

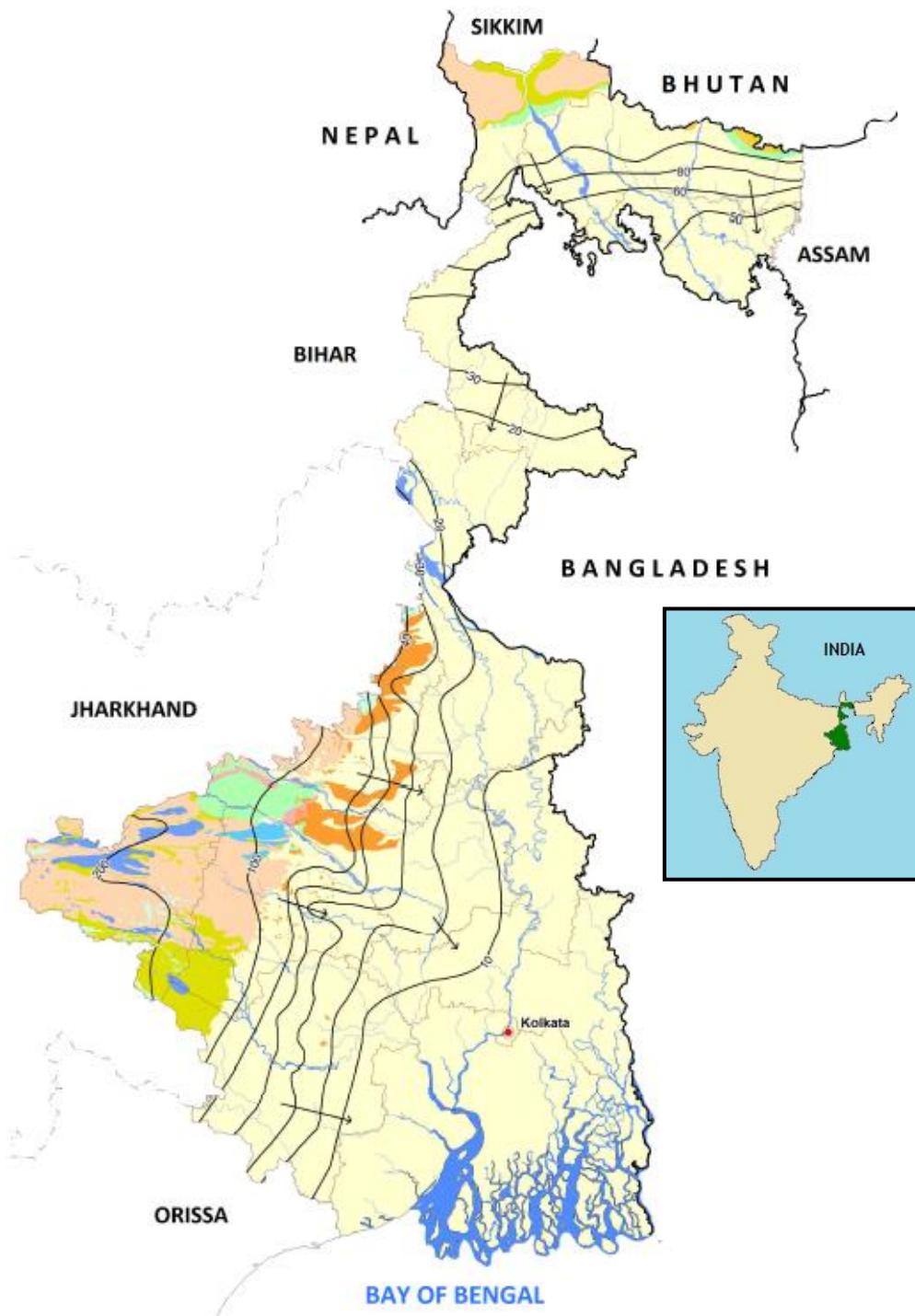


**REPORT ON THE
DYNAMIC GROUND WATER RESOURCES
OF WEST BENGAL, 2024**



Central Ground Water Board,
Eastern Region, Kolkata

State Water Investigation Directorate
Government of West Bengal



CGWB, ER, Kolkata
November, 2024

REPORT ON THE DYNAMIC GROUND WATER RESOURCES OF WEST BENGAL, 2024

Prepared by

**Central Ground Water Board
Eastern Region
Government of India**

&

**State Water Investigation Directorate
Government of West Bengal**

**CGWB, Eastern Region, Kolkata
November, 2024**



भारत सरकार
Government of India
जल शक्ति मंत्रालय
Ministry of Jal Shakti
जल संसाधन विभाग, नदी विकास और गंगा संरक्षण
Department of Water Resources
River Development and Ganga Rejuvenation
केंद्रीय भूमि जल बोर्ड
Central Ground Water Board



Message

Groundwater is the key resource for India's agricultural and drinking water security. Though groundwater is dynamic and replenishable natural resource, extensive extraction is causing an alarming decline in water levels. Scientific assessment of the availability of groundwater resources provides the basic input for planning sustainable management interventions. Central Ground Water Board (CGWB), in collaboration with State Groundwater Departments, conducts regular assessments of groundwater resources every year. These assessments serve as the basis for guiding the management and regulation of groundwater resources in the state. These assessments also serve as the foundation for planning various groundwater management interventions, which may include initiatives such as artificial recharge etc. Present assessment of groundwater resources is based on the Groundwater Estimation Methodology of 2015 (GEC-2015), which comprehensively factors in all relevant parameters contributing to groundwater recharge and extraction.

The Dynamic Groundwater Resource Assessment of 2024 (GWRA-2024) for West Bengal is a collaborative effort involving State Ground Water Departments and the Central Ground Water Board, Eastern Region. I should also mention the diligent efforts of officers of CGWB, Eastern Region, Central Ground Water Board, Eastern Region, Kolkata and officers of State Ground Water Department, Govt. of West Bengal. I extend my congratulations to all of them. I also appreciate the valuable contributions of the State Level Committee (SLC) for their guidance in timely completion of the assessment

It is very much anticipated that this compilation will prove to be of immense value to administrators, planners, and all other stakeholders engaged in formulating strategies and interventions aimed at ensuring the long-term sustainability of groundwater.

A handwritten signature in black ink, appearing to read "N. Vardaraj".

(N. Vardaraj)
Member (East)

PREFACE

The state of West Bengal for its major parts is bestowed with potential and prolific aquifer systems, which get adequately recharged annually due to high annual rainfall of the order of >1500mm. Even where aquifer is limited in space and time in the state, dependence on sub-surface water is the essence of life. Ground water therefore has played and will continue to play an important role in the overall development of the state. With the increase in population, and developmental activities especially the summer paddy cultivation, the demand for ground water has increased manifold. The ease, with which ground is extracted even by an individual, has led to its indiscriminate abstraction in unplanned manner, particularly from the near surface aquifer. But like other natural resources utilizable ground water too is not an infinite resource. This calls for an evaluation of the demand, availability and projected demand scenario of ground water in the state.

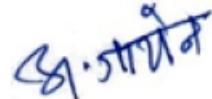
Unlike other natural resources, ground water is mobile, and the assessment of ground water resource involves computation of many variable parameters which is rather difficult as technology is yet to develop for their direct measurements. Nevertheless estimation of ground water resource, casts a glance over the existing status of ground water development.

This report is an outcome of the joint exercises of the Central Ground Water Board, Eastern Region and the State Water Investigation Directorate, Government of West Bengal along with other state govt. departments in the core working group for estimation of resources. It is an effort to present the findings of assessment of dynamic component of ground water resource available in the unconfined aquifer, adopting methodology of 'Ground Water Estimation Committee 2015'. The methodology mainly takes into account the stage of ground water extraction for categorization of assessment units.

The ground water development needs judicious approach and requires to be carried out in a planned and phased manner with close and regular monitoring. Out of 345 assessment units of West Bengal (including 01 Urban Unit i.e. KMC area), 60 blocks

in 05 districts are in the coastal tract area, where fresh groundwater occurs predominantly under confined condition. The findings of the assessment reveal that in this State, the Net Ground Water Availability and Gross Draft are 23.56 lakh ham and 10.75 lakh ham respectively. The Stage of development in State is 45.63%. Assessment results show presence of 0.12 bcm of Dynamic Confined Ground Water Resources, 10.02 bcm of In-Storage Confined Ground Water Resources and 10.14 bcm of Total Confined Ground Water Resources is present in the area.

The report is a combined and sincere effort of officers of SWID and CGWB. The contributions made by other State Govt. Departments in the working group are thankfully acknowledged. The committed efforts of officers of CGWB and SWID in the form of data collection, their synthesis, interpretation and finally estimation of ground water resource as well as compilation of entire data in tabular form, preparation of various graphics, maps, appendices and the preparation of the text, have resulted in bringing out the present volume.



(Dr. Anadi Gayen)

**Regional Director
Central Ground Water Board
Eastern Region, Kolkata**

CONTENTS

	Page no.
Preface	
Chapter - I	
Introduction	1-2
1.1 Background for re-estimating the Ground Water Resources of the State	
1.2 Constitution of state-level committee for Ground Water Resources Estimation	
1.3 Brief outline of the proceedings of the resource estimation	
Chapter - II	3-23
Hydrogeological Conditions of the State	
2.1 Description of Rock types	
2.2 Hydrometeorology	
2.3 Ground Water Condition	
2.4 Ground Water Level Scenario (2023)	
2.5 Ground Water Quality	
Chapter – III	24
Ground Water Resources Estimation Methodology-GEC'15	
3.1 Ground Water Resource Estimation Methodology – GEC'15- Brief Description	
Chapter – IV	25-39
Groundwater Resources Scenario in West Bengal	
4.1 Spatial variation of the Ground water recharge and development scenario in West Bengal	
4.2 Comparison with the earlier ground water resources estimate and reasons for significant departure from earlier estimates	
4.3 Computation of Ground water resources of Confined Aquifer in West Bengal	

DYNAMIC GROUND WATER RESOURCES OF WEST BENGAL, 2024

AT A GLANCE

1. Total Annual Ground Water Recharge	25.89
2. Annual Extractable Ground Water Resources	23.56
3. Annual Ground Water Extraction	10.75
4. Stage of Ground Water Extraction	45.63%

CATEGORIZATION OF ASSESSMENT UNITS

(Blocks/ Mandals/ Taluks)

Sl.No	Category	Number of Assessment Units		Recharge worthy Area		Annual Extractable Ground Water Resource	
		Number	%	in lakh sq. km	%	(in bcm)	%
1	Safe	239	69.28	.6084207	76.28	19.40324	82.35
2	Semi Critical	36	10.43	.0709953	8.9	3.0078	12.77
3	Critical	10	2.9	.0231607	2.9	1.15097	4.88
4	Over-Exploited	-	-	-	-	-	-
5	Saline	60	17.39	.095081	11.92	-	-
	TOTAL	345	100	0.7976577	100	23.56201	100

Contributors' Page

*Central Ground Water Board
Eastern Region, Kolkata*

Dr. Indranil Roy, Scientist -D
Dr. Shaista Khan, Scientist -C
Dr. Nilamoni Barman, Scientist -C

*State Water Investigation Directorate
Govt. of West Bengal*

Sri. Subrata Haldar, SE (AI)
Smt. Mousumi Neogi Adhikari, Senior Geologist
Sri. Sajal Kr. Das, EE (AI)
Dr. Sirsendu Kar, Geologist
Smt. Sampa Hazra, Geologist

Executive Summary

India is the largest user of groundwater in the world with a fourth of the total global withdrawal. Indian cities cater to about 48% of its water supply from groundwater. Hence, there is dire need to know the updated resource position for proper management of the groundwater resource. Groundwater Resource Assessment refers to the process of evaluating the quantity and quality of groundwater to determine its sustainability and usage. In India, State Ground Water Departments and Central Ground Water Board carry out Ground Water Resource Assessment at periodical intervals as a joint exercise under the guidance of the respective State Level Committee and under the overall supervision of the Central Level Expert Group (CLEG). The assessment process involves computation of dynamic ground water resources or Annual Extractable Ground Water Resource, Total Current Annual Ground Water Extraction (utilization) and the percentage of utilization with respect to annual extractable resources (Stage of Ground Water Extraction). The assessment units (blocks) are categorized based on Stage of Ground Water Extraction, which are then validated with long-term water level trends. The assessment prior to that of year 2017 were carried out following Ground Water Estimation Committee (GEC) 97 Methodology, whereas from 2017 onwards assessment are based on norms and guidelines of the GEC 2015 Methodology. Previous estimates of groundwater resources in West Bengal used GEC'97 methodology in 2004, 2008-09, 2010-11, and 2012-13, and the GEC'15 methodology in 2021-22 and 2022-23.

Present estimation of groundwater resources in West Bengal for the current assessment year (2024) started as per instruction of CHQ, CGWB referring Ministry of Jal Shakti notification. The State Level Committee for Ground Water Assessment (SLGWAC) formed "Groundwater Resource Assessment Cell" and "Working Group" for Dynamic Groundwater Resources Re-Assessment of West Bengal (as on March 31st, 2024) vide notification 56-ACS/WRIDD/2024 dated 07.08.2024. The working group finalized the report in consultation of other members of the committee and prepared the report. Under the Chairmanship of Secretary, WRIDD, Govt. of West Bengal, SLGWAC approved the report as an outcome of the meeting dated

13.09.2024. Further, CLEG reviewed and approved the groundwater resource assessment of West Bengal on October 8, 2024.

The ground water resource assessment (in 2024) for the State of West Bengal is carried out as per GEC 2015 guidelines through 'IN-GRES', with blocks as primary assessment units. IN-GRES is a software/web-based application developed by Central Ground Water Board (CGWB) in collaboration with Indian Institute of Technology-Hyderabad for assessment of ground water resources.

Present assessment covered all 344 blocks of West Bengal and one urban area, the Kolkata Municipal Corporation. The estimated total annual groundwater recharge is 25.89 billion cubic meters (bcm), while the annual extractable groundwater resource is 23.56 bcm. Estimated current annual groundwater extraction for all uses is 10.75 bcm, resulting in a stage of groundwater extraction (SGWE) of 45.63%. The estimation also includes areas with confined aquifers, assessing 60 confined aquifer units.

Based on the present assessment categorization scheme:

- 239 assessment units (AUs) are classified as Safe;
- 36 AUs are Semi-Critical;
- 10 AUs are Critical;
- 60 AUs have poor groundwater quality; and
- No block in the state is of Over-Exploited category.

Compared to the previous assessment in 2023, the 2024 assessment shows an increase in the SGWE from 44.81% to 45.63%, primarily attributed to population growth. Nadia, Murshidabad, North 24 Parganas and Barddhaman districts show high ground water withdrawal and Stage of Groundwater Extraction due to cultivation of Paddy, especially summer paddy (Boro). On the other hand, the hard rock terrain lying in the western part of the State comprising Purulia, western parts of Jhargram, Birbhum, Bankura, Paschim Barddhaman and Paschim Medinipur districts, show low ground water withdrawal and stage of groundwater extraction due to low ground water potential.

CHAPTER I

INTRODUCTION

1.1 Background for Re-estimating the Ground Water Resources of the State

Sustainable development and efficient management of ground water resource is a challenge. Proper planning and management of ground water development in a state in a judicious and socio-economically equitable manner, principally depends on proper quantification of ground water resources and also on assessment of status of ground water development.

Estimation of ground water resources on scientific basis for different States of India was made for the first time following the guidelines prescribed by ‘Ground Water Over-exploitation Committee’ – 1979, constituted by Agricultural Refinance and Development Corporation (ARDC) headed by the Chairman, CGWB. CGWB and State Ground Water Departments computed the gross water availability by ARDC norms. To make the methodology more realistic, Govt. of India constituted a new committee on ground water estimation (GEC) in 1982 headed by the Chairman, CGWB. The Committee prescribed guidelines for estimation, which was known as GEC 1984 Methodology. CGWB and SWID, Govt. of West Bengal, have adopted this methodology and estimated the ground water resources. The estimation of ground water resource based on GEC 1984 methodology was done for the first time in 1985 for 273 blocks out of 341 blocks of the State. Eight (08) blocks in hilly areas and Sixty (60) blocks in coastal tracts of West Bengal were not considered for ground water estimation. These blocks were excluded as in hilly terrain availability and development of ground water through abstraction structures is negligible (only spring water is in use) and in the coastal areas where the aquifers are under confined condition and hence not suitable for application of the methodology. Later following the modified GEC 1997 Methodology estimation of ground water resource has been carried out in 2004, 2008, 2011 and 2013. Ground water estimation methodology is further modified in 2015 namely, GEC 2015 Methodology. Following the modified GEC 2015 Methodology estimation of ground water resource is carried out in 2023 and 2024. Present ground water resource estimation is carried out for 345 assessment units (344 Administrative Blocks and 01 Urban Unit) following the same.

1.2 Constitution of State-level committee for Ground Water Resources Estimation

With a view to re-estimate ground water resource in the State of West Bengal for the assessment year 2024, based on the guidelines provided in the GEC 2015 methodology, a permanent State Level Committee has been constituted by Govt. of West Bengal vide notification 585-JS(MI)/DSWI-28011(15)/1/2021[Computer No 477901] dated 08.05.2023 (**Annexure-I**)

1.3 Brief Outline of the Proceedings of the Resources Estimation

Dynamic ground water resource has been estimated for the state of West Bengal previously in the year 2004, 2008-09, 2010-11 and 2012-13 as per GEC'97 methodology and in 2021-22 and 2022-23 as per GEC'15 methodology. As per instruction of CHQ, CGWB referring GOI of Ministry of Jal Shakti, ground water resource estimation (as on 31st March, 2024) (as per GEC'2015) is initiated. The State Level Committee for Ground Water Assessment formed "Groundwater Resource Assessment Cell" and "Working Group" for Dynamic Groundwater Resources Re-Assessment of West Bengal (as on March 31st, 2024) vide notification 56-ACS/WRIDD/2024 dated 07.08.2024 (**Annexure-II**) and assigned the work to CGWB, Eastern Region and SWID, Govt. of WB. The working group finalized the report in consultation of other members of the committee and prepared the report.

After submission of the report to SLGWAC, a meeting of the State Level Committee for Ground Water Assessment is convened by the Member Secretary and Convener (Regional Director, CGWB, ER) on 13.09.2024. The meeting was held under the Chairmanship of Secretary, WRIDD, Govt. of West Bengal. After a detailed discussion among the members the reports on "**Dynamic Ground Water Resources of West Bengal (as on 31st March, 2024)**" have been approved by the Committee. (**Annexure III**).

West Bengal Report as part of national compilation is reviewed and deliberated upon during the meeting of Central Level Expert Group (CLEG) held on 08.10.2024 and is approved.

CHAPTER II

HYDROGEOLOGICAL CONDITIONS OF THE STATE

The State of West Bengal included between 23°31' and 27°33'15" N latitude and 85°45'20" and 89°33' E longitude has a total geographical area of 87,853 sq. km. The Himalayan ranges forms the northern boundary of the State while Bay of Bengal forms the southern boundary. The State has common border with Nepal, Bhutan and Sikkim (India) in the north, Assam (India) and Bangladesh in the east, Bihar (India) and Jharkhand (India) in the west and Orissa (India) in the southwest. The State of West Bengal is administered through five divisions namely Presidency, Medinipur, Barddhaman, Malda and Jalpaiguri. The State comprises of 23 districts (as on 2024) with 344 blocks under those five divisions. The State of West Bengal has a total population of 91276115 as per 2011 census report. The population density in the State is 1028 per sq.km.

The State can be broadly divided into four distinct physiographical divisions (i) Himalayan Region comprising districts of Darjeeling, Jalpaiguri and Kochbehar (ii) Eastern fringe of Chotanagpur Plateau comprising districts of Puruliya, western part of Barddhaman, Medinipur, Birbhum and northern and western part of Bankura (iii) Deltaic areas of Sundarbans comprising districts of South 24 Parganas and small part of North 24 Parganas forming deltaic zone, and (iv) Flat land areas.

In general, West Bengal is a flat plain crisscrossed with rivers except the Himalayan foot hills in the north and Chotanagpur plateau in the south-west. The State is principally drained by the southern flowing Ganga River and its numerous distributaries. The Ganga River system encompasses the catchment areas of the Mahananda, Jalangi, Bhaira etc., in the eastern part and the Mayurakshi, Ajoy, Damodar, Dwarakeswar and Kasai in the western part. The Teesta, Torsa and Jaldhaka streams of the Brahmaputra River system originate in the Himalayas and drain the northern part of the State. Besides these there is a small independent river basin, the Subarnarekha basin covering south western part of the State in Medinipur district.

2.1 Description of rock types:

The state of West Bengal is covered by diverse rock types ranging from the Archaean metamorphics to the Quaternary unconsolidated sediments. Approximately 2/3rd area of the State

is covered by alluvial and deltaic deposits of Sub – Recent to Recent time and the remaining parts are under a wide variety of hard rocks. The geological set up of West Bengal according to the above-mentioned physiographic units as mentioned by Geological Survey of India is as follows.

Table 2.1 Generalized Stratigraphic Succession of the rock units of the Extra-Peninsular Region of West Bengal

Quaternary	Present day flood plain deposit Baikunthapur / Shaugan Formation Chalsa Formation, Matiali Formation Thaljhora Formation, Samsing Formation ----- Unconformity-----	Sand, silt and clay Boulders, gravels, pebbles, Sands and silts. -----
Tertiary	Siwalik Group -----Main Boundary Thrust-----	Siltstone, coarse – grained sandstone (salt and pepper sandstone) and conglomerate with interbands of shale and impure calcareous horizons at the basal part. -----
Permo –Carboniferous And Younger Rocks.	Damuda Gondwana Group Supergroup Talchir Group ----- Tectonic Contact----- Buxa Formation (Mid to Up. Riphean) -----Contact Controversial Reyang Formation	Feldspathic and micaceous quartzite, sandstone, Carbonaceous slates with thin seams of crushed coal. Basal pebble and boulder bed. ----- Predominantly dolostone, cherts and variegated slates. ----- Ortho-and proto quartzite variegated slates and phyllites. Green slate, phyllite, phylonite, cherty chlorite quartzite, green tuffaceous wacke with basic metavolcanics.
Daling Group	Gorubathan Formation Lingtse Gneiss -----Central Crystalline Thrust----- Chungthang Formation Kanchenjungha Gneiss Base not seen	Sheared streaky, porphyritic biotite gneiss. Golden, silvery mica schist, garnet, starlets, kyanite and sillimanite bearing schists and gneisses, migmatitic gneiss. ----- Calc – gneiss, calc – granite, augen gneiss, marble, sillimanite gneiss, graphite schist; etc. Banded gneiss, augen gneiss, streaky gneiss, migmatites etc. with profuse intrusions of granite, aplite and pegmatite.
PROTEROZOIC		
Darjeeling Gneiss		
OLDER PROTEROZOIC		

Source: GSI, Miscellaneous Publication No. 30, 1999.

Table 2.2 Generalised Stratigraphic Succession of Peninsular West Bengal

C E N O Z O I C	Quaternary	Holocene - Pleistocene	Debagram Formation and Bengal Alluvium Unconformity	Recent to sub recent soil / alluvium / sandy clay / loose sand / kankar / caliche / lateritic sediment with calcretes
		Miocene – Pliocene (?)	Memari Formation and Pandua Formation (undifferentiated)	Fossiliferous shale, mudstone / calc. mud / impure limestone often pyritiferous, fine to coarse sandstone with floral remains
M E S O Z O I C	Tertiary	Middle Palaeocene to Middle-Lower Eocene	Unconformity	
			Jalangi Formation	Ferruginous sandstone clay / thin pebble bed / impure limestone / sandstone / grey clay / carbonaceous clay with rich floral assemblage and erect plant roots
U. P. A. L. A. E. O. Z O I C	Upper Jurassic to Lower Cretaceous		Unconformity	
			Durgapur Formation	Hard, compact, thinly laminated quartzite gritty towards base, carbonaceous shale, brown and greenish brown sandstone with streaks of carbonaceous material, carbonaceous shale
P R E - C A M B R I A N	Jurassic to Cretaceous		Unconformity	
			Rajmahal Formation	Basic traps with inter trappeans
S U P E R G R O U P	Triassic to Jurassic		Dubrajpur Formation	
			Supra Panchet Formation	
P R E - C A M B R I A N	Triassic		Unconformity (local)	
			Panchet Formation	
P R E - C A M B R I A N	Permian		Unconformity (?)	
			Raniganj Formation	Grey sandstone and carbonaceous shale with thick coal seams
P R E - C A M B R I A N			Barren Measure Formation	Dark grey shale, nodule of iron ores
			Barakar Formation	
P R E - C A M B R I A N			Karharbari Formation	
			Talchir Formation	Shale and sandstone with coal seams
P R E - C A M B R I A N	Middle Proterozoic		Unconformity	
			Manbhumi granite	(Porphyritic at places)
P R E - C A M B R I A N	Lower Proterozoic		Satellite granite plutons (Chhendapathar etc.)	
			Kuilaipal granite gneiss	
P R E - C A M B R I A N			Dalma volcanics	(Mafics and ultramafics)
			Singhbhum Group	High grade mica schist, phyllites, quartzites, ultramafics, and felsic rocks, tuffs, cherts, and calc. silicates
P R E - C A M B R I A N	Archaean to Lower Proterozoic		Chhotanagpur Gneissic Complex	
			(i) Composite gneiss (ii) Quartz-biotite gneiss	
P R E - C A M B R I A N			Unclassified Metamorphics/ Anorthosites (Bankura, Purulia)	
			Paraschist, marble/ calc. granulites/ quartzites, amphibolites/ pyroxene granulite/ hornblende schist/ gneiss	

2.2 Hydrometeorology:

The general climate of the state, except the Himalayan zone, is tropical. The tropic of cancer passes across the middle of the districts of Nadia and Bardhaman and the northern part of the districts of Bankura and Purulia. For meteorological purposes, IMD has divided the state into two sub-divisions, namely:

(a) Gangetic West Bengal consisting of the districts: (1) Purba Bardhaman (2) Bankura (3) Birbhum (4) East Medinipur (5) Hooghly (6) Howrah (7) Kolkata (8) Murshidabad (9) Nadia (10) North 24 Parganas (11) Purulia (12) South 24 Parganas (13) West Medinipur (14) Paschim Bardhaman and (15) Jhargram.

(b) Sub-Himalayan West Bengal consisting of the districts: (1) Cooch Behar (2) Darjeeling (3) Jalpaiguri (4) Malda (5) North Dinajpur (6) South Dinajpur (7) Alipurduar and (8) Kalimpong.

The total annual rainfall in the plains of the state increases from 142 cm over the southern parts to 371 cm over the northern parts while it decreases to 116 cm over the northwestern parts of Gangetic West Bengal. The foothills of Himalayas receive maximum amount of annual rainfall varying from 205 cm to 450 cm. The southwest monsoon is the principal rainy season when the plains of the state receive almost 74% to 83% of annual rainfall amount whereas the hills of West Bengal receive 73% to 87%. Rainfall in the winter season (December to February) is about 3% of the annual total in Gangetic West Bengal and 1% of the annual total in the plains of the northern parts whereas it is varying from 1% to 5% in the hills of West Bengal. In the hot weather season (March to May), rainfall is about 11% of the annual total in Gangetic West Bengal and 14% in northern parts (plains) respectively and is varying from 10% to 18% in the hills of West Bengal.

Evaporation is lower in the state of West Bengal and the annual value is around 150 cm. Evaporation is lowest (< 2mm to 8mm/day) during January & maximum during May (when it ranges from >4 mm to 20 mm/day). However due to non-availability of detailed field values, evapo-transpiration factor is not considered for present resource estimation work.

2.3 Ground Water Condition

The State of West Bengal has been divided into two broad hydrogeological units—hard consolidated to semi-consolidated formation and alluvial (unconsolidated) formation. Alluvial formation occupies about two-third of the State area while the remaining one-third is occupied by hard-consolidated formation (Archaean crystalline & Gondwana Sedimentaries)

Hard Consolidated & Semi-consolidated Formation: Archaean crystallines rocks, Gondwana Sedimentaries and Rajmahal trap rocks mainly comprise hilly tract of Darjeeling and Jalpaiguri districts falling, in the Extra-Peninsular region, in the northern part of the State and in Purulia and western part of Barddhaman, Bankura, Birbhum and northen part of West Medinipur districts in western and south-western Peninsular region of the State. Groundwater occurs under unconfined condition in the top most weathered residuum of the consolidated to semi-consolidated rocks, the thickness of the weathered mantle, in general, varies from less than 1 m to 5 m in extra-peninsular region and from 5 to 15 m in peninsular region and is being developed through big dia dug/open wells. Groundwater also occurs in the deeper part below the weathered mantle in the zone of secondary porosity. Bored wells, tapping the secondary porosities within the depth of 100 m bgl have yielded 5 to 30 m³/hr. The heterogeneity of fractures has limited the scope of large-scale development of groundwater in this part of the state. Water supply in the hilly tract is, in general, done through spring water. Harnessing of these springs has been suggested to be done in a planned manner to avoid water crisis during peak summer months.

