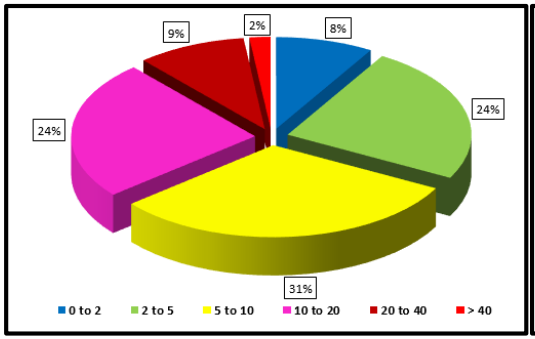

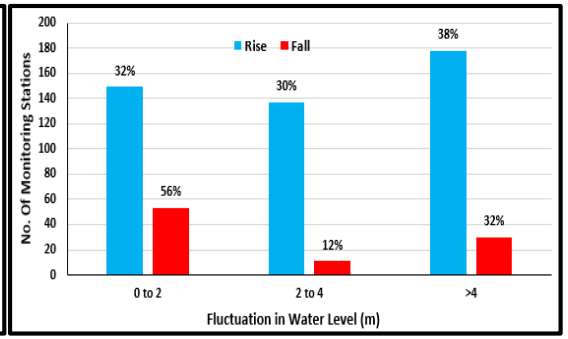

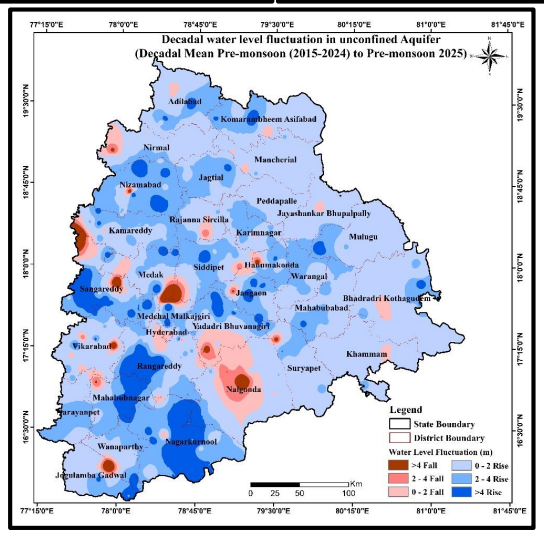

GROUND WATER LEVEL BULLETIN

May 2025

TELANGANA STATE

ABSTRACT

Highlighting Ground water level Scenario during May 2025 and its annual and decadal comparison.

CGWB, SOUTHERN REGION, HYDERABAD

1.0 INTRODUCTION

Groundwater bulletin is prepared by CGWB depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attribute of groundwater regime monitoring is groundwater level.

The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are being measured by Central Ground Water Board four times a year during January, March/April/May, August and November. The regime monitoring started in the year 1969 by Central Ground Water Board. A network of 1272 observation wells called **National Hydrograph Network Stations (NHNS)**, as on 31.03.2025, located in Telangana State is being monitored.

2.0 STUDY AREA

Telangana State is the 29th State (Act, 2014) formed in India covering geographical area of 1,12,077 Km^2 (after transferring 107 villages from Khammam district to residual Andhra Pradesh). It lies between NL 15° 48' and 19° 54'and EL 77° 12' and 81° 50'. The state is bordered by Maharashtra state in the north, Karnataka state in the west, Andhra Pradesh state in the south and east and Chhattisgarh state in the north-east. Administratively, the State comprises of 33 districts and governed by 620 revenue mandals (blocks/tehsils) with 10,434 revenue villages. The largest district is Bhadradri Kothagudem whereas Hyderabad is the smallest district. The total population of the state is ~3.5 crores with sex ratio of 988 (2011 census), of which 61 % lives in rural area and 39 % in urban area. The density of population is 312 per sq. km. The decadal growth in population is ~13.6 % (2001 to 2011 census).

Figure-1: Map showing major aquifers and administrative divisions of Telangana State

Physiographically, Telangana state is occupied by western Pediplains except a fringe of Eastern Ghats in the northeastern part of Khammam district. The Pediplains depict rolling topography with flat to undulating tracts. The state extends largely between elevations of 150 to 600 mamsl except at places where it is overlain by basaltic lava flows, the elevation of which ranges from 600 to 900 m amsl.

The state is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. Nearly 81 % of the state area is underlain by crystalline rocks (consolidated formations) belonging to the Peninsular Gneissic Complex, Dharwar and Eastern Ghats of Archaean to Middle Proterozoic age, Pakhal Group of rocks belonging to Middle to Upper Proterozoic age and Deccan Traps.

The remaining part of the state is underlain by semi consolidated sedimentary formations comprising Gondwana's, Tertiaries and Sub-Recent to Recent Unconsolidated Alluvium.

