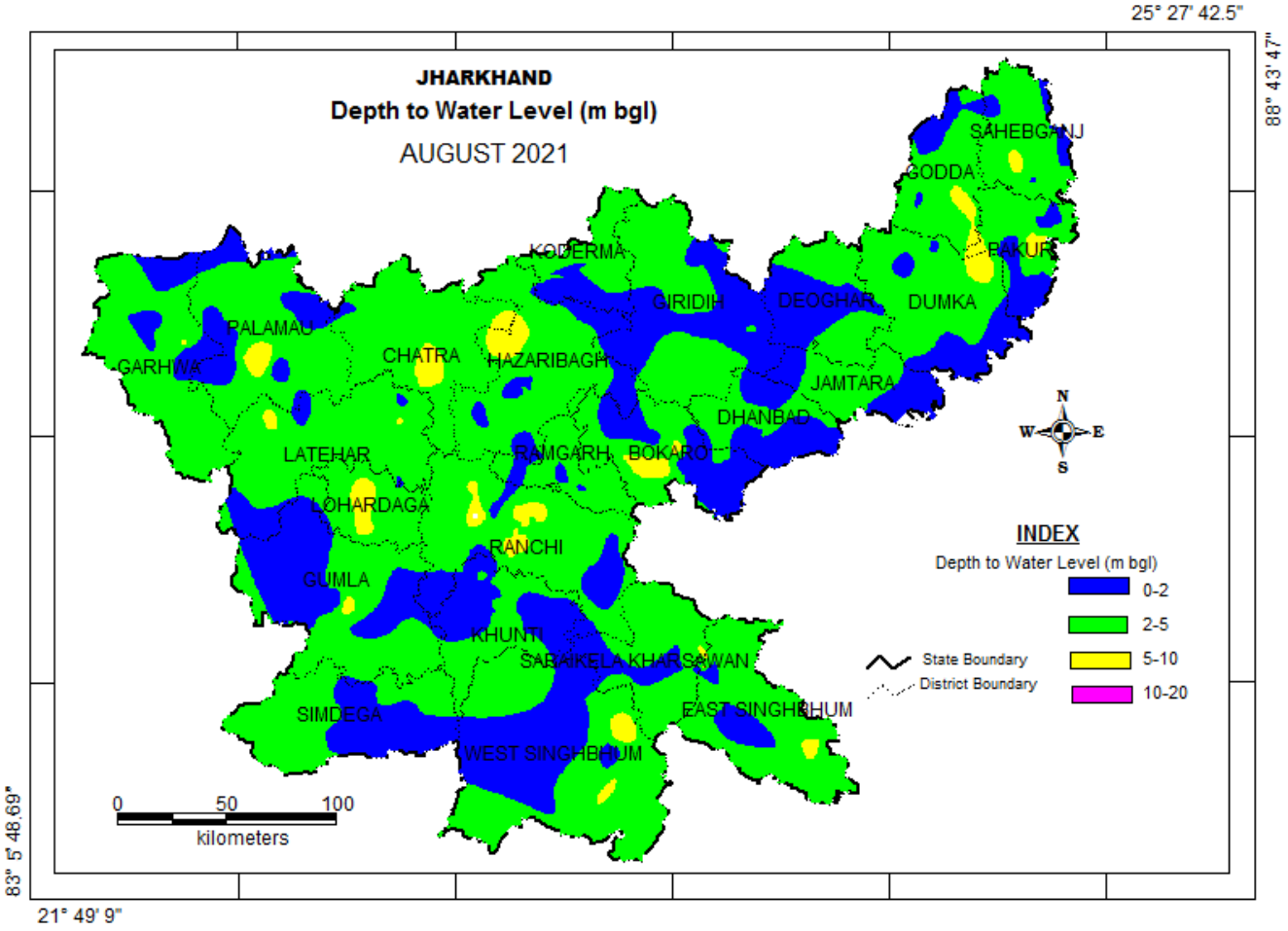

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
Depth to Water Level (m bgl)
AUGUST 2021
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
SIMDEGA
EAST SINGHBHUM
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
0-2
2-5
5-10
10-20
State Boundary
District Boundary
0
50
100
kilometers

PLATE VI

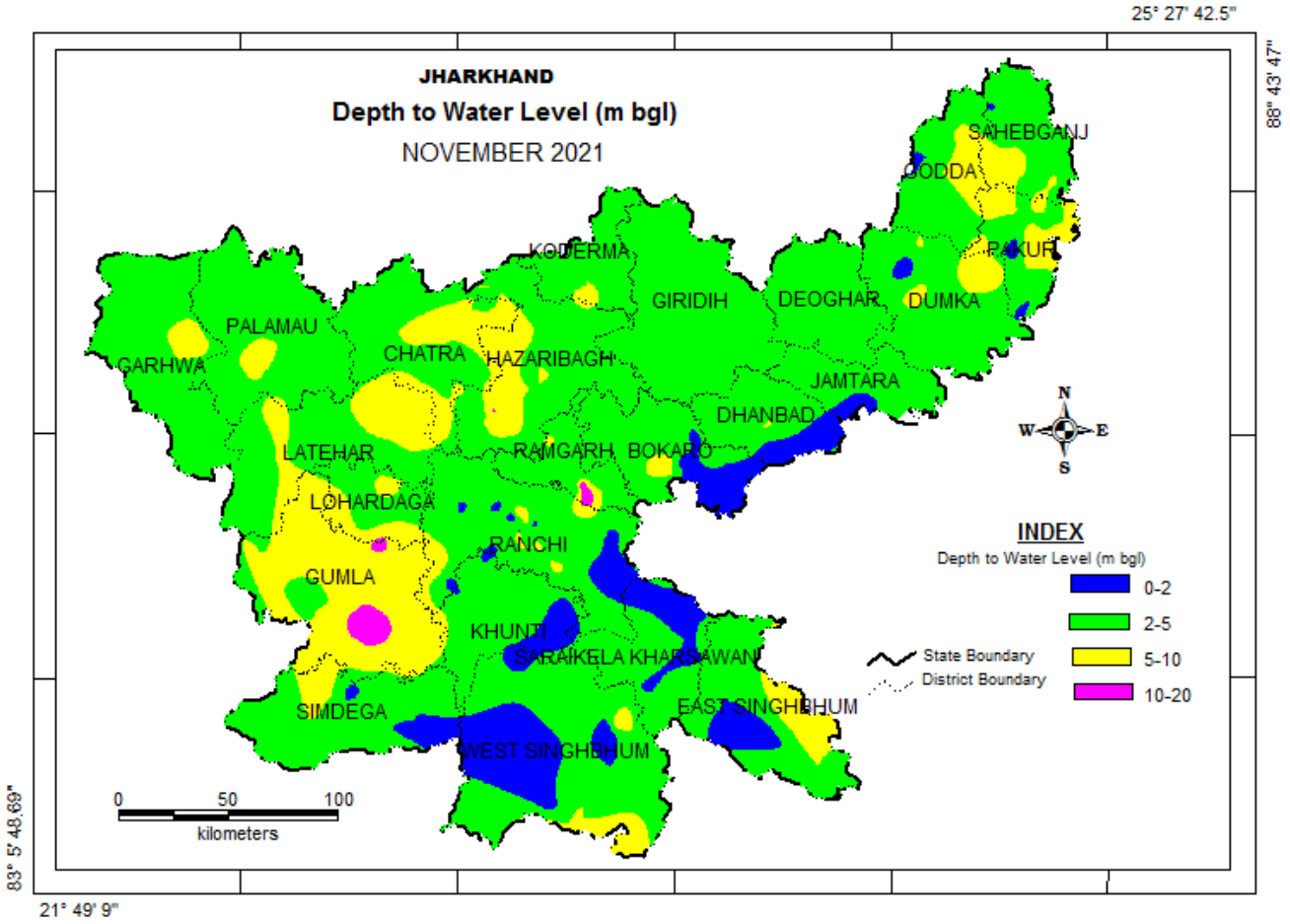

25° 27' 42.5"
88° 43' 47"
JHARKHAND
Depth to Water Level (m bgl)
NOVEMBER 2021
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
0-2
2-5
5-10
10-20
State Boundary
District Boundary
0
50
100
kilometers
83° 5' 48.69"
21° 49' 9"

PLATE VII

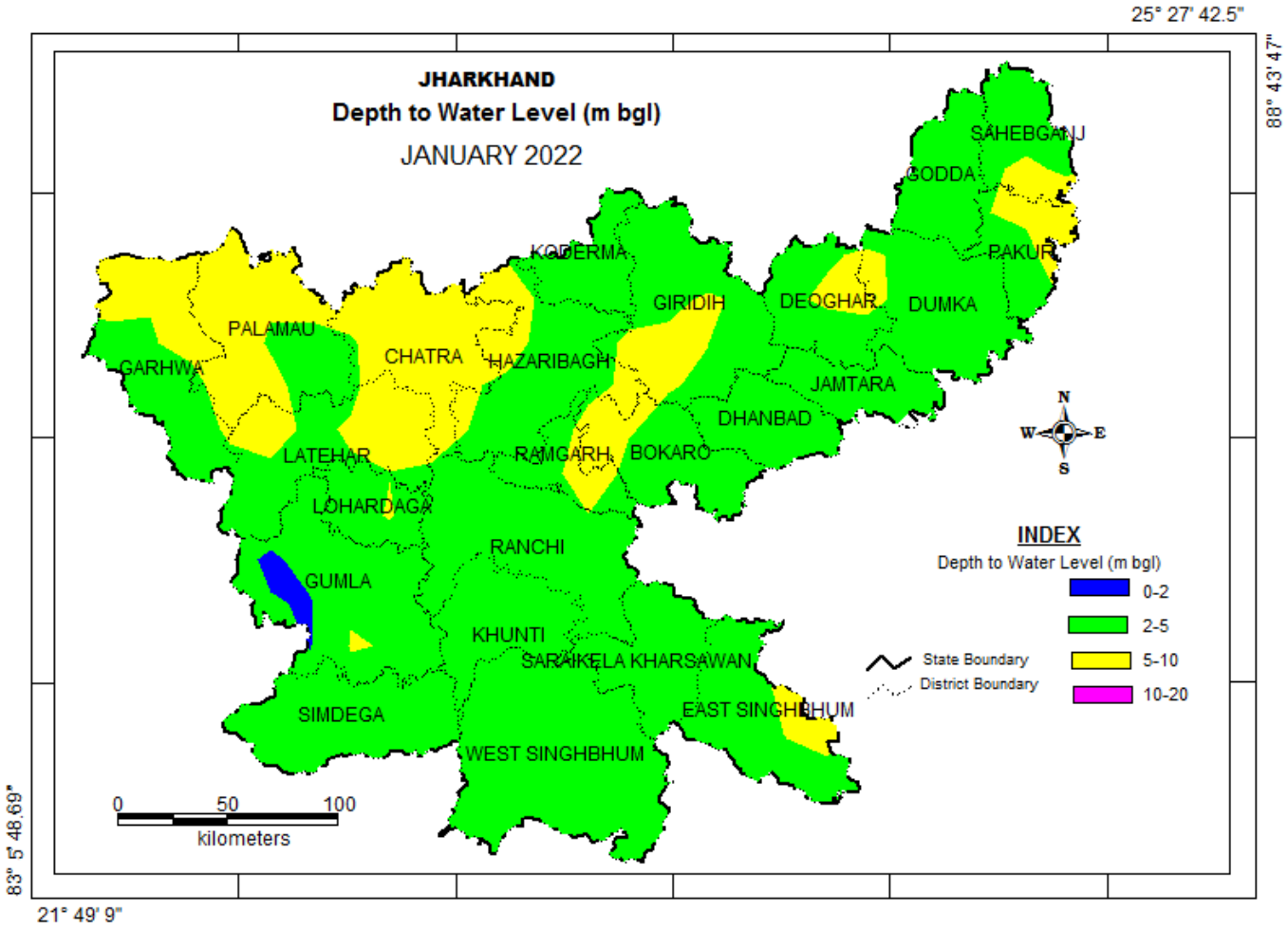

25° 27' 42.5"
88° 43' 47"
JHARKHAND
Depth to Water Level (m bgl)
JANUARY 2022
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
CHATRA
HAZARIBAGH
GARHWA
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
0-2
2-5
5-10
10-20
State Boundary
District Boundary
0
50
100
kilometers
83° 5' 48.69"
21° 49' 9"