Unconsolidated Formation: Thick pile of unconsolidated sediments, laid down by the Ganga-Brahmaputra river system, the thickness of which increases from marginal platform area in the west towards the east and southeast These unconsolidated sediments are found to be made up of succession of clay, silt, sand and gravel of Quaternary age overlying Mio-Pliocene sediments. The Quaternary sediments are made up of Recent and Older alluvium. Occurrence and movement of ground water in this hydrogeological unit is controlled by the primary porosities of the sediments.

- Older Alluvium occurs with/ without Laterite cappings in Bhabar zone (in parts of Darjeeling & Jalpaiguri districts), as Barind tract (in parts of Malda & Dakshin Dinajpur districts) and in the western parts of the State, fringing the eastern border of the Chottanagpur Plateau. Groundwater in the Older Alluvium occurs under unconfined

condition in the near surface aquifer and under semi-confined to confined condition below a blanket of 15 to 20 m thick discontinuous clay bed in the depth span of 50 to 150 m in most of the places with moderate yield prospects of 50-120 m³/hr. The water level is moderately deep (5 to 20 m bgl) with high seasonal fluctuation. In poorly sorted deposits in Bhabar zone, groundwater occurs under unconfined conditions with water level is as deep as 20 to 30 m and is characterized by high seasonal fluctuation to the tune of 10-12 m. Yields of tube wells tapping this aquifer vary in general from 20 to 80 m³/hr with a maximum drawdown of 20 m.

- Recent/younger Alluvium overlies the Older Alluvium with thickness increasing towards east and south east. Groundwater in these sediments occurs under unconfined condition in the near surface aquifer and under semi confined to confined condition in the deeper aquifers. In major parts in the area, fairly thick and regionally extensive both unconfined and confined aquifer systems are present. These are the areas of prolific ground water resources having large yield prospects above 150-200 m³/hr. The depth to water table in the area varies from less than 2 m to 10 m bgl in pre monsoon period and from less than 1m to 5 m bgl in post monsoon period with seasonal fluctuation varying from 1 to more than 4 m and the flow of groundwater is towards east and southeast with gradient varying from 1 m/km in the upland area to 4 m/km in the flat area near coast.

Coastal Confined Area:

The 20-30 km wide coastal zone, covering an area of 13,083 sq.km. covering 59 blocks in four districts (Purba Medinipur district-16 blocks, North 24 Parganas district- 5 blocks, South 24 Parganas district-29 blocks and Haora district-9 blocks) lies in the active delta of the Ganga-Brahmaputra River system. A group of fresh water aquifers occur within the depth span of 120-300 mbgl, sandwiched between saline aquifers. The area is underlain by a 20-30 m thick blanket of surface clay below which brackish water aquifers occur within a depth of 120 m bgl in the western part of Hugli river and 150-160 m bgl in the eastern part of Hugli river. A 15-20 m thick impervious clay layer separates the brackish water aquifers from the underlying fresh water aquifers. These fresh water aquifers extend down to a depth of 300–600 mbgl being more towards Sagar islands. These fresh water aquifers are again underlain by a group of brackish aquifers separated by a thick blanket of impervious clay layer. Groundwater occurs under confined condition and the piezometric head quite deep in Haldia Industrial area and Kolkata

Municipal Corporation area due to heavy withdrawal of groundwater. The flow of groundwater is towards Bay of Bengal with hydraulic gradient varying from 1- 0.3 m/km. Yields of tube wells tapping these fresh water aquifers varies from 100-150 m³/hr with a maximum draw down of 17m. Near surface unconfined aquifers are also present in some pockets over the top brackish/saline aquifers in Haora, Kolkata and North & South 24 Parganas districts.

Table 2.4 Rationalized Irrigation Unit Draft

Sl.	District	DW	STW	MDTW	DTW
1	Alipurduar	1.3	3.0	4.5	10
2	Bankura	0.8	3.0	4.5	15
3	Birbhum (Alluvial)	1.2	3.5	4.5	21
	Birbhum (Hardrock)	0.8	2.5	4.5	18
4	Kochbehar	1.3	2.6	4.5	10
5	Dakshin Dinajpur	1.3	3.0	4.5	20
6	Darjeeling	1.3	2.6	4.5	10
7	Hooghly	0.8	3.5	5.0	20
8	Howrah	0.8	3.5	6.0	20
9	Jalpaiguri	1.3	2.6	4.5	10
10	Jhargram	0.8	3.5	4.5	16
11	Malda (Bamongola)	0.8	1.3	4.5	18
	Malda (Rest of the Blocks)	1.3	3.0	4.5	20
12	Murshidabad (Older Alluvium)	0.8	2.6	6.0	18
	Murshidabad (Younger Alluvium)	1.2	2.6	8.0	21
13	Nadia	1.2	2.0	4.0	21
14	North 24 Parganas	1.2	3.0	5.0	21
15	Paschim Bardhaman	0.8	2.5	4.5	18
16	Paschim Medinipur	0.8	3.5	4.5	16
17	Purba Bardhaman (Older Alluvium)	0.8	3.0	5.0	20
	Purba Bardhaman (Younger Alluvium)	1.2	3.0	5.0	21
18	Purba Medinipur	0.8	3.0	5.0	16
19	Purulia	0.5	2.0	4.5	12
20	Uttar Dinajpur	1.3	1.5	4.5	20

(DW: Dug Well; STW: Shallow Tube Well; MDTW: Medium Depth Tube Well; DTW: Deep Tube Well)

2.4.0 Groundwater Level Scenario (2023)

Groundwater level data of Pre-monsoon 2023

During April 2023, , in shallow phreatic aquifers water level of less than 2 m bgl was recorded in 11% of wells in phreatic aquifers. 2-5 and 5-10 m bgl of water level recorded in 42% of wells in each category and 10-20 m bgl in 5% of wells. Only 2 wells showing water level beyond 20 m bgl (*Figure-2.1*).

Groundwater level data for Post-monsoon 2023

During November 2023, in shallow phreatic aquifers 31 % wells are showing water level less than 2 m bgl. 56 % of wells are showing water level in the depth range of 2-5 m bgl, 12% wells are showing water level in the depth range of 5-10 m bgl and only 1% wells are showing water level in the depth range of 10-20 m bgl, none of the wells are showing water level in the depth range beyond 20m bgl (*Figure 2.2*).

2.4.1 Fluctuation of Groundwater Level:

Water Level Fluctuation between April 2022 and April 2023

In shallow aquifers in rising category 19% of wells are within the fluctuation of 0-2m, 3% are in 2-4m and 1% of wells are in the range of more than 4m. In the falling category 57% of wells are showing falling trend in 0-2m category covering each district of the State, 12% of wells are in the range of 2-4m and 7% of wells are showing >4m fluctuation of water level as isolated patches (*Figure 2.5*).

Water Level Fluctuation between November 2022 and November 2023

In shallow aquifers, in rising category 56% of wells are within the fluctuation of 0-2m, 6% are in 2-4m and 2% of wells are in the range of more than 4m. In the falling category 32% of wells are showing falling trend in 0-2m category, 4% of wells are in the range of 2-4m and 1% of wells are showing >4m fluctuation of water level (*Figure 2.6*).

Water Level Fluctuation with Decadal Mean (Pre-Monsoon 2013- Premonsoon 2022) to Premonsoon 2023

For shallow aquifers, in rising category 28% of wells are within the fluctuation of 0-2m, 5% are in 2-4m and 1% of wells are in the range of more than 4m. In the falling category 51% of

wells are showing falling trend in 0-2m category, 10% of wells are in the range of 2-4m and 6% of wells are showing >4m fluctuation of water level (*Figure 2.7*).

Water Level Fluctuation with Decadal Mean (Post-Monsoon 2013-Post- Monsoon 2022) to Post-Monsoon 2023

For shallow aquifers, in rising category 53% of wells are within the fluctuation of 0-2m, 2% are in 2-4m and only two wells fall in the range of more than 4m. In the falling category 40% of wells are showing falling trend in 0-2m category, 3% of wells are in the range of 2-4m and 1% of wells are showing >4m fluctuation of water level (*Figure 2.8*).

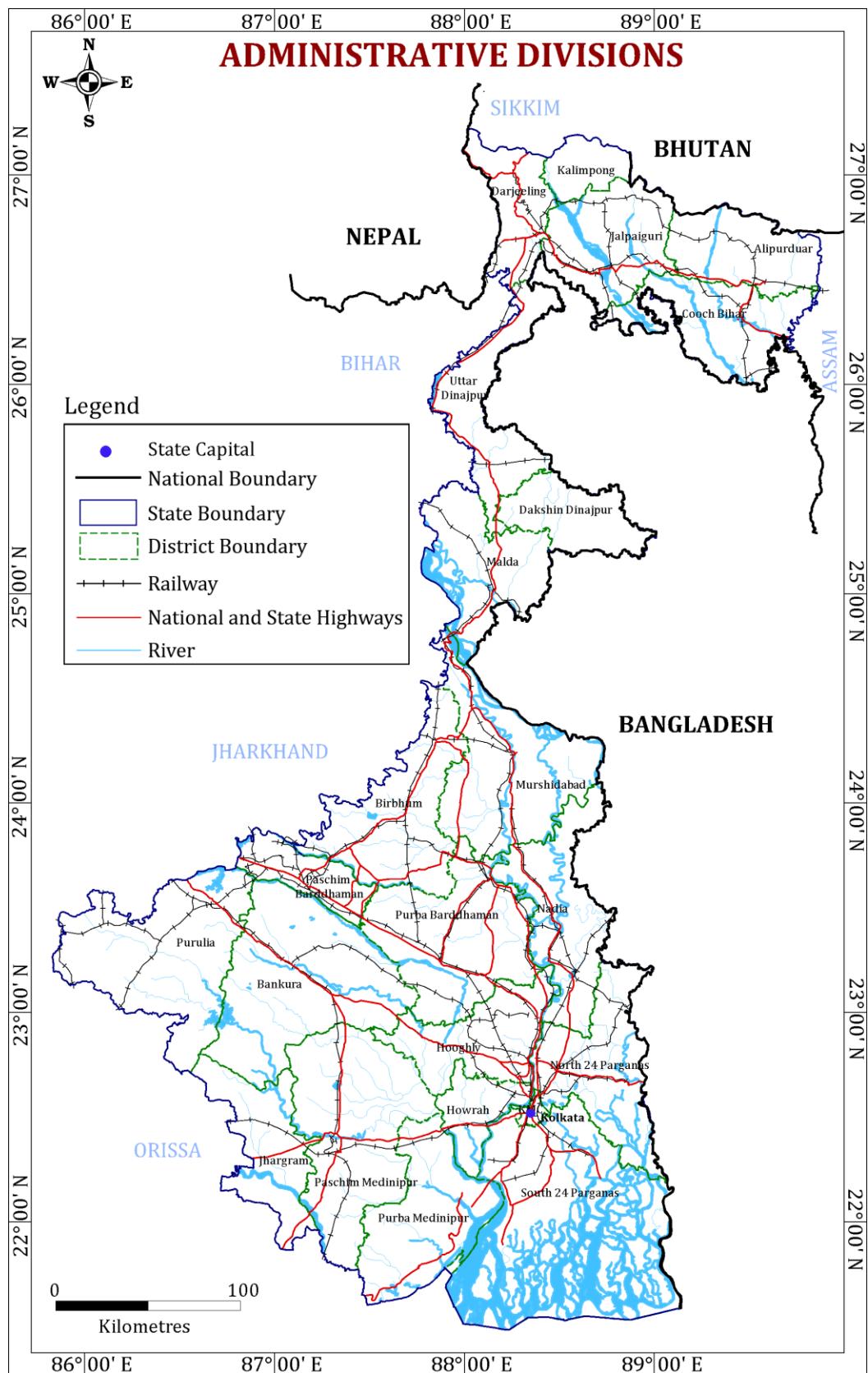
2.5 Ground Water quality:

The chemical quality of groundwater is dependent on the source of water and on the course over which it flows. Ground water quality throughout the State is found to be slightly alkaline. The quality of ground water in northern part of the state is much fresh with low mineral contents having electrical conductance varied from 44 to 5534 $\mu\text{S}/\text{cm}$ at 25°C . Except in few cases, the quality of ground water in the south and western part of the state is potable. The coastal belt of Medinipur, South 24 Parganas, Hugli and Howrah districts, lying in the active delta of the Ganga, ground water in upper aquifer (within depth of 160 m bgl) is brackish with high chloride and high TDS.

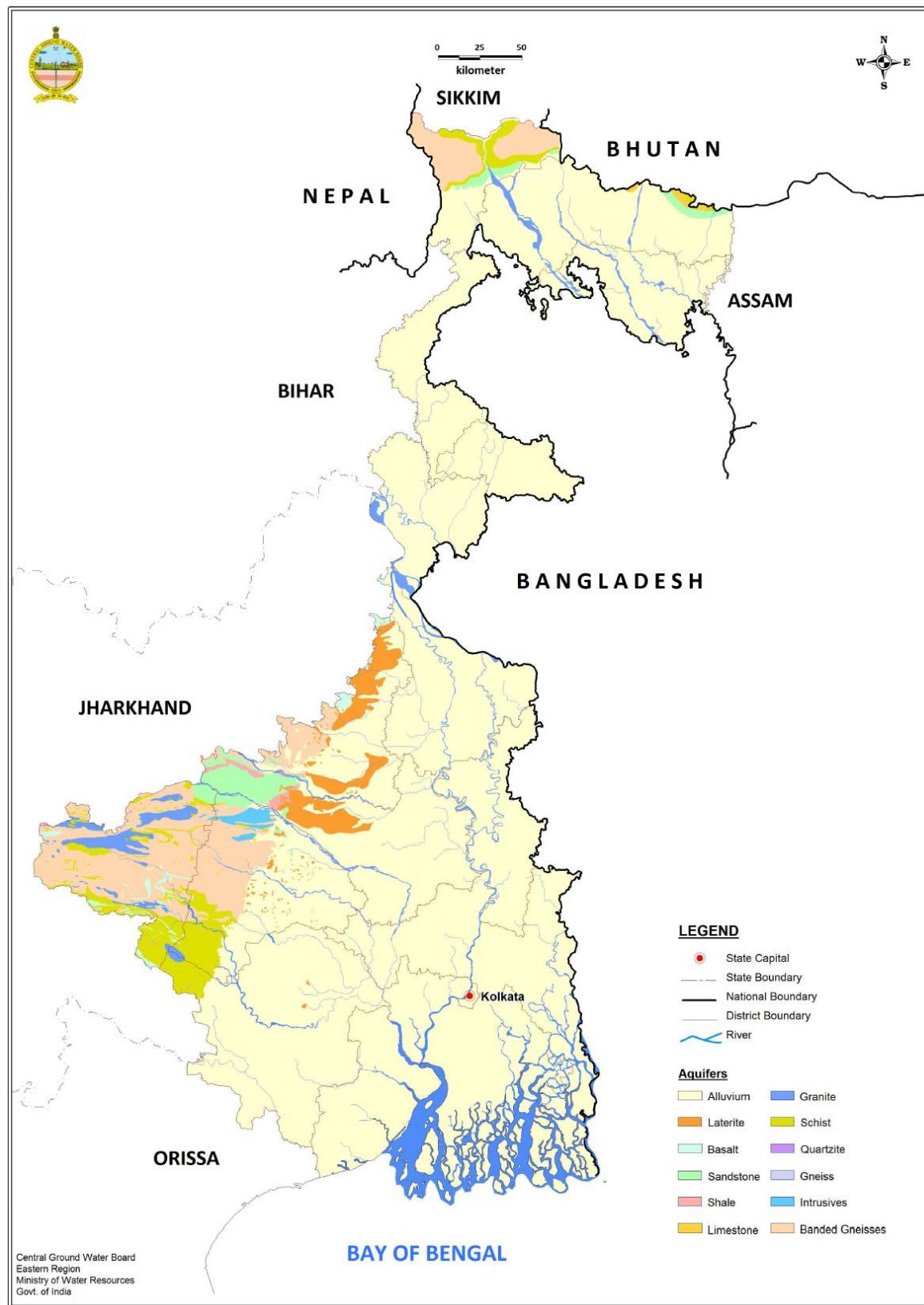
Occurrence of arsenic, as a pollutant in groundwater, has been found sporadically within a linear tract extending NNW-SSE from Kaliachak block of Malda district along the eastern part of Bhagirathi River in Murshidabad, Nadia, North 24 Parganas & South 24 Parganas districts and in western part of Bhagirathi River in parts of Purba Bardhaman, Hugli, Howrah districts covering seventy-nine administrative blocks. The concentration of arsenic above permissible limit has been found sporadically in the aquifers in the depth span of 20 to 100 m bgl.

Fluoride concentration more than 1.5 mg/l, maximum permissible limit (as per BIS), has been found in few places of seven districts in Birbhum, Purulia, Murshidabad, Malda, Dakshin & Uttar Dinajpur districts.

Administrative Divisions of West Bengal



Principal aquifer Systems of West Bengal



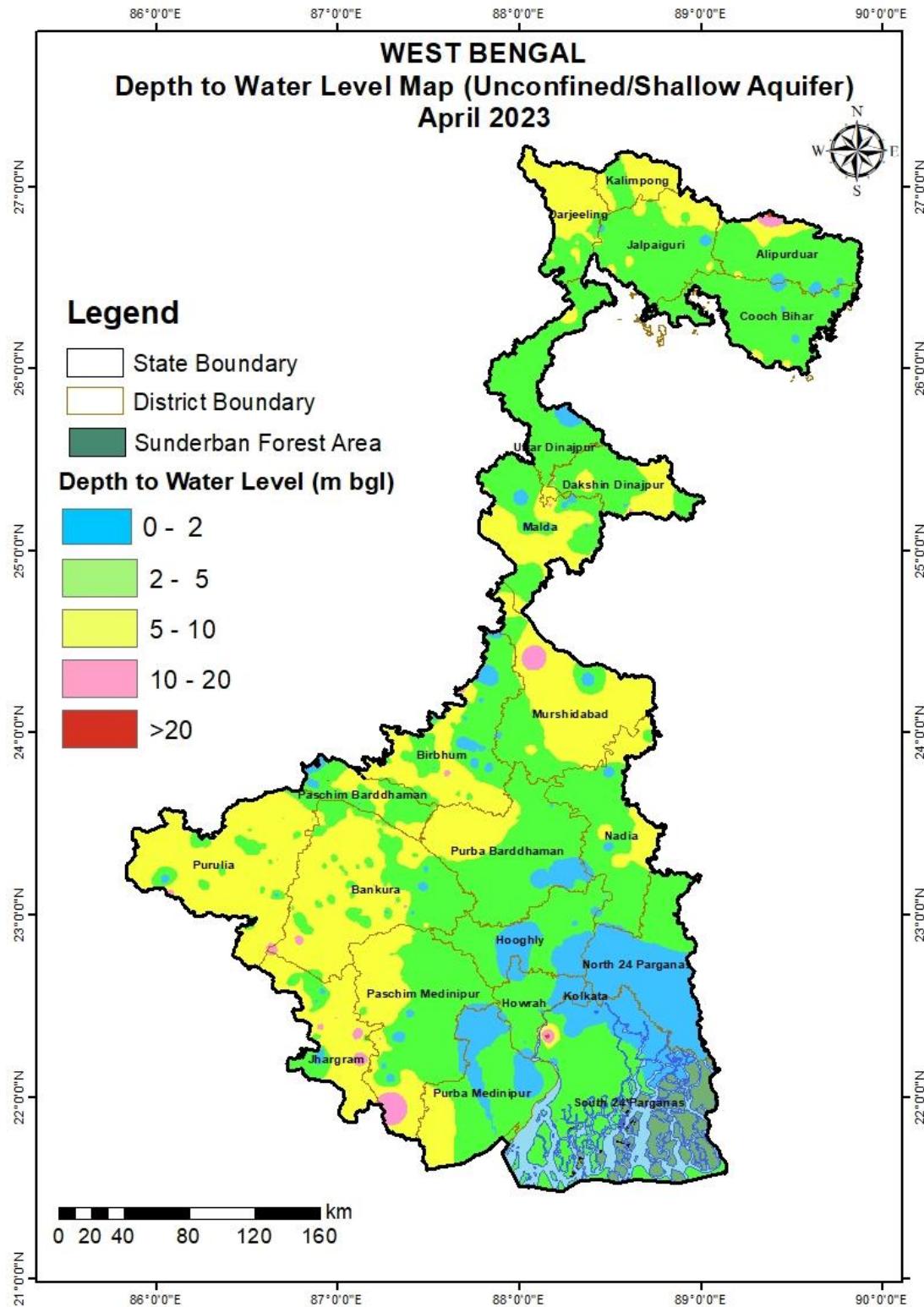


Figure-2.1: Depth to Water Level Pre-monsoon in Shallow Aquifers (April 2023)

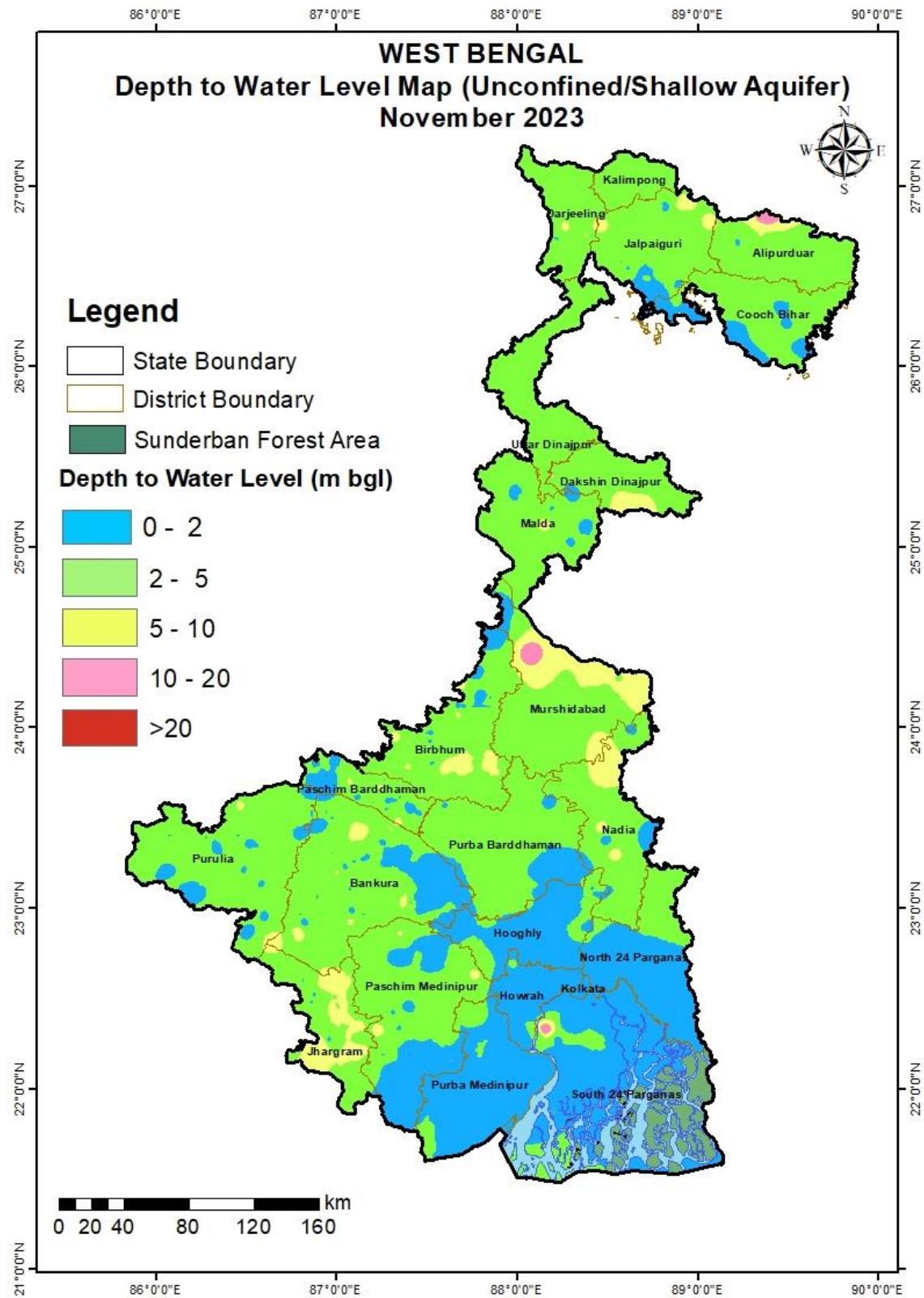


Figure-2.2: Depth to Water Level – Post monsoon in Shallow Aquifers (November 2023)

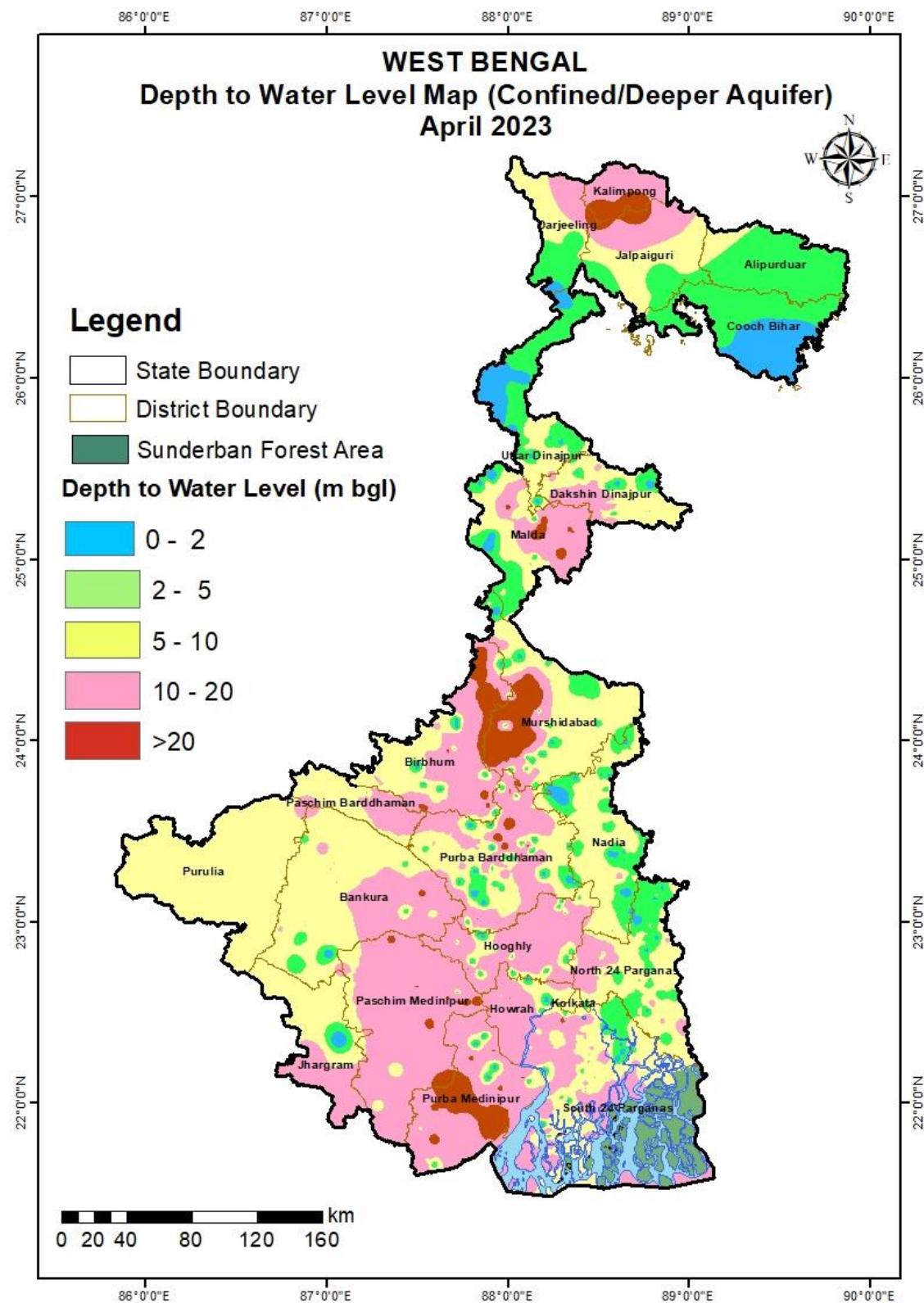


Figure-2.3: Depth to Water Level Pre-monsoon in Deeper Aquifers (April 2023)