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Southern Region, is monitoring changes in groundwater regime in Telangana state on quarterly basis continuously.This is facilitated by a network of monitoring stations in the State located in diverse hydrogeological and geomorphic units. The number of operational wells till May 2025 was 1272 which include 270 dug wells and 1002 piezometers. In May 2025, 1272 wells monitored (Water Level recorded for 250 Dug wells and 908 Piezometer) while 42 wells were dry and 72 wells could not be monitored due to various reasons like inaccessibility, filled up, installation of pump units, road damaged, gate locked etc. The number of operational wells after completion of January 2025 monitoring stands at 1272, which include 270 dug wells and 1002 Bore wells. The district-wise breakup of the water level monitoring stations is given in **Table-1**.

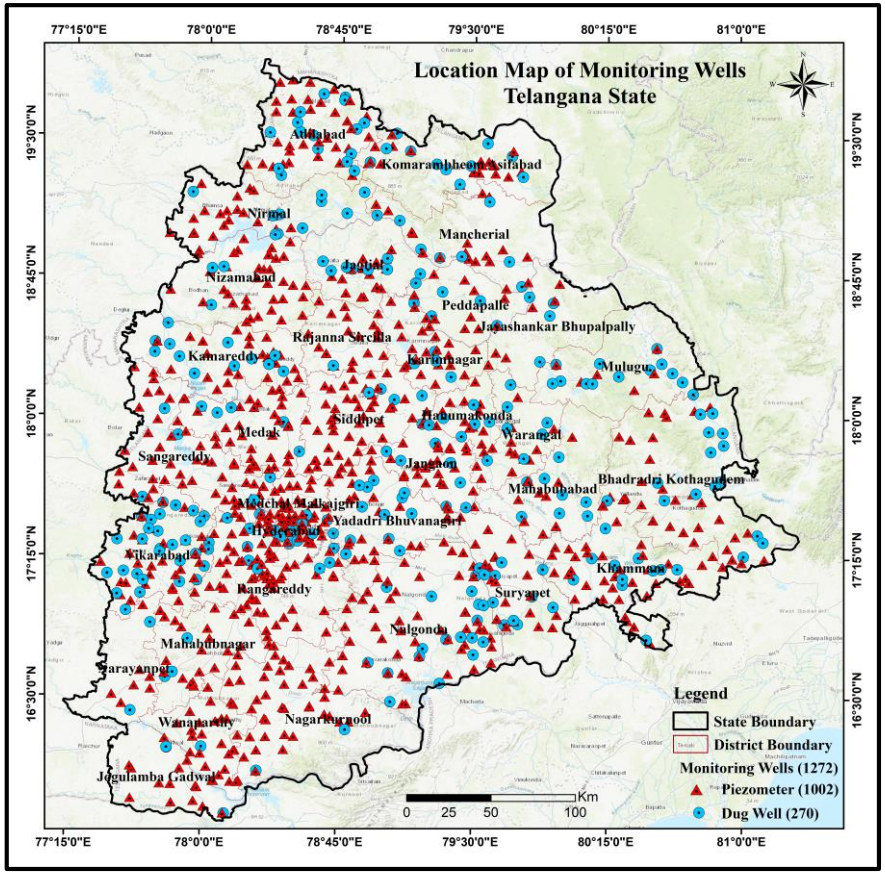

Figure- 2: Map showing locations of monitoring wells (GWMWS) in Telangana State

Table-1: District-wise distribution of water level monitoring stations

SR. No.	District	Number of Water Level Monitoring Stations					
		2022	2023	2024	2025		
		Total	Total	Total	DW	PZ	Total
1	Adilabad	**51**	55	55	16	39	55
2	Bhadradri Kothagudem	**73**	73	73	15	57	72
3	Hanamkonda	**18**	18	18	4	14	18
4	Hyderabad	**25**	28	28	8	20	28
5	Jagtial	**25**	24	24	8	16	24
6	Jangaon	**42**	42	42	9	33	42
7	Jayashankar Bhupalapally	**14**	14	14	3	11	14
8	Jogulamba Gadwal	**17**	17	17	3	14	17
9	Kamareddy	**25**	39	39	12	27	39
10	Karimnagar	**23**	26	26	5	21	26
11	Khammam	**68**	69	69	12	57	69
12	Komarambheem Asifabad	**39**	42	42	10	32	42
13	Mahabubabad	**21**	21	21	8	13	21
14	Mahabubnagar	**28**	26	26	3	23	26
15	Mancherial	**32**	33	33	9	23	32
16	Medak	**38**	38	38	5	33	38
17	Medchal Malkajgiri	**20**	39	39	3	36	39
18	Mulugu	**23**	21	21	13	7	20
19	Nagarkurnool	**46**	47	47	2	45	47
20	Nalgonda	**80**	81	81	17	64	81
21	Narayanpet	**12**	12	12	2	10	12
22	Nirmal	**34**	33	33	8	25	33
23	Nizamabad	**42**	42	42	5	37	42
24	Peddapalli	**18**	20	20	6	14	20
25	Rajanna Sircilla	**21**	21	21	1	20	21
26	Rangareddy	**73**	95	95	13	82	95
27	Sangareddy	**60**	65	65	5	57	62
28	Siddipet	**51**	53	53	5	48	53
29	Suryapet	**34**	34	34	11	23	34
30	Vikarabad	**66**	65	65	29	36	65
31	Wanaparthy	**25**	26	26	1	25	26
32	Warangal	**20**	20	20	7	13	20
33	Yadadri Bhuvanagiri	**43**	42	42	12	27	39
	Total	**1207**	**1281**	**1281**	**270**	**1002**	**1272**

4.0 RAIN FALL

The rainfall data collected and compiled from weekly and monthly weather reports from Telangana Development Planning Society (TGDPS) were used to analyze the rainfall for the period June 2024-May 2025. Table-2 gives the district-wise rainfall data for the period June-May 2024-2025 & June May 2023-2024, Normal and the departure of June-May 2025 rainfall with other periods.