PLATE-VIII

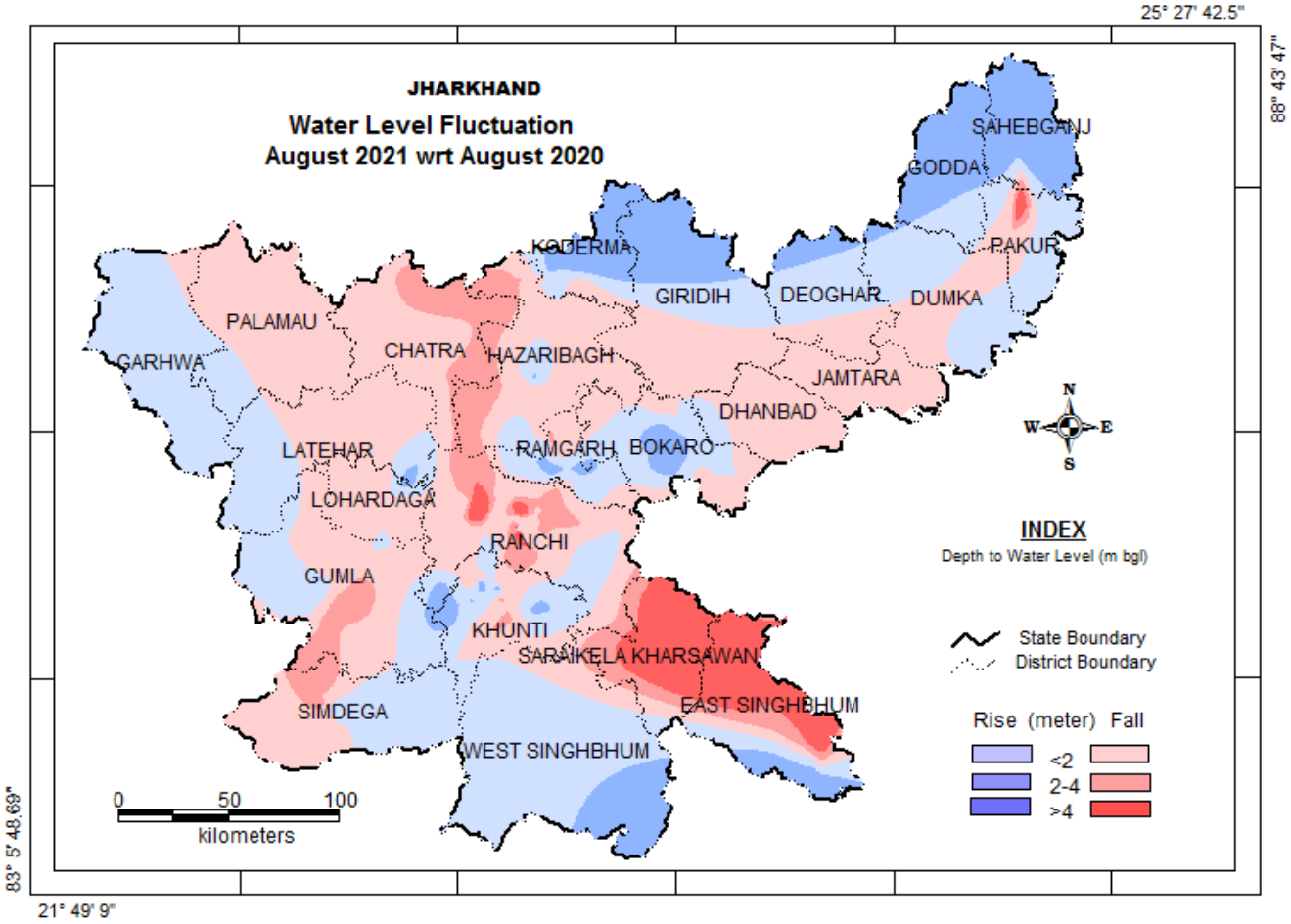

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
Water Level Fluctuation
August 2021 wrt August 2020
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
CHATRA
HAZARIBAGH
GARHWA
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers

PLATE-IX

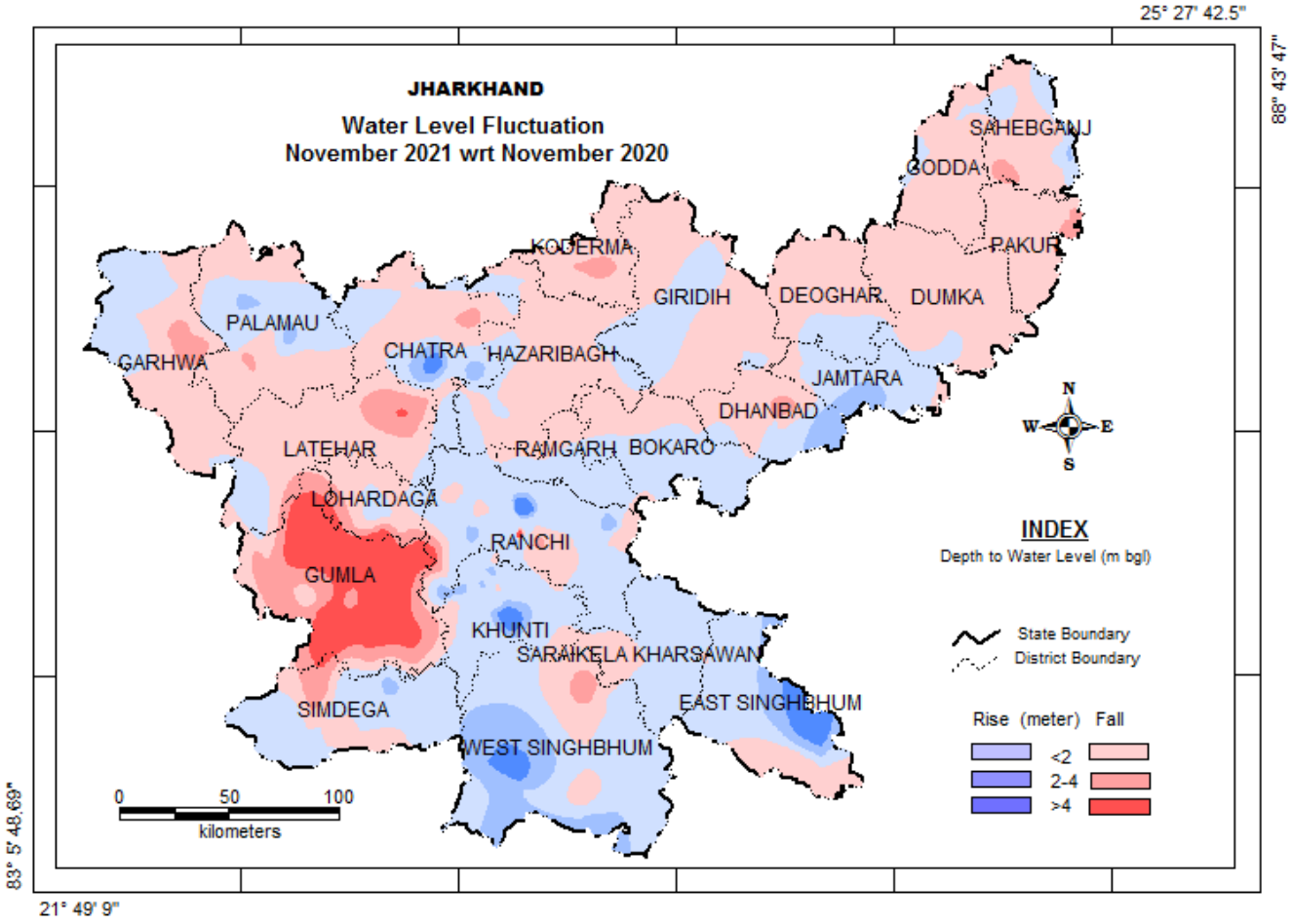

25° 27' 42.5"
88° 43' 47"
JHARKHAND
Water Level Fluctuation
November 2021 wrt November 2020
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers
83° 5' 48.69"
21° 49' 9"

PLATE-X

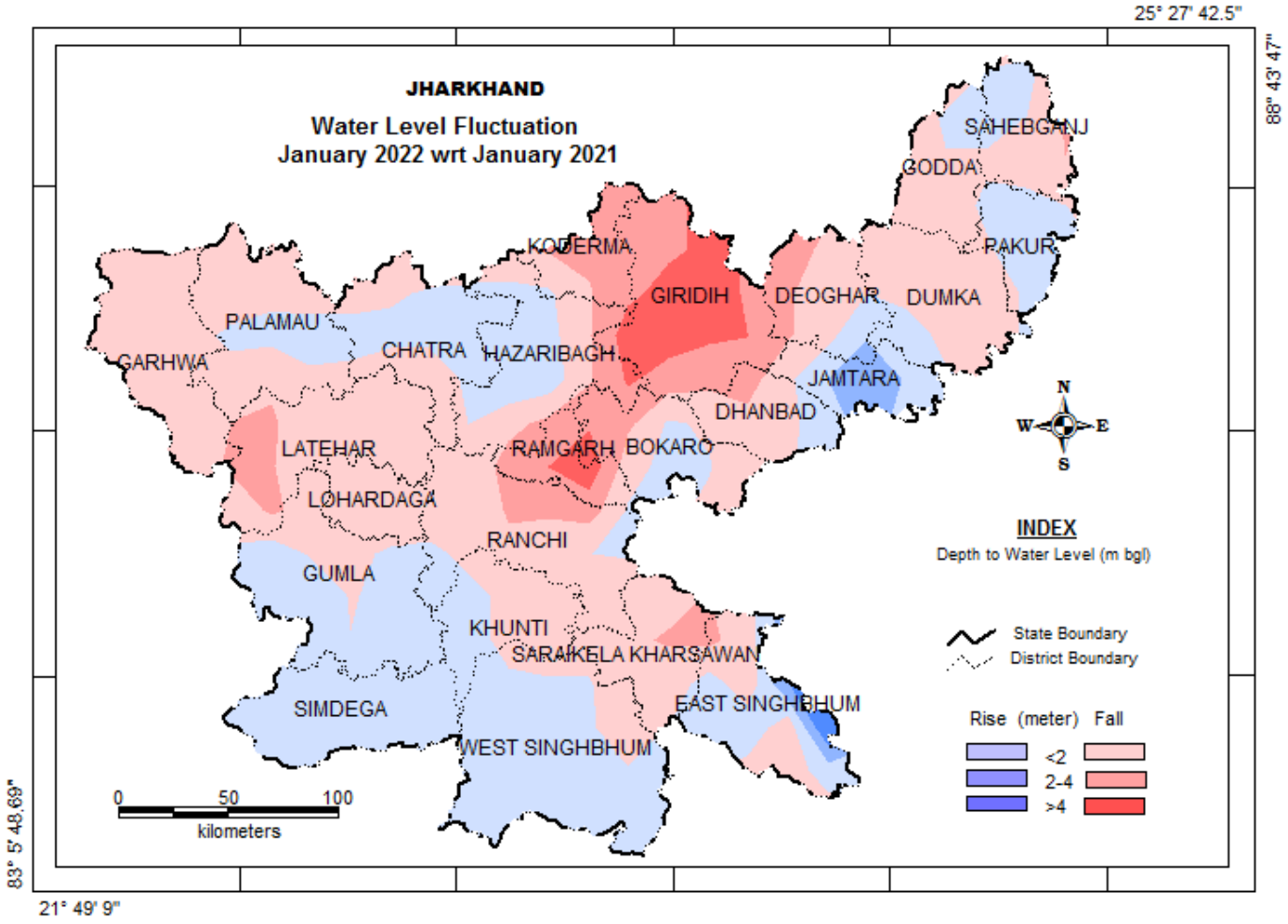

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
Water Level Fluctuation
January 2022 wrt January 2021
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
CHATRA
HAZARIBAGH
GARHWA
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
SIMDEGA
EAST SINGHBHUM
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers

PLATE-XI

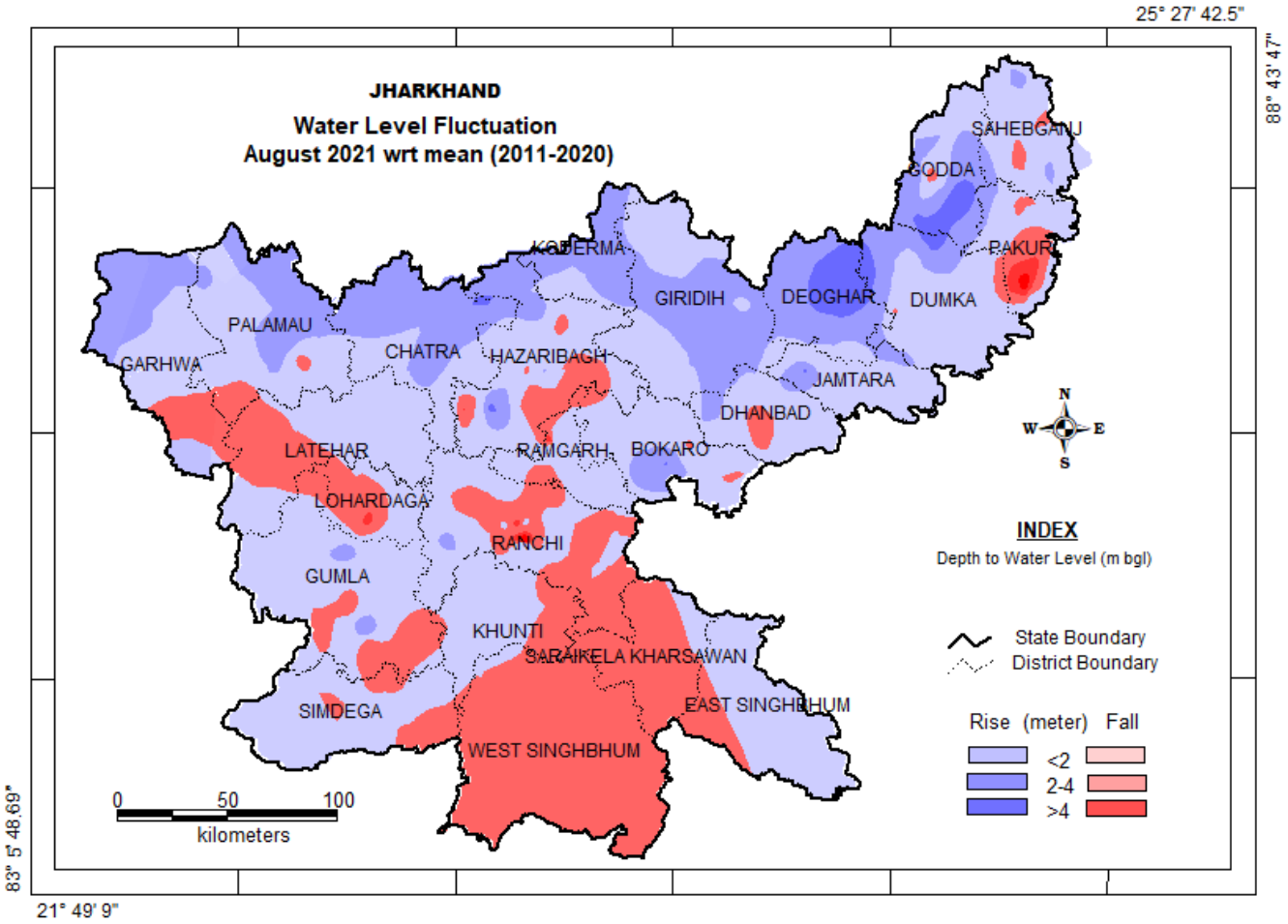

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
Water Level Fluctuation
August 2021 wrt mean (2011-2020)
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
CHATRA
HAZARIBAGH
GARHWA
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
EAST SINGHBHUM
SIMDEGA
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers