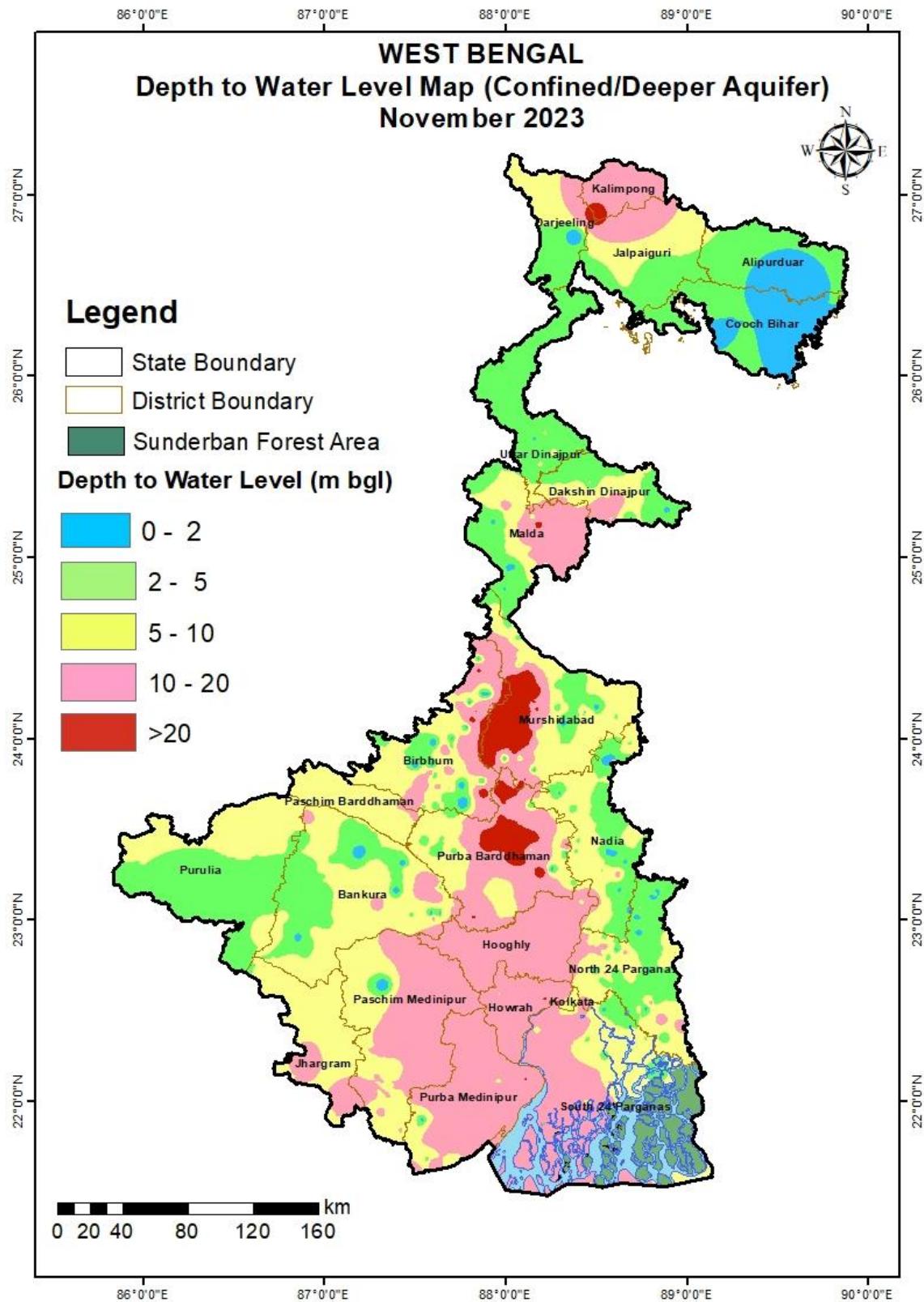


Figure-2.4: Depth to Water Level – Post monsoon in Deeper Aquifers (November 2023)

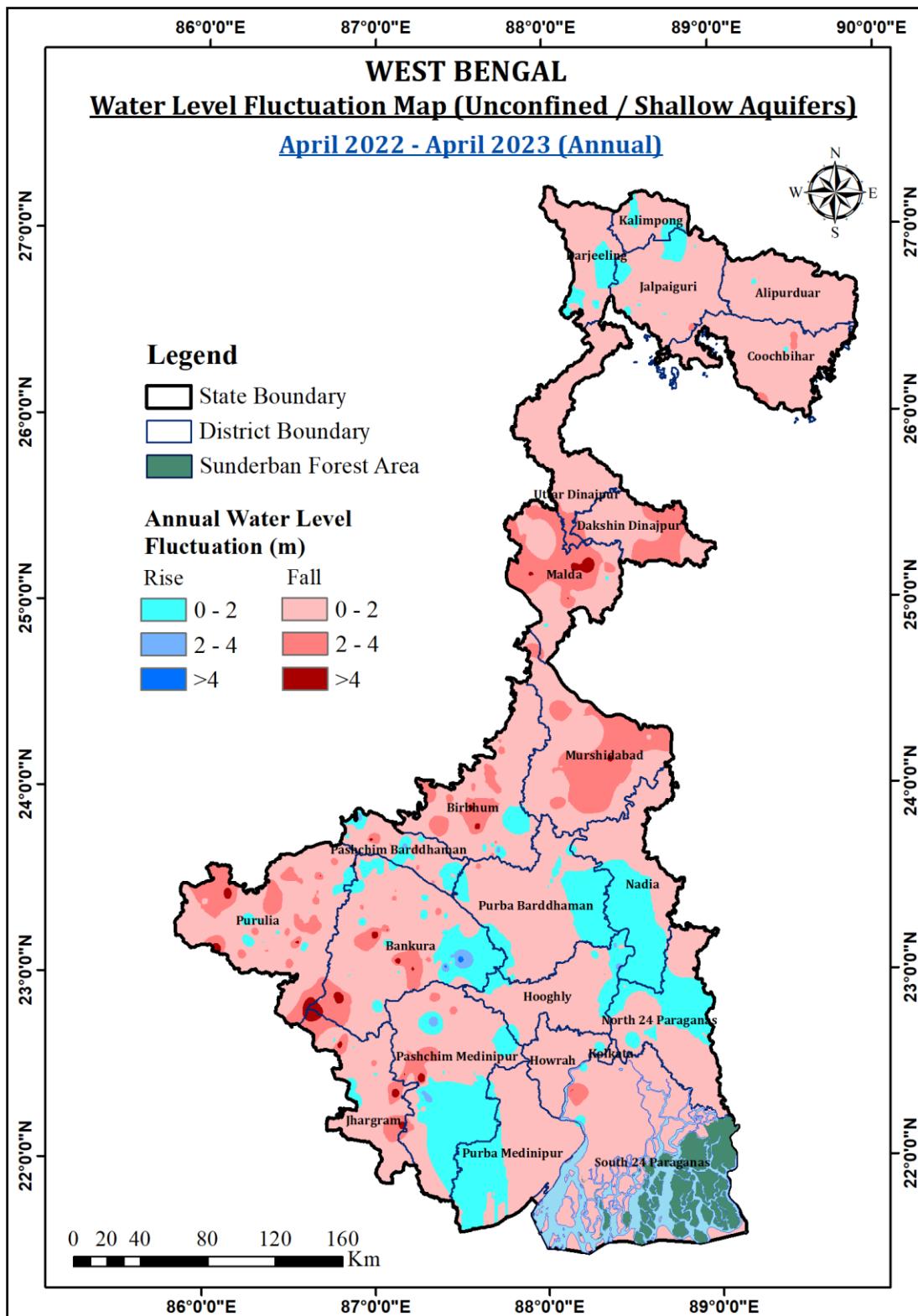


Figure-2.5: Water Level Fluctuation between April 2022 and April 2023

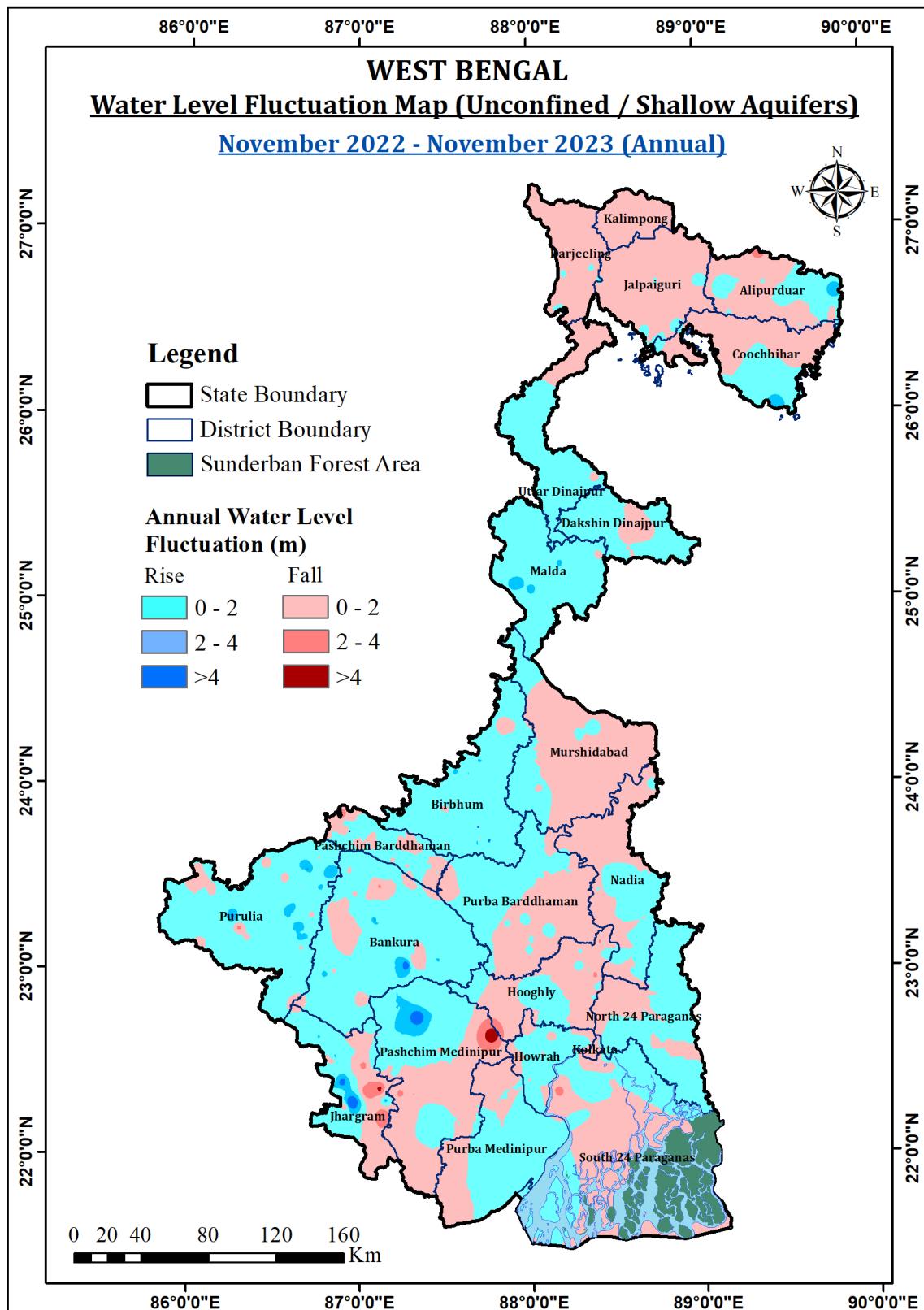


Figure-2.6: Water Level Fluctuation between November 2022 and November 2023

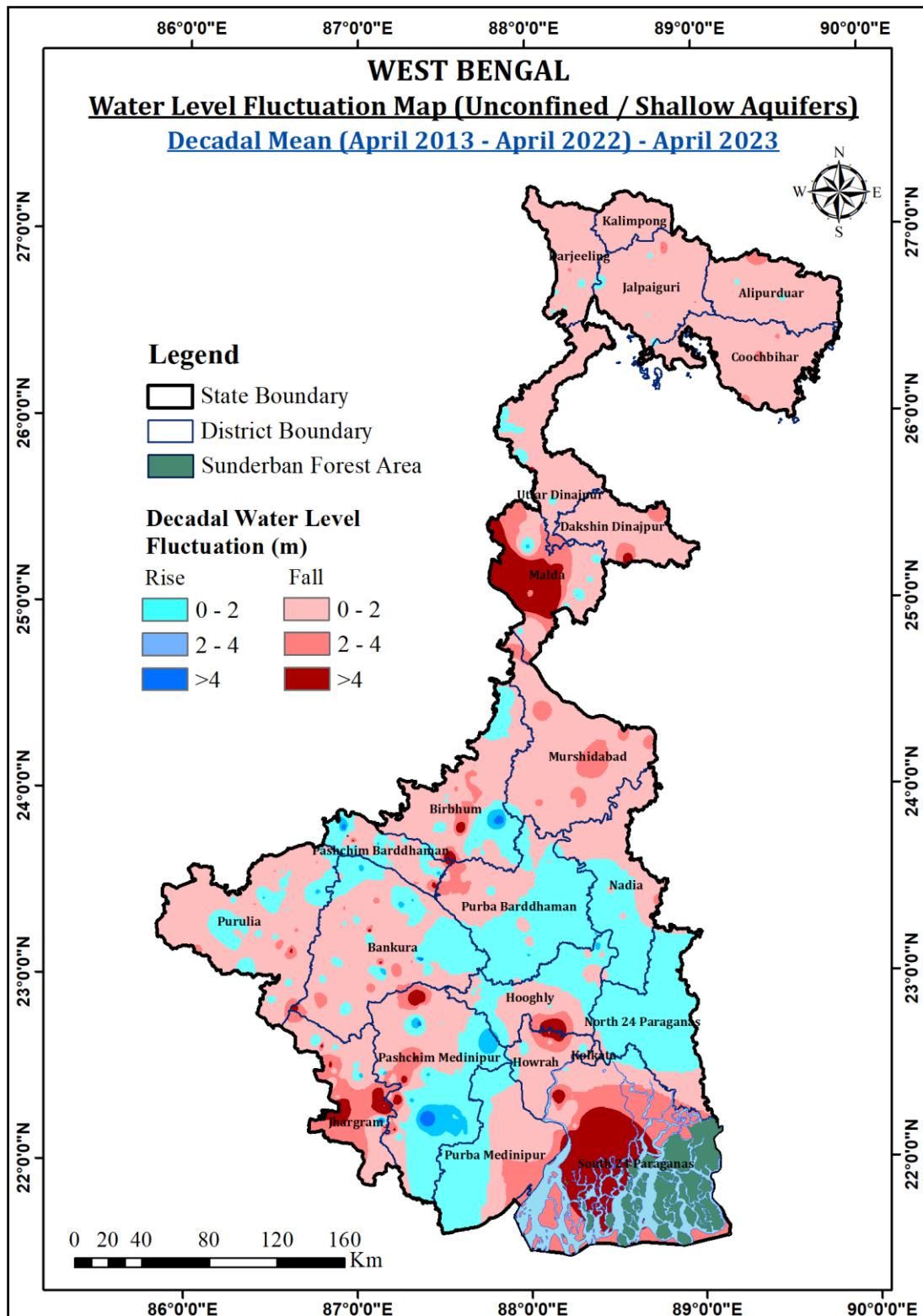


Figure-2.7: Water Level Fluctuation with Decadal Mean (Pre-Monsoon 2013- Premonsoon 2022) to Premonsoon 2023

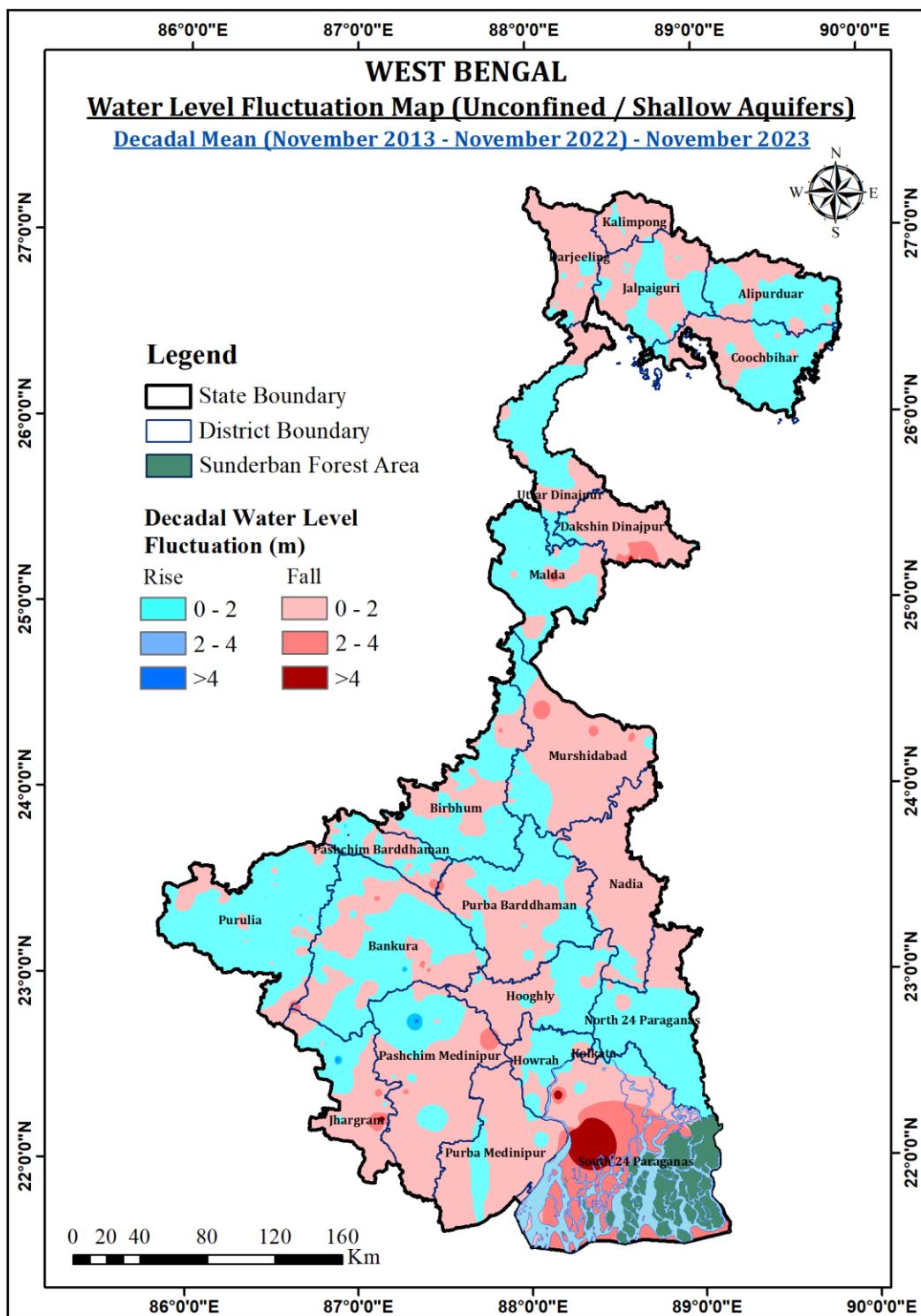
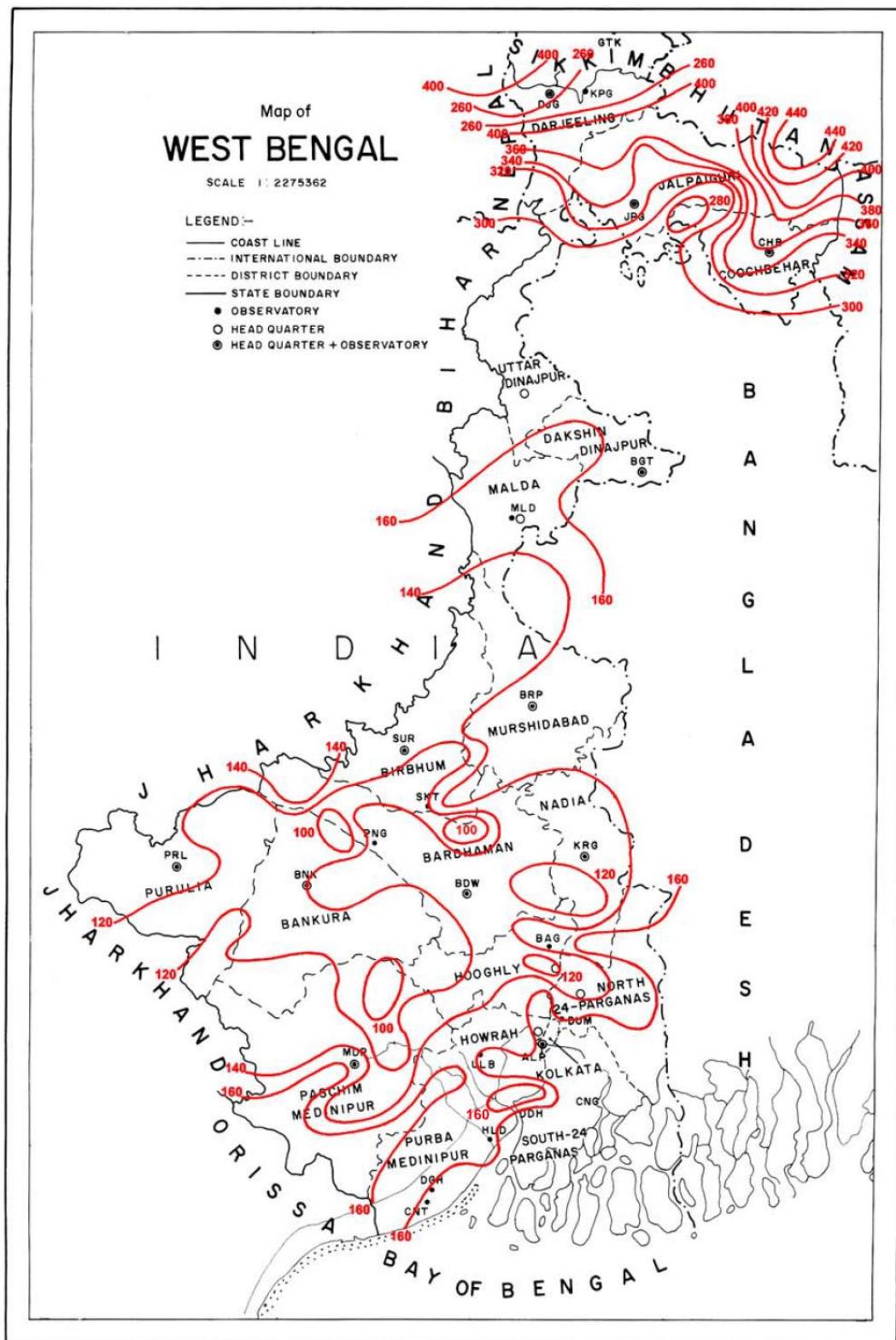


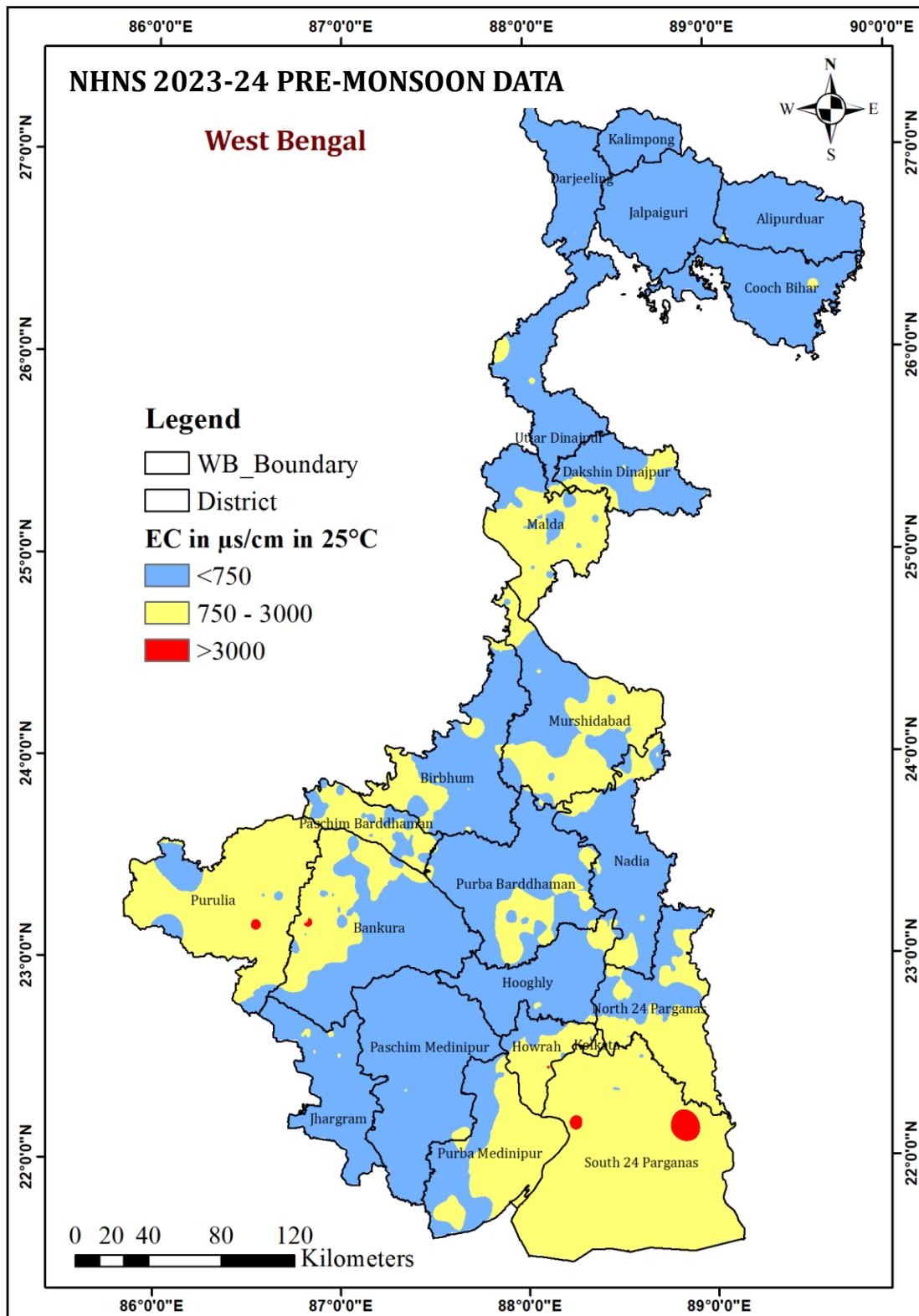
Figure-2.8: Water Level Fluctuation with Decadal Mean (Post-Monsoon 2013-Post- Monsoon 2022) to Post-Monsoon 2023

ANNUAL NORMAL RAINFALL (CM)



Source: IMD (2008)

Distribution of Electrical Conductivity (EC)



CHAPTER III

GROUND WATER RESOURCES ESTIMATION METHODOLOGY- GEC' 15

3.1 Ground Water Resource Estimation Methodology – GEC'15 - Brief Description

Increasing thrust on ground water and changed scenario of data accusation led Government of India to form another Ground Water Estimation committee in 1995 to review the existing methodology of Ground water Resources (GEC '84) and suggest revisions, if necessary. The Committee proposed a revised and elaborate methodology for resource estimation popularly known as GEC '97 methodology. Further, in 2015 Ground Water Estimation committee has modified existing methodology and brought out few changes which currently at vogue and is known as GEC '15 methodology.

Principal attributes of GEC 2015 methodology:

The methodology recommends aquifer wise ground water resource assessment of both the Groundwater resources components, i.e., Replenishable ground water resources or Dynamic Ground Water Resources and In-storage Resources or Static Resources. Wherever the aquifer geometry has not been firmly established for the unconfined aquifer, the in-storage ground water resources have to be assessed in the alluvial areas down to the depth of bed rock or 300 m, whichever is less. In case of hard rock aquifers, the depth of assessment would be limited to 100 m. In case of confined aquifers, if it is known that groundwater extraction is being done from this aquifer, the dynamic as well as in-storage resources are to be estimated. If it is firmly established that there is no ground water extraction from this confined aquifer, then only in-storage resources of that aquifer have to be estimated. Until aquifer geometry is established on appropriate scale, the existing practice of using watershed in hard rock areas and blocks/ mandals/ firkas in soft rock areas may be continued.

CHAPTER IV

GROUND WATER RESOURCES SCENARIO IN WEST BENGAL

The ground water resource assessment (in 2024) for the State of West Bengal has been carried out as per GEC 2015 guidelines through ‘IN-GRES’, with blocks as primary assessment units. IN-GRES is a software/web-based application developed by Central Ground Water Board (CGWB) in collaboration with Indian Institute of Technology-Hyderabad for assessment of ground water resources.