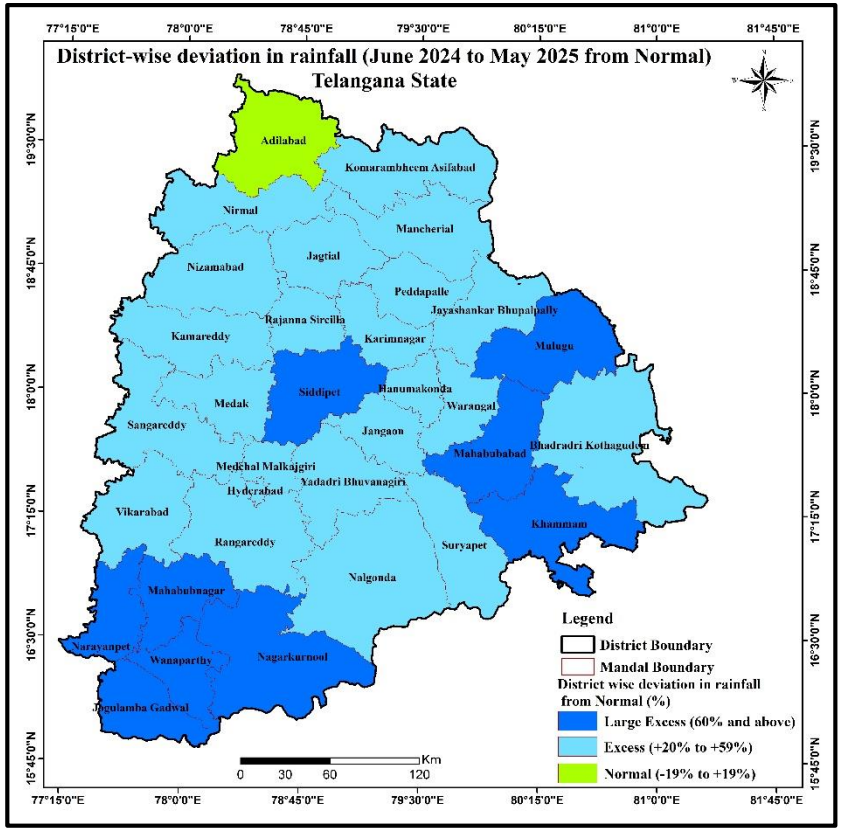

Figure-3: Rainfall deviation (June 2024 - May 2025) from normal rainfall

Table-2: District wise variability of rainfall in Telangana State (2024 to 2025)

S. No.	District	Rainfall (June 2024 to May 2025)	Rainfall (June 2023 to May 2024)	Normal Rainfall	Departure from 2023-2024 (%)	Departure from Normal (%)	Status
1	**Adilabad**	1434.2	1332.0	1155	8%	24%	Normal
2	**Bhadradri Kothagudem**	1796.2	1306.4	1215	37%	48%	Excess
3	**Hanumakonda**	1317.3	1171.0	1001	13%	32%	Excess
4	**Hyderabad**	1313.7	914.7	847	44%	55%	Excess
5	**Jagtial**	1463.7	1163.4	1017	26%	44%	Excess
6	**Jangaon**	1127.9	1004.4	862	12%	31%	Excess
7	**Jayashankar**	1524.3	1442.9	1109	6%	37%	Excess
8	**Jogulamba Gadwal**	1193.8	471.0	617	153%	93%	L. Excess
9	**Kamareddy**	1338.8	1114.6	983	20%	36%	Excess
10	**Karimnagar**	1349.5	1056.9	907	28%	49%	Excess
11	**Khammam**	1654.8	894.5	1027	85%	61%	L. Excess
12	**Kumuram Bheem**	1606.6	1296.3	1199	24%	34%	Excess
13	**Mahabubabad**	1759.2	1053.2	1024	67%	72%	L. Excess
14	**Mahabubnagar**	1329.4	628.8	687	111%	94%	L. Excess
15	**Mancherial**	1396.4	1092.3	1087	28%	28%	Excess
16	**Medak**	1307.1	1099.5	840	19%	56%	Excess
17	**Medchal-Malkajgiri**	1147.6	900.1	806	27%	42%	Excess
18	**Mulugu**	2196.5	1507.8	1354	46%	62%	L. Excess
19	**Nagarkurnool**	1212.7	495.5	660	145%	84%	L. Excess
20	**Nalgonda**	1000.2	607.8	689	65%	45%	Excess
21	**Narayanpet**	1445.5	622.5	658	132%	120%	L. Excess
22	**Nirmal**	1494.7	1359.2	1055	10%	42%	Excess
23	**Nizamabad**	1533.2	1296.2	1019	18%	50%	Excess
24	**Peddapalli**	1369.1	1129.9	1033	21%	33%	Excess
25	**Rajanna Sircilla**	1392.6	1149.0	897	21%	55%	Excess
26	**Rangareddy**	1071.1	723.6	750	48%	43%	Excess
27	**Sangareddy**	1269.1	986.0	855	29%	48%	Excess
28	**Siddipet**	1329.4	990.4	791	34%	68%	L. Excess
29	**Suryapet**	1169.2	714.0	744	64%	57%	Excess
30	**Vikarabad**	1320.3	870.6	839	52%	57%	Excess
31	**Wanaparthy**	1369.7	598.0	671	129%	104%	L. Excess
32	**Warangal**	1524.1	1290.4	1054	18%	45%	Excess
33	**Yadadri Bhuvanagiri**	1061.1	749.3	732	42%	45%	Excess
	State Total	**1388.5**	**1001.0**	**914.6**	**48%**	**54%**	**Excess**

