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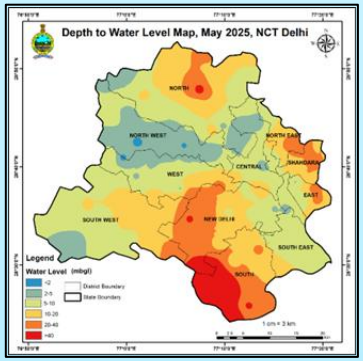
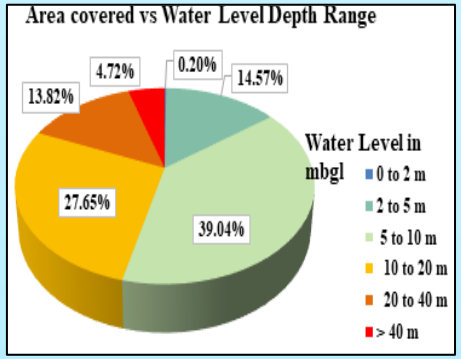
जल शक्ति मंत्रालय / MINISTRY OF JAL SHAKTI

केंद्रीय भूमि जल बोर्ड / CENTRAL GROUND WATER BOARD





GROUND WATER LEVEL BULLETIN MAY 2025 STATE UNIT OFFICE, NEW DELHI

केंद्रीय भूमि जल बोर्ड, राज्य इकाई कार्यालय

CENTRAL GROUND WATER BOARD, STATE UNIT OFFICE

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राष्ट्रीय राजधानी क्षेत्र , दिल्ली में मई -2025 के दौरान भूजल स्तर परिदृश्य में निष्कर्षों, विभिन्न जलभृतों में भूजल स्तर की स्थिति और इसकी मौसमी, वार्षिक और दशकीय तुलना पर प्रकाश डाला गया

GROUNDWATER LEVEL SCENARIO DURING MAY – 2025 IN NCT, DELHI HIGHLIGHTING THE FINDINGS, STATUS OF GROUNDWATER LEVEL IN DIFFERENT AQUIFERS, AND ITS SEASONAL, ANNUAL, AND DECADAL COMPARISON

1.0 INTRODUCTION

Ground water is among the Nation's most precious natural resources. Measurements of water levels in wells provide the most fundamental indicator of the status of this resource and are critical to meaningful evaluations of the quantity and quality of groundwater and its interaction with surface water. Water-level measurements are made by Central Ground Water Board four times a year manually but the measurements in May are quite crucial as they provide the overall impact of pre-monsoon ground water behavior and ground water withdrawal for drinking and domestic purpose which counts nearly 75% of its drinking and domestic demands during this period only. Recently CGWB has installed Automatic Water Level Recorders in selected Piezometers to get the real time water levels of NCT, Delhi.

2.0 STUDY AREA

The State Unit Office of Central Ground Water Board Delhi has jurisdiction over the National Capital Territory (NCT) of Delhi, covering an area of 1483 Sq.km and lies between 28°24'15'' & 28°53'00'' North Latitudes and 76°50'24" & 77°20'30" East Longitudes, covered under Survey of India Topo-sheet Nos. 53D and 53H. The NCT of Delhi is surrounded on three sides by two States, i.e., on North, West and South by Haryana and in the East by Uttar Pradesh. NCT of Delhi is divided into 11 Revenue District and one non-revenue unit along river Yamuna, named as Nazul Land. As per District Census Hand Book, 11 districts of NCT of Delhi are further subdivided into 3 Tehsils for each district and there are total 33 Tehsils, with 112 villages, 110 Census Town and 3 Statutory Towns.

The rock formations exposed in the National Capital Territory of Delhi are mainly quartzite of Alwar series of the Delhi Super group that are inter-bedded with thin micaceous schist bands. Proterozoic rocks occur along the ridge, extending from Harchandpur (Haryana) in the South to Wazirabad (Delhi) in the North. Quaternary sediments directly overlie the Proterozoic rocks.

The Delhi Quartzite ridge acts as the recharge zone. The Quaternary deposits in the form of aeolian and alluvial deposits constitute the major repository of ground water in the area. In the east of the ridge, the thickness of unconsolidated sediments gradually increases away from the ridge, with the maximum reported thickness being 170 m.

3.0 BEHAVIOUR OF WATER LEVEL

In the Southwestern, Western and Northern parts of the area, the thickness of sediments is more than 300 m except at Dhansa where the bedrock has been encountered at 297m below land surface. In Chhattarpur basin, the maximum thickness of sediments is 116 m. The aeolian deposits are mainly comprised of loam, silty loam and sandy loam. The bedrock is overlain by these deposits. Older alluvial deposits consist mostly of interbedded, lenticular and inter fingering deposits of clay, silt, andsand along with kankar. These deposits overlay the aeolian deposits and are in turn overlain bythe newer alluvium, which occurs mostly in the flood plains of river Yamuna (***Figure 1***).

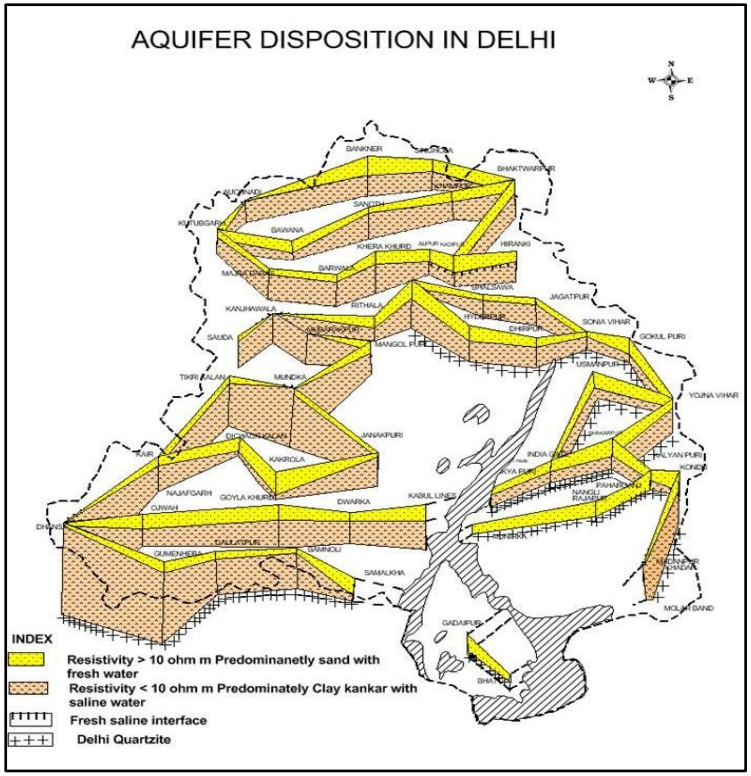

Figure 1 : Panel Diagram showing Aquifer Disposition in NCT of Delhi

To meticulously evaluate the quantitative shifts in groundwater resources, a comprehensive analysis was conducted by comparing water level data from May 2025 with that January 2024, August 2024 and November 2023, and the decadal mean for May (2015-2024). This comparison enabled the calculation of Seasonal, Annual, and Decadal Mean Water Level Fluctuations. The ensuing discussion elucidates the behavioral dynamics of groundwater levels in May 2025, providing a critical examination of changes relative to the referenced temporal benchmarks.

3.1 RAINFALL

(source: https://mausam.imd.gov.in/newdelhi/mcdata/seasonal_report.pdf)

The rainfall data collected and compiled from monthly weather reports from Indian Meteorological Department were used to analyze the rainfall for the period of June 2024- September 2024. Monsoon withdrew from Delhi on 2nd October 2024 against its normal date of withdrawal 25th September (1971-2019). In the year 2024, the southwest monsoon (SWM) made its onset over Delhi on 28th June, 2024 against its normal onset date of 27th June (1961-2019). In last 124 years, the earliest onset of southwest monsoon was in 2008 when it arrived in Delhi on 15th June and most delayed onset was in 1987 when it arrived on 26th July. In Delhi, seasonal rainfall (June to September) in the monsoon 2024 was in the category of Large excess (departure of 61%) with actual rainfall 1029.9 mm against its normal value (1971-2020) of 640.4 mm. This year, Delhi received 7th highest seasonal rainfall in the monsoon season since 1901.

Table 1: Highest Seasonal Rainfall (June- September) over Delhi in 2024

S. No	Year	Seasonal Rainfall (in mm)
1	1933	1421.6
2	1964	1190.9
3	1975	1155.6
4	2003	1052.8
5	2010	1031.5
6	2021	1169.7
7	2024	1029.9

Table 2: The rainfall recorded during monsoon season in NCT, Delhi 2024

S. No	Month	Rainfall (in mm)	Normal (1971-2020)	Departure (in %)	No. of Rainy Days (RF >2.4 mm)
1	June	243.3	74.1	228	3
2	July	203.7	209.7	-3	12
3	August	390.3	233.1	67	17
4	September	192.5	123.5	56	08

3.2 DEPTH TO WATER LEVEL: MAY 2025

The analysis of the water level behavior in May 2025, as illustrated in (***Figure 2),*** unveils critical insights into regional hydrological dynamics. The depth to water level map, serving as a pivotal tool in this evaluation, highlights significant variations in groundwater table depths across different locales.

In May 2025, the depth to the water level in Delhi exhibits a significant range, from a mere 1.5m below ground level in Hiran Kudna DW Dug Well within the Punjab bagh in the West district to a substantial 75.10 mbgl in Sultanpur IMS in the Vasant Vihar in New Delhi district.

Notably, the areas which are characterized by extremely shallow water levels ranging from 0 to 2 mbgl, observed in 2.22% of monitoring wells, signify localized water logging within 0.20% of the state's area. Similarly, shallow water levels between 2 to 5 mbgl are recorded in 24.44% of wells encompassing 14.57% area across Narela, Kaspshera, Najafgarh, Khanjhawala, Punjabi Bagh, Rohini, Narela, Civil Line, Karawal Nagar and Model Town tehsils.

