GROUND WATER CHEMICAL QUALITY BULLETIN

2024-25

(Pre-Monsoon)

Central Ground Water Board

Northern Region

Lucknow

Uttar Pradesh

1. INTRODUCTION

The availability of fresh water for human consumption, irrigation, agricultural development and other activities is associated with the growing needs of modern living conditions but is decreasing day by day due to increase in population, urbanization, industrialization and erratic behavior of rains. To meet the requirement of fresh water, the dependency on ground water is increasing in comparison to surface water because during summer season most of the surface water bodies do not have sufficient water, while ground water is easily accessible throughout the year.

The quality of groundwater is affected in three ways i.e. physical, chemical and bacteriological, although the procedure is very slow and complex to understand. The quality of ground water in the phreatic aquifer depends on the nature of rocks, contact time, circulation and temperature. It is also dependent on the solubility of the minerals present in the rocks. To some extentthe atmospheric precipitation (rain water) is also contributory factor for affecting the quality of ground water as during the rain fall most of the gases such as CO_2, SO_2 and NO_2 present in the atmosphere gets dissolved in the rain water during the course of downward travel and percolate downthrough the earth surface dissolving mainly calcium and magnesium present in the soil forming calcium bicarbonate. The pH plays an important role in the geochemical reactions as low pH tends to help faster dissolution of the minerals. The quality of ground water is also influenced by the excessive use of fertilizers and pesticides for agricultural production and also industrial activity.

Ground water due to its long standing with minerals and rocks is generally more mineralized than surface water. This was found to be confirmed largely for water in phreatic zones. The chemical quality of ground water in phreatic zones is also affected by anthropogenic sources at the ground surface, whether it is domestic, agriculture or industrial in nature

2. CHEMICAL QUALITY OF GROUND WATER IN UTTAR PRADESH

The suitability of ground water for drinking purposes has been assessed according to the guidelines laid down by BIS (2012), Table-1 for various analysed parameters. The chemical analysis results for **675** nos. of samples for 15 basic parameters and **675** nos. of samples for 8 Heavy metals have been discussed.

The minimum, maximum and average values of various constituents determined during chemical analysis have been summarized in following table below:

Table 1: Minimum, maximum and average values of Ground Water basic parameters in Uttar Pradesh (2024-25) Pre-monsoon

S. No.	Constituents	Minimum	Maximum	Average
1.	pH	7.24	8.82	7.90
2.	EC µS/cm at 25 ºC	193	10560	840
3.	CO_3 mg/l	0	72	1.28
4.	HCO_3 mg/l	79	1360	344
5.	Cl mg/l	3.55	2996	60.89
6.	F mg/l	0	6.69	0.6058
7.	NO_3 mg/l	0	181.04	15.524
8.	SO_4 mg/l	0	682	33.1199
9.	PO_4 mg/l	0	0.25	0.00037
10.	TH (as $CaCO_3$) mg/l	50	3270	270.298
11.	Ca mg/l	6	642	53.325
12.	Mg mg/l	2.4	404.928	33.146
13.	Na mg/l	3.2	862.4	65.93
14.	K mg/l	0	101.4	4.302
15	SiO_2 mg/l	8.6	120	30.213

Hydrogen Ion Concentration (pH):

The pH value of ground water in the state of U.P. varies from 7.24 to 8.82 and is generally wellwithin the permissible limit and the water is slightly alkaline in nature. The average pH value has been found to be 7.903.

Electrical Conductivity (EC):