Category was defined based on the departures from normal values:
Normal: -19% to 19%; **Excess:** 20% to 59%; **L. Excess:** > 60%; **Deficit:** -20% to -59%

5.0 GROUND WATER LEVEL SCENARIO (MAY 2025)

5.1 SHALLOW AQUIFER (UNCONFINED)

5.1.1 DEPTH TO WATER LEVEL

Depth to Water Level in Unconfined Aquifer (May 2025)

Analysis of depth to water level data of 571 wells shows water levels vary between 0.12 m bgl (Mulugu district) to 40.62 m bgl (Medak district). Water level of less than 2 m bgl is recorded in 8% of wells, between 2 and 5 m bgl in 28% of wells, between 5 and 10 m bgl in 35% of wells, between 10 and 20 m bgl in 25% of wells and > 20 mbgl in 5% of wells.

Shallow water level of less than 2 m bgl is mainly observed in parts of Jayashankar Bhupalpally, Khammam, Warangal, Nalgonda, Nagarkurnool and Narayanpet and Kamareddy districts covering only an area of 0.5% of the State. Water levels of 2–5 mbgl, covering 22% of the area, are found mainly in parts of Bhadradri Kothagudem, Suryapet, Mahabubabad, Jayashankar Bhupalpally, Khammam, Warangal, Nalgonda, Jagtial, Karimnagar, Peddapalle, Mulugu districts etc. 5 to 10 m bgl of water levels covering major part of State with an area of 51.8%, is mainly observed in parts of Bhadradri Kothagudem, Yadadri Bhuvangiri, Kamareddy, Narayanpet, J Gadwal, Rajanna Sircilla, Nirmal districts etc. While 24.3% of the State is covered by 10 – 20 m bgl water levels in Medak, Rangareddy, Nizamabad, Nirmal, Nagarkurnool, Hanumakonda, Medchal Malkajgiri, Wanaparthy districts etc. Deeper water levels exceeding 20 meters cover less than 1.5% of the area, found in patches in Medak, Sangareddy, Adilabad, K Asifabad, Nagarkurnool and Nizamabad districts.

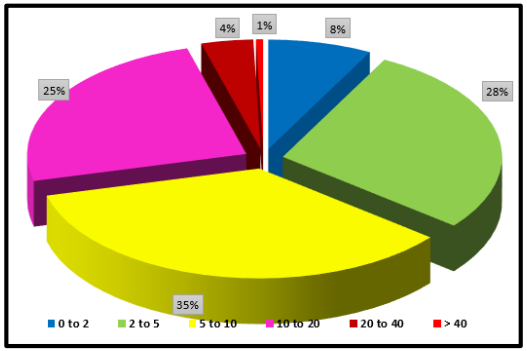

Figure-4: Percentage of wells in different water level ranges in unconfined aquifer.