PLATE-XII

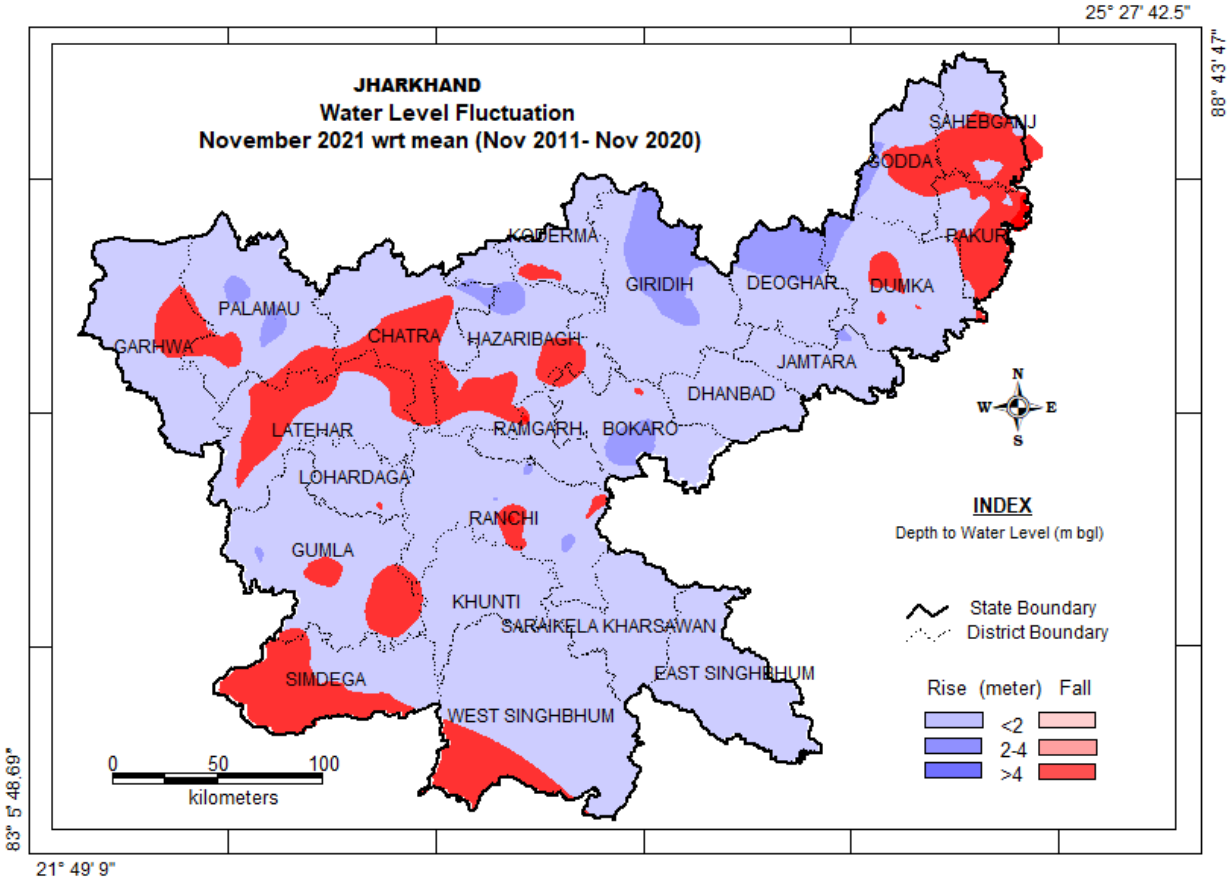
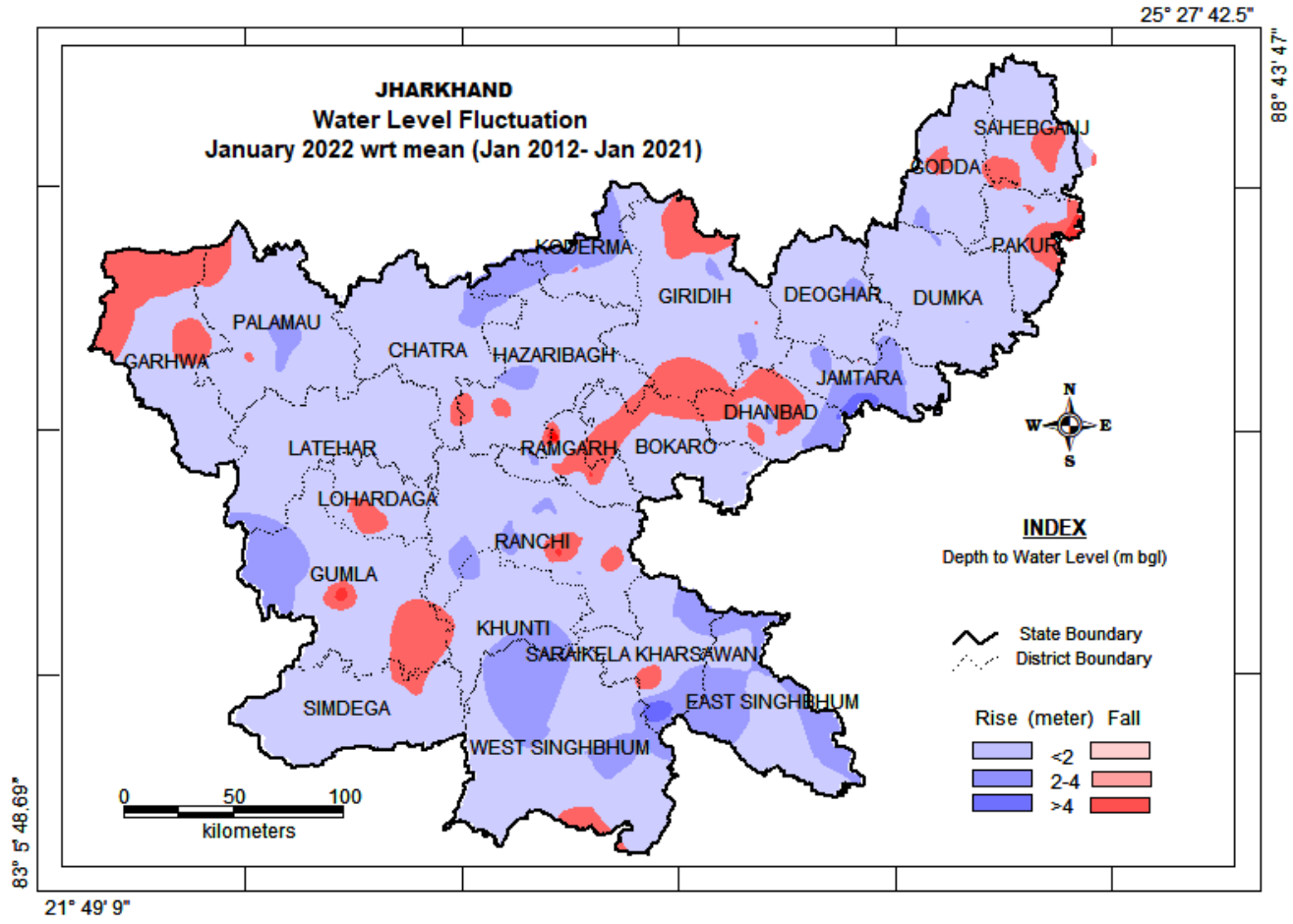

25° 27' 42.5"
88° 43' 47"
83° 5' 48.69"
21° 49' 9"
JHARKHAND
Water Level Fluctuation
November 2021 wrt mean (Nov 2011- Nov 2020)
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
SIMDEGA
EAST SINGHBHUM
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers

PLATE-XIII


25° 27' 42.5"
88° 43' 47"
JHARKHAND
Water Level Fluctuation
January 2022 wrt mean (Jan 2012- Jan 2021)
SAHEBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PALAMAU
GARHWA
CHATRA
HAZARIBAGH
JAMTARA
DHANBAD
LATEHAR
RAMGARH
BOKARO
LOHARDAGA
RANCHI
GUMLA
KHUNTI
SARAIKELA KHARSAWAN
SIMDEGA
EAST SINGHBHUM
WEST SINGHBHUM
N
W
E
S
INDEX
Depth to Water Level (m bgl)
State Boundary
District Boundary
Rise (meter) Fall
<2
2-4
>4
0
50
100
kilometers
83° 5' 48.69"
21° 49' 9"

ANNEXURE-I

WATER LEVEL DATA OF NETWORK STATIONS MEASURED BY CGWB, SUO, RANCHI, JHARKHAND

District	Block	Location	Depth to Water Level (m bgl)			
			2021			2022
			May	August	November	January
Bokaro	Chas	Pachaura Sersadih		2.12	2.51	
Bokaro	Chas	Chas		5.63	6.02	dry
Bokaro	Chas	Jaina More		5.91	4.88	7.42
Bokaro	Chas	Pindrajora		1.62	1.71	4.15
Bokaro	Chandankiyari	Chandankiyari		1.99	1.49	2.85
Bokaro	Chandankiyari	Laghla		1.06	1.62	3.12
Bokaro	Chandankiyari	Nutandih				dry
Bokaro	Chandankiyari	Baramasia		2.65	2.16	4.71
Bokaro	Chandankiyari	Chandra		0.9	1.46	3.3
Bokaro	Chandankiyari	Chandrapura		0.98	1.74	2.35
Bokaro	Peterwar	Gomia		0.94	2.28	3.75
Bokaro	Gomia	Nawadih		3.24	4.6	6.45
Bokaro	Nawadih	Peterwar		5.03	3.99	6.1
Bokaro	Bermo	Bermo/ Phusro				_
Bokaro	Paterwar	Tenughat		1.51	2.06	3.31
Bokaro	Chas	Radhagaon Rly Station		2.17	1.99	3.08
Bokaro	Chas	Bokaro Rly Station		1.55	1.68	0.65
Chatra	Simaria	Bagra	8.35	8.8	4.1	10.6
Chatra	Simaria	Birhu	9.2	2.8	5.1	4.6
Chatra	Chatra	Chatra	3.75	3.2	Dry	4.6
Chatra	Itkhori	Itkhori	3.35	2.1	4.05	4.8
Chatra	Itkhori	Pitij	6.5	2.6	6.2	4.1
Chatra	Simaria	Simaria	7.98	dry	Dry	Dry
Chatra	Tandwa	Tandwa	3.7		5.1	Dry
Chatra	Simaria	Tutilawa	6.65	2.6	4.2	5.3
Chatra	Chatra	Behra chocha		3.1	5.5	4.6
Chatra	Simaria	Piri	1.16	2.8	3.12	2.1
Chatra	Tandwa	Teliyadih	2.16	3.6	4.8	4.6
Deoghar	Deoghar	Deoghar				abn
Deoghar	Mohanpur	Ghormara		2.26	4.94	6.05
Deoghar	Deoghar	Jasidih		1.57	2.9	5.55
Deoghar	Madhupur	Madhupur		1.03	1.8	4.31
Deoghar	Palajori	Palajori		1.9	3.2	4.81
Deoghar	Sarath	Sarath				4.9

Deoghar	Sarawan	Sarawan		1.85	4.1	5.4
Dhanbad	Jharia	Jharia		1.2	3.1	2.15
Dhanbad	Baghmara	Baghmara		7.6	8.4	6.88
Dhanbad	Katras	Balajee Mandrir		3.4	8.7	7.85
Dhanbad	Dhanbad	Basudeopur			5.7	5.5
Dhanbad	Dhanbad	Bhuli A block			8.3	8.45
Dhanbad	Dhanbad	Chragora Hirapur			6.8	6.65
Dhanbad	Dhanbad	DBI Bunglow			2.5	2.55
Dhanbad	Dhanbad	Dhaiya ISM				_
Dhanbad	Dhanbad	Dhanbad New		2.28	1.75	1.55
Dhanbad	Dhanbad	Dhansar MRS		2.52	3.4	3.25
Dhanbad	Dhanbad	Godhar Basti			6.75	6.85
Dhanbad	Govindpur	Govindpur		2.03	4.75	5.1
Dhanbad	Jharia	Kandra Madal Basti		2.45	3.6	3.45
Dhanbad	Baghmara	Mahuda		2.81	4.6	5.21
Dhanbad	Dhanbad	Matkuria			2.15	2.25
Dhanbad	Nirsa	Nirsa		0.75		1.65
Dhanbad	Dhanbad	Panderpalli			6.1	6.25
Dhanbad	Dhanbad	P. K. Roy College			8.2	2.18
Dhanbad	Dhanbad	Purandih Jorapol			7	2.16
Dhanbad	Rajganj	Rajganj		2.38	3.95	4.45
Dhanbad	Jharia	Sindri Gosala More		2.27	2.6	2.36
Dhanbad	Topchanchi	Topchanchi			4.1	6.1
Dhanbad	Tundi	Tundi		1.12		5.4
Dumka	Dumka	Chapodia			3.79	_
Dumka	Jama	Chikania		3.58		5.7
Dumka	Dumka	Dumka(db ib)		2.3	3.05	3.45
Dumka	Ramgarh	Gamharia		3.9	5.45	6.4
Dumka	Gopikandar	Gopikandar		6.55	6.5	_
Dumka	Saraighat	Hansdiha pwdib				abn
Dumka	Jama	Jama1		4.78	5.65	6.4
Dumka	Jharmundi	Jarmundi db.ib		3.1	Dry	dry
Dumka	Kathikund	Kathikund		4.25		5.35
Dumka	Masalia	Masalia		2.75	3.85	4.15
Dumka	Raneshwar	Masanjor		1.43	2.266	2.41
Dumka	Jharmundi	Nunihaat		1.2	1.4	1.5
Dumka	Jama	Parapalashi		4.3	5.22	5.72
Dumka	Sikaripara	Patabari		2.14	3.74	3.09