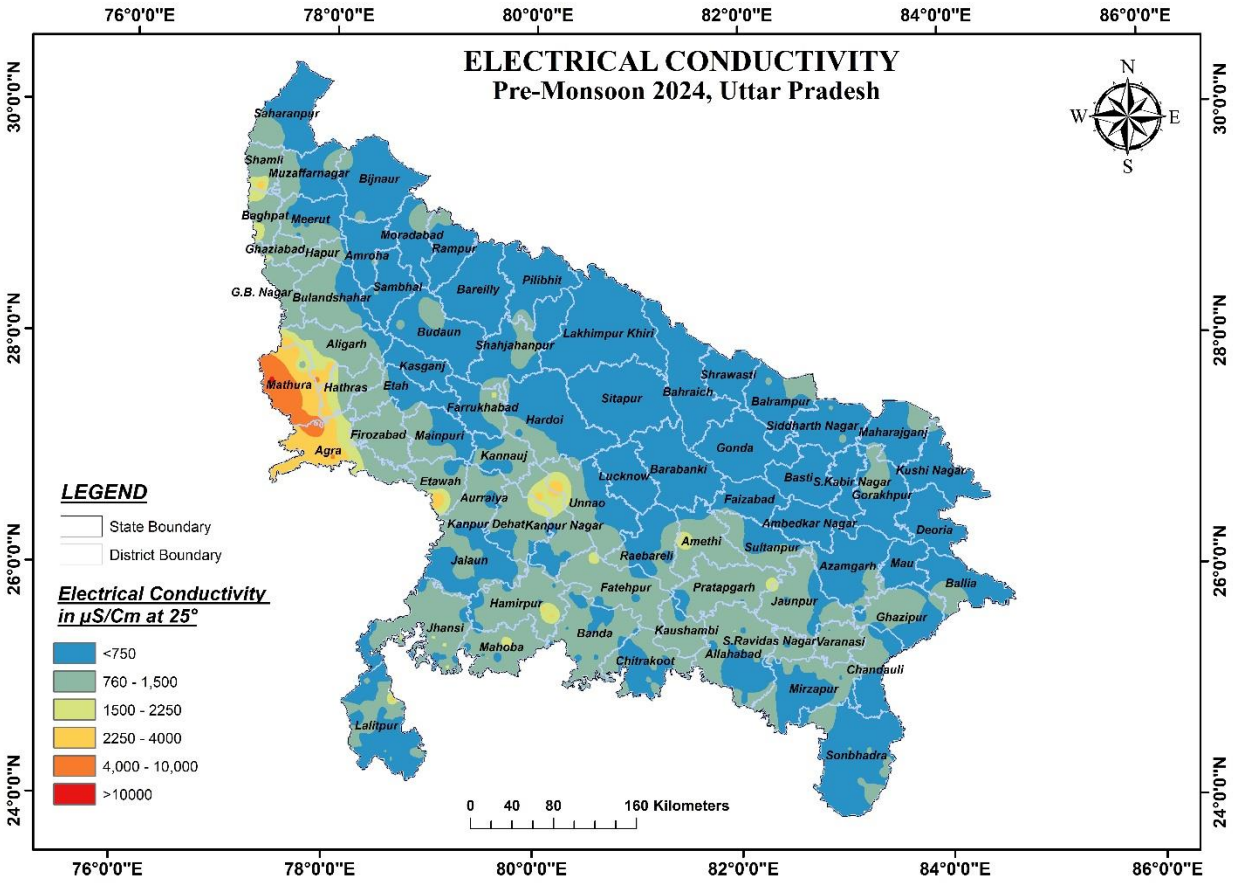
The Electrical Conductivity is a reflection of the concentration of various chemical constituents in ground water and gives the overall quality of ground water for its various uses like drinking, irrigation and other purposes. In the study area EC value varied from 193 to 10560 µSiemens/cm at 25ºC, with an average value of 840 µSiemens/cm at 25ºC. The highest value of E.C. 10560 µS/cm at 25ºC was observed in ground water of Kamai village of Nandgaon block of Mathura district. The various partly affected blocks exhibiting high values of E.C. (>2250 µS/cm at 25°C) aretabulated in following table below-

Table 2: The partly affected blocks exhibiting high values of E.C. (>2250 µS/cm at 25°C) (2024-25) Pre-monsoon

S. No.	District	Block	Location	E.C µS/cm at 25°C
1	Agra	Fatehpur Sikri	Hiraman	3035
2	Agra	Achhnera	Raunakata	5095
3	Agra	Shamsabad	Lohaita	4100
4	Aligarh	Gonda	Dayapur	4403
5	Aligarh	Iglas	Makhdampur	3073
6	Etawah	Barhpura	Kandhesidhar	3060
7	Ghaziabad	Gaziabad Urban	South Side Secter-13	2866
8	Hamirpur	Maudaha	Urdana	2432
9	Hamirpur	Maudaha	BW of P.W.D. Inspection Bungalow near Nagar Palika office	2645
10	Kanpur Nagar	Shivrajpur	Taktauli	2472
11	Lalitpur	Bar	Kathwar	2578
12	Mahoba	Charkhari	Block office	2256
13	Mathura	Nohjhil	Nankpur Khader	3499
14	Mathura	Nandgaon	Kamai	10560
15	Mathura	Chhata	Jatwari	4967
16	Shamli	Kandhala	Kandhala	2650
17	Unnao	Fatehpur Chaurasi	Daboli	2875

The map showing Electrical conductivity concentration in the state of Uttar Pradesh is represented in fig.1:

Figure-1



Carbonate & Bicarbonate (CO_3 & HCO_3):

The Carbonate has been observed to be nil in most of the cases however it has been found up to 72 mg/l & Bicarbonate has been observed in the range of 79 to 1360 mg/l with average value of 344 mg /l.

Chloride (Cl):

The study reveals that concentration of chloride ion ranges from 3.55 to 2996 mg/l with an average value of 61 mg/l. From Table 3, it is clear that a total of 99.70% water samples fall within the desirable limit while 98.96% contain chloride within the maximum permissible limit prescribed by BIS (2012). Only 0.3% samples exhibit Chloride values > 1000 mg/l with highest value of 2996