Depth to water level ranges of 5 to 10 mbgl is exhibited by 34.82% of the monitoring wells. These wells span 39.04% of the total area and are dispersed across Alipur, Chanakyapuri, Kapashera, Najafgarh, Narela, Patel Nagar, Preet Vihar, Punjabi Bagh, Saraswati Vihar, Karawal Nagar, Defence Colony, Gandhi Nagar, Mayur Vihar, and Model Town. Moderate water levels, ranging from 10 to 20 mbgl, are observed in approximately 22.96% of wells, spanning 27.65% of the area in Chanakyapuri, Karol Bhagh, Alipur, Delhi Cantonment, Narela, Vivek Vihar, Najafgarh, Dwarka, Patel Nagar, Saket, Mayur Vihar, Preet Vihar, Seelampur, and Seemapuri. Deep water levels, ranging from 20 to 40 mbgl, are found in 10.37% of wells, covering 13.82% of the area in Delhi Cantonment, Yamuna Vihar, Mehrauli, Rajouri Garden, Saket, Hauz Khas, Dwarka, Mayur Vihar, Preet Vihar and Alipur. Very deep water levels exceeding 40 mbgl occur in 5.19% of the wells and 4.72% of the area, including Delhi Cantonment, Saket, Mehrauli, and Alipur (***Figure 2, Figure 3, Figure 4, and Figure 5 & Table 3)***

Table 3: Number of Wells monitored and Area Covered falling in different Depths to Water Level Ranges (May 2025)

Depth to water level range (mbgl)	Wells Monitored		Area Covered	
	No.	% age	Km2	% age
0 to 2 m	3	2.22%	3	0.20%
2 to 5 m	33	24.44%	216	14.57%
5 to 10 m	47	34.82%	579	39.04%
10 to 20 m	31	22.96%	410	27.65%
20 to 40 m	14	10.37%	205	13.82%
> 40 m	7	5.19%	70	4.72%
Total	**135**	**100.00%**	**1483**	**100.00%**

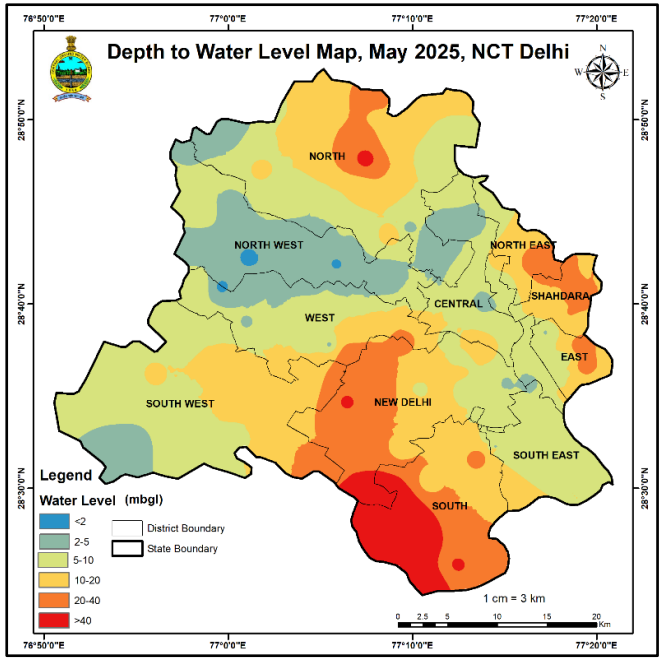

Figure 2: Depth to Water Level Map, May 2025, NCT Delhi

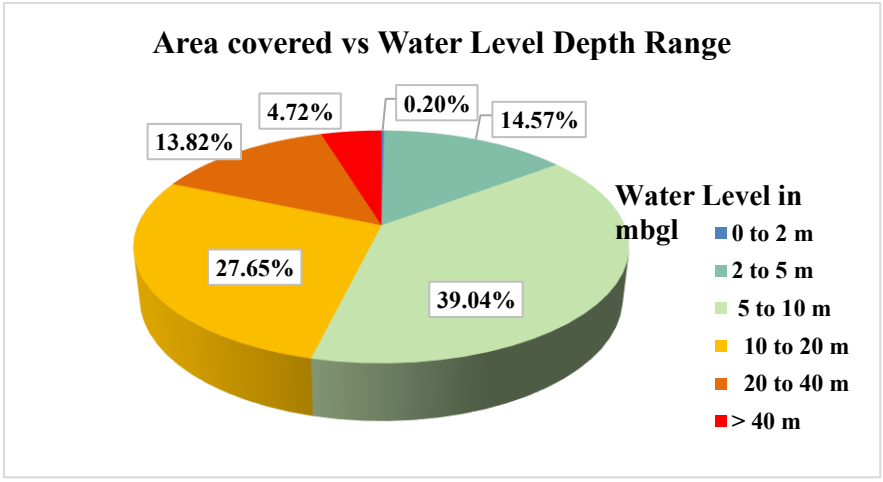

Figure 3: Area Covered Vs Water Level Depth Range (May 2025)

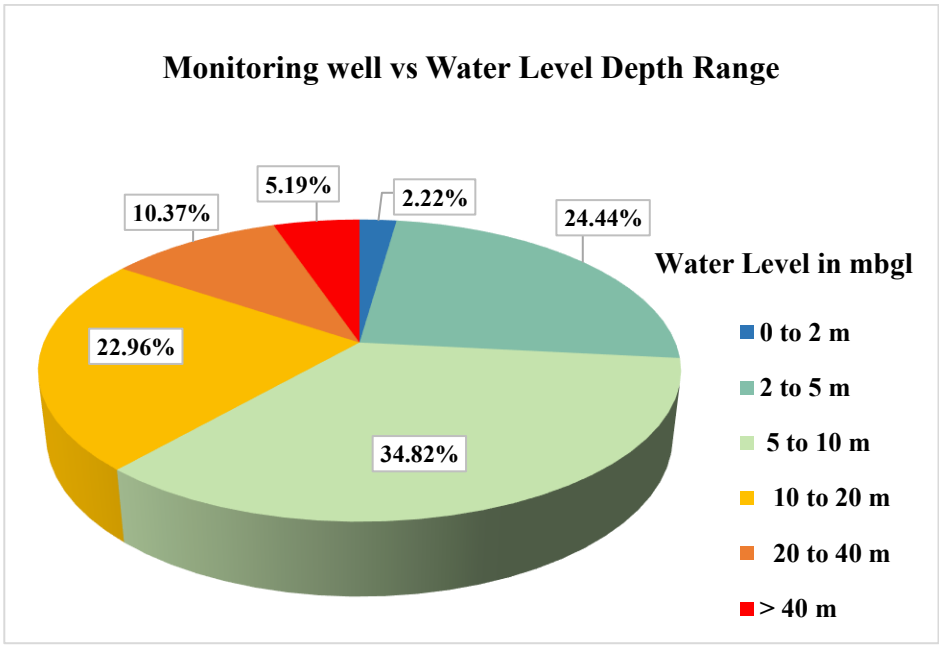

Figure 4 Monitoring Wells Vs Water Level Depth Range (May 2025)

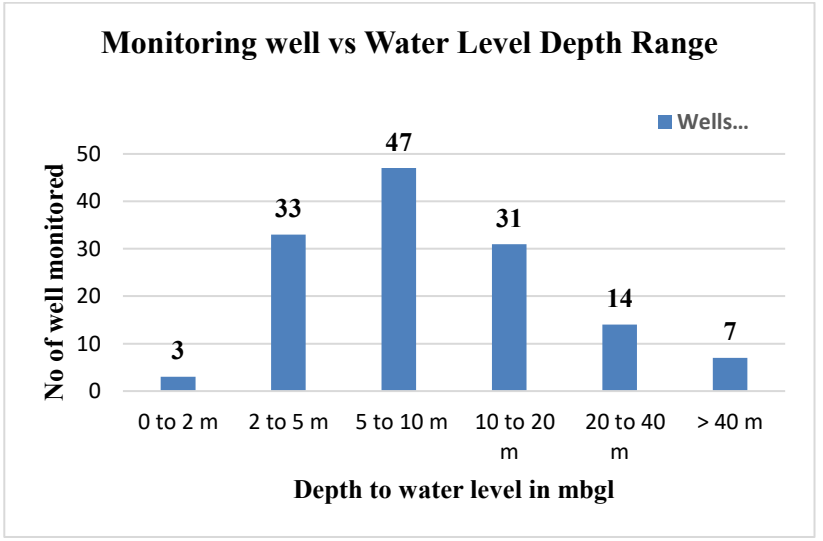

Figure 5: Monitoring Well Vs Water Level Depth Range (May 2025)

3.3.1 SEASONAL WATER LEVEL FLUCTUATIONS: (AUGUST 2024 – MAY 2025)

The comparative analysis of water level data from January 2025 with the previous measurements recorded in August 2024 elucidates the seasonal fluctuations in groundwater levels. This comparative evaluation, which captures the variability in groundwater levels across different times of the year, is critical for understanding the cyclical behavior of aquifer recharge and depletion (***Figure 6***). The analysis of seasonal fluctuations reveals a predominant decline in groundwater levels across 66.66 % of the monitored wells, encompassing 73.46 % of the state's area. Specifically, a decline is seen around 0 to 2 meter in range, is seen in 53.33 % of monitoring well and 62.62 % of state area predominantly in North, North West, Central, North East, Shahdara, New Delhi, South, South West, and West Districts, including Narela, Alipur, Rohini, Punjab Bagh, Najafgarh, Saket, Mehrauli, Kapashera, Khanjhwala, Saraswati Vihar, Model Town, Civil lines, Defence Colony, Vasant Vihar and Saritha Vihar. The water level of 2 to 4 meter is seen in 8.33 % of monitoring well and 6.03% of State area in patches South, New Delhi, South West, West, North, West and Central including Narela, Punjab Bagh, Dwarka, Vasant Vihar, and Karol Bagh. Water level >4 m is seen in 5.00 % of well with an area of 4.81 % in patches of Saket, Mehrauli, Narela, Karol Bagh and Punjab Bagh. (***Figure 7, Figure 8 & Table 4***).

Conversely, water level increases are recorded in 33.33 % of the wells and 26.54 % of the area, with a rise of 0 - 2 meters noted in 27.50 % of wells and 24.84 % of the area. In the districts like West, South West, New Delhi, East, North, North West, North East, and South, primarily in Narela, Alipur, Chanakyapuri, Khanjhawala, Najafgarh, Kapashera, Dwarka, Patel Nagar, Punjab Bagh, Delhi Cantonment, Hauz Khas, Defenses Colony, Yamuna Vihar, Preet Vihar, Mayur Vihar and Rohini. Instances of water level rise exceeding 2 meters are observed, with 2 - 4 meters encompassing an area of 1.48 % and occurring in 5 % of the total monitoring wells. These cover West, South West, New Delhi, North, East and North West districts and areas like Patel Nagar, Rajouri Garden, Khanjhawala, Narela, Mayur Vihar, Chanakyapuri and Delhi Cantonment. Greater than 4-meter ranges showing 0.83 % occurrences in wells and 0.22 % state area is seen in West district Rajouri Garden, and Patel of the state.