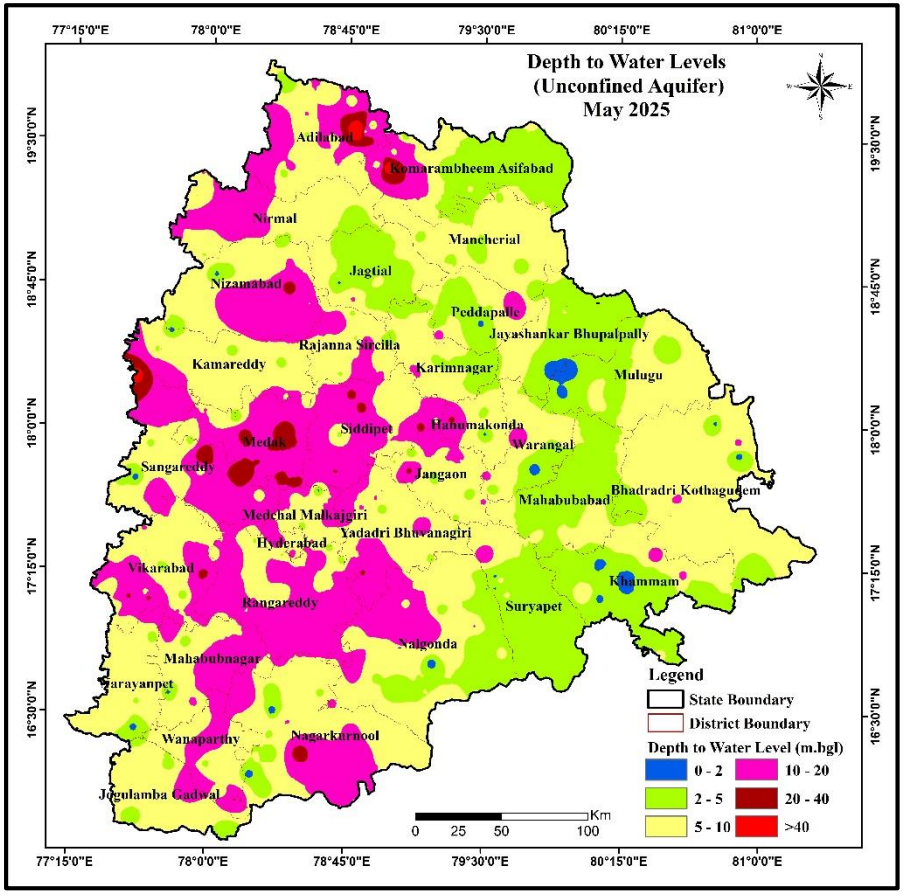

Figure-5: Depth to water level of unconfined aquifer during May 2025.

5.1.2 ANNUAL FLUCTUATION IN WATER LEVEL

Annual Fluctuation of Water Level in Unconfined Aquifer (May 2024 to May 2025)

Analysis of data of 554 wells shows that water level rise is recorded in 77.5% wells (429 wells), water level fall is recorded in 22.5% wells (125 wells).

Rise in Water Levels:

Out of 429 wells, water level rise of less than 2 m is recorded in 66% wells, 2 to 4 m in 23% wells and more than 4 m in 11% of the wells. Water level rise of less than 2 m is seen in almost all of districts of the state mainly in Northern, South eastern, South western, Esatern and North eastern parts. Water level rise of 2 to 4 m is observed mainly in Jagtial, Nirmal, Kumarambheem, Hanamkonda, Warangal, Suryapet, Nalgonda, Kamareddy, Mahabubnagar, Khammam, Siddipet and Mancherial districts. Rise of more than 4 m is seen majorly in Kumarambhem, Sangareddy, Nirmal, Kamareddy, Warangal, Nagarkurnool, J Gadwal, Wanaparthy, Jangaon districts etc.

Fall in Water Levels:

Out of 125 wells that have registered fall in water levels, 60% have recorded less than 2 m while 18% in the range of 2 to 4 m and remaining 22% wells registered water level fall of more than 4 m. Fall of less than 2 m is mainly observed in parts of Bhadradri, Nalgonda, Yadadri, Kamareddy, Sangareddy, Siddipet, Rajanna Sircilla, Vikarabad districts etc. Fall of 2 to 4 m is observed mainly in Yadadri, Medak, Sangareddy, Siddipet, Yadadri districts etc. Fall of >4 m is mainly observed in Yadadri, Sangareddy, Nalgonda, J Gadwal, Wanaparthy and Medak districts.

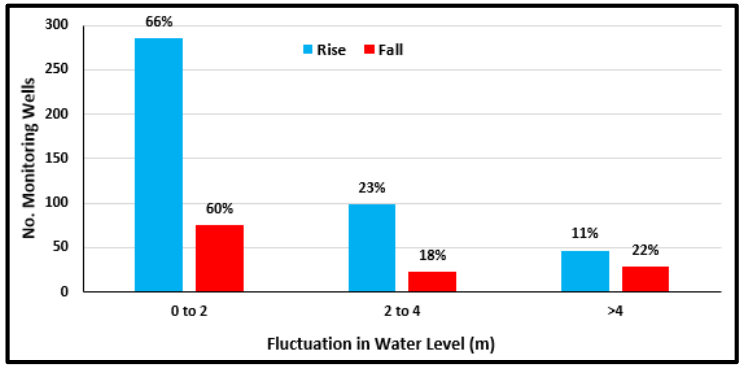

Figure-6: Percentage of wells showing rise and fall in WL in unconfined aquifer (May 2024 to May 2025)