Dumka	Raneswar	Raneswar		1.86	3.2	3.85
Dumka	Shikaripara	Sikaripara		2.15	3.45	4.75
Dumka	Godda	Dhadhakia			3.75	4.5
Dumka	Ramgargh	Ramgargh		1.9	3.15	4.05
Jamtara	Jamtara	Jamtara		2.8	2.65	4.05
Jamtara	Nala	Nala		1.44	2.23	2.83
Jamtara	Mihijam	Mihijam		2.09	1.66	2.07
Jamtara	Kundahit	Kundahit		0.73	2.29	3.25
Jamtara	Fatehpur	Dhootala		2.15	3.23	3.8
Jamtara	Narayanpur	Narayanpur		1.17	2.34	2.84
Jamtara	Karmatarn	Jasaydih		2.5	3.45	4.55
Jamtara	Fatehpur	Basti Palajori		1.7	2.73	3.68
Jamtara	Narayanpur	Mohanpur		2.12	3.7	4.9
Jamtara	Fatehpur	Fatehpur		3.5	3.59	5.07
E. Singhbhum	Jugsalai/Jamshedpur sadar	Pardih		8.55	4.78	5.23
E. Singhbhum	Jugsalai/Jamshedpur sadar	Bagun Nagar		1.8		5.23
E. Singhbhum	Baharagora	Baharagora		4.7		
E. Singhbhum	Jugsalai/Jamshedpur sadar	Baridih		0.98		
E. Singhbhum	Jugsalai/Jamshedpur sadar	Barmamines Thana		1.35		2.1
E. Singhbhum	Chakulia	Chakulia		10.2	9.03	11.85
E. Singhbhum	Jugsalai/Jamshedpur sadar	Telco		0.98		1.54
E. Singhbhum	Dalbhumgarh	Dhalbhumgarh		3.55	4.15	7.21
E. Singhbhum	Ghatsila	Ghatsila		1	3.45	4.03
E. Singhbhum	Ghatsila	Galudih		2.5		
E. Singhbhum	Jugsalai/Jamshedpur sadar	Garhabasa		0.95		
E. Singhbhum	Jugsalai/Jamshedpur sadar	Golmuri		1.8		3

E. Singhbhum	Bahragora	Hana Bautia		4.2		2.2
E. Singhbhum	Potka	Jamshedpur		2.1		
E. Singhbhum	Jamshedpur	Jamshedpur Bloodbank Bistupur		1.5		1.98
E. Singhbhum	Jugsalai/Jamshedpur sadar	Jugsalai Thana		1.8		2.15
E. Singhbhum	Chakulia	Kalapathar		5.1	6.1	6.65
E. Singhbhum	Potka	Kalikapur		1.2	1.3	1.35
E. Singhbhum	Mosabani	Mosabani		1.1	0.68	0.8
E. Singhbhum	Jugsalai	Paridih		6.2		
E. Singhbhum	Chakulia	Pithajudi		2.5		
E. Singhbhum	Potka	Potka		4	3.82	2.2
E. Singhbhum	Jamshed-pur	Ramgarh1		3.2		
E. Singhbhum	Potka	Rankini Madir Jadugora		1.5		
E. Singhbhum	Jamshedpur	Mosabani1		0.95		0.8
E. Singhbhum	Jugsalai/Jamshedpur sadar	Shitla Mandir Sakchi		4.1	1.58	1.68
E. Singhbhum	Jugsalai/Jamshedpur sadar	Barmamines		1.6		2.1
E. Singhbhum	Jamshed-pur	Sundarnagar1		3.25		2.58
Garhwa	Bhawnathpur	Bhawanathpur				abn
Garhwa	Garhwa	Garhwa		5.4	8.7	8.8
Garhwa	Manjhian	Manjhian		2.8	4.1	4.6
Garhwa	Nagar Utari	Nagaruntari		2.4	4.5	6.1
Garhwa	Ramna	Ramna1		1.2	3.2	3.6
Garhwa	Ranka	Ranka		2.4	3.6	4.1
Garhwa	Ranka	Godarmana		3.2	4.2	4.6
Garhwa	Meral	Meral		2.4	4	5.3
Garhwa	Meral	Lagama		3.2	6.6	6.8
Garhwa	Ranka	Bishrampur (Ranka)		2.1	3.2	4.1
Garhwa	Garhwa	Obra		1.3	5.6	5.6
Giridih	Bagodar	Bagodar	_	Could not monitire	3.55	4.9

				d due dense bush		
Giridih	Giridih	Bandhutanr		1.58		4.85
Giridih	Bengabad	Bengabad		1.35	2.7	4.05
Giridih	Birni	Palaudi Birni (Birni)		1.1		6.1
Giridih	Chirki (Pirtanr)	Pirtanr		4.68		5.21
Giridih	Dewri	Dewri		1.64		4.75
Giridih	Giridih	Dhanaydih		1.31		4.5
Giridih	Dhanwar	Nawadih Ruputola (Dhanwar)		1.48		filled up
Giridih	Dumri	Dumri		2	3.1	4.14
Giridih	Gandey	Gandey		1.55	3.65	4.1
Giridih	Giridih	Giridih		1.85	2.33	4.4
Giridih	Jamua	Jamua		3.97	4.95	7.1
Giridih	Jamua	Belatanr (Khijri)		5.3		
Giridih	Gandey	Maheshmunda		2.05	2.75	4.51
Giridih	Gandey	Pandri		2.05	2.75	3.15
Giridih	Saraiya	Saraiya		1.52		4.6
Giridih	Tisri	Tistri				3.91
Godda	Boarijore	Boarijore		1.45	2.58	4.05
Godda	Mehegama	Doi		2	2.6	2.85
Godda	Godda	Godda				
Godda	Godda	Jainipaharpur		4.7	5	5.65
Godda	Mahagama	Lalmatia		4.83	5.43	6.23
Godda	Mahagama	Mahagama		3.4		
Godda	Pathargama	Maheshpur2		1.35	1.6	2.5
Godda	Pathergama	Pathargama				
Godda	Poraiya Haat	Poraiyahaat		3.05	3.9	4.7
Godda	Sunder Pahari	Sundar Pahari		5.09		
Godda	Poreyahat	Chamudih		2.95		4.8
Godda	Godda	Siktia		2.65	4.55	5.35
Godda	Poreyahat	Raghunathpur		2.23	3.43	4.23
Godda	Pathergama	Bisaha		3	3.7	4.2

Godda	Godda	Kumardih		2.08	2.58	2.83
Godda	Godda	Bargacha Hariyari		1.65	2.75	3.9
Godda	Mahagama	Gobra		1.97	2.27	2.73
Godda	ThakurGhanti	ThakurGhanti			2.8	3.55
Gumla	Ghaghra	Adar	1.7	0.9	9.15	0.85
Gumla	Gumla	Anjam gram		1.08	6	5.8
Gumla	Palkot	Baghma	3.8	0.5	11.1	4.1
Gumla	Basia	Baisia	3.6	2.45	9.5	5.2
Gumla	Bharno	Bharno bdo	6.97	2.3	8.44	4.17
Gumla	Bishunpur	Bishnupur	6.2	3.55	9.15	5.6
Gumla	Chainpur	Chainpur1	0.6	1.6	6.18	1.05
Gumla	Ghagra	Ghagra	7.64	3.05	9.06	5.14
Gumla	Gumla	Gumla1	7.04	5.85	9.64	6.64
Gumla	Raidih	Kasir	0.25	0.75	2.07	0.3
Gumla	Gumla	Kharke	6.52	2.6	9.87	5.07
Gumla	Bharno	Nagfeni	6.44	2.55	10.54	5.24
Gumla	Palkot	Palkot	7.99	4.6	10.09	5.89
Gumla	Raidih	Raidih	5.25	2.65	9.05	3.35
Gumla	Sisai	Sisai	3.6	1.96	8.6	4
Simdega	Simdega	Simdega	8.4	2.5	2.5	3.5
Simdega	Bano	Bano	5.75	2.25	3.13	5.05
Simdega	Thethai Thangar	Thethai Thangar	5.3	1	3.2	1.75
Simdega	Kolebira	Kolebira	7.95	2.6	4.76	6.8
Simdega	Kolebira	LacharaGarh	6.58	2	3.09	5.65
Simdega	Jaldega	Jaldega	6.65	1.15	2.8	3.05
Simdega	Jaldega	Tengratuku		1.25	1.82	3.35
Simdega	Simdega	Biru	5.1	1.3	2.3	3.75
Simdega	Kolebira	Puthritoli	4.08	0.9	0.64	1.87
Simdega	Kolebira PZ I	Kolebira		3	4.76	5.47
Simdega	Jaldega	Baribringa	2.2	1.6	1.35	1.75
Simdega	Jaldega	Lamboi	5.77	1.5	3.18	4.5
Simdega	Thethai Thangar	Kerio	8.2	1.05	3.69	5
Simdega	Bolba	Bolba	5.8	3.1	2.32	4.1
Hazaribagh	Hazaribagh	Amritnagar		1.1	3.2	3.7
Hazaribagh	Barhi	Barhi		2.6	2.35	6.6
Hazaribagh	Barkagaon	Barkagaon		2.4	10.09	11.1
Hazaribagh	Barkatha	Barkatha		2.4	2.55	3.7

Hazaribagh	Hazaribagh	Battom Bazar		2.6	4.55	3.1
Hazaribagh	Hazaribagh	College More		1.1	3.25	3.6
Hazaribagh	Churchu	Dari		1.6	4.45	3.8
Hazaribagh	Daru	Daru		2.1	2.1	1.9
Hazaribagh	Keredari	Garrikalan		1.3	3.55	3.8
Hazaribagh	Hazaribagh	Habib nagar		2.9	4.4	3.6
Hazaribagh	Hazaribagh	Hatyari		3.2	3.71	4.22
Hazaribagh	Hazaribagh	Hazaribagh		1.2	3.25	3.1
Hazaribagh	Hazaribagh	Hirabag		2.1	3.95	3.6
Hazaribagh	Ichak	Ichak more		3.3	3.85	4.7
Hazaribagh	Hazaribagh	Kanhari Road		2.4	3.51	6.6
Hazaribagh	Keredari	Keradari		4.8	5.25	5.6
Hazaribagh	Hazaribagh sadar	Korrah Chowk		2.1	3.25	4.6
Hazaribagh	Hazaribagh sadar	Kud Ashram		2.4	5.75	9.6
Hazaribagh	Hazaribagh sadar	Masipiri		3.1	7.95	4.8
Hazaribagh	Hazaribagh	Meru(Silwar)		3.6	5.9	6.6
Hazaribagh	Hazaribagh sadar	Old Bus Stand		0.6	8.7	5.3
Hazaribagh	Padma	Padma		6.9	7.81	9.8
Hazaribagh	Barkathha	Sakrej		3.1	3.4	4.1
Hazaribagh	Hazaribagh sadar	Simra Rest House		1.1	4.6	2.9
Hazaribagh	Hazaribagh sadar	Sindur		1.1	5.1	4.6
Hazaribagh	Bishnugarh	Tatijharia		2.6	4.25	3.2
Hazaribagh	Barkagaon	Urimari			3.9	Dry
Hazaribagh	Chowparan	Chauparan1		3.2	5	5.8
Ramgarh	Patratu	Bhurkunda		3.1	3.72	3.72
Ramgarh	Chitarpur	Chitarpur				7

Ramgarh	Mandu	Kuju		2.42	3.17	4.27
Ramgarh	Mandu	Mandu		3.26	3.76	5
Ramgarh	Ramgarh	Barkakana		2.29	2.6	3.4
Ramgarh	Gola	Gola		3.57	4.44	5.5
Ramgarh	Ramgarh	Ramgarh		3.05	3.14	4.1
Ramgarh	Patratu	Sayal		2	2.61	3.03
Ramgarh	Mandu	Thakur Gora		5	5.68	8.7
Ramgarh	Ramgarh	Kaitha		0.62	1.36	4.6
Ramgarh	Ramgarh	Barlong		2.56	3.8	
Ramgarh	Dulmi	Kusumbha		2.11	3.1	4.5
Ramgarh	Dulmi	Dulmi		1.34	12.93	4.3
Ramgarh	Chitarpur	Chitarpur		2.5	3.05	7
Ramgarh	Chitarpur	PHED campus, Chitarpur				
Ramgarh	Chitarpur	K.B.A. School, Lari		5.43		7.14
Ramgarh	Dulmi	Harhadkander		3.28	3.7	4.3
Ramgarh	Dulmi	Potamdaga			12.93	12.2
Ramgarh	Mandu	Barkachumba		1.9	2.43	3.2
Ramgarh	Mandu	Kanjgi		1.95	2.55	3.2
Ramgarh	Mandu	Sirka		3.76	4.75	7.15
Khunti	Torpa	Dorma		1	2.5	4.05
Khunti	Lapung	Kakriya		3	4.05	6.05
Khunti	Khunti	Kalimati		1.2		1.55
Khunti	Kerra	Bala		1.7	4.66	4.55
Khunti	Kerra	Nawatoli		2.2		4.7
Khunti	Kerra	Pokta		0.8	1.31	1.2
Khunti	kerra	Barwadag		0.8	1.85	3.27
Khunti	Kerra	Govindpur village		0.85	3.52	3.4
Khunti	Kerra	Jariya		1	4.43	5.75
Khunti	Kerra	Ralogutu		1.65		2.95
Khunti	kerra	Malgo		2.01	3.6	1.3
Khunti	Kerra	Masamano		2	3.95	3.25
Khunti	kerra	Kasira		0.95	2.26	4
Khunti	Kerra	Putakatoli		0.98		3.95
Khunti	Jobra	Jobra		1.5	2.74	Na
Khunti	Kerra	Satiya		1.3	3.49	4.7
Khunti	Torpa	Bala		0.6	4.66	4.55
Khunti	Kerra	Kudri		0.9	3.26	6.45
Khunti	Torpa	Jumu		1.75		4.25
Khunti	kerra	Sirka		0.8	4.75	5.5
Khunti	Kerra	Binagoan		2.3	3.25	2.8
Khunti	kerra	Ghusuli		1.9	4.19	4.5
Khunti	Khunti	Guitjora		2.1	3.42	5.35
Khunti	Khunti	Jaltanda		1.9	3.53	4.23
Khunti	Khunti	Dumardagga		1.5	2.93	3.4