Table 4: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (August 2024 & May 2025)

Water Level Fluctuation Range in meters		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	64	53.33%	928.65	62.62%
	2 to 4 m	10	8.33%	89.41	6.03%
	>4 m	6	5.00%	71.36	4.81%
Rise	0 to 2 m	33	27.50%	368.42	24.84%
	2 to 4 m	6	5.00%	21.91	1.48%
	>4 m	1	0.83%	3.25	0.22%
Total		**120**	**100.00%**	**1483**	**100.00%**

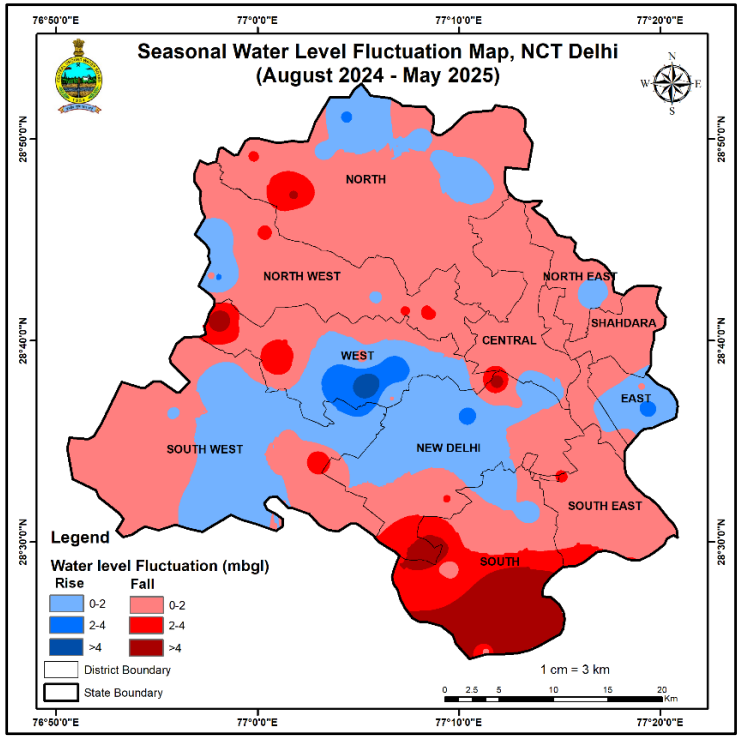

Figure 6: Water Level Fluctuation Map of NCT of Delhi (August 224 & May 2025)

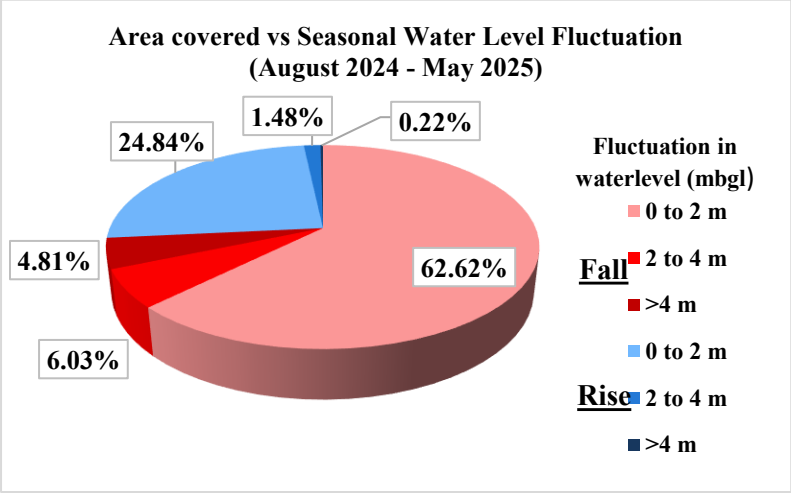

Figure 7: Fluctuations in Water Level by Area (August 24 & May 25)

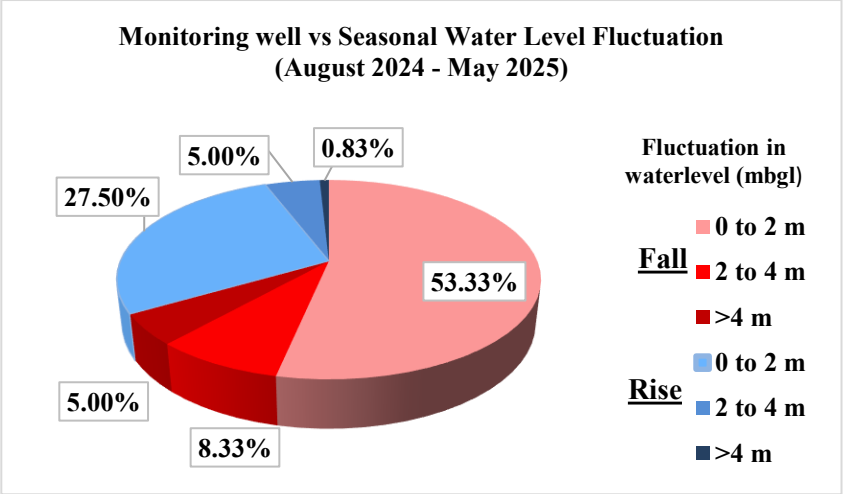

Figure 8: Fluctuation in Water Level (August 2024 & May 2025)

The seasonal water level fluctuation, i.e. the change in the depth to water level of May 2025 with respect to August 2024 reveals the effective decline of groundwater levels owing to the summer season. A number of wells showing the change in groundwater level in the region over a period from May to January is presented below (***Figure 9***).

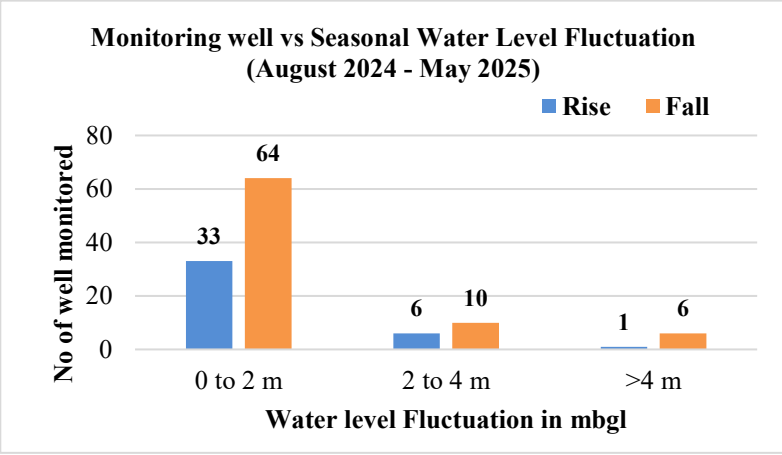

Figure 9: Fluctuation in Water Level: August 2024 - May 2025

3.3.2 SEASONAL WATER LEVEL FLUCTUATIONS: (NOVEMBER 2024 – MAY 2025)

The comparative analysis of water level data from May 2025 with the previous measurements recorded in November 2024 elucidates the seasonal fluctuations in groundwater levels. This comparative evaluation, which captures the variability in groundwater levels across different times of the year, is critical for understanding the cyclical behavior of aquifer recharge and depletion (***Figure 10***). The analysis of seasonal fluctuations reveals a predominant decline in groundwater levels across 75.18 % of the monitored wells, encompassing 85.94 % of the state's area. Specifically, a decline is seen around 0 to 2 meter in range, is seen in 61.65 % of monitoring well and 76.93 % of state area predominantly in North, North West, North East, Shahdara, Central, South East, South, South west, and North West regions, including Narela, Khanjhawala, Alipur, Rohini, Punjab Bagh, Najafgarh, Kapashera, Dwarka, Vasant Vihar, Saket, Model town, Karawal Nagar, Yamuna Vihar, Seelampur, Seemapuri, Vivek Vihar, Gandhi Nagar, Hauz Khas, Defence Colony, Kalkaji, Saket, Mehrauli and Sarita Vihar. The water level of 2 to 4 meter is seen in 9.77 % of monitoring well and 6.05% of State area in patches North, West, Central, South, New Delhi, and East of Punjab Bagh, Narela, Alipur, Vasant Vihar, Mehrauli, Saket, Karawal Nagar, Karol Bagh and Preet Vihar. Water level >4 m is seen in 3.76 % of wells with an area of 2.96 % in South, New Delhi, and North patches of Saket, Mehrauli, Vasant Vihar, Chanakyapuri and Alipur. (***Figure 11, Figure 12 & Table 5***).

Conversely, water level increases are recorded in 24.18 % of the wells and 14.06 % of the area, with a rise of 0 - 2 meters noted in 22.56 % of wells and 13.60 % of the area, primarily North, North West, West, South West, New Delhi, South, East and Central in Narela, Alipur, Chanakyapuri, Khanjhawala, Najafgarh, Kapashera, Dwarka, Patel Nagar, Delhi Cantonment, Hauz Khas, Defenses Colony, Karwal Nagar, Yamuna Vihar, Mayur Vihar and Seelampur. Instances of water level rise exceeding 2 meters are observed, with 2 - 4 meters encompassing an area of 0.31 % and occurring in 1.50 % of the total monitoring wells. These cover South, and New Delhi District in Saket and Greater than 4-meter ranges showing 0.75 % occurrences in wells and 0.15 % state area South District is seen in Saket, and Mehrauli of the state.

Table 5: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (November 2024 & May 2025)

Water Level Fluctuation Range in meters		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	82	61.65%	1140.85	76.93%
	2 to 4 m	13	9.77%	89.76	6.05%
	>4 m	5	3.76%	43.93	2.96%
Rise	0 to 2 m	30	22.56%	201.75	13.60%
	2 to 4 m	2	1.50%	4.54	0.31%
	>4 m	1	0.75%	2.17	0.15%
Total		**133**	**100.00%**	**1483**	**100.00%**

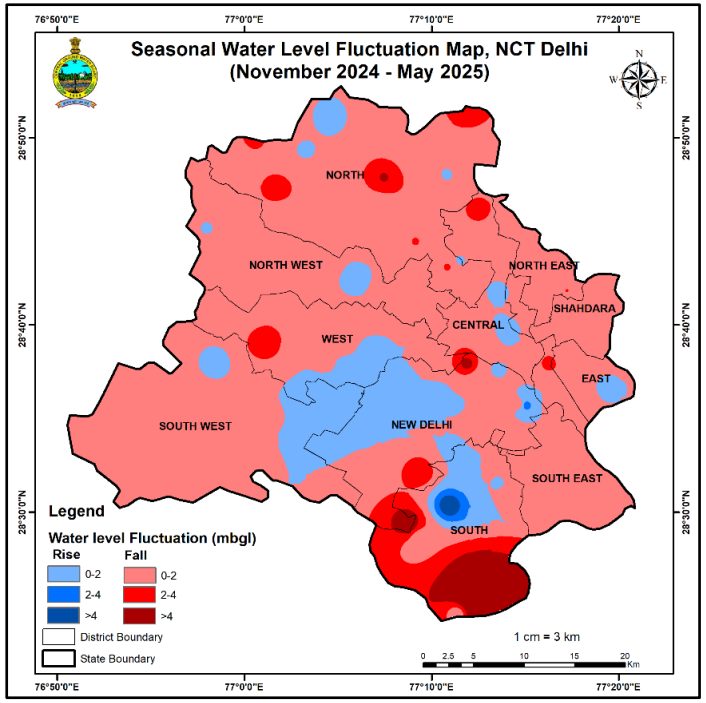

Figure 10: Water Level Fluctuation Map of NCT of Delhi (November 2024 & May 2025)