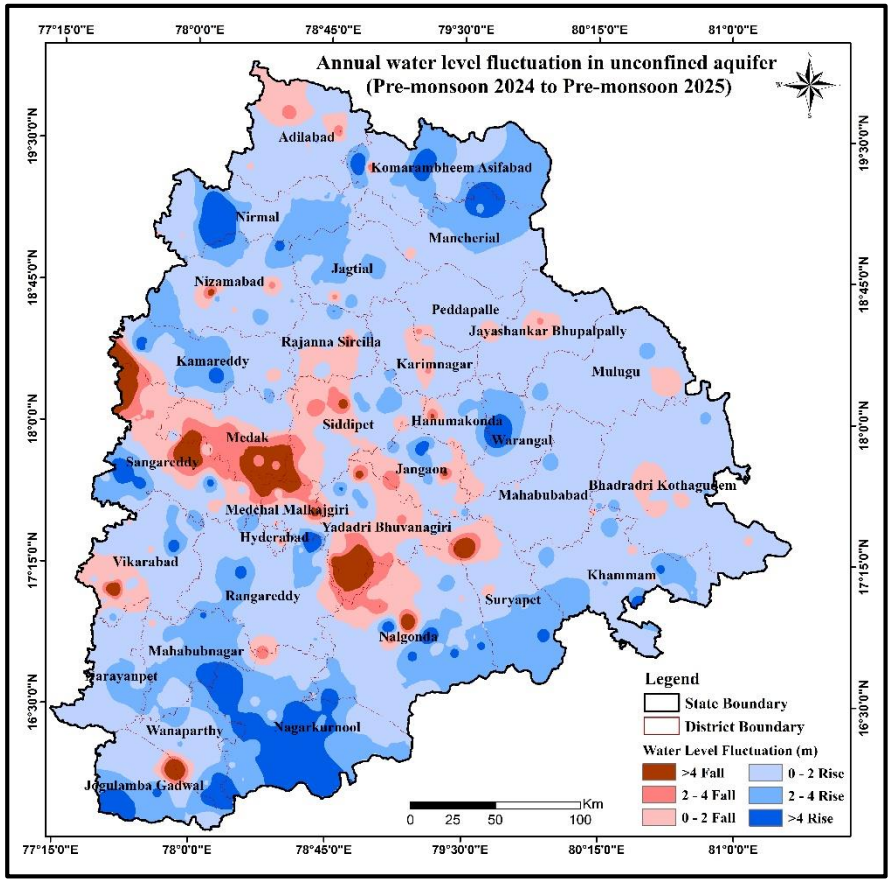

Figure-7: Annual water level fluctuation in unconfined aquifer (May 2024 to May 2025)

Annual Fluctuation of Water Level in Unconfined Aquifer (May 2023 to May 2025)

Analysis of data of 558 wells shows that water level rise is recorded in 38% wells (210 wells) and water level fall is recorded in 62% wells (348 wells).

Rise in Water Levels:

Out of 210 wells, water level rise of less than 2 m is recorded in 81% wells,2 to 4 m in 9 % wells and more than 4 m in 10 % of the wells. Water level rise of less than 2 m is seen mainly in northern districts, and in south-eastern and eastern districts. Water level rise of 2 to 4 m is seen as isolated patches mainly observed in K asifabad, Adilabad, Wanaparthy, Sangareddy and Medchal Malkajgiri districts. Water level rise of more than 4 m is significantly observed in parts of K asifabad, Adilabad, Wanaparthy, Sangareddy and Medchal Malkajgiri

Fall in Water Levels:

Out of the 348 wells that have registered fall in water levels, 59% have recorded less than 2 m while 21% in the range of 2 to 4 m and remaining 19% wells registered water level fall of more than 4 m. Fall of less than 2 m is widespread across the State mainly in Southern, North eastern, South western and Central parts. Fall of 2 to 4 m, recorded in Rangareddy, Rajanna, Kamareddy, Siddipet Yadadri, Siddipet, Jangaon, Nalgonda districts. Fall beyond 4m is recorded mainly in parts of Medak, Rangareddy, Vikarabad, Suryapet, Yadadri, J Gadwal districts et

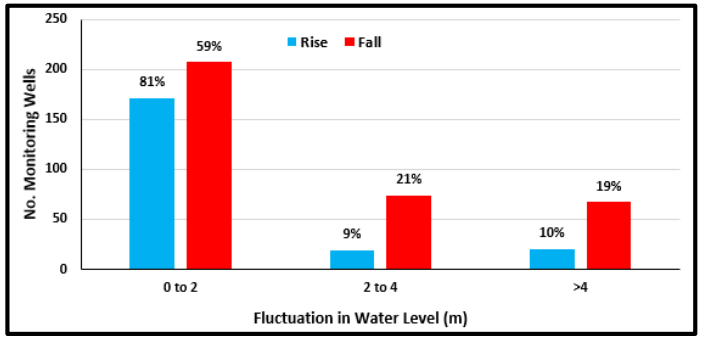

Figure-8: Percentage of wells showing rise and fall in WL in unconfined Aquifer (May 2023 to May 2025)