Objectives of INGRESS Tool

- To provide common and standardized platform for Ground Water Resource Assessment for the entire country based on Ground Water Resource Estimation Committee-2015 (GEC-2015) methodology.
- Pan-India operationalization for Joint assessment by CGWB and State Ground Water Departments.
- Visibility dashboards allowing user to view the data/map and download reports.
- Provide GIS based Thematic map of assessment units.

Summary of Assessment Units

a)	Assessment Unit	Individual Block and Urban Areas
b)	Assessment Sub Unit	Command, Non-Command and Poor-quality area in Block
c)	Total number of Assessment Units in West Bengal	345 units covering 344 administrative Blocks and 01 Urban Unit. Urban Unit is represented by Kolkata district.

d)	Total Number of sub- units	390 sub units of which 106 command, 224 non command and 60 poor-quality.
e)	Base Year of Collection of Data	2023-2024
f)	Year of Projection of data	2024

All 344 blocks of the State of West Bengal and one (01) urban area as Kolkata Municipal Corporation is assessed. Total Annual Ground Water Recharge has been estimated at 25.89 bcm and Annual Extractable Ground Water Resource has been estimated at 23.56 bcm. Current Annual Ground Water Extraction for all uses has been estimated at 10.75 bcm, which translates into a Stage of Ground Water Extraction at 45.63%. As per present assessment categorization scheme, out of 345 assessed units, 239 AUs are Safe, 36 AUs are Semi-Critical, 10 AUs are Critical and 60 AUs are of poor groundwater quality. There is no Over-Exploited Block in the State. Estimation for confined aquifer covered areas has also been taken up during the present exercise. Sixty (60) confined aquifer assessment units are assessed in present estimation exercise.

As a whole for the State, in present assessment (2024) compared to earlier assessment (2023) regarding Dynamic Groundwater Resources, Stage of Ground Water Extraction (SGWE) has increased from 44.81% to 45.63%. This is mostly due to growth in population.

Table 4.1 State Summary Dynamic Groundwater Resource Assessment
(As on 31st March, 2024)

Components	Dynamic GW Resource	
	(BCM)	(ham)
Total Ground Water Recharge	25.89	2588979.28
Provision for Natural Ground Water Discharge	2.33	232778.91
Net Ground Water Availability/ Annual Extractable Groundwater Resource	23.56	2356200.36
Gross Ground Water Draft for All Uses	10.75	1075033.47
<i>Current Annual GW Draft for Irrigation</i>	8.99	898767.54
<i>Current Annual GW Draft for Domestic</i>	1.59	158917.78
<i>Current Annual GW Draft for Industrial uses</i>	0.17	17348.19
Stage of G.W. Development (%)	45.63 %	
Annual Allocation of GW for Domestic & Industrial Water Supply for 2035	1.77	176885.67
Net GW Availability for 'Future Use'	12.72	1272311.33

Contribution of various Recharge Components

Recharge Components	Recharge (%)
Recharge from Rainfall	77.43 %
Recharge From Canal	0.36 %
Recharge From Surface Water Irrigation Return flow	1.44 %
Recharge From Ground Water Irrigation Return flow	15.34 %
Recharge From Tank and Ponds	5.43 %

4.1 Spatial variation of the Ground water recharge and development scenario in West Bengal

Following observations are made from the district-wise detailed ground water assessment of the State

- i) The stage of development varies widely within a district and it may be due to the local hydrogeological conditions, aquifer disposition, available cultivable land, soil type, irrigation practices, cropping pattern etc. It is observed that Paddy, especially summer paddy (Boro) cultivation is more in Nadia, Murshidabad, North 24 Parganas and Barddhaman districts which require huge water for cultivation. Therefore, ground water withdrawal is more and Stage of Development is high in these districts.
- ii) The stage of ground water development highly irregular even within broadly similar hydrogeological settings. The average stage of ground water development of the State is 45.63%.
- iii) Maximum ground water development in the State is observed in the central alluvial districts of Nadia (85.18%), North 24 Parganas (69.72%), Murshidabad (60.54%) and Dakshin Dinajpur (60.43%) districts.
- iv) The ground water development is relatively low in the northern West Bengal districts of Darjeeling, Kalimpong, Jalpaiguri, Alipurduar and Kochbehar. However, because of the high annual rainfall of over 3000 mm, the recharge is more. Thus, all the blocks of these districts have been categorized as ‘Safe’ reflecting lower value of stage of ground water development.
- v) The hard rock terrain lying in the western part of the State comprising Purulia, western parts of Jhargram, Birbhum, Bankura, Paschim Barddhaman and Paschim Medinipur districts, possess low ground water resources with an average stage of development of about 17.72%, 29.42%, 32.74%, 40.59%, 49.68% and 53.14% respectively.
- vi) In Southern part of West Bengal, some of the assessed blocks show very low SOD. This is due to limited and patchy distribution of unconfined aquifer in those areas. This situation led

towards development of confined aquifer system in the area and kept the top-unconfined layer mostly untouched.

- vii) It is observed that the blocks of the State which are categorized as ‘Safe’ reflects limited ground water development, due to unfavorable hydrogeological condition, low development prospects and little or no *boro* cultivation practice in these areas.
- viii) In the rest of the State, ground water development varies and influenced by physiography with north Bengal districts exhibiting low stage of ground water development about 1.8% (Kalimpong) and the remaining between 11% & 46%.
- ix) Based on available population figures (2011 Census), total requirement of water for domestic and industrial uses for the State forms 16.09% of the net ground water availability.
- x) Present exercise led to modifications in block-wise categorization reflecting temporal variation in ground water recharge/discharge/draft pattern overtime.
- xi) Spatial distribution of groundwater recharge and extraction is given in figure 4.1 and 4.2.
- xii) Based on stage of ground water development and long term pre- and post- monsoon water level trend, the status of categorization in the State is given in **Table 4.2**.
- xiii) Therefore, a total number of 345 administrative units are assessed. These 345 administrative blocks/ units of assessment are further subdivided into 390 sub units of command (106), non-command area (224) and poor-quality area (60). Out of 345 administrative units (344 Blocks and 01 Urban unit), 36 blocks are categorized as ‘Semi-critical’, 10 block categorized as ‘Critical’, 60 block categorized as ‘Poor-quality’ and rest 239 as ‘Safe’. Assessment unit -wise list of ‘Safe’, ‘Semi-critical’ and ‘Critical’ blocks is given in **Annexure V**.

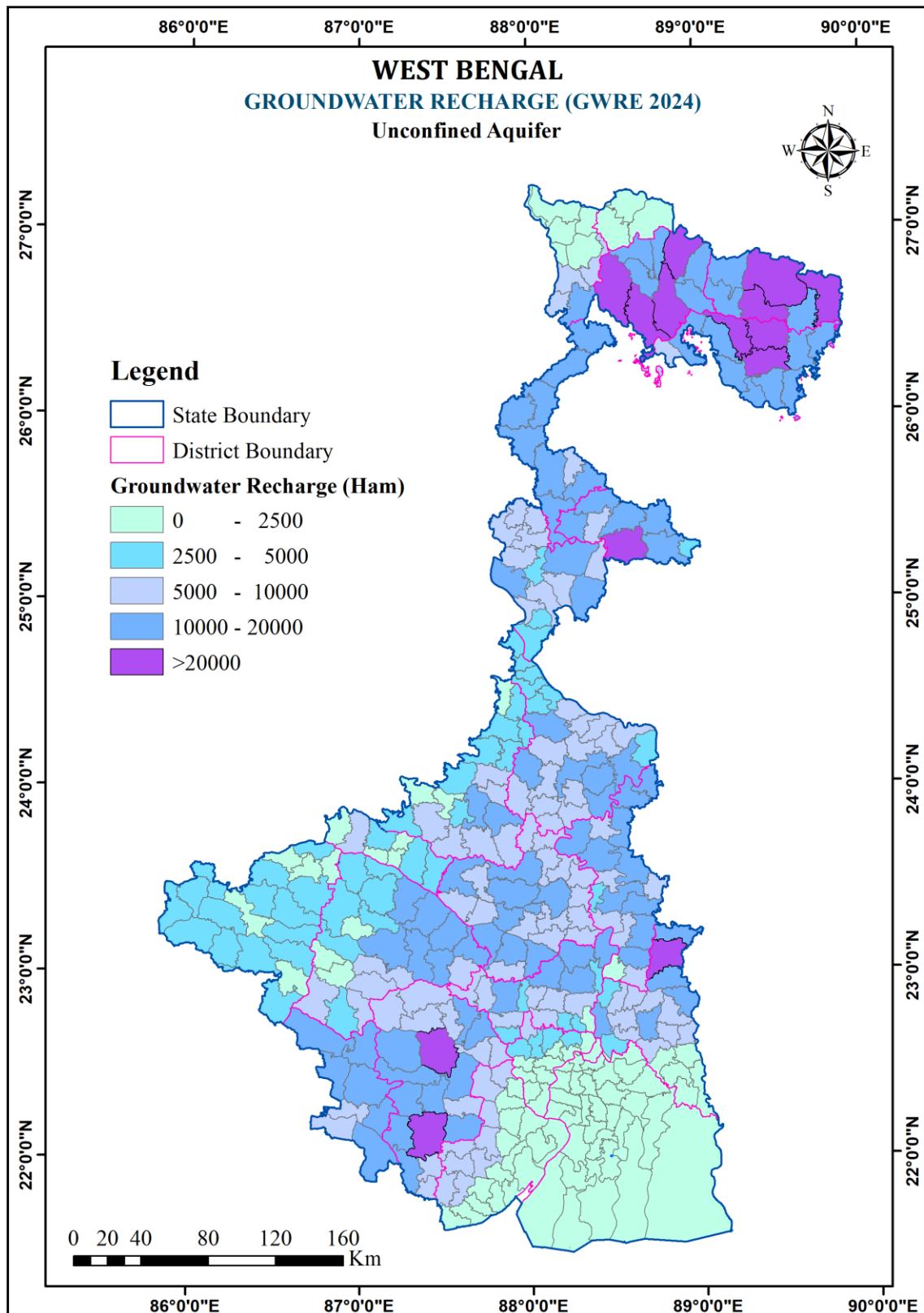


Fig. 4.1. Map showing Spatial Variation in GW Recharge

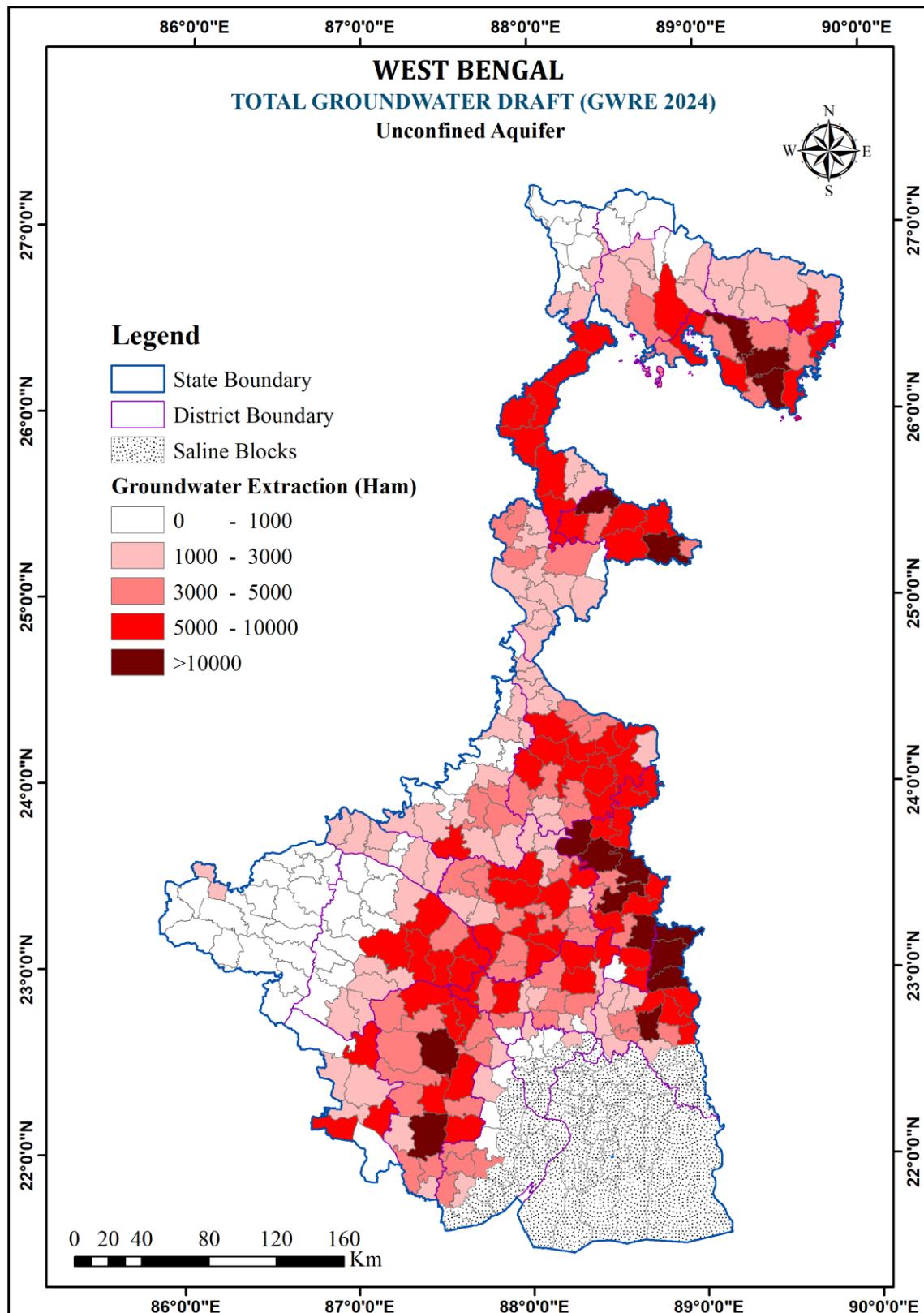


Fig. 4.2. Map showing Spatial Variation in GW Extraction

**Table 5.2 List of Categorized Blocks
(As on 31st March, 2024)**

Sl.	Name of District	Semi-Critical (Total: 36)	Critical (Total: 10)
1	Bankura	Kotulpur	-
2	Dakshin Dinajpur	Kushmundi, Hilli	-
3	Hugli	Serampur Uttarpara, Balagarh, Goghat-II	-
4	Malda	Ratua-II	-
5	Murshidabad	Murshidabad Jiaganj, Ragunathganj-I, Bhagawangola-I, Beldanga-I, Nawda, Raninagar-II	Raninagar-I
6	Nadia	Kaliganj,Karimpur-I, Santipur, Hanskhali Tehatta-I, Haringhata Nabadwip, Krishnanagar-I Kalyani	Ranaghat-II,Nakashipara Krishnaganj,Karimpur-II Chapra,Tehatta-II
7	North 24 Parganas	Habra-I,Gaighata Barasat-I,Bagda Baduria,Swarupnagar	Basirhat-I,Bongaon, Deganga
8	Paschim Medinipur	Chandrakona-II, Kharagpur-II, Garbeta-I	-
9	Purba Bardhaman	Burdwan-II,Mangolkote Memari-I,Purbasthali-II Manteswar	-

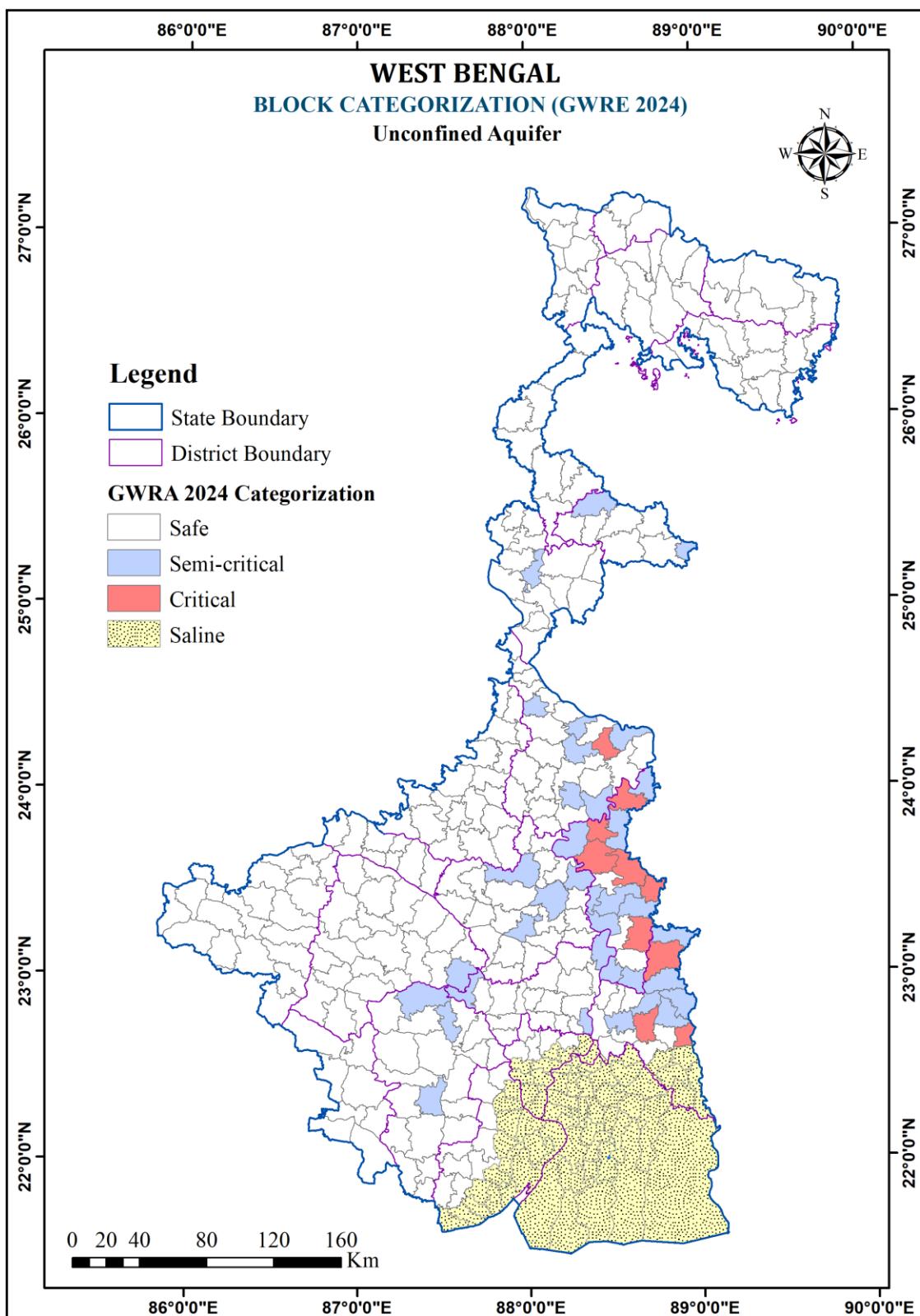


Fig. 4.3. Map showing Categorization of Assessment Units

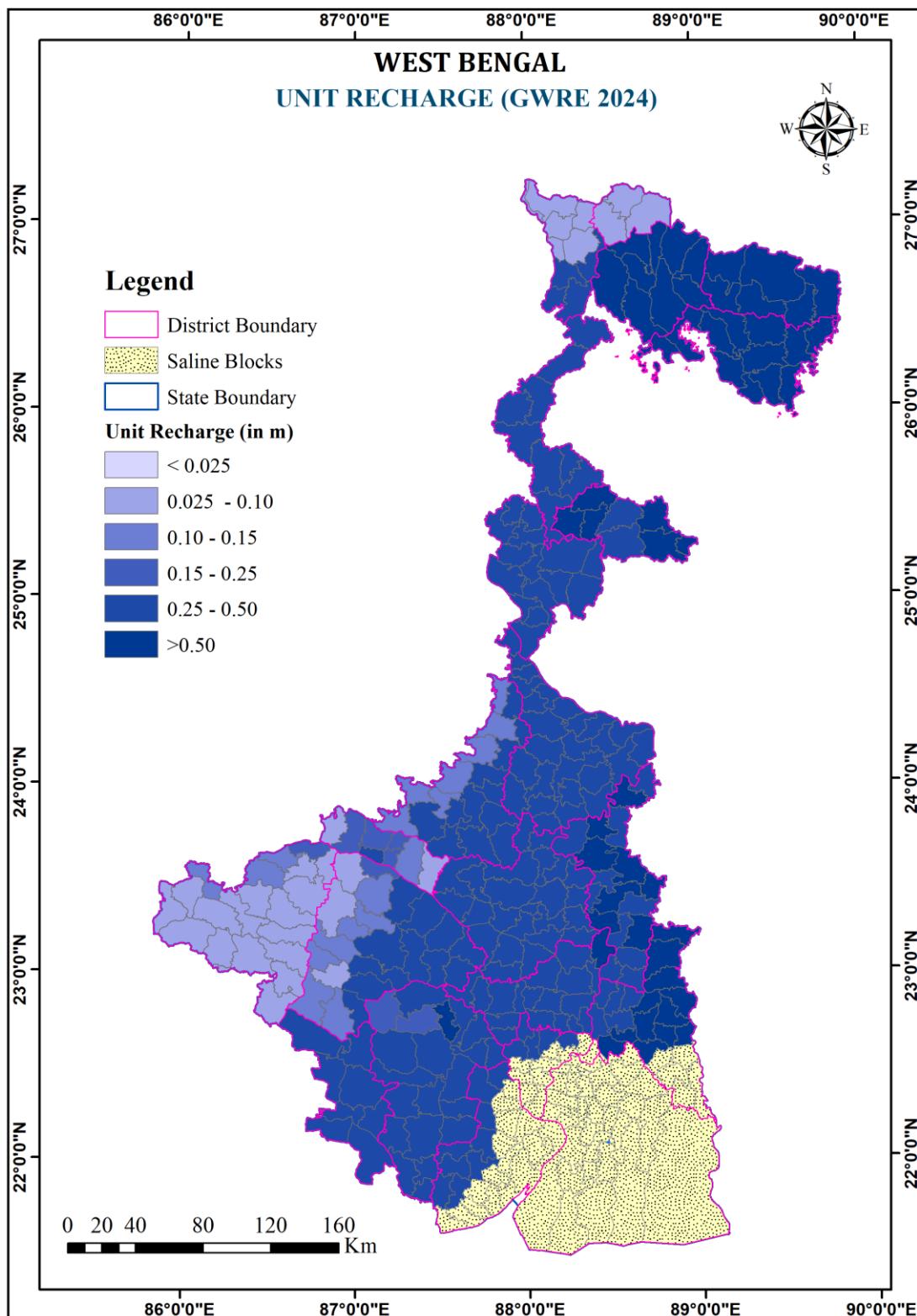


Fig. 4.4. Map showing Unit Recharge

4.2 Comparison with earlier ground water resources estimates and reasons for significant departure from earlier estimates

1. Out of 345 administrative units assessed, represented by 344 CD Blocks and 01 Urban Area, 10 block categorized as ‘Critical’, 36 blocks categorized as ‘Semi Critical’, 239 blocks are categorized as ‘Safe’ and rest 60 blocks are categorized as ‘Poor GW Quality Area’.
2. Change in GW recharge is mostly due to fluctuation of water level.
3. Variability in rain fall is another major contributor. Larger difference in actual and normal rainfall, resulted in preference of RIF over WLF in many Assessment Units.
4. In the present estimation, 6th Minor Irrigation Census data is used for Irrigation draft.
5. In present exercise Industrial draft has been estimated using industries registered with SWID as on 31st March, 2024. This resulted in marginal increase of Industrial draft.
6. In this exercise projected population from population figures from Census 2011 have been used.
7. Domestic draft has slightly increased due to population growth.

Table 4. 3. Comparison of Dynamic GW Resource Estimates

Comparative Criteria	Resource Assessment 2010-11 (BCM)	Resource Assessment 2012-13 (BCM)	Resource Assessment 2021-22 (BCM)	Resource Assessment 2022-23 (BCM)	Resource Assessment 2023-24 (BCM)
Total annual GW recharge	29.25	29.51	23.60	26.29	25.89
Natural discharge	2.67	2.82	2.18	2.39	2.33
Net annual GW availability	26.58	26.69	21.41	23.90	23.56
Gross GW draft for irrigation	9.72	10.84	8.38	8.99	8.99
Gross GW draft for domestic and industrial uses	0.97	1.01	1.68	1.72	1.59
Gross draft for all uses	10.69	11.88	10.06	10.71	10.75
Stage of development	40.22 %	44.38 %	47.01 %	44.81 %	45.63%

4.3 Computation of Ground water resources of Confined Aquifer in West Bengal

During 2021-22, Ground Water Resource Assessment for Confined Aquifers of West Bengal is attempted for the first time.

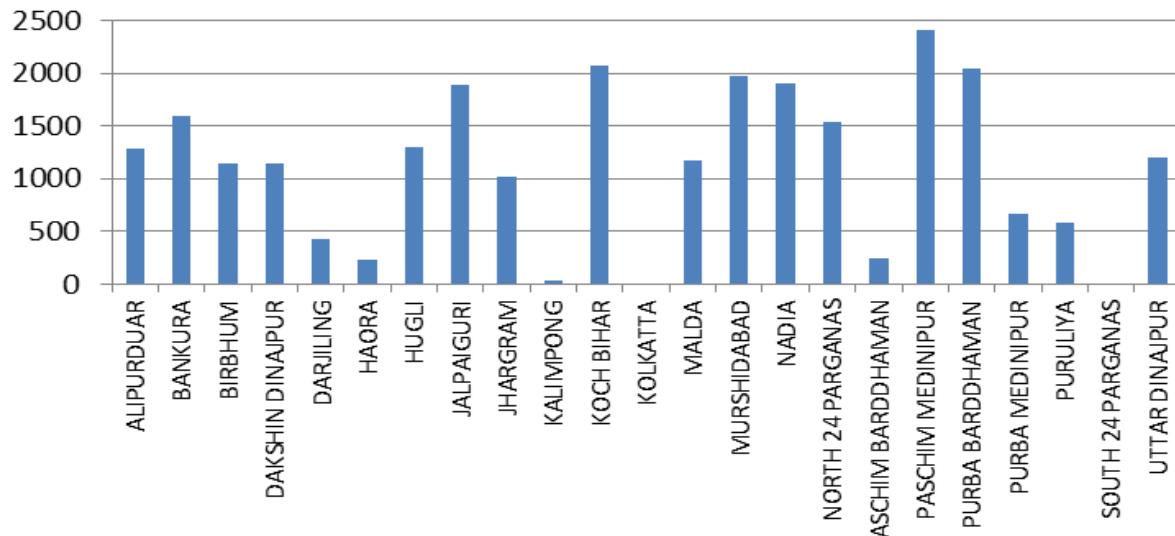
Total 60 coastal blocks in 05 district of confined aquifer system were not assessed earlier for their groundwater resource are due to scarcity of aquifer parameters and saline nature of top part. Following GEC-2015 methodology, Ground Water Resource Assessment for deeper freshwater part of confined aquifers were carried out for those blocks during 2022-23 Resource assessment.

The present assessment (2023-24) shows that 0.12 bcm of Dynamic Confined Ground Water Resources, 10.02 bcm of In-Storage Confined Ground Water Resources and 10.14 bcm of Total Confined Ground Water Resources is present in the area. District-wise status of Confined Ground Water Resources in the State is given in **Table 4.4**.