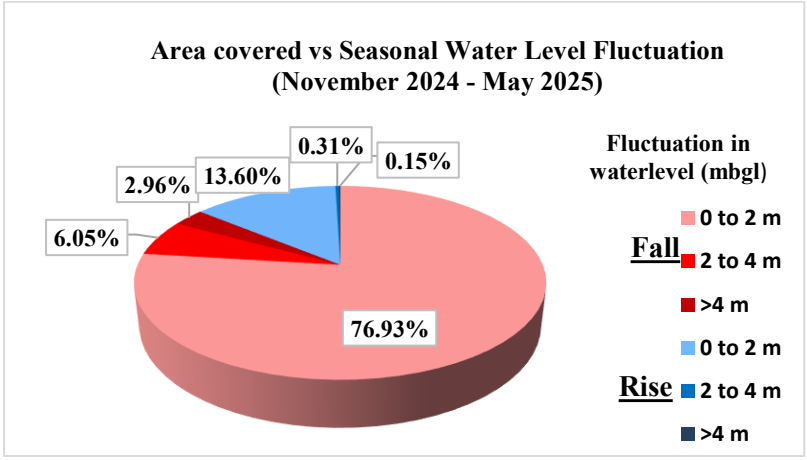

Figure 11: Fluctuations in Water Level by Area (November 2024 & May 2025)

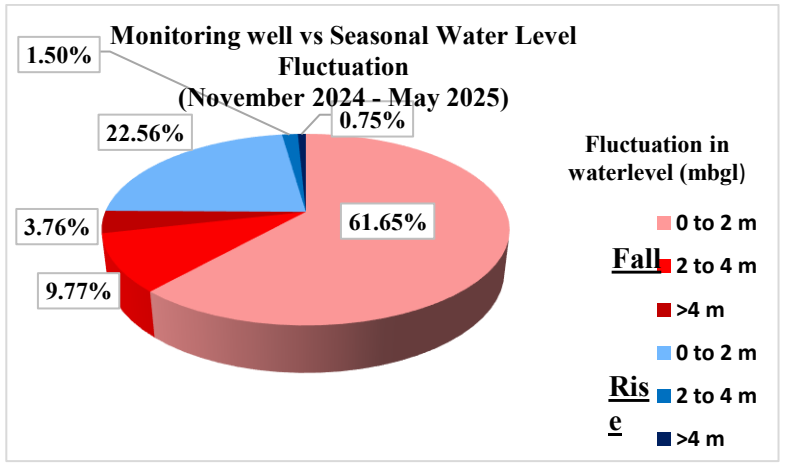

Figure 12: Fluctuation in Water Level (November 2024 & May 2025)

The seasonal water level fluctuation, i.e. the change in the depth to water level of May 2025 with respect to November 2024 reveals the effective decline of groundwater levels owing to the summer season. A number of wells showing the change in groundwater level in the region over a period from August to January is presented below (***Figure 13***).

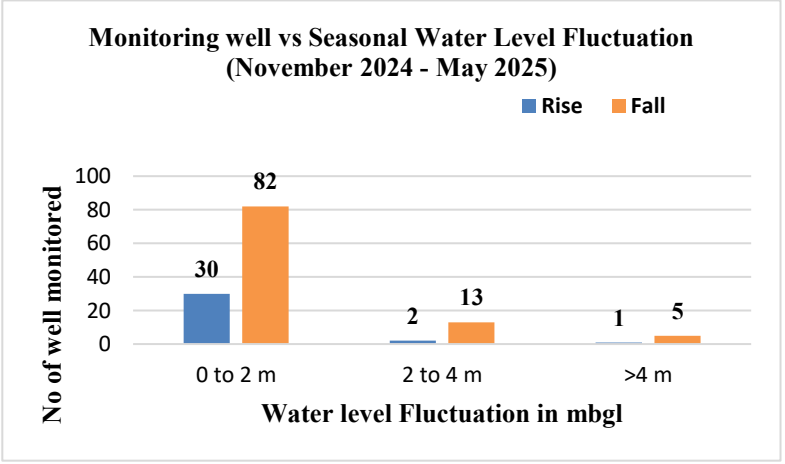

Figure 13: Fluctuation in Water Level: November 2024 - May 2025

3.3.3 SEASONAL WATER LEVEL FLUCTUATIONS: (JANUARY 2025 – MAY 2025)

The comparative analysis of water level data from May 2025 with the previous measurements recorded in January 2025 elucidates the seasonal fluctuations in groundwater levels. This comparative evaluation, which captures the variability in groundwater levels across different times of the year, is critical for understanding the cyclical behavior of aquifer recharge and depletion (***Figure 14***). The analysis of seasonal fluctuations reveals a predominant decline in groundwater levels across 84 % of the monitored wells, encompassing 93.52 % of the state's area. Specifically, a decline is seen around 0 to 2 meter in range, is seen in 74.40 % of monitoring well and 83.97 % of state area predominantly in North, North West, North East, West, Shahdara, East, Central, South East, South, South west, and North West regions, including Narela, Khanjhawala, Alipur, Rohini, Punjab Bagh, Najafgarh, Kapashera, Dwarka, Delhi Cantonment, Vasant Vihar, Saket, Model town, Karawal Nagar, Yamuna Vihar, Seelampur, Seemapuri, Vivek Vihar, Gandhi Nagar, Hauz Khas, Defence Colony, Kalkaji, Saket, Seelampur, Seemapuri, Preet Vihar, Mayur Vihar, Mehrauli and Sarita Vihar. The water level of 2 to 4 meter is seen in 4.80 % of monitoring well and 7.91 % of State area in patches North, West, Central, South, New Delhi, North East, and East of Punjab Bagh, Narela, Alipur, Vasant Vihar, Mehrauli, Saket, Karol Bagh, Seemapuri and Preet Vihar. Water level >4 m is seen in 4.80 % of wells with an area of 1.64 % in South, New Delhi, Central and North patches of Saket, Mehrauli, Vasant Vihar, Narela, and Karol Bagh. (***Figure 15, Figure 16 & Table 6***).

Conversely, water level increases are recorded in 16 % of the wells and 6.48 % of the area, with a rise of 0 - 2 meters noted in 15.20 % of wells and 6.44 % of the area in New Delhi, South West, West, North West, North, and East primarily in Narela, Alipur, Chanakyapuri, Delhi Cantonment, Dwarka, Hauz Khas, Kotwali, Mayur Vihar, Gandhi Nagar Rohini, Saraswati Vihar, Vasant Vihar and Defence Colony. Instances of water level rise exceeding 2 meters are observed, with 2 - 4 meters encompassing an area of 0.04 % and occurring in 0.80 % of the total monitoring wells. These cover New Delhi in Chanakyapuri.

Table 6: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (January 2025 & May 2025)

Water Level Fluctuation Range in meter		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	93	74.40%	1245.29	83.97%
	2 to 4 m	6	4.80%	117.32	7.91%
	>4 m	6	4.80%	24.38	1.64%
Rise	0 to 2 m	19	15.20%	95.52	6.44%
	2 to 4 m	1	0.80%	0.49	0.04%
	>4 m	0	0.00%	0	0.00%
Total		**125**	**100.00%**	**1483**	**100.00%**

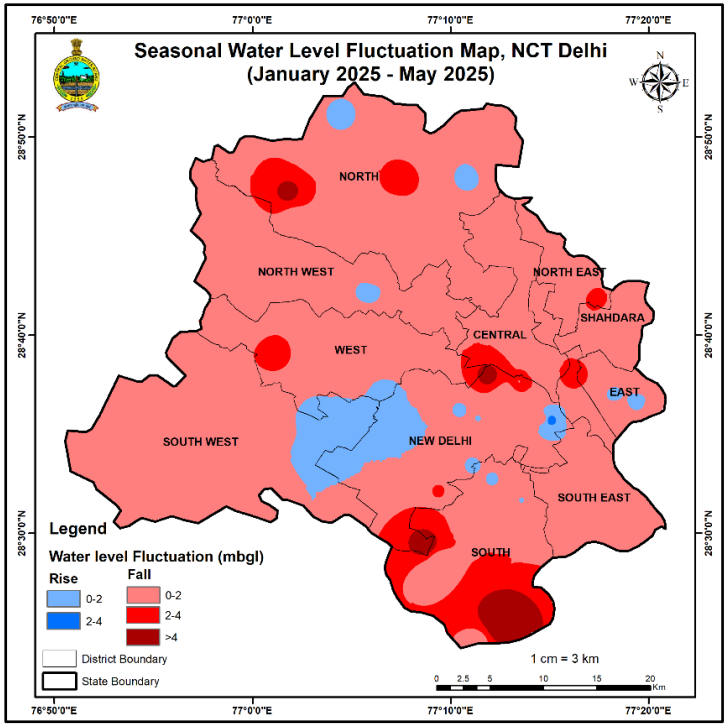

Figure 14: Water Level Fluctuation Map of NCT of Delhi (January 2025 & May 2025)

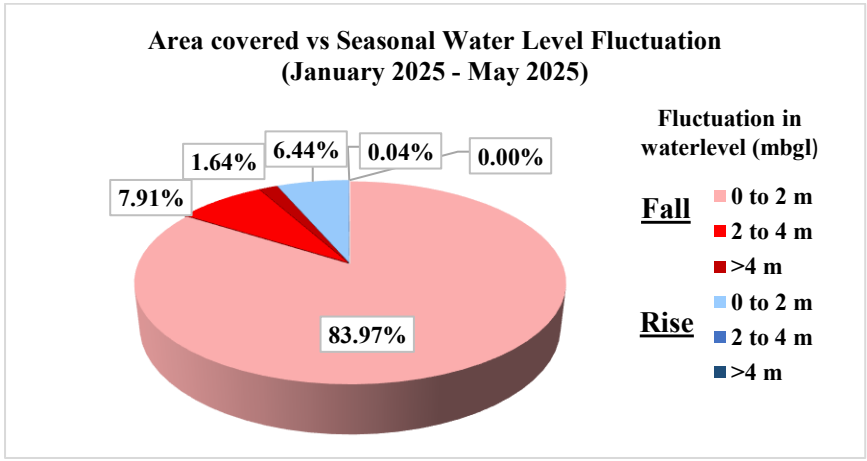

Figure 15: Fluctuations in Water Level by Area (January 2025 & May 2025)

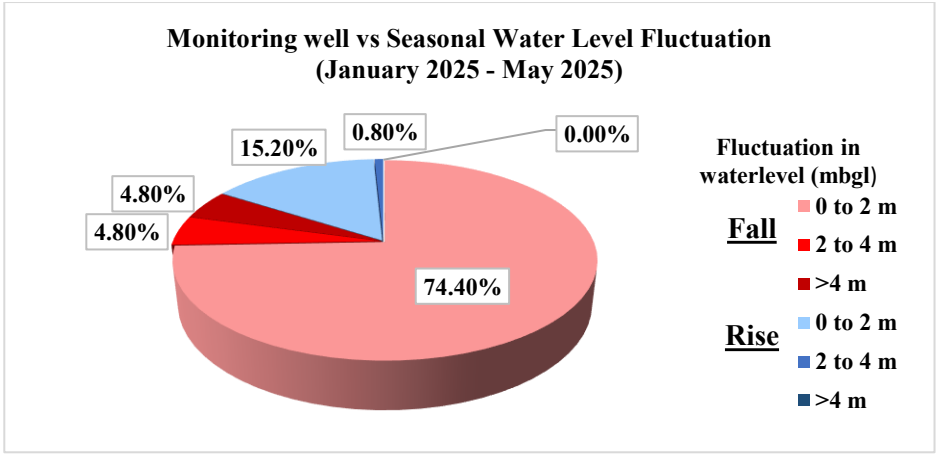

Figure 16: Fluctuation in Water Level (January 2025 & May 2025)

The seasonal water level fluctuation, i.e. the change in the depth to water level of May 2025 with respect to January 2025 reveals the effective decline of groundwater levels owing to the summer season. A number of wells showing the change in groundwater level in the region over a period from November to January is presented below (***Figure 17***).