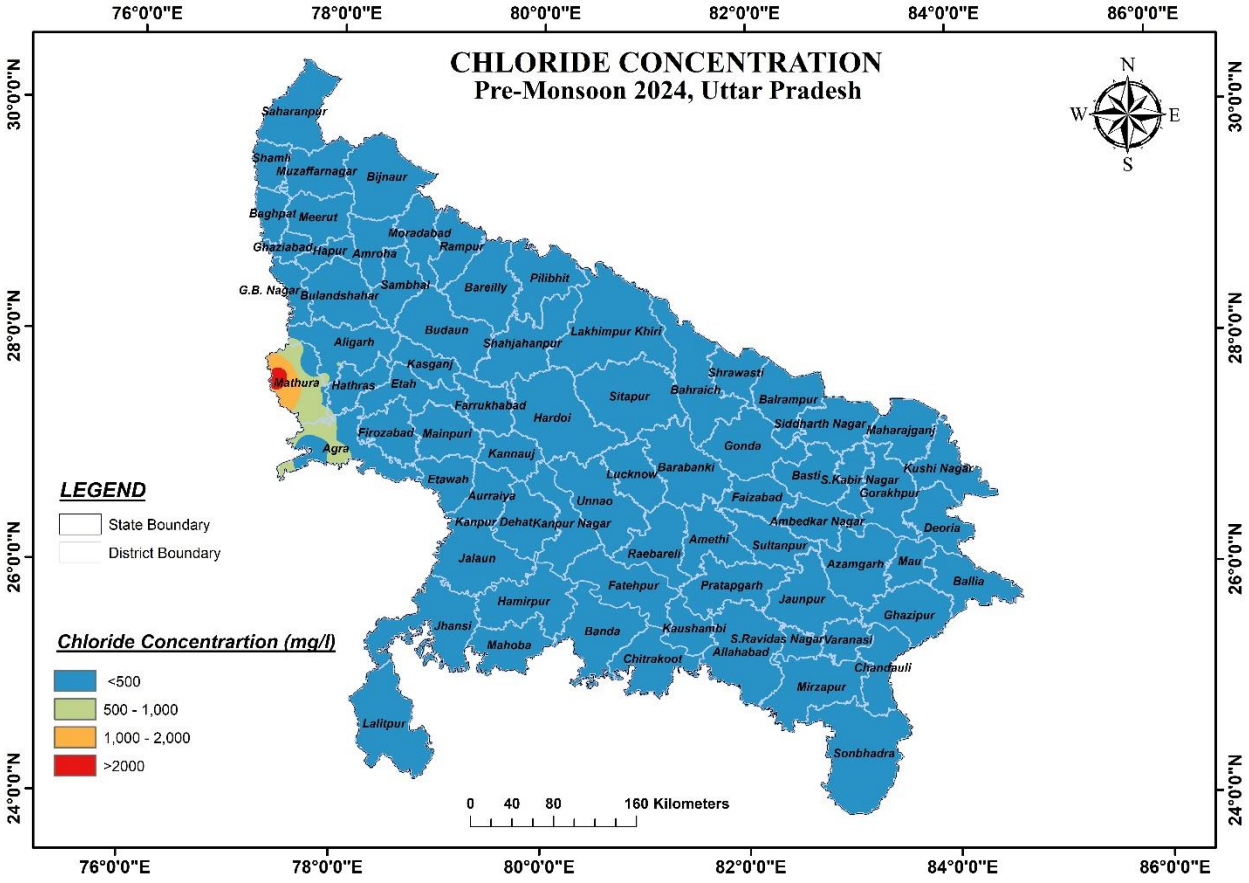
at Kamai location of Nandgaon block of Mathura district. The various partly affected blocks exhibiting high values of Cl (>1000 mg/l) are tabulated in following table below-

Table 3: The partly affected blocks exhibiting high values of Cl (>1000 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	Cl >1000 mg/l
1	Mathura	Nandgaon	Kamai	2996
2	Mathura	Chhata	Jatwari	1071

The map showing Chloride concentration in the state of Uttar Pradesh is represented in **Fig-2**

Figure-2



Nitrate (NO3):

The concentration of Nitrate has been found varying widely. It ranges between not detectable to 181.04 mg/l with an average value of 15.5 mg/l. 92.59% of water samples fall within the permissible limit of 45 mg/l (BIS 2012) and 7.41% samples have higher level of Nitrate