Table 4.4. Groundwater Resource Estimate of Confined Aquifer

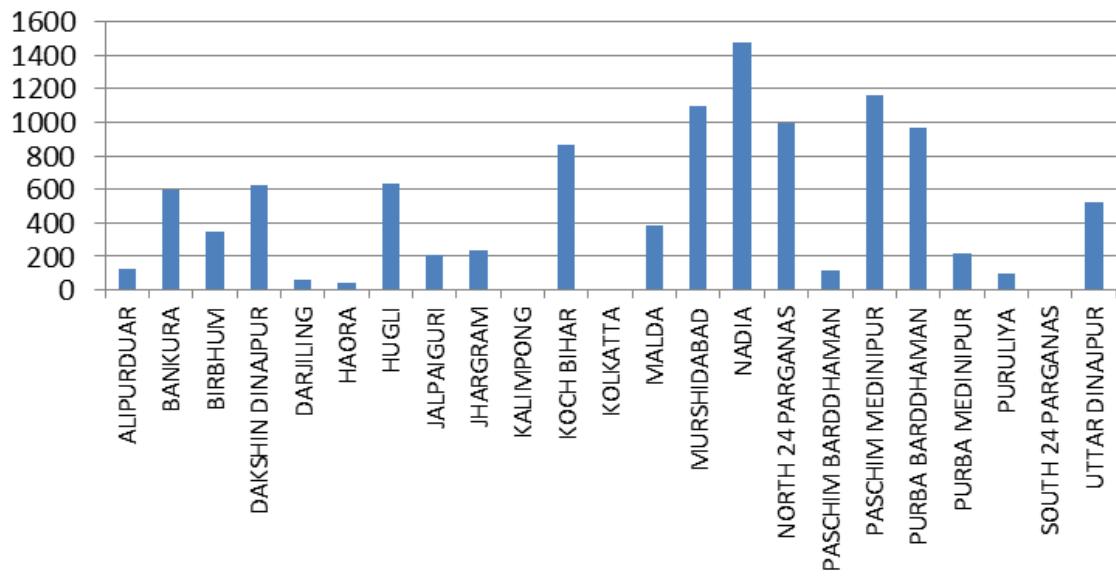
Sl.	District	Dynamic Confined Ground Water Resources (ham)		In-Storage Confined Ground Water Resources (ham)		Total Confined Ground Water Resources (ham)	
		Fresh	Saline	Fresh	Saline	Fresh	Saline
1	Haora	443	0	105399	0	105842	0
2	Kolkata	121	0	12534	0	12655	0
3	North 24 Parganas	835	0	182230	0	183066	0
4	Purba Medinipur	5391	0	274308	0	279699	0
5	South 24 Parganas	5433	0	427109	0	432543	0
	Total	12224	0	1001580	0	1013804	0
	Total (bcm)	0.12	0	10.02	0	10.14	0

Total Annual Ground Water Recharge (MCM)

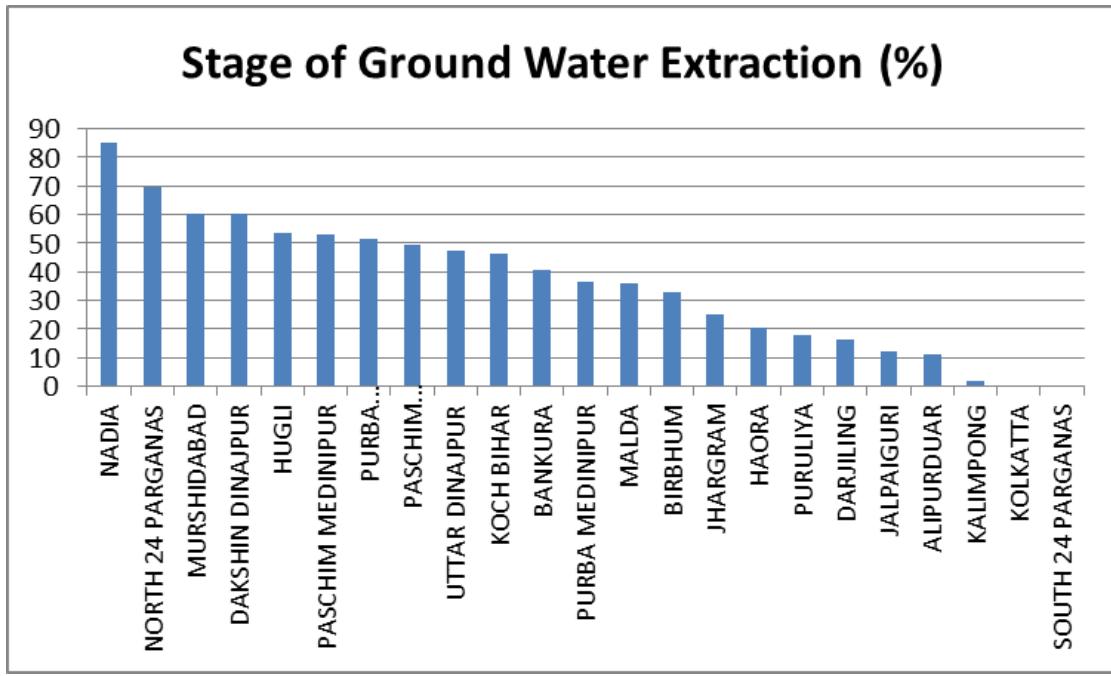


Bar Diagram showing District wise Ground Water Recharge

Total Extraction (MCM)



Bar Diagram showing District wise Extraction



Bar Diagram showing District wise Stage of Ground Water Extraction (SOE %)

Government of West Bengal
Water Resources Investigation & Development Department
Block-A, 5th Floor, Khaddya Bhavan, 11A, Mirza Galib Street
Kolkata-700087

No. 585-JS(MI)/ DSWI-28011(15)/1/2021[Computer No 477901]

Dated, 08-05-2023

NOTIFICATION

Subject: Assessment of annual groundwater recharge – constitution of Permanent State Level Committee for re-assessment of ground water resources.

The last assessment of state-wise annual ground water recharge for the entire country was carried out for the water year 2021-22 based on the methodology adopted by the Ground Water Resources Estimation Committee - 2015. Since then changes in ground water scenario in many parts of the country has been observed. The National Water Policy, 2012 has also recommended that the ground water resources of the country should be re-assessed periodically. In accordance with the decision taken by DOWR, RS & GR, Ministry of Jal Shakti, it has now been decided to carry out the assessment of Ground Water Resources on yearly basis. Hence, the permanent State Level Committee is hereby constituted with the following composition:-

1. Composition:

i)	Principal Secretary	WRI&D Department	Chairman
ii)	Engineer-in-Chief & EO Secretary	WRI&D Department	Member
iii)	Engineer-in-Chief & EO Secretary	PHE Department	Member
iv)	Director	State Water Investigation Directorate	Member
v)	Director	Department of Agriculture	Member
vi)	Representative not below the rank of Joint Secretary	Department of Micro, Small and Medium Enterprises and Textiles	Member
vii)	Representative not below the rank of Joint Secretary	Irrigation & Water Ways Department	Member
viii)	Representative not below the rank of Joint Secretary	Department of Industries & Commerce	Member
ix)	Representative not below the rank of Joint Secretary	P & RD Department	Member
x)	Joint Secretary (MI)	WRIDD	Member
xi)	General Manager	NABARD	Member
xii)	Regional Director,	CGWB (ER)	Member Secretary

The committee may co-opt any other Member(s) / special invitee(s), if necessary.

2.Terms of Reference:The broad terms of reference of the Committee would be as follows :-

- (i) To re-assess annual ground water recharge of the state in accordance with the Ground Water Resources Estimation Methodology-2015.
- (ii) To estimate the status of utilization of the annual extractable ground water resource.
- (iii) To take up 10% field level validations of the villages in the assessment unit. The sample villages may be selected based on prevailing hydrological conditions and should be representative of assessment unit.
- (iv) “Ground Water Assessment Cell” will be formed comprising officers from State/Nodal Department and officers from Regional Offices of CGWB.
- (v) The committee may constitute a Working/Executive Group to ensure speedy assessment of groundwater resources, field validation and strengthening of database.

3. Time frame: The Committee will submit its report within the stipulated time frame.

By Order of the Governor
Sd/-
(Prabhat Kumar Mishra)
Principal Secretary
WRI&D Department

Copy forwarded for kind information and necessary action –

1. The Addl. Chief Secretary / Principal Secretary/ Secretary, Department of Commerce and Industries, GoWB, 4, Camac Street, Kolkata –700 016.
2. The Addl. Chief Secretary / Principal Secretary/ Secretary, P&RD Department, GoWB, Joint Administrative Building, Plot No.7, Floors) Block: HC, 6th to 10th, FD Block, Sector III, Bidhannagar, Kolkata, West Bengal 700106.
3. The Addl. Chief Secretary / Principal Secretary/ Secretary, Public Health & Engineering Department, GoWB, Janaswasthya Karigari Bhawan (NIJALAYA), CN8, Street Number 18, CN Block, Sector V, Bidhannagar, Pin – 700091.
4. The Addl. Chief Secretary,Principal Secretary/ Secretary, Irrigation and Waterways Department,GoWB, Jalsampad Bhavan, Bidhan Nagar, Kolkata-700091.
5. The Addl. Chief Secretary, Principal Secretary/ Secretary, Department of Agriculture, GoWB. ‘Nabanna’ , 3rd Floor, 325, Sarat Chatterjee Road, Howrah- 711102.
6. The Addl. Chief Secretary, Principal Secretary/ Secretary, Department of Micro, Small and Medium Enterprises and Textiles, 4, Camac Street, Kolkata –700 016.
7. The Principal Secretary, WRI&D Department, GoWB, Khyaddo Bhavan, 5th Floor, Block-A, 11A, Mirza Galib Street, Kolkata- 700087.
8. The Engineer-in-Chief & EO Secretary, WRI&D Department, Khyaddo Bhavan, 5th Floor, Block-A, 11A, Mirza Galib Street, Kolkata- 700087.
9. The Director, State Water Investigation Directorate. Nirman Bhavan, 3rd Floor, Salt Lake, Kolkata- 700091.
10. The Director, Department of Agriculture.
11. The General Manager, NABARD, 2nd Floor, 1 Abhilasha, 6, Royd St, Near Bata More, Taltala, Kolkata, West Bengal 700016.
12. The Joint Secretary (MI), WRID Deptt. Khyaddo Bhavan, 5th Floor, Block-A, 11A, Mirza Galib Street, Kolkata- 700087.
13. The Regional Director, Central Ground Water Board (Eastern Region), “ Bhujalika”, CP-6, Sector-V, Salt Lake, Kolkata- 700091.

Joint Secretary(MI)
WRI&D Department

Copy forwarded for information to :

1. The P.S. to Hon'ble Minister-in Charge, WRI&D Department.
2. The Sr. P.S. to Principal Secretary, WRI&D Department.
3. The Sr. P.S. to Engineer-in-Chief & EO Secretary, WRI&D Department.
4. The P.S. to Joint Secretary (MI), WRI&D Department.

Joint Secretary(MI)
WRI&D Department

*OB2
19/5/23*

*Sr. Geologist
MR
17/05/23
D. J. A. 6*

Government of West Bengal
Water Resources Investigation & Development Department
Block-A, 5th Floor, Khaddya Bhavan, 11A, Mirza Galib Street
Kolkata-700087

No. 586-JS(MI)/ DSWI-28011(15)/1/2021[Computer No 477901]

Dated, 08-05-2023

NOTIFICATION

Sub: Formation of "Groundwater Resource Assessment Cell" and "Working Group" for Groundwater Resources Assessment of West Bengal for the year 2023

In order to conduct Groundwater Resources Assessment of West Bengal for the year 2023 "Groundwater Resource Assessment Cell" is hereby formed as mentioned below:

1. Shri. Goutam Kr. Pathak, Executive Engineer (AI), Data Processing Cell, SWID, Kolkata
2. Smt. Debatri Bagchi Roy, Senior Geologist , Data Processing Cell, SWID HQ, Kolkata
3. Dr. Anindita Lahiri, Geologist Data Processing Cell, SWID HQ, Kolkata
4. Dr. Indranil Roy, Scientist 'D', CGWB

In addition, Working Group, Dynamic Groundwater Resources Assessment of West Bengal (as on March 31st, 2022) is also formed as mentioned below:

- (i) Smt. Moumita Roy Sarkar, Assistant Engineer (AI), DPSR Wing, IPD Circle, SWID.
- (ii) Dr. Sirsendu Kar, Geologist Data Processing Cell, SWID HQ, Kolkata.
- (iii) Smt. Aparajita Banerjee, Geological Assistant, Geological Sub Div.IID, Howrah.
- (iv) Dr. Shaista Khan, Scientist C, CGWB
- (v) Dr. Nilamoni Barman, Scientist 'B', CGWB

OFFICE OF THE DIRECTOR
State Water Investigation Directorate

File No.

897

D. E. No.

19-05-23

Date:.....

By Order of the Governor

Sd/-

(Prabhat Kumar Mishra, IAS)

Principal Secretary

WRI&D Department

Govt. of West Bengal

No. 586-JS(MI)/1(9) DSWI-28011(15)/1/2021[Computer No 477901]

Dated, 08-05-2023

Copy forwarded for kind information and necessary action to-

1. Shri. Goutam Kr. Pathak, Executive Engineer (AI), Data Processing Cell, SWID, Kolkata
2. Smt. Debatri Bagchi Roy, Senior Geologist , Data Processing Cell, SWID HQ, Kolkata
3. Dr. Anindita Lahiri, Geologist Data Processing Cell, SWID HQ, Kolkata
4. Dr. Indranil Roy, Scientist 'D', CGWB
5. Smt. Moumita Roy Sarkar, Assistant Engineer (AI), DPSR Wing, IPD Circle, SWID.
6. Dr. Sirsendu Kar, Geologist Data Processing Cell, SWID HQ, Kolkata.
7. Smt. Aparajita Banerjee, Geological Assistant, Geological Sub Div.IID, Howrah.
8. Dr. Shaista Khan, Scientist C, CGWB
9. Dr. Nilamoni Barman, Scientist 'B', CGWB
10. The Director, State Water Investigation Directorate (SWID).

D. J. A.
Joint Secretary (MI)
WRI&D Department

No. 586/2(4)-JS(MI)/ DSWI-28011(15)/1/2021[Computer No 477901]
Copy forwarded for information to :

Dated, 08-05-2023

1. The P.S. to Hon'ble Minister-in Charge, WRI&D Department.
2. The Sr. P.S. to Principal Secretary, WRI&D Department.
3. The Sr. P.S. to Engineer-in-Chief & EO Secretary, WRI&D Department.
4. The P.S. to Joint Secretary (MI), WRI&D Department.



Joint Secretary (MI)
WRI&D Department

Minutes of the Meeting of
the State Level Ground Water Resource Estimation Committee

Date: 13th September, 2024

Time: 3: 00 P.M. to 4:30 P.M.

Venue: Conference Room, SWID, 3rd Floor, Nirman Bhawan, Salt Lake, Kolkata - 91

1. The meeting is chaired by Ms. Roshni Sen, IAS, Additional Chief Secretary, Govt. of West Bengal and Chairman SLGWREC and is attended by the members/ officers, list of which is given as Annexure-III. At the very outset, with the kind permission of the Chair, Dr. Anadi Gayen, Regional Director, CGWB (ER) and Member Secretary, SLC, welcomed all the Members of SLC and other invitees, narrated the agenda and appraised the Chair about the background of the meeting.
2. Findings of the Dynamic Groundwater Resource Assessment exercise by the Groundwater Resource Assessment Cell constituted vide Order No 56-ACS/WRIDD/2024 dated 07.08.2024 is presented before the committee, constituted vide Govt. of West Bengal Notification No. 585-JS (MI)/DSWI-28011 (15)/1/2021–Dt. 08.05.2023, on Ground Water Resources of West Bengal, for the Assessment year 2023-24 using Ground Water Estimation Methodology- 2015 (GEC-2015) and taken up for discussion.
3. As desired by the Chairman of SLGWREC, report and findings are presented before the committee by Dr. Indranil Roy, Scientist D, Central Ground Water Board, Eastern Region, Kolkata. Discussions held about the methodology adopted for the exercise and computational procedures undertaken for arriving at the final estimates of Ground Water Resources of West Bengal (both Dynamic and In-Storage) and the concomitant categorization of the assessment units. The following are the summary of presentation and subsequent discussions:
 - a. For estimation the input data are considered on the basis of available information as far as possible and/or on some elementarily assumptions.
 - b. All 344 blocks of the State of West Bengal and one (01) urban area as Kolkata Municipal Corporation is assessed in terms of GEC-2015 guidelines.
 - c. Groundwater assessment of total 345 assessment units are carried out for both Dynamic and Static part of the unconfined & confined aquifer.

- d. The estimation for confined aquifers is considered for the 'Fresh water bearing Upper Confined Aquifer' only and is at an elementary stage which has been started since 2022.
- e. Similarly in case of the Northern hilly blocks also the estimation is at an elementary stage which has been started since 2022.
- f. The major findings of the assessment were as follows:
 - i. For Dynamic Groundwater Resources:
 - 1. Annual Replenishable Ground Water Resources is estimated to be around 25.89 BCM. The Natural Discharge is assessed to be approximately 2.33 BCM. Hence the Net Annual Ground Water Availability might be tentatively 23.56 BCM.
 - 2. The Annual Gross Ground Water Draft for all uses is estimated to be approximately 10.75 BCM
 - 3. The average Stage of Ground Water Extraction(Development) for the entire state is around 45.63 %
 - 4. Summary of estimation of Dynamic Ground Water Resources of the State of West Bengal is given in Annexure-I.
 - 5. Out of above mentioned 345 assessed units-239 may be categorized as Safe, 36 as Semi-Critical, 10 as Critical and 60 as Poor groundwater quality assessmentunits. On the basis of analysis, it also may be assessed that there is no Over-Exploited Blocks in the State. List of the Semi-Critical and Critical Blocks are given in Annexure I and II.
 - ii. In-storage Groundwater Resources of unconfined aquifer is tentatively 297.02 BCM.
 - iii. Dynamic and In-Storage Groundwater Resource as well as the Resource of the 'Fresh water bearing Upper Confine Aquifer' is approximately 0.12 BCM and 10.02 BCM respectively.
- 4. After detailed discussions and deliberations among the members, the Estimate of Dynamic Ground Water Resources of West Bengal as on 31.03.2024, and the concomitant categorization, along with the unconfined in-storage ground water resource

as well as resources of the 'Fresh water bearing Upper Confined Aquifer' have been unanimously accepted and approved by the State Level Ground Water Resources Estimation Committee (SLGWREC).

5. The meeting ended with thanks to and from the chair.



Lashmi Sen
Additional Chief Secretary,
to the Govt. of West Bengal
Water Resources Investigation & Development Department
&
Chairman SLGWREC

Summary of Estimation of Dynamic Ground Water Resources of the State of West Bengalas per assessment for the year 2023-2024

Components	Dynamic GW Resource	
	(BCM)	(ham)
Total Ground Water Recharge	25.89	2588979.28
Provision for Natural Ground Water Discharge	2.33	232778.91
Net Ground Water Availability/ Annual Extractable Groundwater Resource	23.56	2356200.36
Gross Ground Water Draft for All Uses	10.75	1075033.47
<i>Current Annual GW Draft for Irrigation</i>	8.99	898767.54
<i>Current Annual GW Draft for Domestic</i>	1.59	158917.78
<i>Current Annual GW Draft for Industrial uses</i>	0.17	17348.19
Stage of G.W. Development (%)	45.63 %	
Annual Allocation of GW for Domestic & Industrial Water Supply for 2035	1.77	176885.67
Net GW Availability for 'Future Use'	12.72	1272311.33

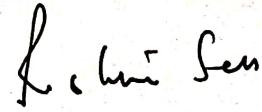
LIST OF BLOCKS CATEGORIZED AS "CRITICAL"
AS PER GWRE OF WEST BENGAL, 2023-24

Sl. No.	District	No. of Blocks	Blocks	Category
1	Murshidabad	1	RANINAGAR-I	Critical
2	Nadia		CHAPRA	Critical
3	Nadia		KARIMPUR-II	Critical
4	Nadia		KRISHNAGANJ	Critical
5	Nadia		NAKASHIPARA	Critical
6	Nadia		RANAGHAT-II	Critical
7	Nadia		TEHATTA-II	Critical
8	North 24 Parganas	3	BASIRHAT-I	Critical
9	North 24 Parganas		BONGAON	Critical
10	North 24 Parganas		DEGANGA	Critical
	Total	10		

Rashmi Sen

LIST OF BLOCKS CATEGORIZED AS "SEMI-CRITICAL"
AS PER GWRE OF WEST BENGAL, 2023-24

Sl. No.	District	No. of Blocks	Blocks	Category
1	Bankura	1	Kotulpur	Semi-critical
2	Dakshin Dinajpur	2	Hilli	Semi-critical
3	Dakshin Dinajpur		Kushmundi	Semi-critical
4	Hooghly	3	Balagarh	Semi-critical
5	Hooghly		Goghat-li	Semi-critical
6	Hooghly		Serampur Uttarpara	Semi-critical
7	Malda	1	Ratua-li	Semi-critical
8	Murshidabad	6	Beldanga - I	Semi-critical
9	Murshidabad		Bhagawangola-I	Semi-critical
10	Murshidabad		Murshidabad Jiaganj	Semi-critical
11	Murshidabad		Nawda	Semi-critical
12	Murshidabad		Raghunathganj-I	Semi-critical
13	Murshidabad		Raninagar-li	Semi-critical
14	Nadia	9	Hanskhali	Semi-critical
15	Nadia		Haringhata	Semi-critical
16	Nadia		Kaliganj	Semi-critical
17	Nadia		Kalyani	Semi-critical
18	Nadia		Karimpur-I	Semi-critical
19	Nadia		Krishnanagar-I	Semi-critical
20	Nadia		Nabadwip	Semi-critical
21	Nadia		Shantipur	Semi-critical
22	Nadia		Tehatta-I	Semi-critical
23	North 24 Parganas	6	Baduria	Semi-critical
24	North 24 Parganas		Bagda	Semi-critical
25	North 24 Parganas		Barasat-I	Semi-critical
26	North 24 Parganas		Gaighata	Semi-critical
27	North 24 Parganas		Habra-I	Semi-critical
28	North 24 Parganas		Swarupnagar	Semi-critical
29	Paschim Medinipur	3	Chandrakona-li	Semi-critical
30	Paschim Medinipur		Garbeta-I	Semi-critical
31	Paschim Medinipur		Kharagpur-li	Semi-critical
32	Purba Bardhaman	5	Burdwan-II	Semi-critical
33	Purba Bardhaman		Mangalkote	Semi-critical
34	Purba Bardhaman		Manteswar	Semi-critical
35	Purba Bardhaman		Memari-I	Semi-critical
36	Purba Bardhaman		Purbasthali-II	Semi-critical
	Total	36		



Participant List of the 2nd Meeting of State Level Committee for Assessment of Ground Water Resources of West Bengal (as on 31.03.2024), held in the Conference Hall of State Water Investigation Directorate, 3rd Floor, Nirman Bhawan, Salt Lake City, Kolkata-91

Members/Officers:

Sl No.	Department	Name & Designation	Signature & E-mail ID
1.	Water Resources Investigation and Development Department	Smt. Roshni Sen Additional Chief Secretary & Chairman, SLC	Roshni Sen 13/9/24
2.	Water Resources Investigation and Development Department	Pradip Kr. Khan E.L.C & Ex Officio Secretary	(Prum.) 13/9/24
3.	Department of Commerce and Industries		
4.	Irrigation and Waterways Department	Biplab Mukherjee JS/I&WD	BM 13.09.24
5.	Public Health & Engineering Department		
6.	P & R D Department	Pijush Goswami JS P&RD	Pj 13/9/24
7.	Department of Micro, Small and Medium Enterprises and Textiles		
8.	NABARD	D. K. BEURIA, DGM	DKB 13/9/24
9.	Department of Agriculture	Dr. Sarfraz Ullah Joint Dir of Agri(Planning) WB.	SU 13/9/24
10.	State Water Investigation Directorate	Alok Sarav, Director	AS 13.9.24
11.	CGWB, BR	Dr. Indranil Ray Se, D	IR 13/9/24

Sl No.	Department	Name & Designation	Signature & mail id
12.	Mr. Anant Gayen CGWB, ER, Kolkata	Regional Director Regional Representative	13/09/2024 anantgayen-cgwb@nic.in
13.	SWID	Dr. Subrata Haldar S.E.(A.I.),	Subrata
14.	W.R.I & D.D.P.D.	UTTARAKHAND Joint Secretary	
15.	SWID, WRIDDD	MOUSUMI N. ADHIKARI : SR. GEOLOGIST.	Mousumi 13/09/24
16.	SWID, WRIDDD	Sajal Kumar Das SE(A.I)	Sajal 13/09/24
17.	CGWB, ER, Kolkata	SANDHYA YADAV.	Sandhya 13/09/24
18.	Dr. Shristi Khan Scientist C CGWB, ER, Kolkata	Dr. Shristi Khan Scientist-C	Shristi 13/09/24
19.	SWID, WRI&DD	Dr. Shirsendu Kar, Geologist, DP Cell, SWID(HQ)	Shirsendu 13/09/2024
20.	SWID, WRI&DD	Dr. ANINDITA CAHIRI Geologist & TA 2 SG. SWID, Bikash Bhawan	Anindita 13/09/2024
21.	CGWB, ER	Dr. Nabanita Banerjee	Nabanita 13/09/2024

Annexure 4

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2024
WEST BENGAL

Sl. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Annual Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)			
		Monsoon Season		Non-Monsoon Season					Irrigation	Industrial	Domestic	Total						
		Recharge from rainfall	Recharge from other Sources	Recharge from Rainfall	Recharge from other Sources													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
1	ALIPURDUAR	102782.18	1129.37	21452.15	3720.79	129084.49	12908.47	116176.02	9366.1	163.89	3418.7	12948.7	3688.97	102957.05	11.15			
2	BANKURA	98606.75	16416.39	16172.89	28068.81	159264.84	13072.76	146192.08	50234.5	390.9	8709.99	59335.32	8983.35	88231.78	40.59			
3	BIRBHUM	76350.59	8665.36	12368.14	16675.75	114059.84	9112.69	104947.15	24501.5	1317.3	8536.52	34355.33	8967.96	70160.38	32.74			
4	DAKSHIN DINAJPUR	66147.9	9075.83	12931.9	25943.2	114098.83	11165.69	102933.14	58067.8	174.69	3964.68	62207.17	4075.12	40615.53	60.43			
5	DARJILING	34042.06	669.29	7397.67	995.72	43104.74	4310.49	38794.25	2132.7	834.51	3398.72	6365.91	3731.61	32095.45	16.41			
6	HAORA	16999.38	894.68	3325.09	1407.08	22626.23	1703.16	20923.07	1248	345.19	2677.2	4270.39	3101.45	16228.43	20.41			
7	HUGLI	80800.27	9608.55	16644.65	23547.14	130600.61	12226.53	118374.08	50788.6	2135.42	10594.08	63518.09	11179.92	54901.24	53.66			
8	JALPAIGURI	150286.43	1952.77	30717.68	5401.85	188358.73	18835.87	169522.85	12700.5	1498.05	6392.21	20590.78	8767.53	146556.74	12.15			
9	JHARGRAM	72564.12	4441.66	15109.92	9454.55	101570.25	8001.55	93568.7	20429.6	63.09	2821.17	23313.88	2909.91	70166.08	24.92			
10	KALIMPONG	3156.89	189.21	557.84	98.37	4002.31	400.24	3602.07	0	2.46	62.42	64.87	62.82	3536.8	1.8			
11	KOCH BIHAR	135906.96	9098.87	30837	31483.46	207326.29	20732.63	186593.66	79018.8	101.07	6963.92	86083.77	7285.72	100188.08	46.13			
12	KOLKATTA	0	0	0	0	-	0	0	0	0	0	0	0	0	0			
13	MALDA	81201.35	7077.97	13223.48	16329.5	117832.3	10679.27	107153.03	27805.5	307.23	10303.26	38415.99	11251.12	67789.17	35.85			
14	MURSHIDABAD	114827.81	14324.54	27520.69	40081.53	196754.57	15844.22	180910.35	90904.8	384.66	18235.52	109525	25470.77	69208.13	60.54			
15	NADIA	98234.39	21137.11	22470.15	48156.69	189998.34	17219.87	172778.47	135236	477.11	11466.5	147179.61	12202.95	24862.4	85.18			
16	NORTH 24 PARGANAS	77294.08	14869.44	19096.05	41919.93	153179.5	10876.9	142302.6	84074.2	2139.42	12994.5	99208.11	14196.58	41892.41	69.72			
17	PASCHIM BARDDHAMAN	16135.16	1922.65	3513.51	3311.51	24882.83	2274.19	22608.64	2602.84	3683.06	4946	11231.89	5287.79	11184.67	49.68			
18	PASCHIM MEDINIPUR	158148.85	13401.26	29960.86	39812.52	241323.49	22478.1	218845.39	103186.4	1248.81	11852.73	116287.92	12307.79	102252.84	53.14			
19	PURBA BARDDHAMAN	123035.46	17317.07	25331.09	39049.86	204733.48	18219.93	186513.55	83940.2	1082.89	11368.64	96391.73	11788.76	91176.43	51.68			
20	PURBA MEDINIPUR	45870.98	3083.32	10246.14	7916.12	67116.56	6711.67	60404.89	17103.2	18.05	4848.4	21969.68	5247.87	38035.75	36.37			
21	PURULIYA	33532.12	8787.68	5742.81	10513.97	58576.58	5718.62	52857.96	2001.2	137.37	7229.19	9367.75	7635.53	43083.86	17.72			
22	SOUTH 24 PARGANAS	0	0	0	0	-	0	0	0	0	0	0	0	0	0			
23	UTTAR DINAJPUR	78855.65	6775.3	15478.61	19374.91	120484.47	10286.06	110198.41	43425.1	843.03	8133.44	52401.58	8742.15	57188.12	47.55			
	Total (Ham)	1664779.38	170838.32	340098.32	413263.26	2588979.28	232778.91	2356200.36	898767.54	17348.19	158917.78	1075033.5	176885.67	1272311.34	45.63			
	Total (Bcm)	16.65	1.71	3.4	4.13	25.89	2.33	23.56	8.99	0.17	1.59	10.75	1.77	12.72	45.63			