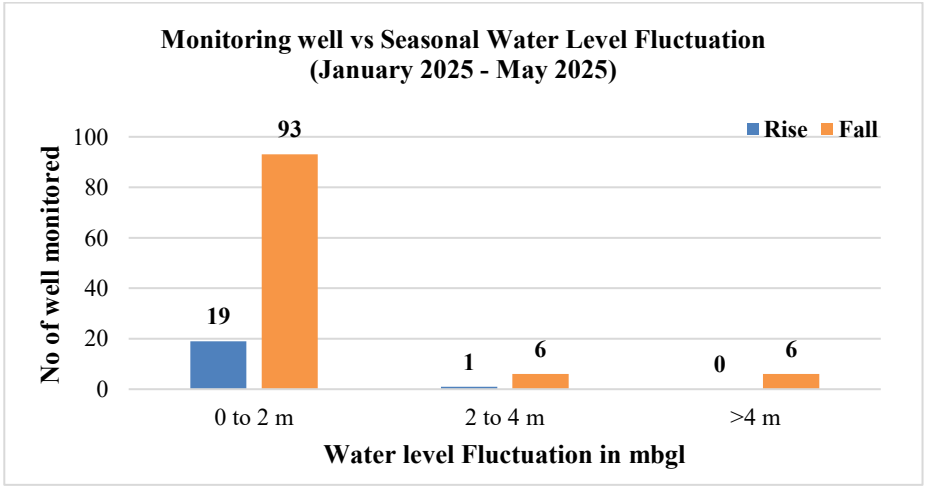

Figure 17: Fluctuation in Water Level: January 2025 - May 2025

3.4.1 ANNUAL FLUCTUATIONS: (MAY 2023 - MAY 2025)

To assess the effects of rainfall and groundwater extraction over the past year, we computed annual water level fluctuations between May 2023 and May 2025. The resulting behavior is detailed below and illustrated in (***Figure 18).***

The interpretation of the data reveals that water levels declined in approximately 51.22 % of monitored wells, encompassing 39.77 % of the state's total area. Specifically, a decline of 0-2 meters was noted in 44.72 % of wells, affecting 36.90 % of the area, encompassing District like North, North West, South West, New Delhi, South, North East, Shahdara, South East and East and encompassing the tehsil of Alipur, Narela, Nazul Land, Seelampur, Civil Lines, Nazul Land, Vivek Vihar, Mayur Vihar, Defence Colony, and Sarita Vihar. Mehrauli, and small patch of Punjabi Bagh, Kapashera, Rajouri Garden. While a 2-4 meter drop was observed only in 5.69 % of wells and 2.37% of the area in the districts of North, South, New Delhi and Shahdara encompassing the tehsil of Alipur, Narela, Model Town, Vasant Vihar and Mehrauli. More significant declines, exceeding 4 meters only in 0.81 % of wells and 0.50% of the area in the district of South and New Delhi encompassing the tehsil of Vasant Vihar and Mehrauli.

Conversely, water levels rose in 48.78 % of the wells, covering 60.23 % of the area. A rise of 0-2 meters was most prevalent, detected in 30.89 % of wells and 51.59 % of the state area in the district of West, South West, New Delhi, South, South East, East, and North East encompassing the tehsil of Narela, Khanjhawala, Rohini, Punjab Bagh, Najafgarh, Kapashera, Dwarka, Delhi Cantonment, Saraswati Vihar, Model Town, Karawal Nagar, Vasant Vihar, Saket, Kalkaji, Chanakyapuri, Mayur Vihar and Defence Colony. Notably, a 2-4 meter rise occurred in 15.45 % of wells and 8.51% area in the districts like North West, West, South West, New Delhi, South, South East, East and North East districts occurring in patches in Chanakyapuri, Rajouri Garden, Delhi Cantonment, Saket, Kapashera, Khanjhawala, Hauz Khas and Dwarka. Water levels over 4 meters of rise are observed in 2.44 % of wells and 0.13% in New Delhi and South West District seen as patches in Dwarka, Delhi Cantonment and Chanakyapuri. (***Figure 19 & Figure 20 & Table 7***).

Table 7: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (May 2023 & May 2025)

Water Level Fluctuation Range in meter		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	55	44.72%	547.21	36.90%
	2 to 4 m	7	5.69%	35.22	2.37%
	>4 m	1	0.81%	7.44	0.50%
Rise	0 to 2 m	38	30.89%	765.13	51.59%
	2 to 4 m	19	15.45%	126.25	8.51%
	>4 m	3	2.44%	1.75	0.13%
Total		**123**	**100.00%**	**1483**	**100.00%**

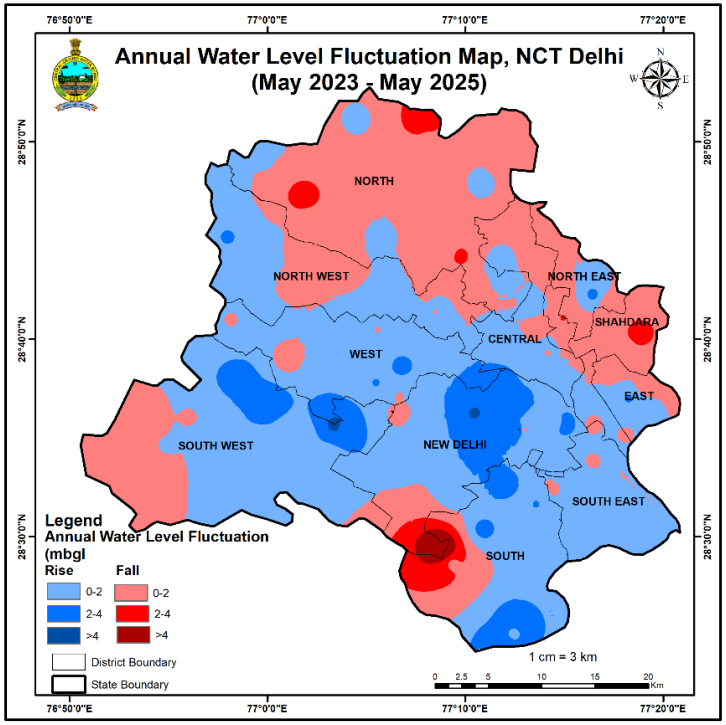

Figure 18: Depth to Water Level Fluctuation Map of NCT of Delhi (May 2023 & May 2025)

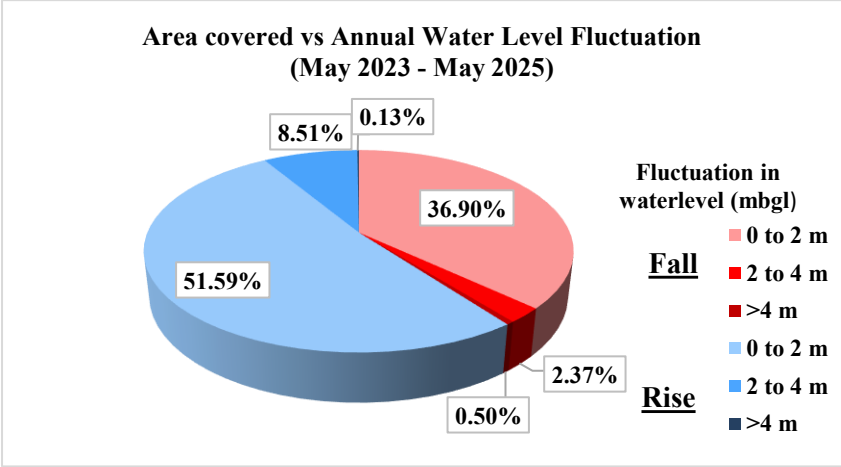

Figure 19: Fluctuation in Water Level by Area (May 2023 Vs May 2025)

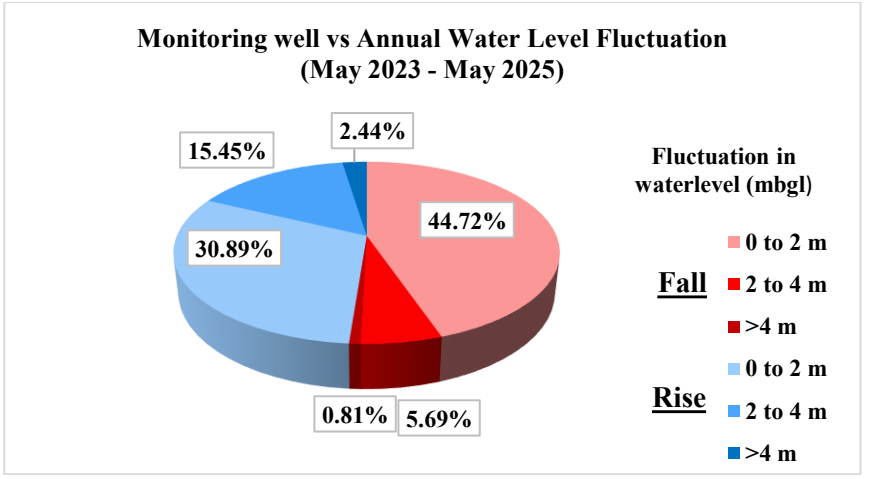

Figure 20: Fluctuation in Water Level: May 2023 Vs May 2025

The Annual water level fluctuation i.e., from May 2023 with respect to May 2025 reveals the effective rise of groundwater levels. A number of wells showing the change in groundwater level in the region over a period from May 2023 to May 2025 is presented below. Each of these observations can be spotted in the following graph (***Figure 21***).