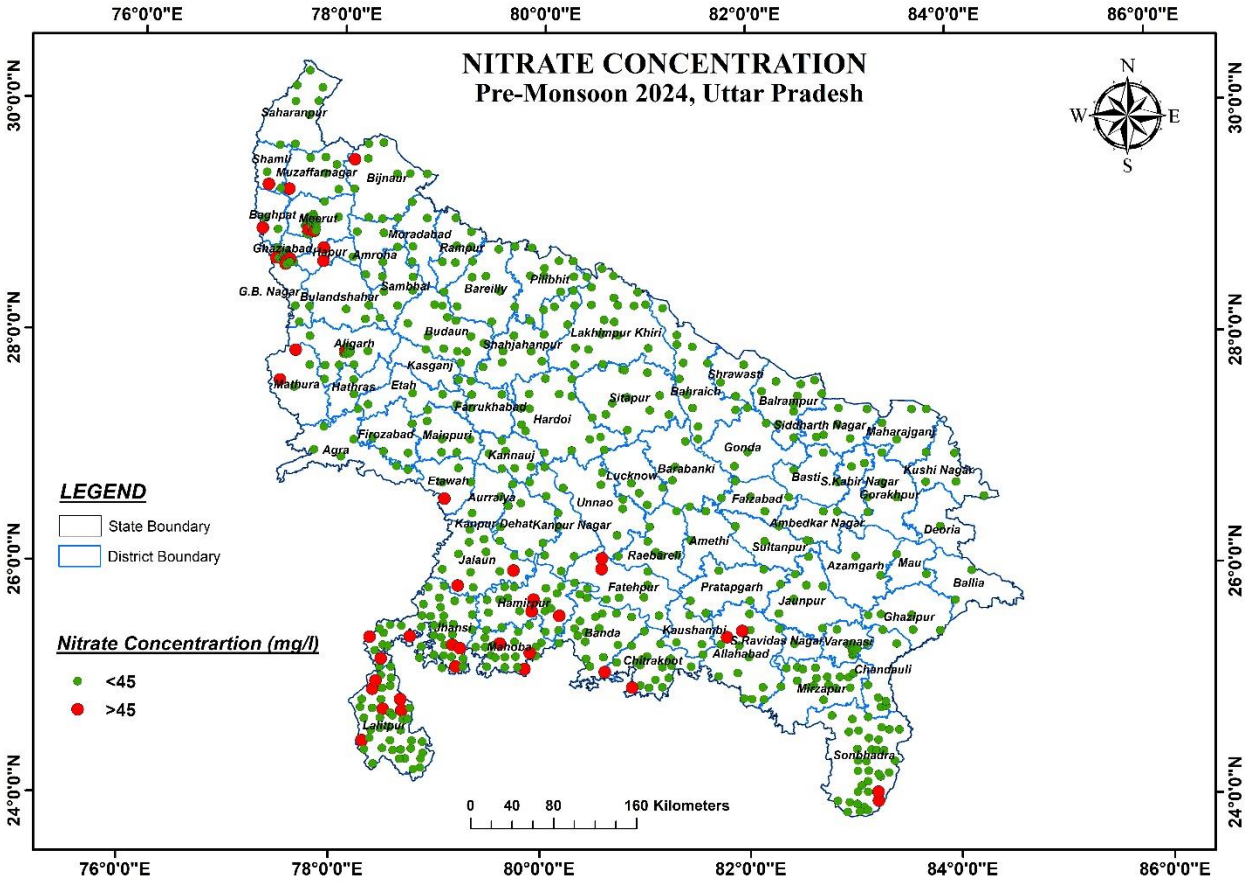
concentration with the highest value 181.04 mg/l recorded at Baghpat block of Baghpat district. High Nitrate is found all over the state and does not follow any definite pattern of distribution.

Table 4: Partly affected Blocks associated with high values of nitrate (>45 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	NO_3
1	Aligarh	Aligarh Urban	Bada Chowk, Sarai Rehman	58.78
2	Baghpat	Baghpat	Baghpat	181
3	Banda	Naraini	Prashidhhapur	61.7
4	Bijnor	Mohammadpur Deomal	Hakeempur	62
5	Chitrakoot	Manikpur	Tikariya Railway Station	61.9
6	Etawah	Barhpura	Kandhesidhar	48.1
7	Fatehpur	Khajua	Bindki	147
8	Fatehpur	Malwan	Chaudgara	90
9	Ghaziabad	Gaziabad Urban	Kali Temple Boundary Wall	65.20
10	Ghaziabad	Gaziabad Urban	Near Meadows Café	60.00
11	Ghaziabad	Gaziabad Urban	Dr. Br Ambedkar Bhawan	64.90
12	Ghaziabad	Gaziabad Urban	South Side Secter-13	63.50
13	Ghaziabad	Gaziabad Urban	Indergarhi	49.57
14	Hamirpur	Maudaha	Urdana	149
15	Hamirpur	Muskara	Imaliya	63.9
16	Hamirpur	Muskara	Bewar	82.5
17	Hapur	Hapur	On Rosd Side	54.40
18	Hapur	Hapur	Shiv Mandir Kakar	51.60
19	Jalaun	Konch	Bilayan	64
20	Jalaun	Kadaura	Dadupur	63
21	Jhansi	Babina	Chattpur Bachauni	88
22	Jhansi	Baragaon	Tilaetha	76
23	Jhansi	Mauranipur	Garhwan	129
24	Jhansi	Mauranipur	Churaha	69
25	Jhansi	Mauranipur	Bamhauri	63
26	Jhansi	Babina	Block Office	63

27	Lalitpur	Birdha	Sepura	165
28	Lalitpur	Talbehat	Bijrotha Para	54
29	Lalitpur	Bar	Khajra	109
30	Lalitpur	Bar	Kathwar	59
31	Lalitpur	Bar	Udaipura	55
32	Lalitpur	Talbehat	Block Office	52
33	Mahoba	Kabrai	Bhandra	141
34	Mahoba	Panwari	Budhi	83.3
35	Mahoba	Kabrai	Block office	91
36	Mathura	Nohjhil	Nankpur Khader	48.82
37	Mathura	Nandgaon	Kamai	56.23
38	Meerut	Meerut Urban	Shatabdi Nagar	56.4
39	Meerut	Meerut Urban	Near Azi Hanif Nhouse	75.4
40	Muzaffarnagar	Budhana	Budhana	85
41	Prayagraj	Prayagraj City	Rajrooppur	48
42	Prayagraj	Soraon	Faizullapur	110
43	Shamli	Kandhala	Kandhala	157
44	Sonbhadra	Myorpur	Baina	63.5
45	Sonbhadra	Myorpur	Nodiya	76.0