Annexure - 5

CATEGORIZATION OF ASSESSMENT UNITS (2024)				
WEST BENGAL				
Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
1	ALIPURDUAR	ALIPURDUAR-I	7.61	Safe
2	ALIPURDUAR	ALIPURDUAR-II	31.18	Safe
3	ALIPURDUAR	FALAKATA	12.07	Safe
4	ALIPURDUAR	KALCHINI	5.66	Safe
5	ALIPURDUAR	KUMARGRAM	7.25	Safe
6	ALIPURDUAR	MADARIHAT	5.67	Safe
7	BANKURA	BANKURA-I	22.12	Safe
8	BANKURA	BANKURA-II	26.69	Safe
9	BANKURA	BARJORA	19.95	Safe
10	BANKURA	CHHATNA	16.26	Safe
11	BANKURA	GANGAJALGHATI	13.51	Safe
12	BANKURA	HIRBANDH	11.62	Safe
13	BANKURA	INDPUR	13.77	Safe
14	BANKURA	INDUS	61.18	Safe
15	BANKURA	JAYPUR	54.58	Safe
16	BANKURA	KHATRA	12.59	Safe
17	BANKURA	KOTULPUR	73.84	Semi-critical
18	BANKURA	MEJHIA	17.92	Safe
19	BANKURA	ONDA	58.22	Safe
20	BANKURA	PATRASAYER	46.98	Safe
21	BANKURA	RAIPUR	50.02	Safe
22	BANKURA	RANIBUNDH	7.09	Safe
23	BANKURA	SALTORA	13.26	Safe
24	BANKURA	SARENGA	42.10	Safe
25	BANKURA	SIMLAPAL	21.85	Safe
26	BANKURA	SONAMUKHI	41.69	Safe
27	BANKURA	TALDANGRA	16.43	Safe
28	BANKURA	VISHNUPUR	64.76	Safe
29	BIRBHUM	BOLPUR SRINIKETAN	20.99	Safe
30	BIRBHUM	DUBRAJPUR	12.10	Safe
31	BIRBHUM	ILLAMBАЗAR	61.06	Safe
32	BIRBHUM	KHOYRASOL	59.82	Safe
33	BIRBHUM	LABPUR	33.62	Safe
34	BIRBHUM	MAYURESWAR-I	30.26	Safe
35	BIRBHUM	MAYURESWAR-II	65.40	Safe
36	BIRBHUM	MOHAMMAD BAZAR	19.24	Safe
37	BIRBHUM	MURARAI-I	37.70	Safe
38	BIRBHUM	MURARAI-II	32.76	Safe
39	BIRBHUM	NALHATI-I	38.38	Safe
40	BIRBHUM	NALHATI-II	37.81	Safe
41	BIRBHUM	NANOOR	23.94	Safe
42	BIRBHUM	RAJNAGAR	12.60	Safe
43	BIRBHUM	RAMPURHAT-I	22.96	Safe
44	BIRBHUM	RAMPURHAT-II	22.42	Safe
45	BIRBHUM	SAINTHIA	34.31	Safe
46	BIRBHUM	SURI-I	29.53	Safe
47	BIRBHUM	SURI-II	24.28	Safe

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
48	DAKSHIN DINAJPUR	BALURGHAT	64.35	Safe
49	DAKSHIN DINAJPUR	BANSIHARI	55.69	Safe
50	DAKSHIN DINAJPUR	GANGARAMPUR	50.60	Safe
51	DAKSHIN DINAJPUR	HARIRAMPUR	55.53	Safe
52	DAKSHIN DINAJPUR	HILLI	80.61	Semi-critical
53	DAKSHIN DINAJPUR	KUMARGANJ	67.70	Safe
54	DAKSHIN DINAJPUR	KUSHMUNDI	70.72	Semi-critical
55	DAKSHIN DINAJPUR	TAPAN	51.03	Safe
56	DARJILING	DARJEELING PULBAZAR	32.99	Safe
57	DARJILING	JOREBUNGLOW SUKIAPOKHRI	29.36	Safe
58	DARJILING	KHARIBARI	18.42	Safe
59	DARJILING	KURSEONG	24.72	Safe
60	DARJILING	MATIGARA	19.92	Safe
61	DARJILING	MIRIK	40.13	Safe
62	DARJILING	NAXALBARI	8.31	Safe
63	DARJILING	PHANSIDEWA	14.50	Safe
64	DARJILING	RANGLI RANGLIOT	19.35	Safe
65	HAORA	AMTA-I	12.63	Safe
66	HAORA	AMTA-II	11.51	Safe
67	HAORA	BAGNAN-I	0.00	Salinity
68	HAORA	BAGNAN-II	0.00	Salinity
69	HAORA	BALLY JAGACHHA	0.00	Salinity
70	HAORA	DOMJUR	34.17	Safe
71	HAORA	JAGATBALLAVPUR	14.98	Safe
72	HAORA	PANCHLA	0.00	Salinity
73	HAORA	SANKRAIL	0.00	Salinity
74	HAORA	SHYAMPUR-I	0.00	Salinity
75	HAORA	SHYAMPUR-II	0.00	Salinity
76	HAORA	UDAYNARAYANPUR	31.96	Safe
77	HAORA	ULUBERIA-I	0.00	Salinity
78	HAORA	ULUBERIA-II	0.00	Salinity
79	HUGLI	ARAMBAG	57.01	Safe
80	HUGLI	BALAGARH	79.66	Semi-critical
81	HUGLI	CHANDITALA-I	43.33	Safe
82	HUGLI	CHANDITALA-II	32.62	Safe
83	HUGLI	CHINSURAH-MAGRA	60.70	Safe
84	HUGLI	DHANIAKHALI	29.05	Safe
85	HUGLI	GOGHAT-I	48.05	Safe
86	HUGLI	GOGHAT-II	84.72	Semi-critical
87	HUGLI	HARIPAL	50.23	Safe
88	HUGLI	JANGIPARA	65.14	Safe
89	HUGLI	KHANAKUL-I	53.13	Safe
90	HUGLI	KHANAKUL-II	14.98	Safe
91	HUGLI	PANDUA	47.49	Safe
92	HUGLI	POLBA-DADPUR	52.46	Safe
93	HUGLI	PURSURA	55.35	Safe
94	HUGLI	SERAMPUR UTTARPARA	78.67	Semi-critical
95	HUGLI	SINGUR	60.23	Safe
96	HUGLI	TARAKESWAR	40.14	Safe
97	JALPAIGURI	BANARHAT	8.99	Safe
98	JALPAIGURI	DHUPGURI	16.28	Safe

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
99	JALPAIGURI	JALPAIGURI SADAR	16.97	Safe
100	JALPAIGURI	KRANTI	11.67	Safe
101	JALPAIGURI	MAL	11.86	Safe
102	JALPAIGURI	MAYNAGURI	22.93	Safe
103	JALPAIGURI	METIALI	5.59	Safe
104	JALPAIGURI	NAGRAKATA	2.32	Safe
105	JALPAIGURI	RAJGANJ	6.83	Safe
106	JHARGRAM	BINPUR-I	45.23	Safe
107	JHARGRAM	BINPUR-II	5.81	Safe
108	JHARGRAM	GOPIBALLAVPUR-I	60.75	Safe
109	JHARGRAM	GOPIBALLAVPUR-II	41.97	Safe
110	JHARGRAM	JAMBONI	13.89	Safe
111	JHARGRAM	JHARGRAM	12.91	Safe
112	JHARGRAM	NAYAGRAM	3.86	Safe
113	JHARGRAM	SAKRAIL	50.59	Safe
114	KALIMPONG	GORUBATHAN	1.08	Safe
115	KALIMPONG	KALIMPONG-I	2.72	Safe
116	KALIMPONG	KALIMPONG-II	1.72	Safe
117	KOCH BIHAR	COOCHBEHAR-I	62.27	Safe
118	KOCH BIHAR	COOCHBEHAR-II	25.62	Safe
119	KOCH BIHAR	DINHATA-I	67.67	Safe
120	KOCH BIHAR	DINHATA-II	44.33	Safe
121	KOCH BIHAR	HALDIBARI	41.61	Safe
122	KOCH BIHAR	MATHABHANGA-I	27.21	Safe
123	KOCH BIHAR	MATHABHANGA-II	61.14	Safe
124	KOCH BIHAR	MEKLIGANJ	41.50	Safe
125	KOCH BIHAR	SITAI	52.26	Safe
126	KOCH BIHAR	SITALKUCHI	59.15	Safe
127	KOCH BIHAR	TUFANGANJ-I	26.30	Safe
128	KOCH BIHAR	TUFANGANJ-II	38.24	Safe
129	KOLKATTA	KMC	0.00	Salinity
130	MALDA	BAMANGOLA	15.89	Safe
131	MALDA	CHANCHAL-I	45.01	Safe
132	MALDA	CHANCHAL-II	37.33	Safe
133	MALDA	ENGLISH BAZAR	21.76	Safe
134	MALDA	GAZOLE	35.81	Safe
135	MALDA	HABIBPUR	15.85	Safe
136	MALDA	HARISCHANDRAPUR-I	52.54	Safe
137	MALDA	HARISCHANDRAPUR-II	55.65	Safe
138	MALDA	KALIACHAK-I	69.02	Safe
139	MALDA	KALIACHAK-II	32.86	Safe
140	MALDA	KALIACHAK-III	61.02	Safe
141	MALDA	MANIKCHAK	18.12	Safe
142	MALDA	OLD MALDA	24.61	Safe
143	MALDA	RATUA-I	43.95	Safe
144	MALDA	RATUA-II	74.15	Semi-critical
145	MURSHIDABAD	BELDANGA-I	76.41	Semi-critical
146	MURSHIDABAD	BELDANGA-II	55.48	Safe
147	MURSHIDABAD	BERHAMPORE	68.90	Safe
148	MURSHIDABAD	BHAGAWANGOLA-I	82.26	Semi-critical
149	MURSHIDABAD	BHAGAWANGOLA-II	61.45	Safe

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
150	MURSHIDABAD	BHARATPUR-I	45.68	Safe
151	MURSHIDABAD	BHARATPUR-II	18.87	Safe
152	MURSHIDABAD	BURWAN	50.06	Safe
153	MURSHIDABAD	DOMKAL	55.53	Safe
154	MURSHIDABAD	FARAKKA	21.51	Safe
155	MURSHIDABAD	HARIHARPARA	65.76	Safe
156	MURSHIDABAD	JALANGI	55.28	Safe
157	MURSHIDABAD	KANDI	50.02	Safe
158	MURSHIDABAD	KHARGRAM	56.69	Safe
159	MURSHIDABAD	LALGOLA	56.19	Safe
160	MURSHIDABAD	MURSHIDABAD JIAGANJ	80.56	Semi-critical
161	MURSHIDABAD	NABAGRAM	60.57	Safe
162	MURSHIDABAD	NAWDA	76.76	Semi-critical
163	MURSHIDABAD	RAGUNATHGANJ-I	71.01	Semi-critical
164	MURSHIDABAD	RAGUNATHGANJ-II	29.57	Safe
165	MURSHIDABAD	RANINAGAR-I	98.04	Critical
166	MURSHIDABAD	RANINAGAR-II	72.92	Semi-critical
167	MURSHIDABAD	SAGARDIGHI	58.09	Safe
168	MURSHIDABAD	SAMSERGANJ	41.48	Safe
169	MURSHIDABAD	SUTI-I	36.40	Safe
170	MURSHIDABAD	SUTI-II	60.56	Safe
171	NADIA	CHAKDAH	66.23	Safe
172	NADIA	CHAPRA	93.02	Critical
173	NADIA	HANSKHALI	76.41	Semi-critical
174	NADIA	HARINGHATA	79.43	Semi-critical
175	NADIA	KALIGANJ	85.27	Semi-critical
176	NADIA	KALYANI	88.81	Semi-critical
177	NADIA	KARIMPUR-I	83.98	Semi-critical
178	NADIA	KARIMPUR-II	92.09	Critical
179	NADIA	KRISHNAGANJ	92.95	Critical
180	NADIA	KRISHNANAGAR-I	83.67	Semi-critical
181	NADIA	KRISHNANAGAR-II	67.62	Safe
182	NADIA	NABADWIP	86.75	Semi-critical
183	NADIA	NAKASHIPARA	93.48	Critical
184	NADIA	RANAGHAT-I	58.19	Safe
185	NADIA	RANAGHAT-II	95.07	Critical
186	NADIA	SANTIPUR	88.12	Semi-critical
187	NADIA	TEHATTA-I	83.21	Semi-critical
188	NADIA	TEHATTA-II	96.49	Critical
189	NORTH 24 PARGANAS	AMDANGA	42.58	Safe
190	NORTH 24 PARGANAS	BADURIA	75.33	Semi-critical
191	NORTH 24 PARGANAS	BAGDA	87.43	Semi-critical
192	NORTH 24 PARGANAS	BARASAT-I	76.96	Semi-critical
193	NORTH 24 PARGANAS	BARASAT-II	51.20	Safe
194	NORTH 24 PARGANAS	BARRACKPUR-I	41.46	Safe
195	NORTH 24 PARGANAS	BARRACKPUR-II	21.80	Safe
196	NORTH 24 PARGANAS	BASIRHAT-I	98.44	Critical
197	NORTH 24 PARGANAS	BASIRHAT-II	47.65	Safe
198	NORTH 24 PARGANAS	BONGAON	92.37	Critical
199	NORTH 24 PARGANAS	DEGANGA	92.34	Critical
200	NORTH 24 PARGANAS	GAIGHATA	84.28	Semi-critical

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
201	NORTH 24 PARGANAS	HABRA-I	89.37	Semi-critical
202	NORTH 24 PARGANAS	HABRA-II	52.12	Safe
203	NORTH 24 PARGANAS	HAROA	17.48	Safe
204	NORTH 24 PARGANAS	HASNABAD	0.00	Salinity
205	NORTH 24 PARGANAS	HINGALGANJ	0.00	Salinity
206	NORTH 24 PARGANAS	MINAKHAN	0.00	Salinity
207	NORTH 24 PARGANAS	RAJARHAT	66.92	Safe
208	NORTH 24 PARGANAS	SANDESHKHALI-I	0.00	Salinity
209	NORTH 24 PARGANAS	SANDESHKHALI-II	0.00	Salinity
210	NORTH 24 PARGANAS	SWARUPNAGAR	72.82	Semi-critical
211	PASCHIM BARDDHAMAN	ANDAL	33.60	Safe
212	PASCHIM BARDDHAMAN	BARABANI	43.29	Safe
213	PASCHIM BARDDHAMAN	DURGAPUR-FARIDPUR	52.20	Safe
214	PASCHIM BARDDHAMAN	JAMURIA	55.93	Safe
215	PASCHIM BARDDHAMAN	KANKSA	65.00	Safe
216	PASCHIM BARDDHAMAN	PANDABESWAR	28.74	Safe
217	PASCHIM BARDDHAMAN	RANIGANJ	53.97	Safe
218	PASCHIM BARDDHAMAN	SALANPUR	60.67	Safe
219	PASCHIM MEDINIPUR	CHANDRAKONA-I	53.86	Safe
220	PASCHIM MEDINIPUR	CHANDRAKONA-II	76.11	Semi-critical
221	PASCHIM MEDINIPUR	DANTAN-I	44.40	Safe
222	PASCHIM MEDINIPUR	DANTAN-II	50.17	Safe
223	PASCHIM MEDINIPUR	DASPUR-I	47.51	Safe
224	PASCHIM MEDINIPUR	DASPUR-II	21.03	Safe
225	PASCHIM MEDINIPUR	DEBRA	68.12	Safe
226	PASCHIM MEDINIPUR	GARBETA-I	82.51	Semi-critical
227	PASCHIM MEDINIPUR	GARBETA-II	54.39	Safe
228	PASCHIM MEDINIPUR	GARBETA-III	60.36	Safe
229	PASCHIM MEDINIPUR	GHATAL	46.03	Safe
230	PASCHIM MEDINIPUR	KESHIARY	28.56	Safe
231	PASCHIM MEDINIPUR	KESHPUR	65.66	Safe
232	PASCHIM MEDINIPUR	KHARAGPUR-I	31.36	Safe
233	PASCHIM MEDINIPUR	KHARAGPUR-II	71.86	Semi-critical
234	PASCHIM MEDINIPUR	MIDNAPORE	42.32	Safe
235	PASCHIM MEDINIPUR	MOHANPUR	51.54	Safe
236	PASCHIM MEDINIPUR	NARAYANGARH	58.01	Safe
237	PASCHIM MEDINIPUR	PINGLA	53.77	Safe
238	PASCHIM MEDINIPUR	SABANG	62.94	Safe
239	PASCHIM MEDINIPUR	SALBANI	31.77	Safe
240	PURBA BARDDHAMAN	AUSGRAM-I	38.07	Safe
241	PURBA BARDDHAMAN	AUSGRAM-II	31.80	Safe
242	PURBA BARDDHAMAN	BHATAR	46.10	Safe
243	PURBA BARDDHAMAN	BURDWAN-I	37.25	Safe
244	PURBA BARDDHAMAN	BURDWAN-II	82.40	Semi-critical
245	PURBA BARDDHAMAN	GALSI-I	24.08	Safe
246	PURBA BARDDHAMAN	GALSI-II	26.50	Safe
247	PURBA BARDDHAMAN	JAMALPUR	59.05	Safe
248	PURBA BARDDHAMAN	KALNA-I	46.54	Safe
249	PURBA BARDDHAMAN	KALNA-II	62.06	Safe
250	PURBA BARDDHAMAN	KATWA-I	39.06	Safe
251	PURBA BARDDHAMAN	KATWA-II	57.14	Safe

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semi-critical/Safe)
252	PURBA BARDDHAMAN	KETUGRAM-I	42.17	Safe
253	PURBA BARDDHAMAN	KETUGRAM-II	21.95	Safe
254	PURBA BARDDHAMAN	KHANDAGHOSH	53.06	Safe
255	PURBA BARDDHAMAN	MANGOLKOTE	74.52	Semi-critical
256	PURBA BARDDHAMAN	MANTESWAR	85.02	Semi-critical
257	PURBA BARDDHAMAN	MEMARI-I	71.40	Semi-critical
258	PURBA BARDDHAMAN	MEMARI-II	41.42	Safe
259	PURBA BARDDHAMAN	PURBASTHALI-I	39.93	Safe
260	PURBA BARDDHAMAN	PURBASTHALI-II	76.97	Semi-critical
261	PURBA BARDDHAMAN	RAINA-I	48.24	Safe
262	PURBA BARDDHAMAN	RAINA-II	54.31	Safe
263	PURBA MEDINIPUR	BHAGAWANPUR-I	10.81	Safe
264	PURBA MEDINIPUR	BHAGAWANPUR-II	52.85	Safe
265	PURBA MEDINIPUR	CONTAI-I	0.00	Salinity
266	PURBA MEDINIPUR	CONTAI-II	0.00	Salinity
267	PURBA MEDINIPUR	CONTAI-III	0.00	Salinity
268	PURBA MEDINIPUR	EGRA-I	56.42	Safe
269	PURBA MEDINIPUR	EGRA-II	34.86	Safe
270	PURBA MEDINIPUR	HALDIA	0.00	Salinity
271	PURBA MEDINIPUR	KHEJURI-I	0.00	Salinity
272	PURBA MEDINIPUR	KHEJURI-II	0.00	Salinity
273	PURBA MEDINIPUR	MAHISADAL	0.00	Salinity
274	PURBA MEDINIPUR	MOYNA	14.37	Safe
275	PURBA MEDINIPUR	NANDA KUMAR	0.00	Salinity
276	PURBA MEDINIPUR	NANDIGRAM-I	0.00	Salinity
277	PURBA MEDINIPUR	NANDIGRAM-II	0.00	Salinity
278	PURBA MEDINIPUR	NANDIGRAM-III	0.00	Salinity
279	PURBA MEDINIPUR	PANSKURA-I	16.85	Safe
280	PURBA MEDINIPUR	PANSKURA-II	19.46	Safe
281	PURBA MEDINIPUR	POTASHPUR-I	62.34	Safe
282	PURBA MEDINIPUR	POTASHPUR-II	49.06	Safe
283	PURBA MEDINIPUR	RAMNAGAR-I	0.00	Salinity
284	PURBA MEDINIPUR	RAMNAGAR-II	0.00	Salinity
285	PURBA MEDINIPUR	SAHID MATANGINI	0.00	Salinity
286	PURBA MEDINIPUR	SUTAHATA	0.00	Salinity
287	PURBA MEDINIPUR	TAMLUK	0.00	Salinity
288	PURULIYA	ARSHA	15.76	Safe
289	PURULIYA	BAGMUNDI	13.06	Safe
290	PURULIYA	BALARAMPUR	14.51	Safe
291	PURULIYA	BARABAZAR	14.66	Safe
292	PURULIYA	BUNDWAN	8.98	Safe
293	PURULIYA	HURA	12.07	Safe
294	PURULIYA	JAIPUR	61.87	Safe
295	PURULIYA	JHALDA-I	24.54	Safe
296	PURULIYA	JHALDA-II	24.89	Safe
297	PURULIYA	KASHIPUR	12.09	Safe
298	PURULIYA	MANBAZAR-I	13.19	Safe
299	PURULIYA	MANBAZAR-II	12.79	Safe
300	PURULIYA	NETURIA	7.85	Safe
301	PURULIYA	PARA	16.77	Safe
302	PURULIYA	PUNCHA	11.98	Safe

Sl. No.	District	Assessment Unit Name	Stage of Ground Water Extraction (%)	Categorization (OE/Critical/Semical/Safe)
303	PURULIYA	PURULIA-I	26.16	Safe
304	PURULIYA	PURULIA-II	17.73	Safe
305	PURULIYA	RAGHUNATHPUR-I	21.85	Safe
306	PURULIYA	RAGHUNATHPUR-II	15.31	Safe
307	PURULIYA	SANTURI	14.65	Safe
308	SOUTH 24 PARGANAS	BARUIPUR	0.00	Salinity
309	SOUTH 24 PARGANAS	BASANTI	0.00	Salinity
310	SOUTH 24 PARGANAS	BHANGAR-I	0.00	Salinity
311	SOUTH 24 PARGANAS	BHANGAR-II	0.00	Salinity
312	SOUTH 24 PARGANAS	BISHNUPUR-I	0.00	Salinity
313	SOUTH 24 PARGANAS	BISHNUPUR-II	0.00	Salinity
314	SOUTH 24 PARGANAS	BUDGE BUDGE-I	0.00	Salinity
315	SOUTH 24 PARGANAS	BUDGE BUDGE-II	0.00	Salinity
316	SOUTH 24 PARGANAS	CANNING-I	0.00	Salinity
317	SOUTH 24 PARGANAS	CANNING-II	0.00	Salinity
318	SOUTH 24 PARGANAS	DIAMOND HARBOUR-I	0.00	Salinity
319	SOUTH 24 PARGANAS	DIAMOND HARBOUR-II	0.00	Salinity
320	SOUTH 24 PARGANAS	FALTA	0.00	Salinity
321	SOUTH 24 PARGANAS	GOSABA	0.00	Salinity
322	SOUTH 24 PARGANAS	JAYNAGAR-I	0.00	Salinity
323	SOUTH 24 PARGANAS	JAYNAGAR-II	0.00	Salinity
324	SOUTH 24 PARGANAS	KAKDWIP	0.00	Salinity
325	SOUTH 24 PARGANAS	KULPI	0.00	Salinity
326	SOUTH 24 PARGANAS	KULTALI	0.00	Salinity
327	SOUTH 24 PARGANAS	MAGRAHAT-I	0.00	Salinity
328	SOUTH 24 PARGANAS	MAGRAHAT-II	0.00	Salinity
329	SOUTH 24 PARGANAS	MANDIRBAZAR	0.00	Salinity
330	SOUTH 24 PARGANAS	MATHURAPUR-I	0.00	Salinity
331	SOUTH 24 PARGANAS	MATHURAPUR-II	0.00	Salinity
332	SOUTH 24 PARGANAS	NAMKHANA	0.00	Salinity
333	SOUTH 24 PARGANAS	PATHARPRATIMA	0.00	Salinity
334	SOUTH 24 PARGANAS	SAGR	0.00	Salinity
335	SOUTH 24 PARGANAS	SONARPUR	0.00	Salinity
336	SOUTH 24 PARGANAS	THAKURPUKUR MAHESTALA	0.00	Salinity
337	UTTAR DINAJPUR	CHOPRA	41.67	Safe
338	UTTAR DINAJPUR	GOALPOKHAR-I	67.85	Safe
339	UTTAR DINAJPUR	GOALPOKHAR-II	68.59	Safe
340	UTTAR DINAJPUR	HEMTABAD	26.43	Safe
341	UTTAR DINAJPUR	ISLAMPUR	58.21	Safe
342	UTTAR DINAJPUR	ITAHAR	34.40	Safe
343	UTTAR DINAJPUR	KALIAGANJ	22.90	Safe
344	UTTAR DINAJPUR	KARANDIGHI	54.73	Safe
345	UTTAR DINAJPUR	RAIGANJ	47.99	Safe

Annexure - 6

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2024
WEST BENGAL

Sl. No.	Name of District	Sl. No.	Name of Assessment Units affected by Fluoride	Sl. No.	Name of Assessment Units affected by Arsenic	Sl. No.	Name of Assessment Units affected by Salinity
1	BANKURA	1	CHHATNA				
		2	SALTORA				
		3	HIRBANDH				
		4	RAIPUR				
		5	INDPUR				
		6	SIMLAPAL				
		7	BANKURA-II				
		8	BARJORA				
		9	GANGAJALGHATI				
		10	TALDANGRA				
2	BIRBHUM	1	RAJNAGAR				
		2	SURI-II				
		3	DUBRAJPUR				
		4	NALHATI-I				
		5	RAMPURHAT-I				
		6	MAYURESWAR-I				
		7	KHOYRASOL				
3	DAKSHIN DINAJPUR	1	GANGARAMPUR				
		2	KUSHMUNDI				
		3	BANSIHARI				
		4	TAPAN				
		5	KUMARGANJ				
4	HAORA					1	SANKRAIL
						2	ULUBERIA-I
						3	BAGNAN-II
						4	ULUBERIA-II
						5	BALLY JAGACHHA
						6	BAGNAN-I
						7	SHYAMPUR-II
						8	PANCHLA
						9	SHYAMPUR-I
5	HUGLI			1	BALAGARH		
6	KOLKATTA					1	KMC
7	MALDA	1	BAMANGOLA	1	MANIKCHAK		
				2	KALIACHAK-III		
				3	ENGLISH BAZAR		
				4	RATUA-I		
				5	KALIACHAK-I		
				6	KALIACHAK-II		

Sl. No.	Name of District	Sl. No.	Name of Assessment Units affected by Fluoride	Sl. No.	Name of Assessment Units affected by Arsenic	Sl. No.	Name of Assessment Units affected by Salinity
8	MURSHIDABAD			1	LALGOLA		
				2	SAMSERGANJ		
				3	HARIHARPARA		
				4	MURSHIDABAD JIAGANJ		
				5	RAGUNATHGANJ-I		
				6	BHAGAWANGOLA-I		
				7	BERHAMPORE		
				8	RANINAGAR-I		
				9	BELDANGA-II		
				10	BHAGAWANGOLA-II		
				11	BELDANGA-I		
				12	SUTI-II		
				13	NAWDA		
				14	JALANGI		
				15	DOMKAL		
				16	RANINAGAR-II		
				17	FARAKKA		
				18	RAGUNATHGANJ-II		
				19	SUTI-I		
9	NADIA			1	RANAGHAT-II		
				2	KALIGANJ		
				3	NAKASHIPARA		
				4	KARIMPUR-I		
				5	RANAGHAT-I		
				6	SANTIPUR		
				7	HANSKHALI		
				8	KRISHNAGANJ		
				9	TEHATTA-I		
				10	HARINGHATA		
				11	NABADWIP		
				12	KARIMPUR-II		
				13	CHAPRA		
				14	TEHATTA-II		
				15	KRISHNANAGAR-II		
				16	KRISHNANAGAR-I		
				17	CHAKDAH		
10	NORTH 24 PARGANAS			1	BARASAT-II	1	MINAKHAN
				2	HAROA	2	SANDESHKHALI-I
				3	BASIRHAT-I	3	HINGALGANJ
				4	BONGAON	4	SANDESHKHALI-II
				5	HABRA-I	5	HASNABAD
				6	BARRACKPUR-I		
				7	GAIGHATA		
				8	AMDANGA		
				9	DEGANGA		
				10	BARASAT-I		
				11	BAGDA		
				12	BARRACKPUR-II		