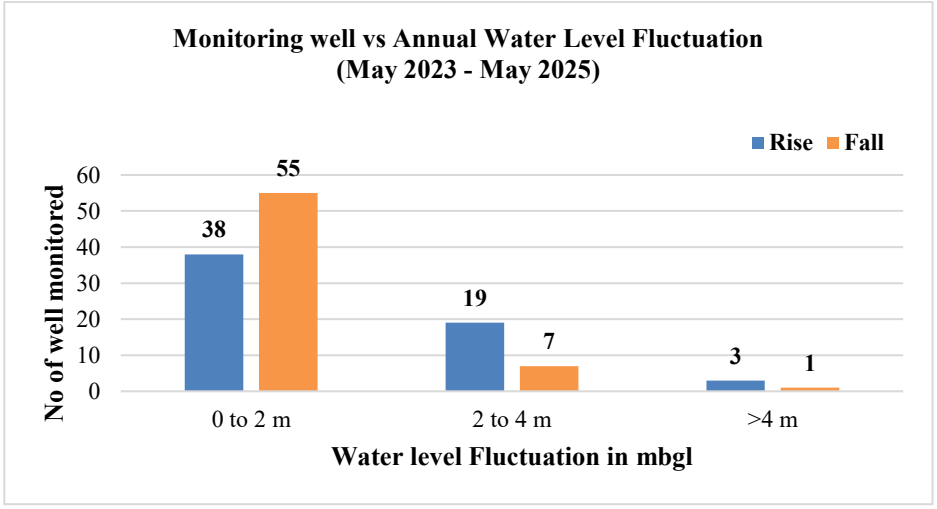

Figure 21: Fluctuation in Water Level: May 2023- May 2025

3.4.2 ANNUAL FLUCTUATIONS: (MAY 2024 - MAY 2025)

To assess the effects of rainfall and groundwater extraction over the past year, we computed annual water level fluctuations between May 2024 and May 2025. The resulting behavior is detailed below and illustrated in (***Figure 22)***.

The interpretation of the data reveals that water levels declined in approximately 31.29 % of monitored wells, encompassing 17.36 % of the state's total area. Specifically, a decline of 0-2 meters was noted in 30.53 % of wells, affecting 16.95 % of the area, encompassing the districts like North, North East, Central, Shahdara, East and some patches of South, West, South West with encompassing the tehsil of Alipur, Narela, Nazul Land, Seelampur, Civil Lines, Vivek Vihar, Seemapuri, Karwal Nagar, Shahdara, Mayur Vihar, Sarita Vihar, Punjab Bagh and small patches of Vasant Vihar, Delhi Cantonment, Kapashera, Saraswati Vihar and Dwarka. While a 2-4 meter drop was not observed in the NCT Delhi area. More significant declines, exceeding 4 meters, encompass 0.76 % of monitored wells, and 0.41% of the area, which encompasses South and New Delhi districts, with the tehsil of Vasant Vihar and Mehrauli.

Conversely, water levels rose in 68.70 % of the wells, covering 82.64 % of the area. A rise of 0-2 meters was most prevalent, detected in 52.67 % of wells and 73.38 % of the state area, encompassing districts like North, North West, West, South West, New Delhi, South, East, and South East, encompassing the tehsil of Narela, Kanjhawala, Rohini, Punjabi Bagh, Kalkaji, Alipur, Chanakyapuri, Civil Lines, Delhi Cantonment, Dwarka, Hauz Khas, Kapashera, Dwarka, Kotwali, Mehrauli, Model Town, Najafgarh, Nazulland, Patel Nagar, Saraswati Vihar, Delhi Cantonment, Vasant Vihar, Defence Colony, Mayur Vihar, and Preet Vihar. Notably, a 2-4 meter rise occurred in 12.21 % of wells and 8.47 % area encompassing North West, South West, New Delhi, South and Central districts occurring in patches in Saket, Chanakyapuri, Mehrauli, Delhi Cantonment, Dwarka, and small patch of Khanjawala, Rohini and Yamuna Vihar. Water levels over 4 meters of rise are observed in 3.82 % of wells and 0.79 % of the surveyed region win South District in Saket and Mehrauli. (***Figure 23 & Figure 24 & Table 8***).

Table 8: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (May 2024 & May 2025)

Water Level Fluctuation Range in meter		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	40	30.53%	251.36	16.95%
	2 to 4 m	0	0.00%	0	0.00%
	>4 m	1	0.76%	6.15	0.41%
Rise	0 to 2 m	69	52.67%	1088.25	73.38%
	2 to 4 m	16	12.21%	125.59	8.47%
	>4 m	5	3.82%	11.65	0.79%
Total		**131**	**100.00%**	**1483**	**100.00%**

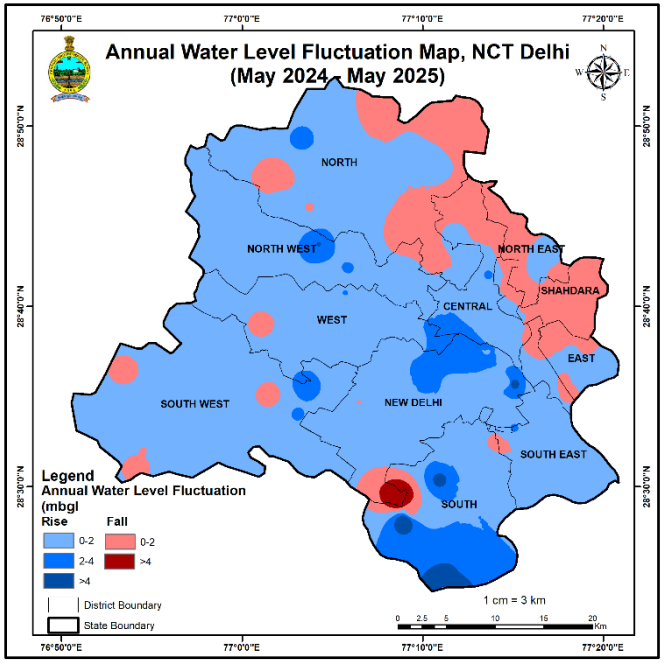

Figure 22: Depth to Water Level Fluctuation Map of NCT of Delhi (May 2024 & May 2025)

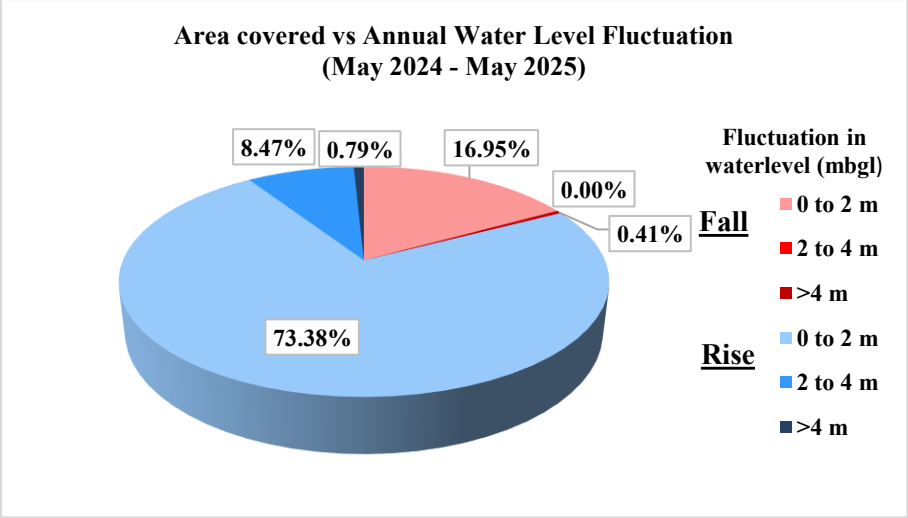

Figure 23: Fluctuation in Water Level by Area (May 2024 Vs May 2025)

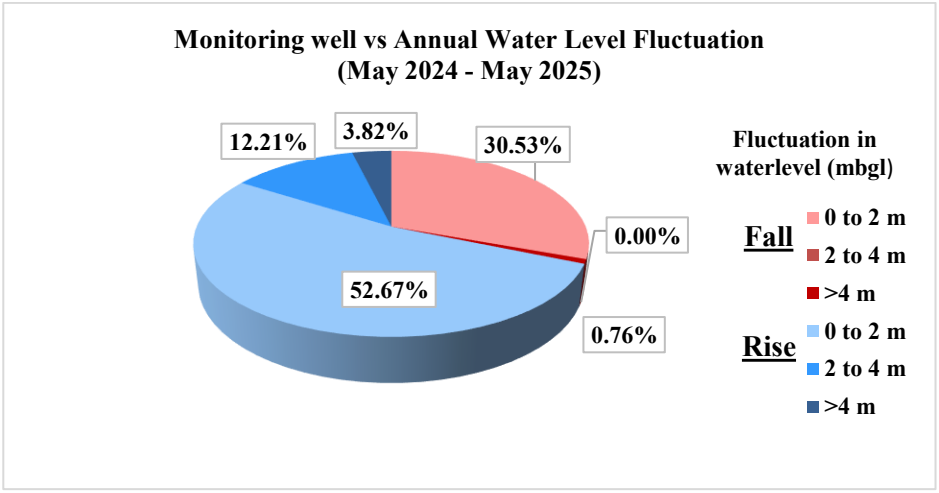

Figure 24: Fluctuation in Water Level: May 2024 Vs May 2025

The Annual water level fluctuation i.e., from May 2024 with respect to May 2025 reveals the effective rise of groundwater levels. A number of wells showing the change in groundwater level in the region over a period from May 2024 to May 2025 is presented below. Each of these observations can be spotted in the following graph (***Figure 25***).

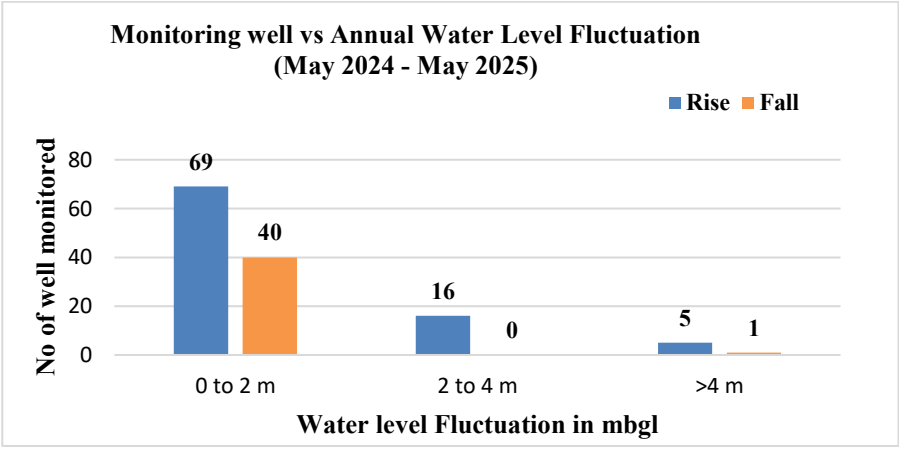

Figure 25: Fluctuation in Water Level: May 2024- May 2025

3.5 DECADAL MEAN FLUCTUATIONS MAY (2015-2024) & MAY 2025

The changes in groundwater level behavior over the last decade have been assessed using decadal mean data. For each groundwater observation well, the mean water level for the period 2015-2024 was computed and compared with the corresponding water level data from May 2025. The observed trends over this period are detailed below, with accompanying (***Figure 26)***.