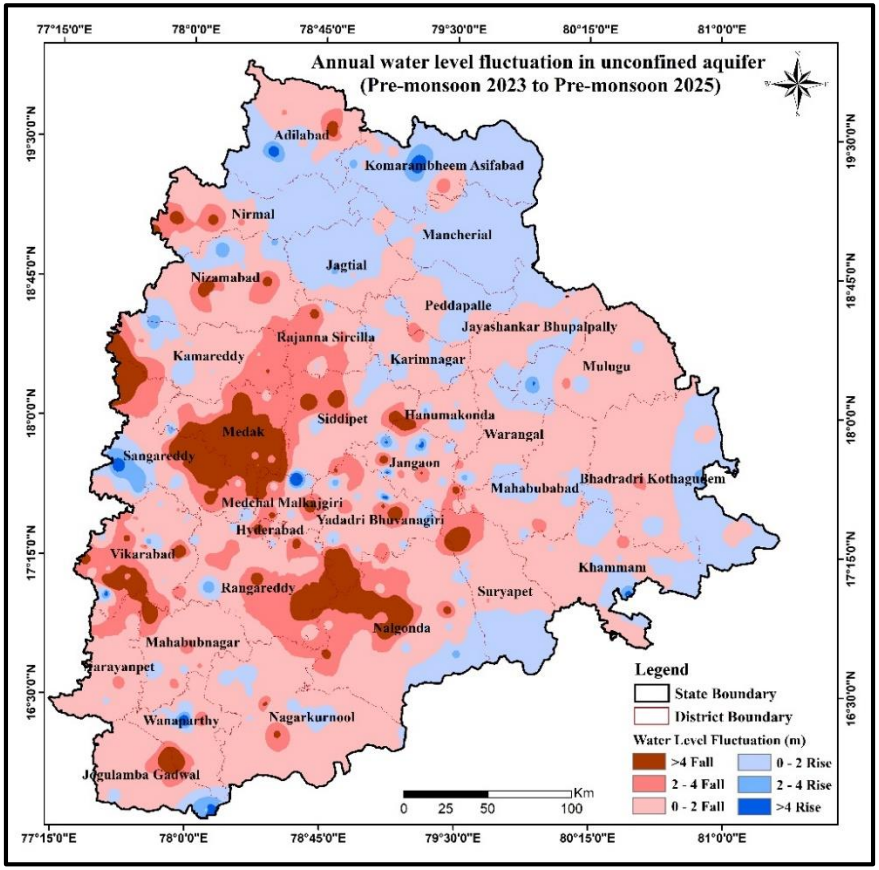

Figure-9: Annual water level fluctuation in unconfined Aquifer (May 2023 to May 2025)

5.1.3 DECADAL FLUCTUATION IN WATER LEVEL

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean to May 2025)

Analysis of data of 426 wells shows that water level rise is recorded in 82 % wells (348 wells), water level fall is recorded in 18% wells (78 wells).

Rise in Water Levels:

Out of 348 wells, water level rise of less than 2 m is recorded in 52 % wells, 2 to 4 m in 26% wells and more than 4 m in 22% of the wells. Water level rise of less than 2 m is seen in all of the districts of the State. Water level rise of 2 to 4 m is mainly observed in Kumarambhem, Nizamabad, Rajanna, Jagtial, Mulugu, Warangal, Siddipet, Wanaparthy, Jogulamba, Adilabad districts etc. Water level rise ofmore than 4 m is significantly observed in parts of Kumarambhem, Bhadradri, Hanamkonda, Jogulamba, Mulugu, Sangareddy Rangareddy, Mahabubnagar, Nagarkurnool Yadadri districts etc.

Fall in Water Levels:

Out of the 78 wells that have registered fall in water levels, 65% have recorded less than 2 m while 13% in the range of 2 to 4 m and remaining 12% wells registered water level fall of more than 4 m. Fall of less than 2 m is recorded in patches in Adilabad, Bhadradri, Nalgonda, Rangareddy, Vikarabad, Mancherial, Siddipet, Sangareddy and Jangaon District. Fall of 2 to 4 m is observed in Nalgonda, Vikarabad, Hanamkonda and Jangaon districts. Fall beyond 4 mis recorded mainly in parts Nalgonda, Vikarabad, Medchal Malkajgiri, Medak, Siddipet, Sangareddy and Nirmal districts.

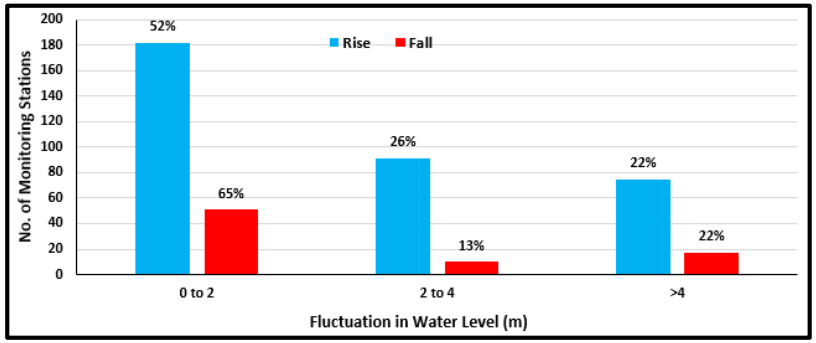

Figure-10: Percentage of wells showing rise and fall in WL in unconfined Aquifer (Decadal Mean Pre-monsoon (2015-2024) to Pre-monsoon 2025)