Sl. No.	Name of District	Sl. No.	Name of Assessment Units affected by Fluoride	Sl. No.	Name of Assessment Units affected by Arsenic	Sl. No.	Name of Assessment Units affected by Salinity
				13	BADURIA		
				14	BASIRHAT-II		
				15	HABRA-II		
				16	RAJARHAT		
				17	SWARUPNAGAR		
11	PURBA BARDHAMAN			1	KALNA-II		
				2	KATWA-I		
				3	KATWA-II		
				4	PURBASTHALI-II		
				5	PURBASTHALI-I		
12	PURBA MEDINIPUR					1	RAMNAGAR-I
						2	CONTAI-II
						3	TAMLUK
						4	NANDIGRAM-I
						5	MAHISADAL
						6	RAMNAGAR-II
						7	CONTAI-III
						8	SUTAHATA
						9	CONTAI-I
						10	NANDIGRAM-II
						11	HALDIA
						12	SAHID MATANGINI
						13	NANDA KUMAR
						14	KHEJURI-II
						15	NANDIGRAM-III
						16	KHEJURI-I
13	PURULIYA	1	PUNCHA				
		2	PARA				
		3	ARSHA				
		4	KASHIPUR				
		5	PURULIA-II				
		6	NETURIA				
		7	BALARAMPUR				
		8	SANTURI				
		9	BAGMUNDI				
		10	PURULIA-I				
		11	HURA				
		12	RAGHUNATHPUR-I				
		13	JHALDA-I				
		14	MANBAZAR-I				
		15	JAIPUR				
		16	RAGHUNATHPUR-II				
		17	BARABAZAR				
14	SOUTH 24 PARGANAS					1	BHANGAR-I
						2	KULTALI
						3	BISHNUPUR-I
						4	MAGRAHAT-I

Sl. No.	Name of District	Sl. No.	Name of Assessment Units affected by Fluoride	Sl. No.	Name of Assessment Units affected by Arsenic	Sl. No.	Name of Assessment Units affected by Salinity
					5	BUDGE BUDGE-II	
					6	CANNING-II	
					7	GOSABA	
					8	KAKDWIP	
					9	MATHURAPUR-I	
					10	KULPI	
					11	MATHURAPUR-II	
					12	NAMKHANA	
					13	DIAMOND HARBOUR-II	
					14	SAGAR	
					15	THAKURPUKUR MAHESTALA	
					16	BHANGAR-II	
					17	BUDGE BUDGE-I	
					18	JAYNAGAR-II	
					19	MANDIRBAZAR	
					20	DIAMOND HARBOUR-I	
					21	BASANTI	
					22	BISHNUPUR-II	
					23	PATHARPRATIMA	
					24	JAYNAGAR-I	
					25	SONARPUR	
					26	MAGRAHAT-II	
					27	BARUJPUR	
					28	CANNING-I	
					29	FALTA	
15	UTTAR DINAJPUR	1	ITAHAR				

Total No. of Assessed Units	Number of Assessment Units affected by Fluoride	Number of Assessment Units affected by Arsenic	Number of Assessment Units affected by Salinity
166	41	65	60

Annexure 7

ASSESSMENT UNIT WISE RESOURCE POSITION, 2024
WEST BENGAL

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
1	ALIPURDUAR	ALIPURDUAR-I	37859	37859	16377.44	135.88	3418.21	395.57	20327.1	2032.71	18294.39	868.8	47.742	476.030664	1392.57	486.91	16890.94
2	ALIPURDUAR	ALIPURDUAR-II	32872	32872	14220.11	537.47	2967.95	1892.13	19617.66	1961.77	17655.89	4885.6	27.104	591.561486	5504.27	599.15	12144.03
3	ALIPURDUAR	FALAKATA	35398	35398	15312.83	174.84	3196.01	569.95	19253.63	1925.37	17328.26	1373	15.96	702.85203	2091.81	800.99	15138.31
4	ALIPURDUAR	KALCHINI	42024	42024	18179.18	65.59	3794.26	148.72	22187.75	2218.78	19968.97	391.5	31.2	708.480768	1131.19	777.39	18768.87
5	ALIPURDUAR	KUMARGRAM	51768	51768	22394.34	148.56	4674.03	519.05	27735.98	2773.6	24962.38	1321.9	11.28	477.808068	1810.99	532.54	23096.66
6	ALIPURDUAR	MADARIHAT	37676	37676	16298.28	67.03	3401.69	195.37	19962.37	1996.24	17966.13	525.3	30.6	461.96517	1017.87	491.99	16918.24
7	BANKURA	BANKURA-I	19015	19015	977.64	674.66	195.15	439.33	2286.78	228.68	2058.1	5.6	9.75	439.971438	455.32	449.67	1593.08
8	BANKURA	BANKURA-II	22084	22084	1135.43	810.65	226.64	491.09	2663.81	266.38	2397.43	261.9	13.05	365.03796	639.99	377.01	1745.47
9	BANKURA	BARJORA	39323	39323	8080.47	858.08	1527.61	1268.98	11735.14	586.76	11148.38	1648	89.04	486.671436	2223.7	506.56	8904.79
10	BANKURA	CHHATNA	44747	44747	2300.63	552.05	459.23	581.33	3893.24	389.33	3503.91	20.4	52.29	496.91976	569.61	520.6	2910.62
11	BANKURA	GANGAJALGHATI	36647	36647	1884.17	1313.88	376.1	942.09	4516.24	451.63	4064.61	67.6	24.75	456.615	548.96	468.56	3503.7
12	BANKURA	HIRBANDH	19097	19097	981.86	495.66	195.99	491.37	2164.88	216.49	1948.39	5.6	0	220.83084	226.43	229.07	1713.72
13	BANKURA	INDPUR	30260	30260	1555.79	732.33	310.55	678.61	3277.28	327.73	2949.55	0.8	2.04	403.38705	406.23	416.04	2530.67
14	BANKURA	INDUS	25499	25499	6742.34	927.53	897.22	2437.98	11005.07	1100.51	9904.56	5625	9.45	425.47977	6059.93	435.95	3834.16
15	BANKURA	JAYPUR	26382	26382	6975.82	698.67	928.29	1945.21	10547.99	1054.81	9493.18	4778.4	4.29	399.10341	5181.79	408.72	5111.92
16	BANKURA	KHATRA	23182	23182	1191.88	410.28	237.91	399.58	2239.65	223.97	2015.68	18.2	0.63	235.01109	253.84	236.63	1760.22
17	BANKURA	KOTULPUR	25038	25038	6197.17	721.93	881	2039.97	9840.07	813.67	9026.4	6221.3	9.9	433.84995	6665.04	441	3192.46
18	BANKURA	MEJHIA	16287	16287	2871.03	187.42	382.05	323.51	3764.01	376.4	3387.61	300	108	199.0272	607.02	205.04	2774.58
19	BANKURA	ONDA	50246	50246	8764.9	1473.77	1620.65	3426.05	15285.37	824.37	14461	7744.9	14.25	659.91051	8419.06	682.72	6019.13
20	BANKURA	PATRASAYER	32262	32262	7413.14	538.53	1040.59	1683.67	10675.93	1067.59	9608.34	4033.5	13.77	467.04597	4514.31	479.88	5081.2
21	BANKURA	RAIPUR	36992	36992	1901.91	902.45	379.64	949.21	4133.21	413.32	3719.89	1437.4	0.12	423.314736	1860.83	443.8	1838.57
22	BANKURA	RANIBUNDH	42851	42851	2203.15	1186.86	439.77	1813.67	5643.45	564.34	5079.11	50	1.08	308.94987	360.03	319.17	4708.86
23	BANKURA	SALTORA	31262	31262	1607.31	702.16	320.83	436.57	3066.87	306.69	2760.18	18.4	3.78	343.86504	366.04	353.04	2384.97
24	BANKURA	SARENZA	22378	22378	3944.73	374.92	787.4	867.34	5974.39	597.43	5376.96	1991.6	0.72	271.31253	2263.63	278.84	3105.8
25	BANKURA	SIMLAPAL	31015	31015	5600.29	555.19	1091.3	787.48	8034.26	524.57	7509.69	1296	0.27	344.772576	1641.04	363.77	5849.65
26	BANKURA	SONAMUKHI	39685	39685	9240.7	658.33	1280.01	1855.02	13034.06	651.71	12382.35	4710.8	10.53	440.854008	5162.18	451.67	7209.35
27	BANKURA	TALDANGRA	34974	34974	6783.67	514.77	1230.61	709.65	9238.7	461.93	8776.77	1051.6	4.05	386.6226	1442.27	400.22	7320.9
28	BANKURA	VISHNUPUR	38775	38775	10252.72	1126.27	1364.35	3501.1	16244.44	1624.45	14619.99	8947.5	19.14	501.432474	9468.07	515.39	5137.96
29	BIRBHUM	BOLPUR SRINIKETAN	34772	34772	6933.47	639.34	1231.1	1046.69	9850.6	492.53	9358.07	1317.3	7.122	639.797112	1964.21	674.05	7359.61
30	BIRBHUM	DUBRAJPUR	36095	36095	6699.6	484.45	1277.94	861.79	9323.78	932.38	8391.4	476	9.08	530.627802	1015.7	548.4	7357.93
31	BIRBHUM	ILLAMBAZAR	26155	26155	5255.54	755	926.01	2063.04	8999.59	449.98	8549.61	4783.7	9.3255	427.386822	5220.42	451.76	3304.82

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
69	HAORA	BALLY JAGACHHA	7205	7205	0	0	0	0	0	0	0	0	0	0	0	0	0
70	HAORA	DOMJUR	9730	9730	2257.48	112.6	533.83	186.94	3090.85	154.54	2936.31	0	272.7896	730.473186	1003.27	835.24	1828.27
71	HAORA	JAGATBALLAVPUR	12489	12489	3738.21	121.29	685.2	184.35	4729.05	303.02	4426.03	96	22.746	544.130466	662.87	689.24	3618.05
72	HAORA	PANCHLA	5342	5342	0	0	0	0	0	0	0	0	0	0	0	0	0
73	HAORA	SANKRAIL	3664	3664	0	0	0	0	0	0	0	0	0	0	0	0	0
74	HAORA	SHYAMPUR-I	11392	11392	0	0	0	0	0	0	0	0	0	0	0	0	0
75	HAORA	SHYAMPUR-II	10025	10025	0	0	0	0	0	0	0	0	0	0	0	0	0
76	HAORA	UDAYNARAYANPUR	12480	12480	3778.98	289	684.7	660.19	5412.87	541.29	4871.58	1077	6.3	473.68605	1556.98	484.7	3303.59
77	HAORA	ULUBERIA-I	11438	11438	0	0	0	0	0	0	0	0	0	0	0	0	0
78	HAORA	ULUBERIA-II	6298	6298	0	0	0	0	0	0	0	0	0	0	0	0	0
79	HUGLI	ARAMBAG	26932	26932	7368.52	661.71	1492.4	1957.54	11480.17	1148.01	10332.16	5044	13.4605	833.291496	5890.75	858.62	4416.08
80	HUGLI	BALAGARH	20215	20215	5474.6	1177.58	1120.19	3245.2	11017.57	550.88	10466.69	7829.9	8.052	499.808808	8337.76	556.63	2072.11
81	HUGLI	CHANDITALA-I	9345	9345	2556.77	247.19	517.84	556.88	3878.68	387.87	3490.81	1156.3	9.724	346.38573	1512.41	512.74	1812.05
82	HUGLI	CHANDITALA-II	7034	7034	1924.48	123.48	389.78	258.99	2696.73	269.68	2427.05	331.5	132.5587	327.740508	791.8	356.52	1606.47
83	HUGLI	CHINSURAH-MAGRA	8186	8186	2239.67	162.46	453.61	241.14	3096.88	309.69	2787.19	209.5	631.0756	851.279718	1691.85	888.53	1058.09
84	HUGLI	DHANIAKHALI	27568	27568	7542.53	926.85	1527.64	1585.88	11582.9	1158.29	10424.61	2157.3	84.704	786.83853	3028.84	802.75	7379.86
85	HUGLI	GOGHAT-I	18632	18632	5097.66	686.89	1032.47	1667.85	8484.87	848.5	7636.37	3312	3.482	353.70909	3669.19	363.05	3957.84
86	HUGLI	GOGHAT-II	19003	19003	4079.21	548.41	1053.03	1917.94	7598.59	477.16	7121.43	5624	2.71	406.54284	6033.26	417.5	1708.32
87	HUGLI	HARIPAL	18442	18442	5045.68	606.97	1021.94	1407.63	8082.22	808.23	7273.99	2783.5	229.72	640.544778	3653.76	661.73	3599.04
88	HUGLI	JANGIPARA	16423	16423	4493.29	676.82	910.06	1706.08	7786.25	778.63	7007.62	4048.8	5.3075	510.649308	4564.75	546.62	2406.9
89	HUGLI	KHANAKUL-I	17193	17193	4703.96	473.03	952.73	1282.09	7411.81	741.18	6670.63	2880.5	0	663.69264	3544.19	686.63	3103.5
90	HUGLI	KHANAKUL-II	12184	12184	3333.51	198.36	675.16	282.54	4489.57	448.96	4040.61	123	0	482.40663	605.41	499.22	3418.39
91	HUGLI	PANDUA	27644	27644	7563.32	863.77	1531.85	2200.17	12159.11	1215.91	10943.2	4438.2	11.106	747.454446	5196.76	822.36	5671.53
92	HUGLI	POLBA-DADPUR	28569	28569	7816.4	1041.79	1583.11	2505.06	12946.36	1294.64	11651.72	5257.3	202.7262	652.9704	6113.01	667.41	5524.27
93	HUGLI	PURSURA	10043	10043	2747.74	374.17	556.52	745.49	4423.92	442.39	3981.53	1767.5	2.205	434.14122	2203.85	444.71	1767.11
94	HUGLI	SERAMPUR UTTARPARA	4480	4480	1021.43	173.18	248.25	314.41	1757.27	175.73	1581.54	143.3	624.7524	476.1427373	1244.19	487.74	325.75
95	HUGLI	SINGUR	16485	16485	4510.25	321.05	913.49	927.3	6672.09	667.21	6004.88	2359.5	167.76175	1089.763272	3617.03	1105.41	2372.2
96	HUGLI	TARAKESWAR	11993	11993	3281.25	344.84	664.58	744.95	5035.62	503.57	4532.05	1322.5	6.0701	490.7133	1819.28	501.75	2701.73
97	JALPAIGURI	BANARHAT	28766	28766	15554.87	116.35	2597.22	444.59	18713.03	1871.3	16841.73	1224.6	0	289.224102	1513.83	304.12	15313
98	JALPAIGURI	DHUPGURI	27788	27788	12020.82	190.18	2508.92	575.14	15295.06	1529.51	13765.55	1259.3	73.53	907.57761	2240.41	1099.95	11332.77
99	JALPAIGURI	JALPAIGURI SADAR	51362	51362	22218.7	334.37	4637.37	1029.41	28219.85	2821.98	25397.86	2493.4	782.55	1033.27923	4309.23	1370.5	20751.41
100	JALPAIGURI	KRANTI	29509	29509	12765.31	136.18	2664.31	376.4	15942.2	1594.22	14347.98	941.2	0	733.503708	1674.7	1522.11	11884.67
101	JALPAIGURI	MAL	25831	25831	11174.24	171.32	2332.23	391.32	14069.11	1406.91	12662.2	823.4	77.85	600.772188	1502.03	777.1	10983.84
102	JALPAIGURI	MAYNAGURI	53060	53060	22953.24	631.2	4790.68	2104.65	30479.77	3047.97	27431.8	5432.5	32.25	824.725968	6289.47	859.8	21107.26
103	JALPAIGURI	METIALI	20491	20491	8864.21	44.21	1850.09	122.66	10881.17	1088.12	9793.05	287	25.74	234.562578	547.31	235.11	9245.19
104	JALPAIGURI	NAGRAKATA	39749	39749	17195.04	127.91	3588.86	91.63	21003.44	2100.35	18903.09	110.7	13.68	314.95485	439.34	321.78	18456.92
105	JALPAIGURI	RAJGANJ	63663	63663	27540	201.05	5748	266.05	33755.1	3375.51	30379.59	128.4	492.45	1453.607682	2074.46	2277.06	27481.68

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
106	JHARGRAM	BINPUR-I	35762	35762	8640.01	853.17	1852.62	2140.66	13486.46	674.33	12812.13	5397.7	1.02	396.21261	5794.95	407.1	7006.29
107	JHARGRAM	BINPUR-II	58350	58350	11582.1	262.41	3022.76	363.39	15230.66	1017.62	14213.04	420.8	0	404.85216	825.65	423.63	13368.61
108	JHARGRAM	GOPIBALLAVPUR-I	27583	27583	5096.59	562.66	1309.83	1888.21	8857.29	442.86	8414.43	4839.7	0	272.38782	5112.09	281.4	3293.33
109	JHARGRAM	GOPIBALLAVPUR-II	19217	19217	3424.64	462.43	912.56	922.04	5721.67	572.17	5149.5	1884.1	1.47	275.60055	2161.17	283.4	2980.53
110	JHARGRAM	JAMBONI	31813	31813	7996.05	628.91	1648.04	795.06	11068.06	573.96	10494.1	1173.8	0	283.99482	1457.8	291.06	9029.23
111	JHARGRAM	JHARGRAM	51511	51511	15021.35	631.94	2668.48	1016.23	19338	1933.8	17404.2	1662.2	60.6	523.359192	2246.16	537.42	15143.98
112	JHARGRAM	NAYAGRAM	50144	50144	13404.15	395.98	2381.19	399.06	16580.38	1658.04	14922.34	205.5	0	370.92687	576.43	383.75	14333.09
113	JHARGRAM	SAKRAIL	27680	27680	7399.23	644.16	1314.44	1929.9	11287.73	1128.77	10158.96	4845.8	0	293.83887	5139.63	302.15	5011.02
114	KALIMPONG	GORUBATHAN	44272	8854	1326.52	64.17	234.4	21.87	1646.96	164.7	1482.26	0	2.46	13.488429	15.94	13.57	1466.24
115	KALIMPONG	KALIMPONG-I	36962	7392	1107.48	55.77	195.7	35.13	1394.08	139.41	1254.67	0	0	34.086036	34.09	34.32	1220.35
116	KALIMPONG	KALIMPONG-II	24126	4825	722.89	69.27	127.74	41.37	961.27	96.13	865.14	0	0	14.843163	14.84	14.93	850.21
117	KOCH BIHAR	COOCHBEHAR-I	36936	36936	14780.07	1389.97	3353.57	4999.36	24522.97	2452.29	22070.68	12817	10.08	915.797556	13742.87	941.91	8301.7
118	KOCH BIHAR	COOCHBEHAR-II	38538	38538	15421.12	530.96	3499.02	1723.52	21174.62	2117.46	19057.16	3995.9	53.55	832.817142	4882.26	947.06	14060.66
119	KOCH BIHAR	DINHATA-I	28422	28422	11373.17	1225.04	2580.55	4334.43	19513.19	1951.32	17561.87	11098.9	10.8	774.682716	11884.38	795.69	5656.48
120	KOCH BIHAR	DINHATA-II	24698	24698	9882.99	797.86	2242.43	2415.09	15338.37	1533.84	13804.53	5444	10.53	664.71975	6119.25	696.33	7653.67
121	KOCH BIHAR	HALDIBARI	16288	16288	6517.7	332.29	1478.85	1246.11	9574.95	957.5	8617.45	3305.4	0	280.743984	3586.14	287.33	5024.72
122	KOCH BIHAR	MATHABHANGA-I	32310	32310	12928.96	465.92	2933.55	1535.56	17863.99	1786.4	16077.59	3749.4	6	619.530414	4374.93	644.75	11677.44
123	KOCH BIHAR	MATHABHANGA-II	30999	30999	12404.36	1139.84	2814.52	4089.63	20448.35	2044.83	18403.52	10651.2	0.6	600.35346	11252.16	623.13	7128.58
124	KOCH BIHAR	MEKLIGANJ	30595	30595	12242.7	653.72	2777.84	2398.82	18073.08	1807.31	16265.77	6337.6	2.85	410.330226	6750.78	423.68	9501.64
125	KOCH BIHAR	SITAI	16082	16082	6435.27	526.58	1460.15	1794.95	10216.95	1021.7	9195.25	4518.2	0	287.23821	4805.43	297.01	4380.05
126	KOCH BIHAR	SITALKUCHI	26251	26251	10504.43	874	2383.43	3235.23	16997.09	1699.71	15297.38	8573	0	475.5804	9048.59	489.95	6234.42
127	KOCH BIHAR	TUFANGANJ-I	31949	31949	12784.51	563.19	2900.78	1688.33	17936.81	1793.68	16143.13	3593.7	5.94	646.31937	4245.96	664.37	11879.12
128	KOCH BIHAR	TUFANGANJ-II	26569	26569	10631.68	599.5	2412.31	2022.43	15665.92	1566.59	14099.33	4934.5	0.72	455.803386	5391.02	474.51	8689.6
129	KOLKATTA	KMC	18700	18700	0	0	0	0	0	0	0	0	0	0	0	0	0
130	MALDA	BAMANGOLA	20620	20620	5292.24	282.96	841.87	534.39	6951.46	695.15	6256.31	622.7	2.52	368.82447	994.05	379.87	5251.21
131	MALDA	CHANCHAL-I	16215	16215	3681.24	340.07	662.02	921.72	5605.05	280.26	5324.79	1862.8	0	534.102894	2396.91	562.46	2899.52
132	MALDA	CHANCHAL-II	20522	20522	4389.24	365.62	837.86	924.79	6517.51	651.76	5865.75	1596.1	2.04	591.73362	2189.87	632.21	3635.4
133	MALDA	ENGLISH BAZAR	25185	25185	6463.87	409.65	1028.24	805.09	8706.85	870.68	7836.17	602.6	17.64	1084.622028	1704.86	1187.37	6028.56
134	MALDA	GAZOLE	31373	31373	8052.05	909.26	1280.88	2118.63	12360.82	1236.08	11124.74	3024.3	76.95	882.78462	3984.03	930.39	7093.1
135	MALDA	HABIBPUR	39710	39710	10191.79	1188.69	1621.26	1866.19	14867.93	1486.8	13381.13	1603.8	10.74	506.187402	2120.73	527.21	11239.38
136	MALDA	HARISCHANDRAPUR-I	17142	17142	4399.59	309.97	699.87	1034.38	6443.81	644.39	5799.42	2478.7	1.74	566.38437	3046.83	601.75	2717.22
137	MALDA	HARISCHANDRAPUR-II	21720	21720	5574.56	641.55	886.78	1691.14	8794.03	879.4	7914.63	3658.5	3.24	742.9356	4404.67	801.84	3451.06
138	MALDA	KALIACHAK-I	10660	10660	2612.99	385.52	435.22	944.79	4378.52	218.93	4159.59	2010.7	1.29	858.943404	2870.93	1108.22	1039.38
139	MALDA	KALIACHAK-II	20917	20917	5215.08	376.72	853.99	949.66	7395.45	369.77	7025.68	1859.6	0	449.228568	2308.83	458.02	4708.06
140	MALDA	KALIACHAK-III	12737	12737	2977.86	320.57	520.02	882.51	4700.96	235.05	4465.91	1766.9	0	958.38999	2725.29	1050.59	1648.42
141	MALDA	MANIKCHAK	31639	31639	8120.32	302.26	1291.74	545.37	10259.69	1025.97	9233.72	881.4	1.53	790.6119	1673.54	850.25	7500.54
142	MALDA	OLD MALDA	22800	22800	5851.75	545.52	930.87	1019.18	8347.32	834.73	7512.59	1096.3	186.18	566.240268	1848.72	651.45	5578.66

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
143	MALDA	RATUA-I	22517	22517	5779.11	346.2	919.32	1038.24	8082.87	808.29	7274.58	2383.5	1.02	812.43525	3196.95	876.15	4013.92
144	MALDA	RATUA-II	10129	10129	2599.66	353.41	413.54	1053.42	4420.03	442.01	3978.02	2357.6	2.34	589.83708	2949.78	633.34	984.74
145	MURSHIDABAD	BELDANGA-I	16875	16875	3738.88	540.44	904.69	1682.04	6866.05	686.6	6179.45	3837	2.92	881.69619	4721.61	943.15	1396.39
146	MURSHIDABAD	BELDANGA-II	20793	20793	4606.96	520.07	1114.74	1390.82	7632.59	763.26	6869.33	3125.6	0	685.40868	3811.01	719.1	3024.63
147	MURSHIDABAD	BERHAMPORE	31419	31419	8353.55	1120.94	1684.41	3384.4	14543.3	1454.33	13088.97	7526.4	57.98525	1434.350136	9018.74	1677.8	3826.78
148	MURSHIDABAD	BHAGAWANGOLA-I	13640	13640	2949.37	438.95	731.26	1355.49	5475.07	273.76	5201.31	3696	4.38	578.30454	4278.69	616.24	884.68
149	MURSHIDABAD	BHAGAWANGOLA-II	14959	14959	3977.24	358.43	801.97	1110.54	6248.18	624.82	5623.36	3002.2	9.855	443.70057	3455.75	469.54	2141.77
150	MURSHIDABAD	BHARATPUR-I	18372	18372	3256.45	438.82	984.94	1041.55	5721.76	572.18	5149.58	1897.4	5.34	449.51064	2352.25	464.78	2782.06
151	MURSHIDABAD	BHARATPUR-II	15850	15850	4214.13	315.07	849.74	520.64	5899.58	589.96	5309.62	556.8	64.01	380.886552	1001.69	384.4	4304.42
152	MURSHIDABAD	BURWAN	27094	27094	4932.89	730.34	1452.54	1768.1	8883.87	444.19	8439.68	3550.2	2.82	671.60292	4224.62	694.82	4191.84
153	MURSHIDABAD	DOMKAL	30519	30519	6761.89	569.75	1636.16	1706.32	10674.12	1067.41	9606.71	4361.2	2.52	971.19492	5334.92	1011.1	4231.88
154	MURSHIDABAD	FARAKKA	13274	13274	3230.69	148.34	711.64	289.44	4380.11	219	4161.11	239.8	39.274	616.129344	895.2	830.73	3051.31
155	MURSHIDABAD	HARIHARPARA	25314	25314	5751.72	795.05	1357.11	2270.36	10174.24	508.71	9665.53	5673	0	682.87485	6355.88	709.62	3282.9
156	MURSHIDABAD	JALANGI	12200	12200	3033.56	336.53	654.06	910.04	4934.19	246.7	4687.49	1911.8	3.67	675.84057	2591.31	704.26	2067.76
157	MURSHIDABAD	KANDI	22748	22748	4438.16	571.06	1219.55	1502.03	7730.8	386.54	7344.26	3014.8	5.486	652.941054	3673.24	673.39	3650.57
158	MURSHIDABAD	KHARGRAM	31845	31845	7055.68	1149.14	1707.25	3057.83	12969.9	1296.99	11672.91	5888.8	2.28	726.21714	6617.3	755.12	5026.71
159	MURSHIDABAD	LALGOLA	18437	18437	4901.95	384.16	988.43	1102.46	7377	737.7	6639.3	2750.8	0.584	979.27821	3730.65	1051.1	2836.83
160	MURSHIDABAD	MURSHIDABAD JIAGANJ	20862	20862	4113.78	819.59	1118.44	2255.02	8306.83	415.34	7891.49	5553.6	27.448	776.370768	6357.43	807.52	1502.91
161	MURSHIDABAD	NABAGRAM	30663	30663	5435.03	716.12	1643.88	2152.8	9947.83	994.79	8953.04	4793.2	29.003	600.78708	5423	623.57	3507.26
162	MURSHIDABAD	NAWDA	23139	23139	6152.1	783.1	1240.51	2575.58	10751.29	1075.13	9676.16	6827.2	2.92	597.57654	7427.69	619.86	2226.19
163	MURSHIDABAD	RAGUNATHGANJ-I	9465	9465	2185.11	475.13	507.43	1067.32	4234.99	265.5	3969.49	2090.4	92.06	636.435462	2818.9	722.95	1064.08
164	MURSHIDABAD	RAGUNATHGANJ-II	14091	14091	3393.49	150.52	755.44	367.63	4667.08	233.35	4433.73	692.6	2.92	615.34182	1310.86	887.63	2850.58
165	MURSHIDABAD	RANINAGAR-I	17107	17107	4099.5	807.53	917.13	2632.09	8456.25	422.81	8033.44	7381.4	0.1825	494.012316	7875.6	554.76	97.09
166	MURSHIDABAD	RANINAGAR-II	17513	17513	4385.93	508.9	938.89	1740.66	7574.38	378.72	7195.66	4705.2	2.92	538.68306	5246.8	571.08	1916.46
167	MURSHIDABAD	SAGARDIGHI	34520	34520	7648.36	926.5	1850.66	2695.91	13121.43	1312.15	11809.28	5971.4	4.434	884.08548	6859.93	940.34	4893.1
168	MURSHIDABAD	SAMSERGANJ	9269	9269	2069.04	107.41	496.92	208.52	2881.89	144.09	2737.8	203.6	8.322	923.603592	1135.52	1304.81	1221.07
169	MURSHIDABAD	SUTI-I	13884	13884	2460.95	423.57	744.34	847.43	4476.29	447.63	4028.66	830.6	3	632.687058	1466.29	5690.72	2562.37
170	MURSHIDABAD	SUTI-II	9486	9486	1681.4	189.08	508.56	446.51	2825.55	282.56	2542.99	823.8	10.327	705.997308	1540.12	1042.38	666.49
171	NADIA	CHAKDAH	25959	25959	6792.27	1156.4	1535.86	2736.28	12220.81	1222.08	10998.73	6471.2	114.9495	698.61438	7284.76	737.24	3675.34
172	NADIA	CHAPRA	30598	30598	8006.08	1875.27	1810.32	4289.45	15981.12	1598.12	14383	12602	9.549	767.215692	13378.77	809.32	962.13
173	NADIA	HANSKHALI	24628	24628	6444.01	1258.99	1457.11	2721.93	11882.04	1188.2	10693.84	7521.2	9.614	640.593396	8171.41	735.18	2427.84
174	NADIA	HARINGHATA	17033	17033	4456.75	900.28	1007.75	2030.84	8395.62	839.56	7556.06	5330	147.3015	524.210664	6001.51	573.16	1505.6
175	NADIA	KALIGANJ	32091	32091	8396.73	1704.53	1898.66	4029.91	16029.83	1602.99	14426.84	11482.8	15.884	802.938972	12301.62	868.55	2059.61
176	NADIA	KALYANI	2921	2921	764.29	62.04	172.82	151.69	1150.84	115.08	1035.76	232.8	73.23	613.823712	919.86	675.9	53.82
177	NADIA	KARIMPUR-I	21578	21578	5376.9	1133.7	1276.66	2592.7	10379.96	519	9860.96	7850	0.639	430.28244	8280.92	477.91	1532.41
178	NADIA	KARIMPUR-II	22439	22439	5871.25	1355.19	1327.6	3108.93	11662.97	1166.29	10496.68	9104.8	4.8	556.63449	9666.23	573.33	813.75
179	NADIA	KRISHNAGANJ	15159	15159	3966.41	940.06	896.88	2124.59	7927.94	792.8	7135.14	6267.2	1.92	363.09324	6632.21	371.05	494.97