Khunti	Khunti	Rewa		0.85	4.9	5.35
Khunti	Khunti	Amjora		0.95	2.87	4
Khunti	Kerra	Jaratoli		1.25		4.05
Khunti	Khunti	Kunjala		3.7	3.43	6.15
Khunti	murhu	Pelaul		1.85	2.58	6.85
Khunti	murhu	Murhu		1.7	1.83	3.15
Khunti	Khunti	Karapurti		0.9	2.6	6.95
Khunti	Khunti	Seringathu		1.2	0.93	2.75
Khunti	Karra	Lodhama		0.5	1.51	3.45
Khunti	Khunti	Khunti		2.3	2.89	3.6
Ranchi	Angara	Angara1	6.1	3.6	4.2	5.06
Ranchi	Namkom	Hinoo		11.1	9.05	5.76
Ranchi	Ratu	Bajra	3.1	3.75	2.9	4.1
Ranchi	Nagri	Bandhea	11.2	6.1	6.63	7.14
Ranchi	Angara	Barwadag	2.1	3.55	2.9	2.67
Ranchi	Bero	Berro		3.5	Dry	Dry
Ranchi	Chanho	Bijupara Tangar	2.7	3.89	2.3	3.05
Ranchi	Mandar	Bishakhatanga	1.9	3.25	2.32	5.17
Ranchi	Kanke	Bit More	2.6	2.6	2.25	3.48
Ranchi	Kanke	Boreya Phed				Closed
Ranchi	Ratu	Brambey	6.85	10.5	4.31	5.67
Ranchi	Kanke	Bukru		5.38	Filled up	Filled
Ranchi	Bundu	Bundu	4.9	1.82	2.97	4.6
Ranchi	Kanke	Bunti	1.6	1.21	1.26	1.66
Ranchi	Burmoo	Burmoo	7.8	5.05	4.95	
Ranchi	Itki	Chachgura	8.4	3.05	3.65	5.6
Ranchi	Ormanjhi	Chutupalu	1.7	2.5	1.16	3.6
Ranchi	Namkom	Shyamali,Mecon colony				Abandoned
Ranchi	Namkom	Shyamali,Mecon colony				Abandoned
Ranchi	Namkom	Shyamali,Mecon colony				Abandoned
Ranchi	Angarha	Gondlipokhar	1.8	1.6	2.05	3.2
Ranchi	Kanke	Harmu	9.1	7.1	4.81	6.36
Ranchi	Kanke	Harmu Hhc	18.4	8.15	8	12.04
Ranchi	Namkum	Hatia	4.1	4.51	3.45	4.03
Ranchi	Ratu	Hurhuri	3.1	1.5	1.81	4.16
Ranchi	Itki	Itki	4.8	2.4	3.7	5.1
Ranchi	namkom	Jamchuan Kgbav		9.1	7.2	7.23
Ranchi	Angara	Jonha	3.1	3.55	3.28	3.53
Ranchi	Kanke	Kanke1	1.3		0.88	0.88
Ranchi	Ratu	Khatitanr	2.1	2	2.5	2.65
Ranchi	Namkom	Kharsidag				4.8
Ranchi	Silli	Kita	2.1	2.5	2.1	2.62
Ranchi	Itki	Kurgi		12.25		_

Ranchi	Namkom	Lalganj		2.45		4.5
Ranchi	Namkom	Lowadih	6.5	4.21	3.8	5.1
Ranchi	Namkom	Mahilong Forest Nur		7.2		6
Ranchi	Mandar	Mandar	2.8	2	2.45	3.5
Ranchi	Namkom	Military Farm Namkom		13.54		5.63
Ranchi	Murhu	Murhu				
Ranchi	Namkom	Namkom Bz Chowk				Filled
Ranchi	Namkom	Hatia		13.8		4.03
Ranchi	Ormanjhi	Ormanji	4.1	2.1	3.95	4.08
Ranchi	Silli	Patrahatu	1.3	1	0.87	0.8
Ranchi	Kanke	Pithoria	2.6	1.85	2.15	3.2
Ranchi	Namkom	Rampur	1.5	2	5.35	5.6
Ranchi	Kanke	Ranchi		2.45		2.82
Ranchi	Kanke	Ranchi College		6.1		
Ranchi	Tamar	Rangamati	2.8	3.2	4.55	5.21
Ranchi	Silli	Silli	3.4	3.31	4.35	5.28
Ranchi	Namkom	Siramtoli	3.1	3.45	4.05	4.38
Ranchi	Namkom	Sithipokhartoli		5		2.45
Ranchi	Sonahatu	Sonahatu	1.3	1.1	1.13	
Ranchi	Chanho	Sonsbazar	3.1	2.1	3.3	4.25
Ranchi	Kanke	Sukurhutu				
Ranchi	Bundu	Taimara	3.6	3.25	5.06	6.59
Ranchi	Tamar	Tamar	5.8	2.1	3.15	5.99
Ranchi	Ormanjhi	Ukrid	3.2	2.68	2.77	2.92
Ranchi	Kanke	Daily Market	3.7	10.65	5.15	6.05
Ranchi	Namkom	Chutiya (Sani Mandir)	1.6	0.9	1.09	0.8
Ranchi	Namkom	Tati Silway(E.F.)	3.8	4.6	4.02	4.85
Ranchi	Ormanjhi	Tungri Tola		7.5		4.35
Ranchi	Ormanjhi	Hombai B.I.T. Mesra		5.1		5.28
Ranchi	Kanke	Hillview		3.1	Abandoned	
Ranchi	Kanke	Ramkrishna mission Morabadi	2.1	2.39	3.05	6.05
Ranchi	ormanjhi	Hochar		4		4.05
Ranchi	Kanke	Kanke Chowk		1.5		3.1
Ranchi	Kanke	Sukurhutu	1.6	2.93	2.55	3.17
Ranchi	Namkom	Ladnapiri	3.6	3.55	3.05	4.35
Ranchi	namkom	Pindarcom	4.1	4.35	4.35	5.6
Ranchi	Namkom	Kharsidag	5.1	4	4.25	4.8
Ranchi	Namkom	Mani Tola (Doranda)	1.8	2.33	1.09	1.75

Ranchi	Namkom	Hanuman Mandir (Near AG.Office)	5.5	6.1	5.04	5.98
Ranchi	Namkom	Bridge Ford School	2.1	5.1	3.1	4.2
Ranchi	Kanke	PHED tank, kanke block chowk		8.05	Abandoned	
,mk	Kanke	Kanke School (High School)	17	10.5	5.95	9.65
Ranchi	Ormanjhi	Baridih School, Ormanjhi		3.6		
Koderma	Chandwara	Chandwara	1.25	0.7	3.9	3.5
Koderma	Koderma	Jhumri Tilaiya	1.8	2.2	3.1	4.7
Koderma	Koderma	Kodarma	4.5	Dry	Dry	3.22
Koderma	Domchanch	Domchanch	9.7	3.6	Dry	dry
Koderma	Jainagar	Jainagar	1.6	1.2	5.5	3.2
Koderma	Koderma	Pathaldiha	1.55	1	2.2	2.95
Koderma	Koderma	Kanobigha	3.3	1.6	4.15	4.8
Koderma	Tilaya	Buchitar		2.1	4.7	4.82
Lohardaga	Lohardaga	Lohardaga (Barwatoli Chowk)	3.4	3.35	2.5	2.6
Lohardaga	Bhandara	Bhandara	7.15	2.8	6.2	6.5
Lohardaga	Lohardaga	Hesal (Mangan Toli)	7.35	2.6	5.68	6.48
Lohardaga	Kuru	Hinjila	6.8	3.75	4	4.56
Lohardaga	Lohardaga	Irgaon	7	2.3	3.88	4.1
Lohardaga	Kisko	Kisko		5.75		9.05
Lohardaga	Kuru	Kuru	4		4.7	_
Lohardaga	Lohardaga	Lohardaga (Barwatoli Chowk)		2.1		2.6
Lohardaga	Lohardaga	Lohardaga	4.6	2.35	3.4	4.2
Lohardaga	Kuru	Rudh	6.1	1.9	5	5.95
Lohardaga	Senha (Sneha)	Senha bdo		5.8		5.35

Pakur	Amrapara	Amrapara		1.14	2.09	2.39
Pakur	Hiranpur	Hiranpur		3.5	6.05	5.8
Pakur	Litipara	Litipara		6.08	7.18	8.03
Pakur	Maheshpur	Maheshpur2				dry
Pakur	Pakur	Pakur1		3.45	8.2	10.75
Pakur	Pakuria	Pakuria		0.89	1.89	2.19
Pakur	Maheshpur	Salgapara		1.5	3.8	4.85
Pakur	Hiranpur	Torai		1.15	3.3	5
Pakur	Maheshpur	Sahargram		6.8	9.4	9.7
Pakur	Litipara	Litipara 2		2.15	2.95	3.22
Pakur	Litipara	Kariodih		2.39	3.94	4.54
Pakur	Pakur	Vikrampur		0.8	2.3	2.6
Pakur	Amrapara	Pochaibera		0.6	0.9	1.65
Palamu	Nawabazar	Banari		1.6	2.6	Dry
Palamu	Chainpur	Baraw		1.4	3.4	3.6
Palamu	Bishrampur	Bishrampur		2.1	3.6	3.6
Palamu	Chhatarpur	Chhatarpur		Dry	Dry	Dry
Palamu	Daltonganj	Daltenganj		4.2	6.6	6.8
Palamu	Haidarnagar/ Husainabad	Haidernagar		1.2	3.8	6.1
Palamu	Hariharganj	Hariharganj		2.1	3.6	4.4
Palamu	Husainabad	Japla		3.1	4.6	6.1
Palamu	Bishrampur	Kajri		8.7	9.2	9.8
Palamu	Patan	Kanda		3.8	2.1	4.8
Palamu	Lesliganj	Lesliganj		1.1	2.1	3.1
Palamu	Patan	Nawadih1		3.2	4.6	4.8
Palamu	Panki	Panki		2.8	3.8	4.1
Palamu	Patan	Patan		2.1	3.1	4.1
Palamu	Bishrampur	Rajhara		1.8	2.8	3.6
Palamu	Panki	Sagalim		2.8	4.9	6.1
Palamu	Chhattarpur	Sandha		4.1	4.6	5.1

Palamu	Satbarwa	Satbarwa		5.9	7.2	7.1
Palamu	Bishrampur	Ketat Kala		1.1	2.6	3.1
Latehar	Chandwa	Chandwa		2.3	3.6	4.1
Latehar	Latehar	Latehar		3.1	3.2	4.1
Latehar	Manika	Manika		1.6	3.6	3.6
Latehar	Balumath	Balumath		5.1	8.2	8.8
Latehar	Barwadih	Barwadih		2.6	3.1	3.6
Latehar	Balumath	Bariatu		1.8		4.8
Latehar	Garu	Garu		3.7	5.1	6.1
Latehar	Mahuadanr	Mahuadanr		1.3	3.2	3.65
Latehar	Mahuadanr	Aksi		1.4		5.3
Latehar	Garu	Baresad(Lalmatia)		4.2		4.6
Latehar	Barwadih	Betla		4.6		7.4
Sahibganj	Berhait	Barhait		6.56	6.66	6.65
Sahibganj	Barharwa	Barharwa		3.35	5.25	7.8
Sahibganj	Borio	Borio		3.35	3.8	3.95
Sahibganj	Rajmahal	Ghat Selumpur		1.35	2.45	3.85
Sahibganj	Mandro	Mandro		1.2	1.85	3.15
Sahibganj	Rajlmahal	Rajmahal		3.57	4.87	5.87
Sahibganj	Pathna	Ranga		1.9	2.93	4.2
Sahibganj	Sahebganj	Sahebganj1		3.85	4.45	5.2
Sahibganj	Sahibganj	Sakrigali				abn
Sahibganj	Taljhari	Taljhari1		1.45	1.8	2.35
Sahibganj	Udhwa	Udhwa			2.6	3.35
Sahibganj	Sahibganj	Hazipur				
Sahibganj	Sahibganj	Dihari				
Sahibganj	Borio	Harinchara Chowk		2.33	3.08	3.9
Sahibganj	Borio	Maricho		4.12	4.57	5.02
Sahibganj	Berhait	Chota Kadma		2.72	6.42	7.27
Sahibganj	Rajmahal	Mangal hat		3.15	3.6	4.15
Sahibganj	Berhait	Baramasia		1.23	3.43	6.58
Sahibganj	Barharwa	Kotalpokhar		1.5	2.5	3
Sahibganj	Mandro	Belbhadri		3.27		
Sahibganj	Pathana	Taljhari			3.02	3.42
Sahibganj	Udhwa	Kathalwadi				3.55
Sahibganj	Udhwa	Fudkipur				1.75
Sahibganj	Barharwa	Ramnagar				7.8
Sahibganj	Taljhari	Brindavan				2.8