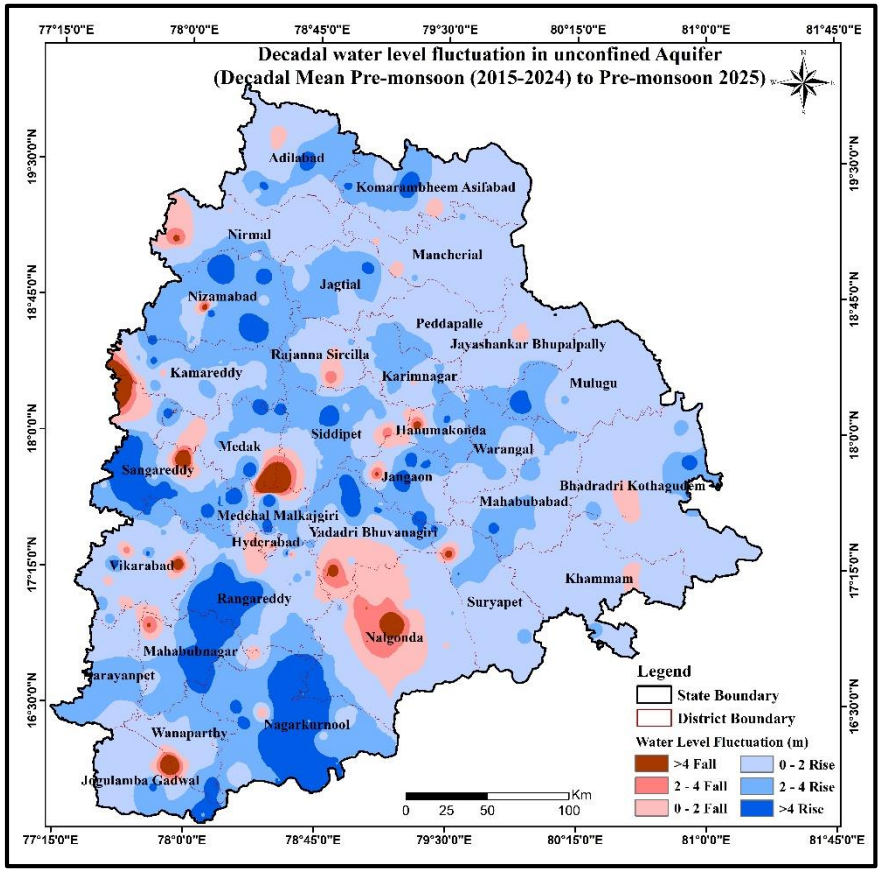

Figure 11: Decadal water level fluctuation in unconfined Aquifer (Decadal Mean Pre-monsoon (2015-2024) to Pre-monsoon 2025)

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, the CGWB, SR, Hyderabad conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon May, August, and post- monsoon November. Additionally, a yearly assessment ofground water quality is performed in May. As of March 2025, the Southern Region of the Central Ground Water Board supervises 270 dug wells and 1002 piezometers. This comprehensive report aims to portray the variations in the state's groundwater conditions across different aquifers.

During May 2025, roughly 74.3% of the state's territory exhibited a water depth of up to 10 meters below the ground level in unconfined aquifers. Areas with deeper water levels exceeding 20 meters accounted for 1.5% of the state's territory in unconfined aquifers mainly in Sangareddy, Medak, Adilabad, Medchal, Kamareddy districts.

During the period from June 2024 to May 2025, the state experienced a substantial increase in rainfall, recording a 48% rise compared to the previous year (June 2023 to May 2024) and a 54% departure above the long-term normal rainfall levels. This marked excess in rainfall has played a crucial role in replenishing groundwater resources across the region. As a result, a noticeable improvement in groundwater levels was observed in May 2025, reflecting the positive impact of the abundant rainfall on the overall water table conditions.

Annual fluctuation analysis (May 2024 to May 2025) indicated that 77.5% of wells recorded a rise in water levels, while 22.5% showed a decline. When compared to a two-year span (May 2023 to May 2025), 38% of wells recorded a rise and 62% showed a fall, suggesting variability depending on localized factors. However, decadal comparisons (mean of 2015–2024 vs. May 2025) showed long-term improvement, with 82% of wells recording a rise and only 18% showing a fall in groundwater levels.

7.0 RECOMMENDATIONS

Analysis of groundwater scenario of Telangana state reveals that the dynamics of groundwater is highly related with the variation in rainfall. Hence the following recommendations are submitted:

- To sustain Monsoon Recharge, efforts must be made to harvest rainwater through check dams, percolation tanks at sites highlighted in Artificial Recharge Master Plan. Protect and enhance natural recharge zones identified in District Recharge Plan to retain monsoon benefits.
- Promote efficient micro-irrigation techniques like drip and sprinkler irrigation to reduce groundwater extraction and encourage farmers to grow less water-intensive crops in drought-prone regions of Andhra Pradesh. Adopt crop diversification to shift from high-water-consuming crops (paddy, sugarcane) to drought-resistant crops.
- In deep water level zones (>20m), enforce strict regulations on dependency on borewell by implementing incentives for sustainable practices. In Urban areas, dependency on deeper aquifers has to curb by improving surface water supply for domestic use. Promote the reuse of treated water for non-potable purposes to lessen groundwater exploitation.
- Promote afforestation in depleted regions to improve soil moisture retention and groundwater recharge. Select native tree species with deep root systems to enhance percolation and groundwater sustainability.
- Escalate Community Awareness programs to educate farmers and industries on water-efficient practices. Establish community water conservation groups to encourage participatory groundwater management