Figure-3



Fluoride (F):

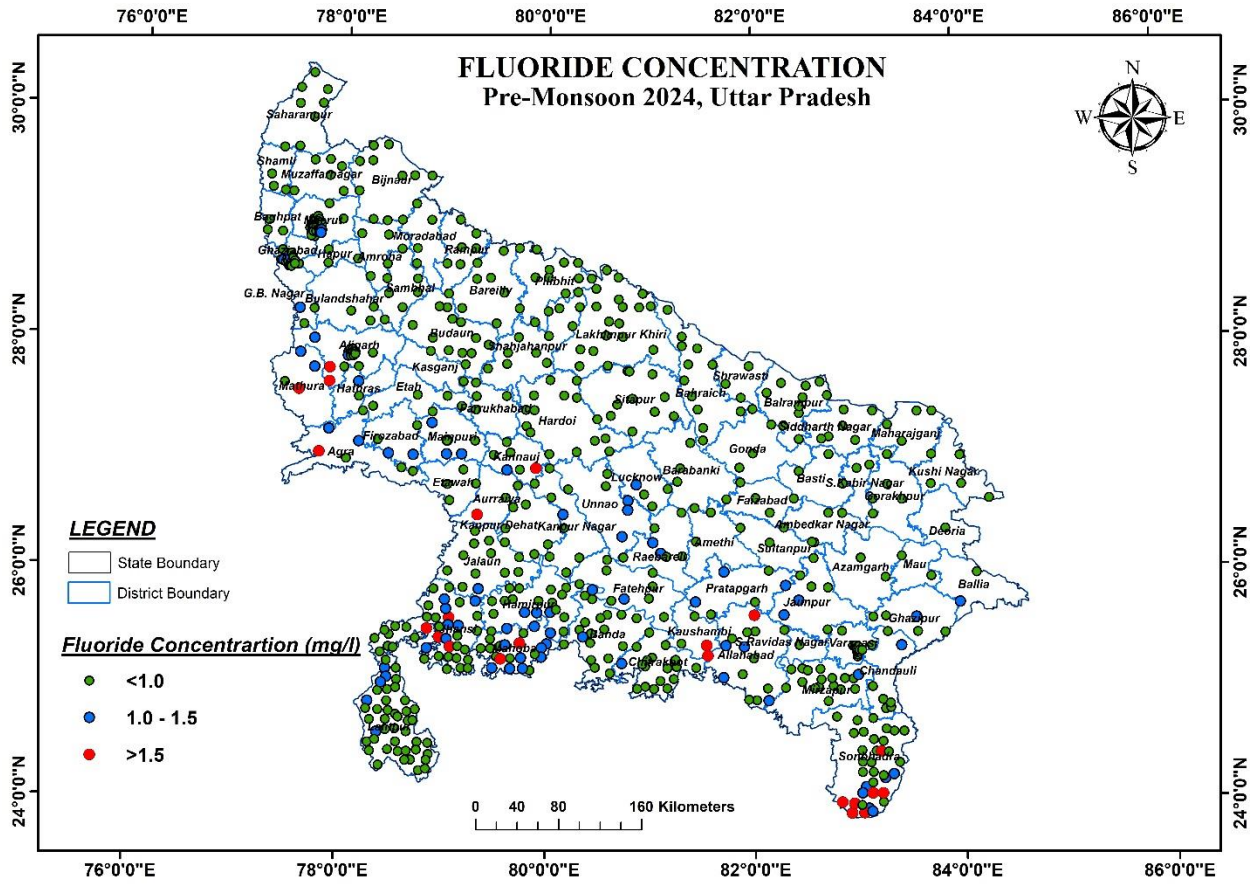
The value of **Fluoride** concentration is found to range between 0 to 6.69 mg/l with an average value of 0.60 mg/l. Total 96.59% samples falling within the permissible limit prescribed by BIS (2012). The **highest value of 6.69 mg/**l has been recorded in Umarda block of Kannauj district.