Saraikela	Adityapur (Gamharia)	Kandra		1.8	2.35	3.32
Saraikela	Kharsawan	Kharsawan		1.98	3.86	4.7
Saraikela	Nimdih	Jamdih		2.1	1.95	2.66
Saraikela	Khuntpani	Pandrasalai		3.2		
Saraikela	Gobindpur	Rajnagar		2.55		2.6
Saraikela	Seraikela	Saraikela		2	1.94	3.35
Saraikela	Chandil	Chandil		3.1	Filled	
Saraikela	Nimdih	Lupungdih		2.55		3.4
Saraikela	Chandil	Bhaludih		1.8		
W Singhbhum	Noamundi	Bhandgaon		3.1	1.81	2.01
W Singhbhum	Bandgaon	Bandgaon		4.2	5.44	7.42
W Singhbhum	Noamundi	Barajamda		1.05	0.9	1.02
W Singhbhum	Chaibasa	Chaibasa		9.86	7.73	9.04
W Singhbhum	Chakradharpur	Chakradharpur		1.62	3.25	4.08
W Singhbhum	Hatgamhariya	Hat Gamhariya		5.3	2.08	4.58
W Singhbhum	Bandgaon	Hesadih		2.3	1.65	2.43
W Singhbhum	Jagnnathpur	Jagannathpur		4.1	4.9	5.27
W Singhbhum	Jagnnathpur	Jaitgarh		3.5	abn	2.4
W Singhbhum	Jhinkpani	Jhinkpani		1.1		1.08
W Singhbhum	Manoharpur	Keshargaria		0.95	0.55	0
W Singhbhum	Sonua	Sonua			2.15	4.3
W Singhbhum	Kereikala	Kereikela		2	1.7	4.6
W Singhbhum	Khuntpani	Khuntpani		2.9	2.75	4.03
W Singhbhum	Noamundi	Noamundi		1	0.45	1.26
W Singhbhum	Tantnagar	Kokcho		4.5	2.72	4.1

W Singhbhum	Hatgamaria	Talaburu				1.25
W Singhbhum	Chaibasa	Putida				1.14
W Singhbhum	Jagnnathpur	Barananda				1.1
W Singhbhum	Goielkera	Goilkera				10.05
W Singhbhum	Noamundi	Toretopa Noamundi				5.38

ANNEXURE-II

Trend of Water Level for last ten years (2011 to 2020)

	BOKARO									
			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
1	1	Nawadih	6		0.1923	9		34	0.1772	
2	4	Pindarjora new	3			8	0.0756	22		
3	5	Chandankiyari	7	0.2446		8	0.0417	31		0.1985
4	7	Chas	8	0.0718		9		34	0.0906	
5	9	Petarbar	9	0.0531		10		39	0.1402	
6	10	Pupunki	6	0.2115		6		22	0.0844	
7	11	Jaina More	9	0.0922		9		38	0.2603	
8	12	Phusro/Bermo	6		0.8052	7	0.706	25		0.0952
9	14	Tenughat	9		0.0055	10		39	0.1065	
10	15	Chandrapura	7	0.1193		10	0.127	37		0.1623
11	17	Gomia	9	0.7892		10	0.2191	38		0.4294
	CHATRA									
			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
12	Tandwa	5			8	0.0326		29	0.4074	
13	Birhu	6	0.9138		8	0.39		27	0.3651	
14	Bagra	7	0.0792		10	0.0915		38	0.1539	
15	Tutilawa1	5			7		0.0057	25		0.0564

16	Simaria	7		0.0758	10	0.0005		35	0.1048	
17	Chatra	2			3			12		
18	Chatra1	5			8		0.0087	27		0.0718
19	Pitij	6		0.6315	8	0.1876		28	0.03	
20	Itkhori1	5			8	0.0492		27		0.1227
	DEOGHAR									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
21	Sarath	8		0.3463	7		0.5544	34		0.3484
22	Jasidih	6		0.0262	9	0.3199		33	0.2353	
23	Madhupur1	5			9	0.0319		30		0.0174
24	Palajori	8	0.3927		9	0.2087		37	0.3528	
25	Sarawan	8	0.4665		9	0.578		36	0.6286	
26	Ghormara	7		0.1298	9	0.0249		36		0.0745
	DHANBAD									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
27	Dhanbad New	5			7	0.1434		23		
28	Baghmaranew	4			8	0.2866		21		
29	Govindpur	6		0.2606	9		0.0348	29		0.0945
30	Mahuda	5			6	0.4463		23		
31	Rajganj	8		0.0481	9	0.0317		37		0.0096
32	Topchanchi	8	0.0287		10	0.0835		38	0.1047	
33	Tundi	6		0.1239	10	0.0552		35		0.0348
34	Jharia	6		0.1932	6		0.05	23		
35	Nirsa ecl l.qtr	6	0.2846		8	0.084		29	0.1855	
36	Dhansar MRS	5			6	0.1409		21		
	DUMKA									

			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
37	51	Nunihaat	4			8	0.063	25		
38	52	Gopikandar	9	0.5206		9	0.2359	36		0.3265
39	53	Gamharia	8		0.0638	7	0.132	24		0.1898
40	54	Hansdiha pwdib	8	0.0867		9		33	0.0174	0.0458
41	55	Mihijam New	5			8		25	0.1198	
42	56	Kundahit	9		0.032	8	0.0731	31		0.1118
43	57	Dhootala	4			7	0.3122	20		
44	58	Jamatara	8	0.0843		8		33	0.0752	
45	59	Raneswar	9	0.1423		7	0.1779	34		0.1258
46	60	Nala	9		0.0255	9	0.0514	33		0.0571
47	61	Masanjor	8	0.0107		9	0.1237	35		0.0406
48	62	Masalia	9	0.2616		9	0.0771	36		0.1524
49	63	Patabari	9		0.0993	9	0.0303	36		
50	64	Sikaripara	5			8	0.3079	27		0.128
51	65	Chikania	7	0.0708		8	0.1842	32		0.144
52	66	Kathikund	8	0.1206		9	0.0255	35		0.1004
53	67	Dumka(db ib)	9	0.5042		9	0.182	34		0.2711
54	68	Jama1	9		0.3014	9		36	0.0257	
55	69	Jarmundi db.ib	9	0.1606		9	0.2565	36		0.2059
	GARHWA									
			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
56	Ranka	6		0.1588	7	0.3383		30	0.1898	
57	Garhwa	8		0.1877	9		0.0754	34		0.0512
58	Ramna1	5			7	0.4965		25	0.3294	

59	Nagaruntari	8	0.0218		9	0.0619		35	0.0786	
60	Manjhian	6		0.8633	7		0.3505	25		0.2548
61	Bhawanathpur	7		0.0553	6	0.1468		27	0.1159	
	GIRIDIH									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
62	Dumri	9		0.1709	9		0.2306	37		0.1271
63	Dewri	6		0.2307	9	0.1535		31	0.0042	
64	Khijri	6		1.3536	8		0.0156	29		0.4445
65	Tisri	7		0.4811	8	0.0663		28		0.0582
66	Pandri	9		0.248	10	0.108		34	0.0383	
67	Bagodar	9		0.0366	10		0.1175	38		0.076
68	Birini	8		0.0515	9	0.1838		33	0.1057	
69	Dhanwar	8		0.5594	9	0.0022		35		0.1084
70	Gandey1	5			7	0.3848		21		
71	Giridih	9	0.2855		9	0.017		35	0.1948	
72	Saraiya new	6		0.5165	7	0.0356		23		
73	Maheshmunda1	6		0.4421	8	0.0157		24		0.0129
74	Dhanidih	9		0.1183	10	0.0862		37	0.0952	
75	Bengabad	9	0.0005		10	0.1458		38	0.1363	
76	Bandhutanr	8	0.1026		9	0.0221		35	0.0304	
77	Jamua pwd ib	9		0.0474	10	0.0578		37	0.0876	
	GODDA									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
78	Poraiyahaat	4			6	0.2512		21		
79	Sundar Pahari	9		0.2853	9	0.0911		36	0.0018	

80	Godda1	6	0.0756		7		0.1728	28	0.0296	
81	Jainipaharpur	5			7	0.3907		23		
82	Maheshpur2	9	0.0946		7	0.0357		30	0.1661	
83	Pathargama	8		0.0356	7		0.432	29		0.1506
84	Bara borijore	6		0.0131	7	0.0704		27	0.0975	
85	Mahagama1	6		0.0189	7	0.0236		29	0.24	
86	Lalmatia	9	0.1639		9	0.1359		37	0.2044	
87	Doi	8	0.0939		8	0.0426		33	0.0427	
	GUMLA									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
88	Nagfeni	9		0.0215	10	0.0076		39		0.0509
89	Thethai Thangar	8	0.549		10	0.2398		36	0.3347	
90	Biru	5			8	0.0068		26	0.037	
91	Jaldega	8	0.5533		10	0.1575		36	0.3184	
92	Gumla	3			9	0.2516		26		0.0579
93	Lachargarh	6		0.3204	10		0.006	35		0.1212
94	Bano	7	0.1929		9	0.1823		34	0.125	
95	Tengratuku	4			8		0.0824	25		0.1081
96	Bishnupur	6	0.2336		8	0.1144		31	0.2455	
97	Kolebira	8		0.0695	10		0.115	34		0.1008
98	Palkot	9		0.07	10	0.0157		40		0.041
99	Baisia	10		0.3357	10		0.2586	40		0.2239
100	Baghma	5			7	0.003		27		0.0403
102	Raidih	9	0.3655		10	0.2533		39	0.2202	
103	Gumla1	7	0.0148		8	0.1572		33	0.0409	
104	Kasir	6	0.0258		8	0.0017		28		0.0245
105	Anjam gram	9	0.6101		10	0.255		37	0.3746	
106	Chainpur1	5			8	0.2111		29	0.0366	
107	Sisai	6	0.1303		8	0.0912		30		0.0216
108	Bharno bdo	9	0.0226		10		0.0789	39		0.0999

109	Ghagra	7	0.207		9	0.0166		34	0.0984	
	HAZARIBAG									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
110	Mandu	8		0.1488	10	0.0057		33		0.1349
111	Garrikalan	5			6		0.0811	26	0.0397	
112	Barkagaon	6		0.2231	8		0.1868	31		0.1051
113	Keradari	7	0.1847		7		0.0608	30	0.0147	
114	Hatyari	3			6		0.0503	20		
115	Hazaribagh	7	0.295		8	0.0147		33	0.0708	
116	Meru(Silwar)	5			7		0.1294	26		0.2806
117	Tatijharia	3			6	0.1084		19		
118	Ichak more	4			6	0.1371		23		
119	Barkatha	9	0.1984		7	0.0569		36	0.0786	
120	Padma	6		0.1708	7	0.0043		27		0.0572
121	Sakrej	4			6	0.4629		21		
122	Barhi	9	0.0064		8	0.1494		37	0.0561	
123	Gola	6	0.0057		8	0.2283		30	0.1488	
124	Chitarpur	4			7	0.4104		21		
125	Kaitha	4			6	0.4356		18		
126	Barkakhana	9	0.1833		10	0.0533		35	0.1016	
127	Ramgarh2	6	0.2059		2			16		
128	Sirka	4			6	0.5866		21		
129	Kanjgi	4			6	0.3366		19		
130	Sayal	6	0.4662		8	0.3735		26	0.3492	
131	Urimari	5			7	0.4015		22		
132	Kuju	5			8	0.0003		24		0.1056
133	Thakur Gora	1			6		0.0014	15		
	KODARMA									
			Pre Monsoon			**Pre Monsoon**			**Annual**	

Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
134	Kanobigha	3			6	0.3543		19		
135	Kodarma	8		0.2323	7		0.7835	34		0.3059
136	Domchanch	4			6		0.238	18		
137	Chandwara	4			9	0.3751		29	0.2785	
	LOHARDAGA									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
138	Bhandara	9		0.0185	9		0.0552	39		0.027
139	Senha Bdo	8		0.1089	8		0.0254	37		0.0632
140	Irgaon	4			7	0.2946		23		
141	Lohardaga(pwdib	9	0.0929		10	0.1641		40	0.0668	
142	Lohardaga(Patra Toli)	6		0.367	8	0.1954		28		0.0701
143	Hesal	3			7	0.0931		23		
144	Hinjla	8	0.03		10		0.0027	37		0.0087
145	Kuru1	7	0.0411		9	0.2514		33	0.1217	
146	Rudh1	4			8	0.4358		27	0.2546	
	PAKAUR									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
147	Amrapara	7	0.2723		9		0.009	32	0.1536	
148	Pakur1	8	0.071		8	0.0757		33	0.0629	
149	Litipara	9		0.0656	8		0.0417	34		0.0409
150	Hiranpur	7	0.0385		9		0.0508	34	0.0543	
151	Pakuria	7	0.6006		9	0.0796		33	0.0162	

152	Salgapara	8	0.1086		8	0.0273		32		0.0493
	PALAMU									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
153	Sandha	6		0.2545	8	0.1893		28	0.1767	
154	Haidernagar	3			6	0.1796		19		
155	Balumath	10	0.0395		10	0.249		39	0.1848	
156	Satbarwa	8		0.0062	10	0.0046		38	0.0328	
157	Manika	9		0.1528	10		0.0197	36	0.0415	
158	Barwadih	8	0.0839		7	0.359		29	0.3858	
159	Barjatu	9	0.2767		8	0.1177		36	0.2334	
160	Betla	5			8	0.0651		29		0.0965
161	Lesliganj	8	0.1695		9	0.1689		36	0.1549	
162	Panki	8		0.6011	9	0.1565		35	0.0378	
163	Sagalim	5			7	0.2987		26	0.2119	
164	Daltenganj	9	0.3544		9	0.351		35	0.3381	
165	Baraw	6	0.0198		6	0.0821		26	0.2187	
166	Kajri	8	0.0193		9	0.0061		35		0.0497
167	Nawadih1	7		0.3091	7		0.1369	24	0.0648	
168	Rajhara	8	0.2204		9		0.0314	35	0.1324	
169	Patan	6		0.4095	7	0.1365		28	0.2021	
170	Bishrampur	7	0.2535		10	0.1707		35	0.2565	
171	Hariharganj	7		0.0057	9		0.0466	32	0.0302	
172	Kanda	8	0.1018		9	0.104		36	0.0897	
173	Chhatarpur	9		0.0032	9		0.1561	38		0.088
174	Japla	7		0.0148	4			20		
175	Garu	5			6	0.1312		24	0.1075	
176	Chandwa	10	0.1913		10	0.0041		37	0.1177	
177	Latehar	8	0.1155		10	0.2368		34	0.1367	
	PASHCHIMI SINGHBHUM									