The interpretation of decadal mean fluctuations reveals that 26.22 % of the wells exhibit a water level decline, impacting approximately 17.84 % of the state's total area. A decline in the 0 - 2 meter range is noted in 14.56 % of the wells, affecting 12.45 % of the state in Alipur, Narela, Model Town, Karawal Nagar, Seelampur, Shahdara, Vivek Vihar, Preeti Vihar, Mayur Vihar, Sarita Vihar, Saket, Mehrauli, Vasant Vihar and some patches in Delhi Cantonment, Rajouri Garden and Dwarka. Additionally, a decline between 2-4 meters has been reported in 5.83 % of wells, encompassing 3.27 % of the state's area in Alipur, Karawal Nagar, Seelampur, Seemapuri, Mayur Vihar, Vivek Vihar, Mehrauli, and Vasant Vihar. While more severe declines of over 4 meters were observed in 5.83 % of wells and 2.12 % of the area, seen in Yamuna Vihar, Karawal Nagar, Seelampur, Vasant Vihar and Mehrauli. (***Figure 27 &Figure 28 & Table 9***).

Conversely, a water level rise has been recorded in 73.78 % of wells, covering 82.16 % of the state's area. A small yet significant rise in the 0-2 meter range was observed in 32.04 % of wells, spanning 36.35 % of the state's area, seen in the form of patches in the Alipur, Narela, Kanjhawala, Rohini, Punjab Bagh, Saraswati Vihar, Delhi Cantonment, Vasant Vihar, Defence Colony, Kotwali, Preet Vihar, Nazul Land, Saket and Civil Lines. Rises of 2-4 meters were noted in 16.50 % of wells, covering 29.55 % of the state in Khanjhwala, Najafgarh, Kapashera, Punjab Bagh, Dwarka, Mehrauli, Vasant Vihar, Delhi Cantonment, Civil Line, Chanakyapuri, Defence colony, Hauz Khas, Karol Bagh, Gandhi Nager and Kalkaji. While more substantial rises of over 4 meters were recorded in 25.24 % of wells, affecting 16.26 % of the area in Patel Nagar, Dwarka, Najafgarh, Hauz Khas, Saket, Chanakyapuri, and some part of Khanjhawala, Karol Bagh, Kalkaji, Gandhi Nagar and Preet Vihar.

Table 9: Number of Wells monitored and areas covered falling in different Water Level Fluctuation Ranges (May (2015-24) & May 2025)

Water Level Fluctuation Range in meter		Wells Monitored		Area Covered	
		No.	% Age	Km2	% Age
Fall	0 to 2 m	15	14.56%	184.69	12.45%
	2 to 4 m	6	5.83%	48.52	3.27%
	>4 m	6	5.83%	31.32	2.12%
Rise	0 to 2 m	33	32.04%	539.13	36.35%
	2 to 4 m	17	16.50%	438.22	29.55%
	>4 m	26	25.24%	241.12	16.26%
Total		**103**	**100.00%**	**1483**	**100.00%**

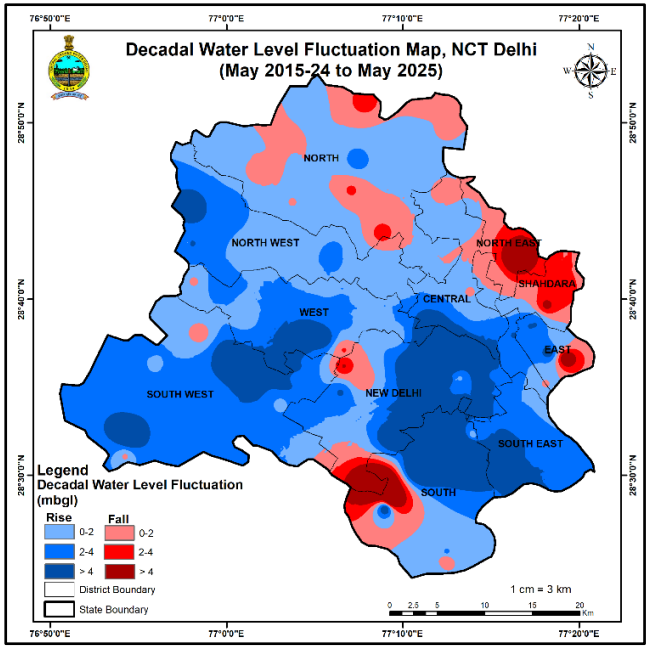

Figure 26: Water Level Fluctuation Map of NCT of Delhi Decadal Mean May (2015-2024) & May 2025

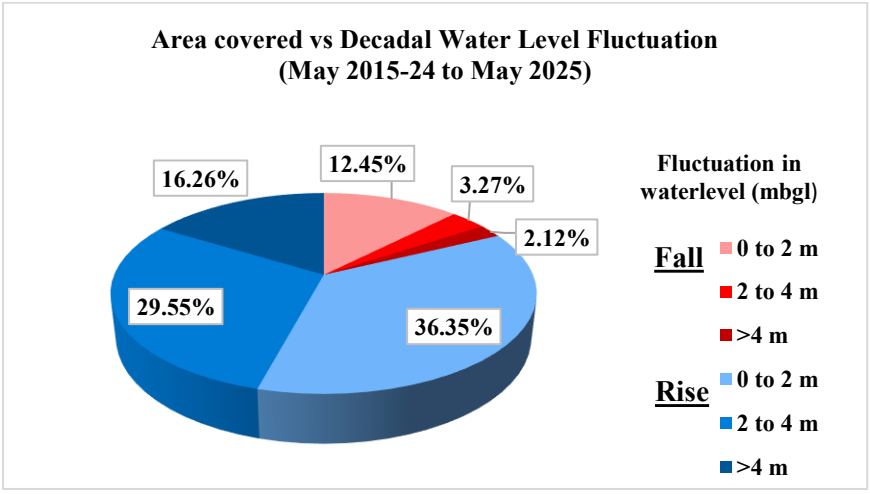

Figure 27: Fluctuation in Water Level by Area (May 2015-2024) Vs May 2025

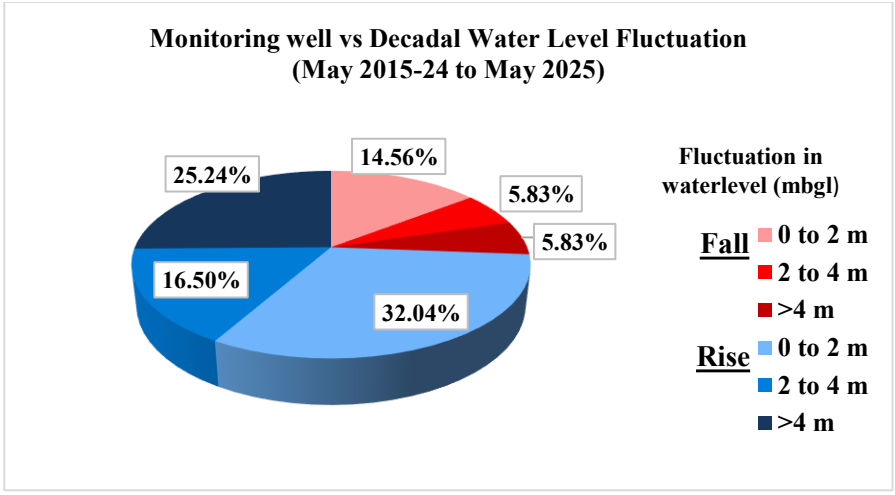

Figure 28: Fluctuation in Water Level: May (2015-2024) - May 2025

The Decadal information has been depicted in statistical format in the graphs following (***Figure 29).***

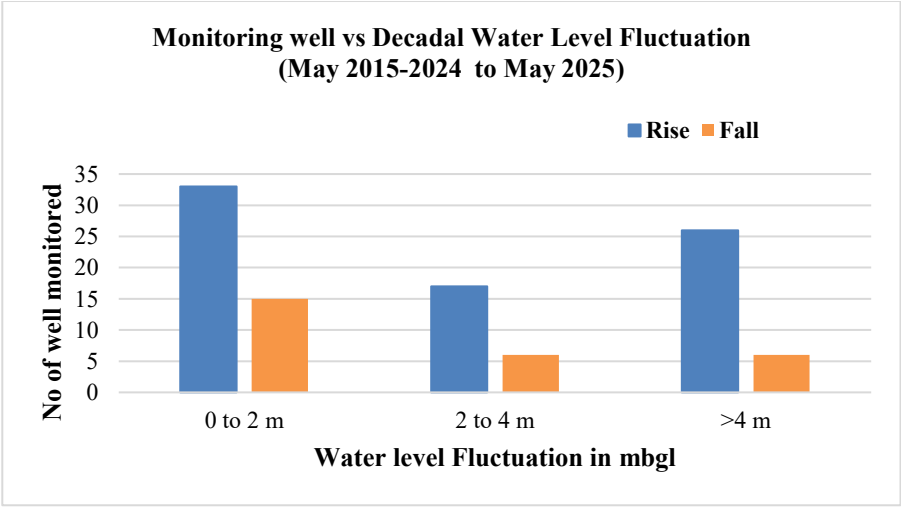

Figure 29: Fluctuations in Water Level: May (2015-2024) - May 2025

4. CONCLUSIONS

The interpretation results of the May 2025 water levels shows that New Delhi, South and South East Delhi districts are showing a deeper water level in pre-monsoon season. Water level fluctuation map of August 2024 vs May 2025 shows that Water level is declining with the fluctuation of 0-2 meter North, North West, Central, North East, Shahdara, New Delhi, South, South West, and West Districts. Water level fluctuation map of November 2024 vs May 2025 clearly depict that 76.93%of the area is showing 0 -2 range of decline in water level. However, the other parts of the State like North, North West, West, South West, New Delhi, South, East and Central District shows the rising water level situation which means these areas having recharge from rainfall and as well as from other sources. Water level fluctuation map of January 2025 vs May 2025 clearly depict that 83.97% of the area is showing 0 -2 range of decline in water level. However, the other parts of the State like New Delhi, South West, West, North West, North, and East District shows the rising water level situation which means these areas having recharge from rainfall and as well as from other sources.

The interpretation of decadal mean fluctuations reveals that New some part of New Delhi, Central, West, South West, South East, North West and South district shows rise in water level greater than 4 meter and the districts like North, North East, Shahdara, East and some part of New Delhi, South West and South district shows decline in water level in the 2-4 meter. The 73.78 % area of NCT Delhi is showing rising trend due to strict regulation of CGWA guideline by State Government, Rainfall and intervention for recharging of Ground Water by State Government.

5. RECOMMENDATION

(I) Parts of New Delhi, South, South East, South West districts are showing rising water level and parts of North East, East and Shahdara, South East, New Delhi district are showing decline water level, along with deeper water level (>10 m). So, in these districts Artificial Recharge, Roof Top Rain Water Harvesting (RTRWH) should be promoted so that water will get recharged. Other than that surface water supply may be provided for reducing ground water extraction. Dual water supply system can also be promoted with the use of treated waste water.

(II) In the parts of districts like New Delhi, South and South East, South West where water level is in the rising trend of above 0.4 m/annum along with 5 – 10 m water level range, tube wells may be constructed with sustainable development coupled with Artificial Recharge measures.