Table 5: Partly affected Blocks associated with high values of fluoride (>1.5 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	F
1	Agra	Fatehpur Sikri	Hiraman	2.25
2	Aligarh	Gonda	Kalua	1.62
3	Aligarh	Gonda	Dayapur	1.58
4	Auraiya	Ajitmal	Akbarpur	4.41

5	Jhansi	Chirgaon	Shakti Bhairu	2.4
6	Jhansi	Bangra	Ghanghri	2.7
7	Jhansi	Bamaur	Atarsuwan	2.5
8	Jhansi	Bangra	Sanora	2.4
9	Jhansi	Bamaur	Tharo-Li	1.52
10	Kannauj	Umarda	Thathiya	6.69
11	Kaushambi	Newada	Bohagara Sarai	2.85
12	Mahoba	Jaitpur	HP of PHC near Block office	2.16
13	Mahoba	Charkhari	Block office	2.05
14	Mathura	Chhata	Jatwari	1.97
15	Prayagraj	Baharia	Dunnaiya	3.9
16	Prayagraj	Shankargarh	Pratappur	2.35
17	Sonbhadra	Myorpur	Nakkhu	1.58
18	Sonbhadra	Babhani	Mohua Dohar	1.82
19	Sonbhadra	Myorpur	Liladewa	1.64
20	Sonbhadra	Babhani	Adhoura	1.75
21	Sonbhadra	Myorpur	Lovuhan	1.87
22	Sonbhadra	Myorpur	Nodiya	1.67
23	Sonbhadra	Kone	Rogahi	1.78

Figure-4



Total Hardness (TH):

TH value ranges between 50 to 3270 mg/l with an average value of 270.3 mg/l. Total 97.78% of water samples falling within the permissible limit of 600 mg/l (BIS- 2012) and 2.22% samples have higher value of Total Hardness concentration with the highest value 3270 mg/l recorded at Kamai location of Nandgaon block of Mathura district.

Table 6: Partly affected Blocks associated with high values of Total Hardness (>600 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	TH
1	Agra	Achhnera	Raunakata	965
2	Agra	Shamsabad	Lohaita	1200
3	Aligarh	Gonda	Dayapur	895
4	Aligarh	Iglas	Makhdampur	675

5	Amethi	Bahadurpur	Kesariya Salimpur	705
6	Baghpat	Baghpat	Baghpat	810
7	Etawah	Barhpura	Kandhesidhar	885
8	Fatehpur	Malwan	Chaudgara	780
9	Ghaziabad	Gaziabad Urban	South Side Secter-13	960
10	Mathura	Nohjhil	Nankpur Khader	800
11	Mathura	Nandgaon	Kamai	3270
12	Mathura	Chhata	Jatwari	810
13	Meerut	Meerut Urban	Near Azi Hanif Nhouse	615
14	Prayagraj	Soraon	Faizullapur	630
15	Shamli	Kandhala	Kandhala	850

Calcium (Ca):

Calcium ranges between 6 mg/l to 642 mg/l with an average value of 53.3 mg/l. Total 99.7% of water samples falling within the permissible limit of 600 mg/l (BIS- 2012) and 0.3% samples have higher value of 642 mg/l recorded at Kamai location of Nandgaon block of Mathura district.

Table 7: Partly affected Blocks associated with high values of Calcium (>200 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	Ca
1	Ghaziabad	Gaziabad Urban	South Side Secter-13	286
2	Mathura	Nandgaon	Kamai	642

Magnesium (Mg):

Magnesium ranges between 2.4 to 405 mg/l with an average value of 33.14 mg/l. Total 98.96% of water samples falling within the permissible limit of 100 mg/l (BIS- 2012) and 1.04% samples have higher value of 405 mg/l recorded at Kamai location of Nandgaon block of Mathura district.

Table 8: Partly affected Blocks associated with high values of Magnesium (>100 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	Mg
1	Agra	Achhnera	Raunakata	174
2	Agra	Shamsabad	Lohaita	198
3	Aligarh	Gonda	Dayapur	139
4	Etawah	Barhpura	Kandhesidhar	171
5	Fatehpur	Malwan	Chaudgara	103
6	Kanpur Nagar	Shivrajpur	Taktauli	103
7	Mathura	Nohjhil	Nankpur Khader	165
8	Mathura	Nandgaon	Kamai	405
9	Mathura	Chhata	Jatwari	151

Sodium (Na):

Sodium ranges between 3.2 to 862.4 mg/l with an average value of 65.93 mg/l. Out of total samples analyzed, 83.11% of water samples exhibit **Sodium** concentration up to 100 mg/l, 12 % of samples exhibit concentration up to 200 mg/l, 4.15% of samples exhibit concentration up to 500 mg/l and 0.74% samples were found to be associated with extremely high levels of Na concentration >500 mg/l with a maximum value of **862.4 mg/l** recorded at Kamai location of Nandgaon block of Mathura district.

Table 9: Partly affected Blocks associated with high values of Sodium (>500 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	Na
1	Agra	Fatehpur Sikri	Hiraman	700.1
2	Agra	Achhnera	Raunakata	715.0
3	Aligarh	Gonda	Dayapur	592.40
4	Mathura	Nandgaon	Kamai	862.40
5	Mathura	Chhata	Jatwari	755.00

Potassium (K):

Potassium ranges between 0 to 101.4 mg/l with an average value of 4.3 mg/l. Out of total samples analysed; 95.7% of water samples exhibit Potassium concentration up to 10 mg/l, 2.67% samples were found concentration up to 20 mg/l, 0.3% samples were found concentration up to 30 mg/l and 1.33% samples were found to be associated with extremely high level of K concentration >30 mg/l with a maximum value of 101 mg/l recorded at Kathwar location of Bar block of Lalitpur district.