			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
178	Jaitgarh	5			7	0.4055		25	0.222	
179	Bandgaonnew	4			6		0.3848	20		
180	Barajamda	3			6	0.1065		22		
181	Noamundi	5			7	0.1978		24		0.0111
182	Jagannathpur	5			7	0.6378		25	0.4556	
183	Hat Gamhariya	4			7	0.4569		24		0.0466
184	Keshargaria	8	0.7407		9		0.0681	34	0.2164	
185	Jhinkpani	9	0.0744		10	0.0707		39	0.0971	
186	Kokcho	9	0.0355		10		0.0003	39	0.114	
187	Hesadih	9		0.0415	9	0.0513		37		0.009
188	Chaibasa	9		0.0628	9		0.4936	38		0.1503
189	Rajnagar	6	0.1002		4			16		
190	Khuntpani	8	0.1194		9	0.0192		36	0.0334	
191	Chakradharpur	9	0.1215		10	0.1462		38	0.1221	
192	Saraikela	9	0.4686		9		0.1132	35	0.1061	
193	Kharsawan	9		0.0312	9	0.039		36	0.0571	
194	Bandgaon	8		0.0331	7		0.0238	33		0.231
195	Kereikela	9	0.564		8		0.0018	37	0.1353	
196	Kandra	7	0.1021		9		0.0191	33	0.0509	
197	Chandil	9		0.4731	10		0.3473	36		0.3627
	PURBI SINGHBHUM									
			Pre Monsoon			Pre Monsoon			Annual	
Sl No.	Location	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)	Data Points	Rise (m/year)	Fall (m/year)
198	Ghatsila	9	0.1606		9	0.062		38	0.0803	
199	Baharagora	9	0.1452		9		0.0492	37	0.0159	
200	Chakulia	8	0.185		9		0.0825	37		0.2813

201	Pithajudi	6	0.0076		5			22		
202	Dhalbhumgarh	9		0.1108	9		0.4074	38		0.0436
203	Mosabani	6	0.2887		6		0.0069	23		
204	Mosabani1	4			6	0.1247		20		
205	Kalikapur	9	0.2536		10		0.0781	39	0.039	
206	Potka	8	0.1293		10		0.2236	36		0.1238
207	Galudih	7	0.7368		8		0.0935	27	0.2375	
208	Ramgarh1	7	0.1284		6	0.1068		24		0.0503
209	Sundarnagar	6	0.3738		4			20		
	RANCHI									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
210	Rampur	3			6		0.0416	15		
211	Sithipokhartoli	2			6		0.0606	12		
212	Berro	9	0.3171		8		0.0035	34	0.1468	
213	Hatia1	5			9		0.3616	25		0.1778
214	Ormanji	7		0.0885	8		0.1129	28		0.1108
215	Chachgura	9		0.0264	8	0.1362		35	0.0789	
216	Siramtoli	3			6	0.2983		13		
217	Lowadih	3			7		0.2036	17		
218	Kita	5			6		0.053	21		
219	Silli	8		0.0848	8		0.0152	31		0.0011
220	Jonha	8	0.0275		8	0.0177		34		0.0125
221	Rangamati	5			6	0.2907		20		
222	Lalganj	4			6		0.0349	17		
223	Bunti	6		0.0087	8	0.0738		27	0.0243	
224	Angara1	6	0.0253		6		0.0659	25		0.0456
225	Gondlipokhar	5			8	0.0009		23		
226	Kantitanr	7	0.167		6		0	27	0.0413	
227	Kanke1	4			8		0.0105	23		
228	Bit More	6	0.5153		7	0.2994		23		

229	Mandar	8	0.1538		8		0.0637	31	0.0391	
230	Pithoria	6	0.1415		6	0.0129		22		
231	Chutupalu	8		0.1553	7		0.158	30		0.1464
232	Burmoo	6	0.4327		6	0.3951		23		
233	Murhu	8	0.2101		8	0.1703		30	0.1892	
234	Khunti	9	0.3489		9		0.049	34	0.0287	
235	Tamar	8	0.1875		9	0.0285		32	0.2125	
236	Dumardagga	5			6	0.1098		22		
237	Bundu	9	0.1535		9		0.1085	37		0.0906
238	Taimara	7	0.234		7	0.014		24	0.249	
239	Kalimati	7	0.2324		10	0.0836		35	0.0795	
240	Lodma	7	0.2009		6		0.095	25	0.0681	
241	Kharsidag	3			7		0.0413	18		
242	Barwadag	8	0.3507		9		0.0526	32	0.0631	
	SAHIBGANJ									
			Pre Monsoon			**Pre Monsoon**			**Annual**	
Sl No.	**Location**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**	**Data Points**	**Rise (m/year)**	**Fall (m/year)**
243	Ranga	5			7	0.3816		24	0.1442	
244	Barhait	7	0.1783		6	0.1766		30	0.285	
245	Udvababutala	5			7		0.0138	23		
246	Rajmahal	9		0.0541	8		0.0963	35		0.0366
247	Borio	8		0.9005	9	0.0446		32		0.2159
248	Ghat Selumpur	6	0.3985		8	0.0056		26	0.1872	
249	Taljhari1	8	0.8088		6	0.0863		26	0.3718	
250	Mandro	8	0.2004		7	0.1781		32	0.0491	
251	Sahebganj1	9	0.09		8	0.1519		34	0.168	
252	Sakrigali	8	0.3638		7	0.0597		33	0.1377	

ANNEXURE-III

CHEMICAL ANALYSIS DATA of SAMPLES COLLECTED DURING MAY 2021
(Samples have been collected from limited number of districts due to countrywide locked down situation during Covid)

District	Block	Location	Source of Water Sample	pH	EC	TDS	TH	Ca^{2+}	Mg^{2+}	Na^{+}	K^{+}	CO_3^{2-}	HCO_3^{-}	Cl^{-}	SO_4^{2-}	NO_3^{-}	F^{-}	PO_4^{3-}	SiO_2
					µS/cm	mg/L													
Gumla	Basia	Basia	DW	7.91	963	626	270	70	23	85	21	0	110	178	75	77	0.78	0.12	
Gumla	Palkot	Palkot	DW	8.17	154	100	45	12	3.65	13	3.22	0	55	21	0.58	2.62	0.05	0	
Gumla	Palkot	Baghma	DW	7.93	398	259	135	42	7.29	27	4.5	0	43	64	34	49	0.13	0	
Gumla	Raidih	Raidih	DW	7.84	385	250	140	42	8.51	22	2.66	0	73	50	30	35	0.23	0	
Gumla	Bharno	Bharno	DW	8.17	176	114	45	12	3.65	16	8.1	0	24	28	7.32	24	0	0	
Gumla	Sisai	Sisai	DW	7.92	1008	655	335	104	18	63	23	0	195	128	74	98	0.68	0.98	
Gumla	Bharno	Nagfeni	DW	7.96	175	114	60	16	4.86	11	0.98	0	24	18	7	39	0	0	
Gumla	Gumla	Kharke	DW	8.13	538	350	225	70	12	9.2	15	0	122	85	27	20	0.12	0	
Gumla	Ghaghra	Adar	DW	7.76	285	185	90	24	7.29	17	9.1	0	116	21	11	6.03	0.15	0	
Gumla	Bishunpur	Bishunpur	DW	7.82	613	398	195	72	3.65	35	26	0	110	82	36	77	0.58	0	
Gumla	Gumla	Gumla 1	DW	8.19	148	96	45	16	1.22	10	6.05	0	43	21	4.9	5.2	0	0	
Gumla	Raidih	Kashir	DW	8.14	140	91	60	20	2.43	4.5	0.8	0	24	11	18	21	0	0	
Gumla	Chainpur	Chainpur 1	DW	7.83	893	580	260	76	17	74	19	0	268	110	42	30	0.74	0	
Ramgarh	Patratu	Bhukunda	DW	7.32	1020	663	325	104	16	74	22	0	238	89	155	42	0.01	0	
Ramgarh	Mandu	Kuju	DW	7.7	806	524	250	84	9.72	57	25	0	214	75	89	46	0.03	0	

Ramgarh	Mandu	Mandu	DW	7.82	441	287	130	50	1.22	34	9.8	0	128	25	65	12	0	0	
Ramgarh	Ramgarh	Barkakana	DW	7.58	1168	759	330	110	13	115	2.27	0	268	114	146	60	0	0	
Ramgarh	Gola	Gola	DW	7.51	1413	918	460	142	26	116	5.4	0	256	209	146	60	0.02	0	
Ramgarh	Ramgarh	Ramgarh	DW	7.54	1381	898	400	130	18	116	3.08	0	262	170	146	60	0.01	0	
Ramgarh	Patratu	sayal	DW	7.63	853	554	260	82	13	67	4.38	0	159	78	120	60	0.03	0.3	
Ramgarh	Mandu	Thakur gora	DW	7.79	418	272	135	42	7.29	32	4.37	0	61	39	60	56	0.02	0	
Ramgarh	Ramgarh	Kaitha	DW	7.77	378	246	125	36	8.51	22	8.21	0	73	46	43	10	0	0	
Ramgarh	Ramgarh	Barlong	DW	7.86	336	218	95	22	9.72	30	1.45	0	18	32	56	54	0	0	
Ramgarh	Dulmi	Kusumbha	DW	7.48	1272	827	450	150	18	76	14	0	244	178	132	59	0	0	
Ramgarh	Dulmi	Dulmi	DW	7.61	822	534	250	70	18	69	7.23	0	165	92	94	60	0.01	0	
Ramgarh	Mandu	Barkachumba	DW	7.64	682	443	225	62	17	54	0.75	0	79	85	111	59	0.02	0	
Ramgarh	Mandu	Kanjgi	DW	7.59	765	497	200	50	18	81	1.69	0	67	114	111	61	0.03	0.7	
Ramgarh	Mandu	Sirka(Bazartarn)	DW	7.43	1014	659	275	82	17	94	28	0	207	99	154	60	0	0	
Bokaro	Chas	Bijulia	DW	7.31	1762	1145	635	176	47	116	4.15	0	409	249	154	60	0.02	0	
Bokaro	Chas	Jaina more	DW	7.32	1166	758	425	162	4.86	69	2.32	0	207	163	126	59	0.03	0	
Bokaro	Chas	Pindrajora	DW	7.2	2060	1339	445	150	17	246	22	0	336	369	154	60	0	0	
Bokaro	Chas	Pupunki	DW	7.54	723	470	260	70	21	41	6.61	0	104	67	126	58	0	0	
Bokaro	Chandankiyari	Chandankiyari	DW	7.49	946	615	280	74	23	84	7.37	0	195	92	126	59	0.01	0	
Bokaro	Chandankiyari	Laghla	DW	7.3	1766	1148	610	162	50	116	27	0	421	266	126	59	0.03	0	
Bokaro	Chandankiyari	Baramasia	DW	7.65	359	233	80	24	4.86	41	6.65	0	18	60	38	47	0	0	
Bokaro	Chandankiyari	Chandra	DW	7.41	462	300	120	40	4.86	42	13	0	49	28	85	75	0.2	0	
Bokaro	peterwar	chandrapura	DW	7.55	1677	1090	475	70	72.9	146	21	0	537	178	111	19	0	0	
Bokaro	Gomia	Gomia	DW	7.57	1001	651	240	58	23	116	11	0	317	99	84	28	0	0	
Bokaro	Nawadih	Nawadih	DW	7.61	920	598	325	96	21	62	1.15	0	220	75	120	59	0.03	0	

Bokaro	peterwar	peterwar	DW	7.67	771	501	240	78	11	61	6.34	0	85	135	75	59	0	0	
Bokaro	Bermo	Bermo/phusro	DW	7.4	1536	998	510	116	53	116	1.73	0	378	213	120	41	0.01	0	
Bokaro	Gomia	Tenughat	DW	7.59	711	462	290	94	13	29	0.92	0	159	36	120	61	0.04	0	
Bokaro	Chas	Radhagaonrly station	DW	7.61	726	472	205	72	6.07	69	2.86	0	195	60	84	38	0	0	
Bokaro	Chas	Bokaro rly station	DW	7.44	1418	922	325	94	22	175	1.25	0	256	220	132	57	0	0	
Hazaribag	Hazaribag	Amritnagar	DW	7.86	346	225	80	18	8.51	42	1.68	0	85	28	52	9.04	1.16	0	
Hazaribag	Barhi	Barhi	DW	7.37	1614	1049	550	144	46	116	2.61	0	494	92	120	178	0.38	0	
Hazaribag	Barakatha	Barakatha	DW	7.56	668	434	180	72	30	40	2.06	0	37	99	65	39	0.46	0	
Hazaribag	Hazaribag	Botom bajar	DW	7.43	1123	730	250	50	30	116	50.1	0	275	121	87	98	0.22	0	
Hazaribag	Hazaribag	college more	DW	7.57	722	469	205	50	19	50	6.81	0	12	82	56	34	0.61	0	
Hazaribag	Churchu	Dari	DW	7.74	364	237	105	30	7.29	33	5.23	0	61	32	56	40	0.74	0	
Hazaribag	Daru	Daru	DW	7.59	531	345	95	26	7.29	77	3.69	0	24	92	67	57	1.08	0	
Hazaribag	Keredari	Garrikalan	DW	7.39	890	579	305	46	46	60	8.3	0	183	124	67	59	0.37	0	
Hazaribag	Hazaribag	Habibnagar	DW	7.41	1076	699	350	90	30	76	5.69	0	24	245	87	89	0.74	0	
Hazaribag	Hazaribag	Hatyari	DW	7.27	360	234	165	52	8.51	36	9.15	0	31	36	52	20	0.26	0	
Hazaribag	Hazaribag	Hazaribag	DW	7.43	564	367	140	38	11	59	7.57	0	110	82	44	35	0.12	0	
Hazaribag	Hazaribag	Hirabag	DW	7.49	677	440	220	50	23	49	2.61	0	37	110	65	98	0.19	0	
Hazaribag	Hazaribag	Kanhari road	DW	7.37	1202	781	450	110	43	69	2.07	0	153	213	126	59	0.08	0	
Hazaribag	Keredari	Keredari	DW	7.29	1295	842	575	178	32	29	4.65	0	140	273	91	59	0.75	0	
Hazaribag	Hazaribag sadar	Korrah Chowk	DW	7.54	1269	825	455	102	49	69	2.6	0	232	206	78	59	0.19	0	
Hazaribag	Hazaribag sadar	Kud ashram	DW	7.76	443	288	155	44	11	29	2.71	0	49	75	27	56	0.25	0	
Hazaribag	Hazaribag sadar	Masipiri	DW	7.54	724	471	285	68	28	45	7.13	0	177	82	87	55	0.15	0	
Hazaribag	Hazaribag	Meru(silwar)	DW	7.62	557	362	110	24	12	77	5.58	0	122	53	63	58	0.09	0	