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
180	NADIA	KRISHNANAGAR-I	27319	27319	7148.12	1628.73	1616.32	3623.61	14016.78	1401.68	12615.1	9556	19.145	980.289114	10555.43	1007.49	2032.47
181	NADIA	KRISHNANAGAR-II	12436	12436	3246.39	604.07	735.77	1315.31	5901.54	295.07	5606.47	3448.8	2.179	340.306728	3791.29	356.71	1798.78
182	NADIA	NABDWIP	9739	9739	2238.32	572.11	576.21	1259.84	4646.48	232.32	4414.16	3331.2	21.7725	476.251416	3829.23	535.59	525.59
183	NADIA	NAKASHIPARA	36091	36091	9443.35	2145.99	2135.32	4959.75	18684.41	1868.44	16815.97	14727.2	12.494	979.555902	15719.25	1015.38	1060.9
184	NADIA	RANAGHAT-I	14553	14553	3439.76	435.84	861.03	1000.38	5737.01	286.85	5450.16	2591.6	16.066	563.680596	3171.35	646.52	2195.97
185	NADIA	RANAGHAT-II	27903	27903	7300.92	1756.48	1650.88	4061.49	14769.77	1476.98	13292.79	11633.6	7.385	995.980026	12636.96	1024.71	627.1
186	NADIA	SANTIPUR	17140	17140	4300.53	1106.2	1014.08	2513.48	8934.29	446.72	8487.57	6746	6.9985	726.036246	7479.04	759.43	975.14
187	NADIA	TEHATTA-I	24955	24955	6529.57	1297.37	1476.46	2955.67	12259.07	1225.9	11033.17	8556.4	3.584	620.90004	9180.88	638.2	1834.99
188	NADIA	TEHATTA-II	17247	17247	4512.74	1203.86	1020.42	2680.84	9417.86	941.79	8476.07	7783.2	9.6	386.09262	8178.89	397.28	285.99
189	NORTH 24 PARGANAS	AMDANGA	13928	13928	4125.34	348.83	904.01	957.49	6335.67	633.57	5702.1	1935	17.7844	475.429728	2428.22	487.59	3261.72
190	NORTH 24 PARGANAS	BADURIA	17972	17972	5068.04	856.47	1166.48	2727.45	9818.44	490.93	9327.51	6213.4	1.632	811.36215	7026.39	838.89	2273.59
191	NORTH 24 PARGANAS	BAGDA	23347	23347	6915.16	1160.19	1515.35	4031.59	13622.29	1362.23	12260.06	10295.4	0.378	423.32262	10719.1	433.1	1531.18
192	NORTH 24 PARGANAS	BARASAT-I	11404	11404	3377.76	368.82	740.18	1003.56	5490.32	549.03	4941.29	1794	164.202	1844.454135	3802.66	2131.22	851.86
193	NORTH 24 PARGANAS	BARASAT-II	10497	10497	2759.02	906.61	681.31	2027.21	6374.15	318.71	6055.44	2572.4	34.2415	493.66323	3100.3	506.36	2942.44
194	NORTH 24 PARGANAS	BARRACKPUR-I	9544	9544	2020.71	346.61	619.46	674.71	3661.49	183.08	3478.41	462	69.5485	910.701864	1442.25	916.3	2030.56
195	NORTH 24 PARGANAS	BARRACKPUR-II	38305	38305	8767.09	205.53	2486.21	337.17	11796	589.8	11206.2	9	1530.8462	902.766399	2442.61	923.01	8743.35
196	NORTH 24 PARGANAS	BASIRHAT-I	11184	11184	2296.54	814.15	725.9	2460.01	6296.6	314.83	5981.77	5481.4	4.095	402.998763	5888.49	416.77	79.51
197	NORTH 24 PARGANAS	BASIRHAT-II	12744	12744	2812.45	956.84	827.16	2091.43	6687.88	334.39	6353.49	2453.2	4.9545	569.069748	3027.22	614.79	3280.55
198	NORTH 24 PARGANAS	BONGAON	33670	33670	9527.54	2046.31	2185.37	6899.65	20658.87	1032.94	19625.93	17336.4	48.87017143	742.809456	18128.08	759.62	1481.04
199	NORTH 24 PARGANAS	DEGANGA	20209	20209	4967.73	1196.85	1311.68	3950.9	11427.16	571.36	10855.8	9379	8.379	636.350928	10023.73	654.05	814.37
200	NORTH 24 PARGANAS	GAIGHATA	24330	24330	7206.32	1371.19	1579.15	4398.65	14555.31	1455.53	13099.78	10335.6	5.684	698.621826	11039.9	768.87	1989.63
201	NORTH 24 PARGANAS	HABRA-I	11736	11736	3476.09	610.29	761.73	2027.38	6875.49	687.55	6187.94	4891	19.64925	619.776132	5530.42	652.61	624.69
202	NORTH 24 PARGANAS	HABRA-II	11267	11267	3337.18	334.77	731.29	923.52	5326.76	532.67	4794.09	2054	9.4425	435.14205	2498.59	510.01	2220.63
203	NORTH 24 PARGANAS	HAROA	15273	15273	3015.81	1461.21	991.3	2578.82	8047.14	804.71	7242.43	684	5.6655	576.35763	1266.03	601.35	5951.41
204	NORTH 24 PARGANAS	HASNABAD	15307	15307	0	0	0	0	0	0	0	0	0	0	0	0	0
205	NORTH 24 PARGANAS	HINGALGANJ	23880	23880	0	0	0	0	0	0	0	0	0	0	0	0	0
206	NORTH 24 PARGANAS	MINAKHAN	15882	15882	0	0	0	0	0	0	0	0	0	0	0	0	0
207	NORTH 24 PARGANAS	RAJARHAT	7290	7290	2159.23	517.44	473.16	955.63	4105.46	410.55	3694.91	444	213.57	1815.015936	2472.59	2329.82	707.52
208	NORTH 24 PARGANAS	SANDESHKHALI-I	18230	18230	0	0	0	0	0	0	0	0	0	0	0	0	0
209	NORTH 24 PARGANAS	SANDESHKHALI-II	19721	19721	0	0	0	0	0	0	0	0	0	0	0	0	0
210	NORTH 24 PARGANAS	SWARUPNAGAR	21513	21513	5462.07	1367.33	1396.31	3874.76	12100.47	605.02	11495.45	7734.4	0.48	636.656214	8371.53	652.22	3108.36
211	PASCHIM BARDDHAMAN	ANDAL	8487	8487	1440.94	99.38	263.82	206.47	2010.61	201.06	1809.55	250	46.98	310.939704	607.92	323.18	1189.39
212	PASCHIM BARDDHAMAN	BARABANI	27895	27895	4736.06	132.13	867.11	261.04	5996.34	599.64	5396.7	250	904.29	1182.15105	2336.44	1249.34	2993.07
213	PASCHIM BARDDHAMAN	DURGAPUR-FARIDPUR	31017	31017	1535.95	545.47	421.82	824.59	3327.83	332.78	2995.05	250	177.87	1135.419516	1563.28	1175.73	1391.46
214	PASCHIM BARDDHAMAN	JAMURIA	24027	24027	3054.86	164.62	746.87	315.19	4281.54	214.07	4067.47	250	1541.12	483.87612	2274.99	508.4	1767.96
215	PASCHIM BARDDHAMAN	KANKSA	27844	27844	1378.82	379.25	378.67	580.24	2716.98	271.7	2445.28	852.84	325.92	410.768664	1589.53	560.63	855.6
216	PASCHIM BARDDHAMAN	PANDABESWAR	8411	8411	1428.03	105.39	261.45	214.97	2009.84	200.98	1808.86	250	0	269.796174	519.8	288.19	1270.67

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
217	PASCHIM BARDDHAMAN	RANIGANJ	8327	8327	1413.77	221.44	258.84	409.9	2303.95	230.39	2073.56	250	495.36	373.780878	1119.14	383.55	944.65
218	PASCHIM BARDDHAMAN	SALANPUR	23157	23157	1146.73	274.97	314.93	499.11	2235.74	223.57	2012.17	250	191.52	779.263758	1220.79	798.77	771.87
219	PASCHIM MEDINIPUR	CHANDRAKONA-I	23760	23760	6928.76	695.49	1230.86	2064.77	10919.88	1091.99	9827.89	4880.5	1.08	411.87768	5293.46	426.35	4519.96
220	PASCHIM MEDINIPUR	CHANDRAKONA-II	15044	15044	4387.05	644.08	779.34	1949.82	7760.29	776.03	6984.26	4953.5	1.02	361.429278	5315.95	374.73	1655.01
221	PASCHIM MEDINIPUR	DANTAN-I	25707	25707	7496.53	483.31	1331.73	1542.68	10854.25	1085.42	9768.83	3907.8	1.68	427.410912	4336.89	448.28	5411.07
222	PASCHIM MEDINIPUR	DANTAN-II	18556	18556	5411.2	362.57	961.28	1349.21	8084.26	808.43	7275.83	3243	0	407.45169	3650.45	422.4	3610.43
223	PASCHIM MEDINIPUR	DASPUR-I	16829	16829	4907.58	438.84	871.81	1078.84	7297.07	729.71	6567.36	2573.3	6.93	540.23139	3120.46	561.22	3425.91
224	PASCHIM MEDINIPUR	DASPUR-II	16546	16546	4825.05	374.77	857.15	426.27	6483.24	648.32	5834.92	553	45	628.99647	1226.99	652.65	4584.28
225	PASCHIM MEDINIPUR	DEBRA	34241	34241	9985.17	942.1	1773.82	3300.13	16001.22	1600.12	14401.1	9074.4	10.17	725.539554	9810.11	747.25	4569.28
226	PASCHIM MEDINIPUR	GARBETA-I	36187	36187	5276.33	795.3	937.32	2458.56	9467.51	946.75	8520.76	6461.2	5.04	564.29073	7030.53	595.03	1459.49
227	PASCHIM MEDINIPUR	GARBETA-II	39255	39255	4437.27	716.43	1016.78	1595.16	7765.64	388.27	7377.37	3630.4	1.29	380.79063	4012.48	392.3	3353.38
228	PASCHIM MEDINIPUR	GARBETA-III	31212	31212	4550.93	459.32	808.45	1312.69	7131.39	713.14	6418.25	3456.6	1.44	416.046126	3874.08	462.32	2497.9
229	PASCHIM MEDINIPUR	GHATAL	23671	23671	6902.8	717.33	1226.25	1708.8	10555.18	1055.52	9499.66	3703.5	0	669.24867	4372.75	691	5105.16
230	PASCHIM MEDINIPUR	KESHIARY	29209	29209	8517.77	205.54	1513.14	654.35	10890.8	1089.08	9801.72	2315.8	0	483.84765	2799.64	498.2	6987.73
231	PASCHIM MEDINIPUR	KESHPUR	48316	48316	14089.64	1415	2502.97	4727.74	22735.35	2273.53	20461.82	12520.5	1.29	912.94092	13434.73	952.84	6987.19
232	PASCHIM MEDINIPUR	KHARAGPUR-I	40396	40396	10485.27	415.71	2092.67	1077.7	14071.35	703.57	13367.78	2496.3	848.25	847.095942	4191.65	863.93	9159.3
233	PASCHIM MEDINIPUR	KHARAGPUR-II	26563	26563	7746.15	646.47	1376.07	2319.96	12088.65	1208.86	10879.79	7144.9	149.34	524.16774	7818.4	540.3	3195.68
234	PASCHIM MEDINIPUR	MIDNAPORE	34200	34200	6648.81	474.37	1771.7	1256.24	10151.12	1015.11	9136.01	3057.6	12.24	796.63221	3866.47	835	5231.17
235	PASCHIM MEDINIPUR	MOHANPUR	13749	13749	4009.41	330.44	712.25	1080.8	6132.9	613.3	5519.6	2548.3	0	296.67273	2844.98	308.29	2663
236	PASCHIM MEDINIPUR	NARAYANGARH	49949	49949	14565.85	1269.34	2587.56	4403.96	22826.71	2282.67	20544.04	11119.5	27.3	770.117442	11916.92	794.15	8603.09
237	PASCHIM MEDINIPUR	PINGLA	22448	22448	6546.16	475.97	1162.9	1537.11	9722.14	972.21	8749.93	4200.3	0.66	503.72409	4704.69	519.95	4029.01
238	PASCHIM MEDINIPUR	SABANG	30500	30500	8894.24	865.48	1580.02	2207.13	13546.87	1354.69	12192.18	6979	0	694.7994	7673.8	715.99	4497.19
239	PASCHIM MEDINIPUR	SALBANI	55339	55339	11536.88	673.4	2866.79	1760.6	16837.67	1121.38	15716.29	4367	136.08	489.41682	4992.49	505.61	10707.61
240	PURBA BARDDHAMAN	AUSGRAM-I	22234	22234	5480.13	759.39	1036.7	1602.8	8879.02	691.7	8187.32	2721	41.304	354.373536	3116.68	363.56	5061.45
241	PURBA BARDDHAMAN	AUSGRAM-II	36045	36045	9179.68	913.23	1680.68	1940.94	13714.53	1371.46	12343.07	3447.6	100.736	376.43034	3924.77	385.31	8409.42
242	PURBA BARDDHAMAN	BHATAR	41501	41501	7046.11	1063.51	1935.08	2230.53	12275.23	1227.52	11047.71	4394	38.832	659.99154	5092.82	676.4	5938.48
243	PURBA BARDDHAMAN	BURDWAN-I	29460	29460	7502.66	643.2	1373.64	1306.66	10826.16	1082.62	9743.54	2395.2	248.643	985.598988	3629.44	1027.96	6071.74
244	PURBA BARDDHAMAN	BURDWAN-II	18957	18957	4827.83	853.23	883.91	2484.58	9049.55	904.96	8144.59	6342.2	5.728	363.171642	6711.1	380.06	1416.6
245	PURBA BARDDHAMAN	GALSI-I	25737	25737	4369.67	749.54	1200.04	769.49	7088.74	708.87	6379.87	1019	82.464	434.604624	1536.07	478.75	4799.65
246	PURBA BARDDHAMAN	GALSI-II	21909	21909	5579.62	525.87	1021.56	825.82	7952.87	795.29	7157.58	1515	17.734	363.80061	1896.53	371.67	5253.18
247	PURBA BARDDHAMAN	JAMALPUR	26302	26302	6698.4	1141.53	1226.39	2778.23	11844.55	1184.46	10660.09	5557.2	83.468	654.55815	6295.23	667.94	5826.22
248	PURBA BARDDHAMAN	KALNA-I	17548	17548	4431.88	598.57	818.21	1180.11	7028.77	351.44	6677.33	2541.6	2.88	562.900956	3107.38	573	3559.85
249	PURBA BARDDHAMAN	KALNA-II	17217	17217	4384.7	609.04	802.78	1631.52	7428.04	742.8	6685.24	3761.4	2.4	385.16406	4148.96	407.85	2513.59
250	PURBA BARDDHAMAN	KATWA-I	17747	17747	4182.74	425.49	827.49	981.75	6417.47	320.87	6096.6	1778.8	0	602.553534	2381.35	621.26	3696.54
251	PURBA BARDDHAMAN	KATWA-II	17356	17356	3144.48	451.36	809.26	1140.32	5545.42	277.27	5268.15	2658	0	352.32282	3010.32	363.37	2246.78
252	PURBA BARDDHAMAN	KETUGRAM-I	19398	19398	3293.42	503.32	904.47	1085.72	5786.93	578.7	5208.23	1770	0.96	425.34618	2196.31	438.44	2998.83
253	PURBA BARDDHAMAN	KETUGRAM-II	16003	16003	3817.03	403.58	746.18	717.84	5684.63	284.23	5400.4	889	0	296.11866	1185.13	303.18	4208.21

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
254	PURBA BARDDHAMAN	KHANDAGHOSH	26523	26523	6754.68	858.9	1236.69	2048.03	10898.3	1089.83	9808.47	4667.8	61.384	475.01757	5204.2	486.83	4592.46
255	PURBA BARDDHAMAN	MANGOLKOTE	36544	36544	6204.5	1502.34	1703.94	3335.15	12745.93	1274.59	11471.34	7877	0.96	670.17723	8548.13	689.14	2904.25
256	PURBA BARDDHAMAN	MANTESWAR	30519	30519	5181.57	1217.39	1423.02	3054.97	10876.95	1087.7	9789.25	7727	0	595.59897	8322.6	610.41	1451.84
257	PURBA BARDDHAMAN	MEMARI-I	18684	18684	4749.06	870.31	871.18	2102.93	8593.48	429.68	8163.8	4935	295.65	597.998772	5828.65	613.21	2319.94
258	PURBA BARDDHAMAN	MEMARI-II	20159	20159	4960.99	616.26	939.96	1358.15	7875.36	393.77	7481.59	2678	45.9	375.24993	3099.15	384.2	4373.49
259	PURBA BARDDHAMAN	PURBASTHALI-I	14844	14844	3780.36	441.9	692.13	825.2	5739.59	573.96	5165.63	1580.4	0	482.19639	2062.6	555.66	3029.57
260	PURBA BARDDHAMAN	PURBASTHALI-II	19247	19247	4901.68	707.68	897.43	2065.42	8572.21	857.23	7714.98	5378	0	559.97643	5937.97	581.03	1755.96
261	PURBA BARDDHAMAN	RAINA-I	26607	26607	6776.07	725.69	1240.61	1799.79	10542.16	1054.22	9487.94	4137	20.25	419.953962	4577.21	425.6	4905.08
262	PURBA BARDDHAMAN	RAINA-II	22728	22728	5788.2	735.74	1059.74	1783.91	9367.59	936.76	8430.83	4170	33.6	375.53463	4579.13	383.93	3843.3
263	PURBA MEDINIPUR	BHAGAWANPUR-I	17424	17424	4845.3	274.08	1082.29	456.81	6658.48	665.85	5992.63	0	0.384	647.445468	647.84	701.78	5290.46
264	PURBA MEDINIPUR	BHAGAWANPUR-II	18020	18020	5011.03	408.47	1119.31	1227.3	7766.11	776.61	6989.5	3192	0.384	501.25596	3693.65	518.58	3278.53
265	PURBA MEDINIPUR	CONTAI-I	15527	15527	0	0	0	0	0	0	0	0	0	0	0	0	0
266	PURBA MEDINIPUR	CONTAI-II	17030	17030	0	0	0	0	0	0	0	0	0	0	0	0	0
267	PURBA MEDINIPUR	CONTAI-III	16052	16052	0	0	0	0	0	0	0	0	0	0	0	0	0
268	PURBA MEDINIPUR	EGRÄ-I	19710	19710	5480.99	517.43	1224.28	1646.05	8868.75	886.87	7981.88	4065	0	438.42486	4503.43	454.24	3462.63
269	PURBA MEDINIPUR	EGRÄ-II	18471	18471	5136.45	262.61	1147.32	760.1	7306.48	730.65	6575.83	1828	0.24	464.26905	2292.51	479.77	4267.82
270	PURBA MEDINIPUR	HALDIA	6544	6544	0	0	0	0	0	0	0	0	0	0	0	0	0
271	PURBA MEDINIPUR	KHEJURI-I	13051	13051	0	0	0	0	0	0	0	0	0	0	0	0	0
272	PURBA MEDINIPUR	KHEJURI-II	13746	13746	0	0	0	0	0	0	0	0	0	0	0	0	0
273	PURBA MEDINIPUR	MAHISDAL	14648	14648	0	0	0	0	0	0	0	0	0	0	0	0	0
274	PURBA MEDINIPUR	MOYNA	15450	15450	4296.36	557.71	959.67	973.69	6787.43	678.75	6108.68	287	1.08	589.645236	877.73	611.35	5209.25
275	PURBA MEDINIPUR	NANDA KUMAR	16570	16570	0	0	0	0	0	0	0	0	0	0	0	0	0
276	PURBA MEDINIPUR	NANDIGRAM-I	18184	18184	0	0	0	0	0	0	0	0	0	0	0	0	0
277	PURBA MEDINIPUR	NANDIGRAM-II	10574	10574	0	0	0	0	0	0	0	0	0	0	0	0	0
278	PURBA MEDINIPUR	NANDIGRAM-III	13758	13758	0	0	0	0	0	0	0	0	0	0	0	0	0
279	PURBA MEDINIPUR	PANSKURA-I	24690	24690	6865.84	198.38	1533.61	474.42	9072.25	907.22	8165.03	761	1.29	613.233726	1375.52	742.97	6659.77
280	PURBA MEDINIPUR	PANSKURA-II	14790	14790	4112.83	196.67	918.68	235.89	5464.07	546.41	4917.66	249.8	10.65	696.482196	956.93	801.3	3855.91
281	PURBA MEDINIPUR	POTASHPUR-I	17226	17226	4790.24	448.62	1069.99	1335.66	7644.51	764.46	6880.05	3856	0	433.03527	4289.04	454.93	2569.12
282	PURBA MEDINIPUR	POTASHPUR-II	19174	19174	5331.94	219.35	1190.99	806.2	7548.48	754.85	6793.63	2864.4	4.02	464.6085	3333.03	482.95	3442.26
283	PURBA MEDINIPUR	RAMNAGAR-I	13943	13943	0	0	0	0	0	0	0	0	0	0	0	0	0
284	PURBA MEDINIPUR	RAMNAGAR-II	16327	16327	0	0	0	0	0	0	0	0	0	0	0	0	0
285	PURBA MEDINIPUR	SAHID MATANGINI	9782	9782	0	0	0	0	0	0	0	0	0	0	0	0	0
286	PURBA MEDINIPUR	SUTAHATA	7954	7954	0	0	0	0	0	0	0	0	0	0	0	0	0
287	PURBA MEDINIPUR	TAMLUK	12350	12350	0	0	0	0	0	0	0	0	0	0	0	0	0
288	PURULIYA	ARSHA	37504	37504	2012.37	326.87	347.77	517.21	3204.22	320.42	2883.8	0.8	27.45	426.09735	454.35	447.94	2407.61
289	PURULIYA	BAGMUNDI	42795	42795	2296.27	221.94	396.83	341.92	3256.96	325.7	2931.26	6.4	0	376.43253	382.83	396.82	2528.04
290	PURULIYA	BALARAMPUR	30088	30088	1614.45	345.42	279	434.15	2673.02	267.3	2405.72	4	1.65	343.52559	349.18	358.22	2041.85

Sl. No	District	Assessment Unit Name	Total Geographical Area	Recharge Worthy Area	Recharge from Rainfall-MON	Recharge from Other Sources-MON	Recharge from Rainfall-NM	Recharge from Other Sources-NM	Total Annual Ground Water Recharge (Ham)	Total Natural Discharge (Ham)	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future use (Ham)
328	SOUTH 24 PARGANAS	MAGRAHAT-II	13693	13693	0	0	0	0	0	0	0	0	0	0	0	0	0
329	SOUTH 24 PARGANAS	MANDIRBAZAR	11235	11235	0	0	0	0	0	0	0	0	0	0	0	0	0
330	SOUTH 24 PARGANAS	MATHURAPUR-I	14730	14730	0	0	0	0	0	0	0	0	0	0	0	0	0
331	SOUTH 24 PARGANAS	MATHURAPUR-II	22745	22745	0	0	0	0	0	0	0	0	0	0	0	0	0
332	SOUTH 24 PARGANAS	NAMKHANA	37062	37062	0	0	0	0	0	0	0	0	0	0	0	0	0
333	SOUTH 24 PARGANAS	PATHARPRATIMA	48448	48448	0	0	0	0	0	0	0	0	0	0	0	0	0
334	SOUTH 24 PARGANAS	SAGAR	28211	28211	0	0	0	0	0	0	0	0	0	0	0	0	0
335	SOUTH 24 PARGANAS	SONARPUR	15175	15175	0	0	0	0	0	0	0	0	0	0	0	0	0
336	SOUTH 24 PARGANAS	THAKURPUKUR MAHESTALA	10726	10726	0	0	0	0	0	0	0	0	0	0	0	0	0
337	UTTAR DINAJPUR	CHOPRA	48082	48082	11082.06	566.31	2330.98	1746.36	15725.71	1572.58	14153.13	4536.74	535.35	825.407058	5897.49	894.25	8186.8
338	UTTAR DINAJPUR	GOALPOKHAR-I	36511	36511	8415.15	1034.61	1770.03	3171.01	14390.8	1439.08	12951.72	7737.06	53.46	996.80478	8787.33	1101.91	4059.28
339	UTTAR DINAJPUR	GOALPOKHAR-II	29869	29869	6884.28	728.42	1448.03	2487.93	11548.66	1154.87	10393.79	6254.22	0	874.9926	7129.21	950.92	3188.65
340	UTTAR DINAJPUR	HEMTABAD	19182	19182	5223.94	290.95	929.93	762.85	7207.67	360.38	6847.29	1389	30.45	390.1704	1809.63	409.83	5018
341	UTTAR DINAJPUR	ISLAMPUR	32944	32944	7593.02	624.7	1597.1	1972.02	11786.84	1178.68	10608.16	5069.06	114.18	991.477386	6174.72	1067.25	4357.67
342	UTTAR DINAJPUR	ITAHAR	36240	36240	11926.21	989.44	1756.89	2518.88	17191.42	859.57	16331.85	4731	54.27	833.449614	5618.72	885.74	10660.84
343	UTTAR DINAJPUR	KALIAGANJ	30190	30190	7848.42	459.73	1463.59	1077.15	10848.89	542.45	10306.44	1702.5	6.12	651.201756	2359.82	669.33	7928.49
344	UTTAR DINAJPUR	KARANDIGHI	39052	39052	9000.8	1040.78	1893.21	2836.99	14771.78	1477.18	13294.6	6116.28	24.24	1136.058996	7276.58	1265.69	5888.39
345	UTTAR DINAJPUR	RAIGANJ	47213	47213	10881.77	1040.36	2288.85	2801.72	17012.7	1701.27	15311.43	5889.24	24.96	1433.881914	7348.08	1497.23	7900