Table 10: Partly affected Blocks associated with high values of Potassium (>100 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	K
1	Lalitpur	Bar	Kathwar	101

Sulphate (SO4):

Sulphate ranges between 0 to 682 mg/l with an average value of 33.11 mg/l. Maximum value of 682 mg/l recorded at Raunakata location of Achhnera block of Agra district.

Table 10: Partly affected Blocks associated with high values of Sulphate (>400 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	SO4
1	Agra	Achhnera	Raunakata	682
2	Etawah	Barhpura	Kandhesidhar	653
3	Ghaziabad	Gaziabad Urban	South Side Secter-13	578.3
4	Aligarh	Gonda	Dayapur	498.8
5	Unnao	Fatehpur Chaurasi	Daboli	495
6	Agra	Shamsabad	Lohaita	425

Heavy metals

As per the chemical analysis data **675** nos. of **NHS** samples analyzed for trace metal during the year **2024-25** these samples reveal following results:

Chromium (Cr):

Chromium concentration is found within acceptable limit of 0.05 mg/l in all locations.

Iron (Fe):

Iron concentration was found more than 1.0 mg/l in 162 samples (24%). Iron was found more than 1.0 mg/l at 357 block locations (H/P IM-II) of 51 districts of Uttar Pradesh. The maximum concentration of iron is found to be 37.118 mg/l at Kauhari location of Karvi of Chitrakoot district.

Table 12: The partly affected blocks exhibiting high values of Iron (>1.0 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	Fe
1	Aligarh	Dhanipur	Shahwazpur	4.433
2	Amethi	Shukul Bazar	Mahona West, Kuraishi Mohalla	1.936
3	Amroha	Dhanaura	Papsari Khadar	1.014
4	Amroha	Hasanpur	Sabadarpur Sarki	2.227
5	Amroha	Joya	Patai	3.964
6	Auraiya	Sahar	Piluaa	1.650
7	Ayodhya	Bikapur	Shukl Ka Purwa	6.654
8	Bahraich	Mahasi	Godmar Khurd	1.066
9	Bahraich	Fakharpur	Kodahi	1.324
10	Bahraich	Balha	New Basti Chairaha	2.035
11	Bahraich	Mihipurwa	Mote Baba	2.274
12	Bahraich	Jarwal	Nasirganj, Barauli Ghat	2.382
13	Bahraich	Balha	Shiyapura	2.550
14	Bahraich	Shivpur	Baundi	3.038
15	Bahraich	Mahasi	Mahua Chauraha	3.528
16	Ballia	Sohaan	Chitbaragoan	1.525
17	Ballia	Maniyar	Pilui Fattepur	2.368
18	Balrampur	Shri Datt Gani	Nauradih	1.298
19	Balrampur	Pachperwa	Majigwa Khurd	1.512
20	Balrampur	Gainsara	Tharunia	2.395
21	Balrampur	Harraya Satzawa	Laliya Village	3.786
22	Balrampur	Pachperwa	Shivpur More	4.324
23	Balrampur	Gainsara	Kushahwa	4.593