Hazaribag	Hazaribag sadar	Fasi well	DW	7.44	961	625	280	72	28	73	21	0	250	89	81	66	0.21	0	
Hazaribag	padma	Padma	DW	7.67	390	254	135	46	5	24	1.94	0	110	28	23	46	0.66	0	
Hazaribag	Barakatha	Sakrej	DW	7.53	642	417	155	52	6	76	2.01	0	43	103	91	57	0.48	0	
Hazaribag	Hazaribag sadar	Simra rest House	DW	7.42	1326	862	500	126	45	69	8.07	0	305	188	91	58	0.12	0	
Hazaribag	Hazaribag sadar	Sindur	DW	7.4	1496	972	530	158	33	77	33	0	262	259	106	57	0.07	0	
Hazaribag	Bishnugarh	Tatijhariya	DW	7.71	453	294	150	46	9	39	5.71	0	79	53	50	56	0.18	0	
Hazaribag	Barkagaon	Urimari	DW	7.63	535	348	140	54	1.22	55	7.41	0	110	43	70	57	0.86	0	
Hazaribag	Chowparan	Chowparan	DW	7.27	1695	1102	675	90	109	75	4.6	0	61	437	126	57	0.12	0	
Lohardaga	Lohardaga	Lohardaga	DW	8.1	387	252	150	46	8.51	15	5.77	0	122	39	11	20	0.69	1.35	11
Lohardaga	Bhandara	Bhandra	DW	8.23	230	150	85	26	4.86	11	0.86	0	73	18	11	14	0.95	1.7	31
Lohardaga	Lohardaga	Hesal	HP	8.18	277	180	105	30	7.29	10	1.11	0	85	25	5.36	10	0.61	1.58	19
Lohardaga	Kuru	Hinjela	DW	7.84	306	199	105	36	3.65	15	4.7	0	92	32	7.56	21	0.84	1.12	18
Lohardaga	Lohardaga	Iragaon	DW	8	124.8	81	50	10	6.08	3.9	0.96	0	37	11	3.23	11	0.62	1.111	17
Lohardaga	Kisko	Kisko I	DW	7.75	212	138	80	16	9.72	9.12	2.81	0	55	28	5.67	9	0.21	1.54	11
Lohardaga	Kuru	Kuru	DW	7.6	776	504	300	50	43	32	8.97	0	201	124	14	25	0.39	1.47	11
Lohardaga	Lohardaga	Lohardaga (Patra Toli chowk)	HP	7.65	612	398	240	64	19	27	2.83	0	134	82	27	52	0.31	1.58	21
Lohardaga	Lohardaga	Lohardaga (PWD IB)	DW	7.69	540	351	210	54	18	17	5.91	0	195	36	18	31	1.55	2.06	11
Lohardaga	Kuru	Rudh I	DW	7.6	518	337	120	32	9.72	51	14	0	49	110	16	52	0	1.41	9.09
Lohardaga	Senha	Senha bdo	DW	7.79	668	434	215	60	16	49	5.2	0	165	96	26	26	0.77	1.67	24
Ranchi	Angara	Angara	DW	7.91	458	298	190	40	22	11	2.27	0	189	25	9.8	11	0.73	0.34	13
Ranchi	Ratu	Bajra	DW	7.78	881	573	285	68	28	67	5.02	0	183	114	81	53	0.5	0.06	6.47
Ranchi	Angara	Barwadag	DW	7.88	788	512	310	60	39	40	9.57	0	268	39	87	49	0.69	0.07	7.66
Ranchi	Bero	Berro	HP	7.9	288	187	140	24	19	1	1.91	0	110	14	6	15	0.65	0.07	23
Ranchi	Chanho	Bijupara Tangar	DW	7.74	641	417	180	50	13	61	2.81	0	122	89	57	47	0.5	0.12	12

Ranchi	Mandar	Bishakhatanga	TW	7.51	294	191	120	38	6.08	15	2	0	67	43	11	25	0.71	0.09	16
Ranchi	Kanke	BIT more	DW	7.78	611	397	160	42	13	61	6.91	0	116	99	45	31	0.12	0.07	1.07
Ranchi	Bundu	Bundu	DW	7.97	1190	774	405	92	43	76	12	0	305	128	130	4.5	0.93	0.44	9.45
Ranchi	Kanke	Bunti	DW	7.75	782	508	220	56	19	66	16	0	128	114	93	50	0.4	0.15	3.32
Ranchi	Burmoo	Burmoo	HP	7.91	220	143	100	26	8.51	1.87	0.79	0	85	11	13	16	0.73	0.07	17
Ranchi	Itki	Chachgura	DW	7.26	212	138	60	16	4.86	18	6.86	0	49	14	6.13	50	0.09	0.06	2.8
Ranchi	Ormanjhi	Chutupalu	TW	7.9	762	495	250	84	9.72	57	2.11	0	220	75	90	4.25	1.08	0.09	18
Ranchi	Angarga	Gondalipokhar	DW	7.83	741	482	215	52	21	60	16	0	116	121	67	51	0.47	0.12	5.06
Ranchi	Kanke	Harmu	DW	7.8	272	177	95	22	9.72	15	3.52	0	61	36	20	19	0.23	0.68	18
Ranchi	Namkum	Hatia	DW	7.26	449	292	140	30	16	31	11	0	61	67	36	53	0.11	0.12	4.35
Ranchi	Ratu	Hurhuri	DW	7.5	602	391	200	40	24	36	16	0	116	96	35	53	0.65	0.13	10
Ranchi	Itki	Itki	TW	7.56	365	237	150	38	13	11	3.26	0	61	60	9.83	52	0.09	0.1	17
Ranchi	Angara	Jonha	DW	7.94	397	258	190	40	22	0.86	1.8	0	177	21	12	17	0.85	0.12	26
Ranchi	Kanke	Kanke	DW	7.95	517	336	190	46	18	41	5.58	0	134	53	59	34	0.26	0.09	7.3
Ranchi	Ratu	Kantitanr	DW	7.56	376	244	135	34	12	20	8.61	0	73	28	50	49	0.31	0.35	3.35
Ranchi	Namkum	Kharsidag	DW	7.45	296	192	105	22	12	12	9.02	0	49	36	29	32	0.34	0.08	5.8
Ranchi	Silli	Kita	DW	7.98	812	528	250	60	24	65	2.26	0	226	107	65	19	0.94	0.09	13
Ranchi	Namkum	Lalganj	DW	7.6	305	198	110	20	15	14	4.01	0	37	39	13	50	0.17	0.1	7.6
Ranchi	Namkum	Lowadih	DW	7.7	1169	760	320	70	35	97	20	0	183	192	80	52	0.86	0.13	3.7
Ranchi	Mandar	Mandar	DW	7.86	822	534	225	56	21	77	10	0	146	121	87	52	0.45	0.06	2.26
Ranchi	Ormanjhi	Ormanjhi	TW	7.84	398	259	135	40	8.51	18	5.88	0	73	46	48	24	0.37	0.35	3.15
Ranchi	Silli	Patrahatu	DW	7.7	712	463	320	78	30	20	6.17	0	134	57	115	48	0.65	0.08	7.04
Ranchi	Kanke	Pithauria	DW	7.96	772	502	240	58	23	60	10	0	214	92	46	46	0.83	0.2	8.43
Ranchi	Namkum	Rampur	DW	7.83	231	150	80	14	11	10	2.19	0	61	25	12	16	0.36	0.2	8.29
Ranchi	Tamar	Rangmati	DW	7.98	1024	666	335	78	34	65	21	0	293	107	93	51	0.96	0.76	12
Ranchi	Silli	Silli	DW	8.01	598	389	190	48	17	45	4.4	0	214	28	50	36	0.61	0.14	11
Ranchi	Namkum	Sirhamtoli	DW	7.83	1012	658	305	54	41	73	29	0	336	121	76	15	0.85	0.15	6.25
Ranchi	Namkum	Sitiopokha	DW	7.8	295	192	75	16	8.51	19	20	0	67	28	28	37	0.52	0.12	2.9

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Ranchi	Sonahatu	Sonahatu	DW	7.8	240	156	100	30	6.08	2.59	2.77	0	85	11	22	22	0.64	0.13	3.08
Ranchi	Chanho	Sons Bazar	DW	7.7	1014	659	355	86	34	52	23	0	171	156	65	53	0.52	0.12	9.55
Ranchi	Bundu	Taimara	DW	7.9	260	169	95	24	8.51	4.37	19	0	73	11	17	46	0.68	0.25	10
Ranchi	Tamar	Tamar	HP	7.82	240	156	105	22	12	7.61	2.34	0	98	18	14	2	0.25	0.16	19
Ranchi	Ormanjhi	Ukrid	DW	7.98	310	202	145	42	9.72	0	4.01	0	128	14	15	22	0.91	0.14	4.14
Ranchi	Kanke	Daily marker	TW	8.1	1280	832	395	84	45	81	38	0	250	188	90	55	0.63	0.18	18
Ranchi	Namkum	Chuiya(Sa ni mandir)	DW	7.82	741	482	200	54	16	65	16	0	201	75	67	44	0.89	0.4	8.77
Ranchi	Namkum	Tatisilway	DW	7.7	552	359	160	40	15	37	17	0	116	57	57	53	0.28	0.08	6.37
Ranchi	Ormanjhi	Hombai B.I.T	DW	7.67	775	504	200	56	15	80	20	0	98	163	35	55	0.7	0.09	13
Ranchi	Kanke	Vivakand Ashram	DW	7.55	881	573	270	54	33	75	3.36	0	177	128	84	40	0.45	0.12	7.46
Ranchi	Ormanjhi	Hochar	DW	7.64	423	275	160	26	23	16	6.42	0	92	36	42	48	0.35	0.11	7
Ranchi	Kanke	Kanke Chowk	DW	7.36	922	599	335	68	40	51	6.19	0	165	142	76	55	0.16	0.13	11
Ranchi	Kanke	Sukurhutu	DW	7.91	1524	991	460	76	66	111	35	0	397	202	99	50	0.67	0.9	14
Ranchi	Namkum	Ladnapiri	DW	8.04	614	399	255	44	35	17	3.07	0	207	32	50	40	0.4	0.58	17
Ranchi	Namkum	Pindarcom	DW	7.63	696	452	255	44	35	32	11	0	140	67	87	53	0.73	0.2	5.84
Ranchi	Namkum	Manitola	DW	7.79	553	359	200	52	17	24	12	0	177	46	41	23	0.2	0.13	6.66
Ranchi	Namkum	Hanuman Mandir (near AG office)	TW	7.78	582	378	225	48	26	24	4.92	0	171	50	63	18	0.24	0.11	4.85
Ranchi	Namkum	Bridge Ford School	pZ	7.46	360	234	90	22	8.51	36	3.2	0	67	32	46	34	0.23	0.25	5.57

6.0 Depth to Water level scenario for confined aquifer

SN	District	Block	Location	Depth to Water Level (m bgl)			
				May-21	Aug-21	Nov-21	Jan-22
1	Khunti	Torpa	Dorma		1	2.5	4.05
2	Ramgarh	Gola	Chitarpur				7
3	Ramgarh	Dulmi	Harhadkander		3.28	3.7	4.3
4	Ranchi	Bero	Kurgi_PZ1		12.25		
5	Ranchi	Mandar	Bandhea	11.2	6.1	6.63	7.14
6	Ranchi	Ormanjhi	Baridih(Utkramit)				
7	Ranchi	Kanke	Harmu Hhc	18.4	8.15	8	12.04
8	Ranchi	Kanke	Dav I				
9	Ranchi	Kanke	Dav Ii				
10	Ranchi	Kanke	Mahilong Forest Nur		7.2		6
11	Ranchi	Kanke	Jamchuan Kgbav		9.1	7.2	7.23
12	Ranchi	Kanke	Sukurhutu				
13	Ranchi	Kanke	Kanke Sember Toli				
14	Ranchi	Kanke	Dav Iii				
15	Ranchi	Kanke	Military Farm Namkom		13.54		
16	Ranchi	Mandar	Brambey I	6.85	10.5	4.31	5.67
17	Ranchi	Mandar	Brambey II				

There are only 17 number of Piezometers monitored upto January 2022 in Jharkhand state. The four seasons monitoring data has been gieven in above table. Due to countrywide locked down during covid19 pandemic the field work was affected. Therefore, only available data has benn tabulated. However more piezometric wells has been included form August 2022 monitoring for better analysis of confined aquifer and map preparation of depth to water level of confined aquifer. Data shows that the pre-monsoon piezometric level varies from 6.85 m bgl to 18.4 m bgl, whereas the post monsoon depth to water level varies from 2.5 m bgl to 12.04 m bgl.