(III) In the parts of district like North East, North West, South West, New Delhi, Central, North water logging problem occurs, (Water level in the range of 2 – 5 mbgl), dewatering is required by over pumping of Ground Water.

(IV) The Urban Development (UD) department sent a DO letter to the CEO (DJB) regarding identifying the leakage points and preparing a complete mapping of pipelines. Delhi Jal Board (Water Supply) should stop the leakage of supply water so that groundwater extraction will be reduced by providing a proper supply of surface water.

(V) In Over Exploited Tehsils (OE), and Deeper water level areas the construction of RTRWHS compulsory in all Government and private buildings to increase Groundwater recharge. Also, an implementable notification must be issued for buildings having more than 100 Sq. m area.

(VI) For Horticulture purposes use STP water only and not Groundwater. NDMC and DJB have to take responsibility for providing STP water through tankers or pipelines. It is recommended to stop dependency on groundwater within one year for horticulture purposes.

(VII) Directorate of Environment to expedite issuance of guidelines for the regulation of the groundwater in line with the guidelines notified by the MoJS for control and regulation of groundwater extraction with pan-India applicability on 24.09.2020 and amendments dated 29.03.2023.

(VIII) In areas, where extraction is more, NOC for groundwater extraction is only issued when they have to maintain the balance of the quantity of extraction water and the same or more than extraction, water has to recharge. Otherwise, no NOC will be issued.

ANNEXURE - GROUND WATER LEVEL DATA OF NCT DELHI FOR MAY 2025

S. No	District	Block Name	Location	Water Level (mbgl)
1	Central	Civil Lines	Burari Auger Pz	6.07
2	Central	Civil Lines	Burari Djb Ex.Engg Office Pz	2.97
3	Central	Civil Lines	Isbt (Kashmiri Gate) DW	3.95
4	Central	Civil Lines	Jagatpur Pz-2	3.01
5	Central	Civil Lines	Majnu Ka Tila DW	9.64
6	Central	Civil Lines	Sonia Vihar DJB WTP	12.82
7	Central	Kotwali	Chandini Chowk Dug Well	6.84
8	Central	Kotwali	Khela Ghat Bhela Road	2.22
9	East	Mayur Vihar	Chilla Regulator	10.18
10	East	Mayur Vihar	Chilla Saroda Pz	8.34
11	East	Mayur Vihar	Kondli Djb Wtp	26.39
12	East	Mayur Vihar	Mayur Vihar B Block, Ph-II	5.65
13	East	Mayur Vihar	Trilokpuri Bps	9.65
14	East	Preet Vihar	Bank Enclave Pz	4.45
15	East	Preet Vihar	Ghazipur Crossing Pz	27.37
16	East	Preet Vihar	Gujarat Vihar Pz	7.1
17	Nazulland	Nazul Land	Lalita Park (Pz)	5.67
18	Nazulland	Nazul Land	Ushmanpur Pz	6.36
19	New Delhi	Chanakyapuri	Agrasen Ki Baoli	15.2
20	New Delhi	Chanakyapuri	Agrasen Ki Baoli (Dhobi Ghat)	17.12
21	New Delhi	Chanakyapuri	Birla Mandir DW	7.63
22	New Delhi	Chanakyapuri	Humayun Tomb DW	4.37
23	New Delhi	Chanakyapuri	Lodhi Garden (D)	5.05
24	New Delhi	Chanakyapuri	Lodhi Garden.(Sh)	4.94
25	New Delhi	Chanakyapuri	Lodhi Graden DW	7.77
26	New Delhi	Chanakyapuri	Mahabir Vansth.	17.35
27	New Delhi	Chanakyapuri	Martin Park TW	6.41
28	New Delhi	Chanakyapuri	Nehru Park DW	14.89
29	New Delhi	Chanakyapuri	Safdarjung Tomb	9.3
30	New Delhi	Chanakyapuri	Shanti Path American Embassy	18.44
31	New Delhi	Chanakyapuri	Shram Shakti Bhawan 1	5.8
32	New Delhi	Chanakyapuri	Shram Shakti Bhawan 2	5.62
33	New Delhi	Chanakyapuri	Sundar Nursery Pz	5.15
34	New Delhi	Delhi Cantonment	Cvd Depot Cant (Dp)	26.94
35	New Delhi	Delhi Cantonment	Kabul Line Pz	29.51
36	New Delhi	Delhi Cantonment	Pusa (WTC)	23.57
37	New Delhi	Delhi Cantonment	Shekhawati Line Pz	43.6
38	New Delhi	Delhi Cantonment	Tagore Garden Pz	11.42
39	New Delhi	Vasant Vihar	J N U Pz (Upstream)	13.98
40	New Delhi	Vasant Vihar	R.K Puram Sec-3	18.3
41	New Delhi	Vasant Vihar	Sultanpur Ims	75.1
42	North	Alipur	Alipur Garhi Pz	9.33
43	North	Alipur	Bakoli Deep Pz	10.96
44	North	Alipur	Bakoli Shallow Pz	10.36
45	North	Alipur	Bhalaswa Lake Pz	3.72
46	North	Alipur	Haiderpur Pz	14.73
47	North	Alipur	Hiranki Village Pz	6.27
48	North	Alipur	Khera Kalan Pz	11.57
49	North	Alipur	Narela Djb WTP	19.28
50	North	Alipur	Palla Temple	9.91
51	North	Alipur	Palla Zero Rd	11.01
52	North	Alipur	Samaypur Badli Pz	10.02
53	North	Alipur	Singhu Village Pz	24.18
54	North	Alipur	Tiggipur Deep Pz	8.66
55	North	Alipur	Tiggipur Shallow Pz	7.53
56	North	Model Town	Coronation Pillar Pz DJB RWTP	2.64
57	North	Model Town	Kewal Park Pz	4
58	North	Narela	Auchandi Pz	3.09
59	North	Narela	Bankner-Pz	18.38
60	North	Narela	Barwala Pz	5.89
61	North	Narela	Bawana Je Store	12.02
62	North	Narela	Bawana WTP	12.12
63	North	Narela	Hareoli DW	3.78
64	North	Narela	Qatlupur DW	4.85
65	North	Narela	Rohini Sec-28	5.33
66	North East	Yamuna Vihar	Gokulpuri E Pz	24.91
67	North East	Yamuna Vihar	Yamuna Vihar DJB WTP	26.19
68	North West	Kanjhawala	Jaunti Dug Well	9.37
69	North West	Kanjhawala	Majara Dabas	3.04
70	North West	Kanjhawala	Nizampur	3.41
71	North West	Kanjhawala	Nizampur Mandir DW	2.95
72	North West	Kanjhawala	Qutubgarh	4.52
73	North West	Rohini	Mangolpuri Pz	3.37
74	North West	Rohini	Rani Khera DW	1.54
75	North West	Rohini	Rithala Pz Sec5 Rohini	2.61
76	North West	Rohini	Rohini Sec-23	2.1
77	North West	Rohini	Rohini Sector - 11	5.2
78	North West	Rohini	Sector-1 Rohini Pz	1.53
79	North West	Rohini	Sultanpur Dabas	5.95
80	North West	Saraswati Vihar	Qatlupur Pz	4.28
81	North West	Saraswati Vihar	Sainik Vihar Pz	2.67
82	North West	Saraswati Vihar	Sandesh Vihar Pz	3.82
83	North West	Saraswati Vihar	Sanjay Van Pz	3.01
84	Shahdara	Shahdara	Yamuna Sports Complex Tw-1	21.11
85	Shahdara	Vivek Vihar	Cbd Shahdara Pz	17.17
86	Shahdara	Vivek Vihar	Vivek Vihar (Pz)	24.57
87	South	Hauz Khas	Pusp Vihar Pz	35.13
88	South	Mehrauli	Gadaipur Pz	68.45
89	South	Mehrauli	Hauz Khas Pz	19.38
90	South	Mehrauli	Jaunapur DJB	41.51
91	South	Mehrauli	Jheel Khoh DW	49.91
92	South	Saket	Balbir Nagar DW	25.13
93	South	Saket	Bhatti Pz	43.79
94	South	Saket	Jamali Kamali	11.7
95	South East	Defence Colony	Nangli Rajpura Pz	3.39
96	South East	Kalkaji	Aastha Kunj DWLR	7.43
97	South East	Kalkaji	Asola Pz	47.37
98	South East	Kalkaji	GK 2 Metro Gate No.1	7.49
99	South East	Kalkaji	GK 2 Metro Gate No.2	7.1

S.No	District	Block Name	Location	Water Level (mbgl)
100	South East	Kalkaji	GK 2 Metro North Side TW	7.64
101	South East	Kalkaji	Jahapana Park DW	10.77
102	South East	Kalkaji	Kalkaji Park DW	7.47
103	South East	Kalkaji	Okhla Djb WTP Pz	7.72
104	South East	Kalkaji	R-Block, GK-1	7.53
105	South East	Kalkaji	S-Block Park GK-Ii Pz	9.25
106	South East	Kalkaji	Sehgal Market-1 GK-II Pz	2.73
107	South East	Kalkaji	Sehgal Market-2 GK-II Pz	12.41
108	South West	Dwarka	Dwarka Sec-16 (Tp)	14.1
109	South West	Dwarka	Dwarka Sec-23 Dda Park	15.27
110	South West	Dwarka	Dwarka Sec-6	12.1
111	South West	Kapashera	Chawla Pz	9
112	South West	Kapashera	Daulatpur Pz	9.42
113	South West	Kapashera	Raota	2.57
114	South West	Kapashera	Sikarpur Deep	5.95
115	South West	Kapashera	Sikarpur Shallow	5.65
116	South West	Najafgarh	Daryapur Khurd Pz	2.64
117	South West	Najafgarh	Dichaon Kalan DW 2	10
118	South West	Najafgarh	Gummanhera DW	3.8
119	South West	Najafgarh	Jhuljhuli DW	2.34
120	South West	Najafgarh	Mundela Kalan Pz	8.63
121	South West	Najafgarh	Najafgarh Town	12.9
122	South West	Najafgarh	Surheda DW	10.48
123	South West	Najafgarh	Surheda TW	10.16
124	South West	Najafgarh	Ujwah Pz	9.69
125	West	Patel Nagar	Dwarka Sec-5 Dda Park	9.9
126	West	Patel Nagar	Janakpuri Pz	4.53
127	West	Patel Nagar	Keshopur Djb WTP	9.57
128	West	Patel Nagar	Pusa (Nrl)	28.5
129	West	Patel Nagar	Vikashpuri Pz	6.89
130	West	Punjabi Bagh	Baprola Dug Well	4.71
131	West	Punjabi Bagh	Hiran Kudna DW	1.5
132	West	Punjabi Bagh	Peera Garhi DW	6.42
133	West	Punjabi Bagh	Peera Garhi Pz	3.72
134	West	Punjabi Bagh	Tikri Kalan Pz	8.56
135	West	Rajouri Garden	Mayapuri Pz	36.16