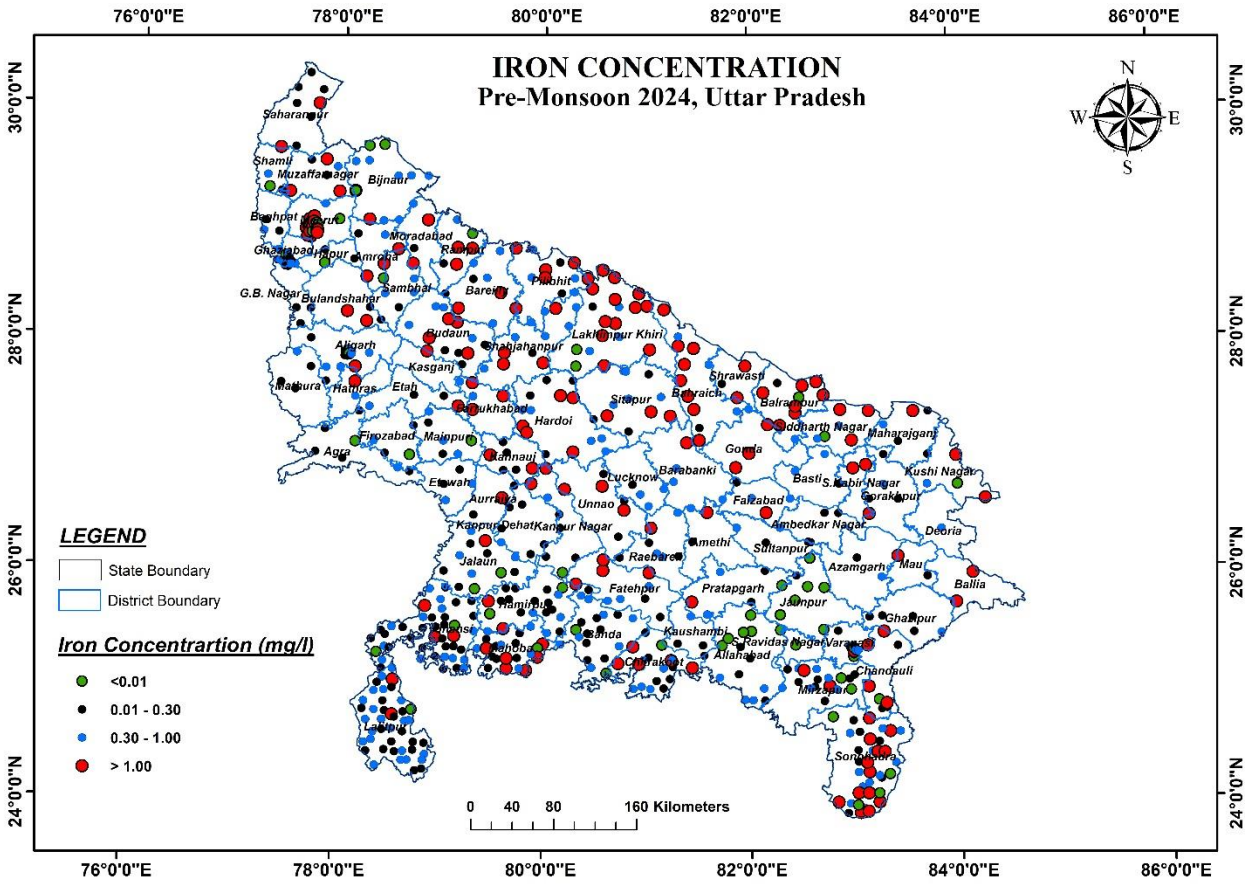
24	Balrampur	Gainsara	Chandarpur	6.173
25	Barabanki	Ram Nagar	Amar singh Purwa	2.579
26	Bareilly	Ramnagar	Nurpur	1.016
27	Bareilly	Bitheri Chainpur	Sawarkhera	1.438
28	Bijnor	Najibabad	Jagdishandpumpur	1.106
29	Bijnor	Jaleelpur	Bhiriya Khera	1.937
30	Bijnor	Haldaur (Khari Jhalu)	Rohniya	2.631
31	Budaun	Sahaswan	Sagrai	2.964
32	Budaun	Salarpur	Kunwargaon	3.968
33	Budaun	Ujhani	Laxminagra	4.199
34	Budaun	Miaon	Allahpur Kasba	1.619
35	Budaun	Wajirganj	Block Hq	5.141
36	Bulandshahar	Shikarpur	Nawada	2.943
37	Chandauli	Naugarh	Sikarganj	1.029
38	Chandauli	Naugarh	Munuwat	2.462
39	Chandauli	Chahniya	Sirkalpur	6.259
40	Chitrakoot	Karwi	HP of inspection Bungalow	1.249
41	Chitrakoot	Mau	Bargarh Mod (Kalchiha)	1.936
42	Chitrakoot	Karvi	Roli (Pataundha Mod)	5.536
43	Chitrakoot	Mau	Block office	17.807
44	Chitrakoot	Karvi	Kauhari	37.118
45	Etah	Aliganj	Daheliyapur Chauraha	1.796
46	Farrukhabad	Rajepur	Amritpur	1.207
47	Farrukhabad	Kaimganj	Eklahra	1.701
48	Farrukhabad	Nawabganj	Ganeshpur	2.162
49	Fatehpur	Malwan	Chaudgara	1.466
50	Fatehpur	Bhitaura	Lohari	1.920
51	Fatehpur	Khajua	Bindki	3.682
52	Fatehpur	Amauli	Dhana	5.818
53	Gonda	Itia Thok	Lalpur	1.416
54	Gonda	Wazirganj	Suklainpurwa	1.539
55	Gonda	Belsar	In The Campus Of Umar Ganj Polica Station	3.942

56	Hamirpur	Gohand	Rihunta	2.223
57	Hamirpur	Rath	Pathnouri	2.898
58	Hardoi	Harpalpur	Kirtiyarpur	1.342
59	Hardoi	Pihani	Arua (Alternate)	1.996
60	Hardoi	Pihani	Gopamau	2.459
61	Hardoi	Bhender Kalan	Gangakheda	6.088
62	Hardoi	Sandi	Kuliya (Alternate)	7.173
63	Hathras	Hathras	Mohari	3.084
64	Jalaun	Kuthond	Jakha Bambi	1.304
65	Jhansi	Chirgaon	Bakua Bujarg	2.280
66	Jhansi	Bangra	Ghanghri	3.316
67	Jhansi	Gursarai	Dugara	9.173
68	Kannauj	Umarda	Thathiya	1.252
69	Kannauj	Saurikh	Saurikh	4.648
70	Kanpur Nagar	Bilhaur	Araul	4.535
71	Kanpur Nagar	Kakwan	Gadaipur	11.335
72	Kushi Nagar	Vishunpurwa	Hiranai	1.749
73	Kushi Nagar	Sewarhi	Habirpur	11.298
74	Lakhimpur Kheri	Bijua	Gogawan	1.046
75	Lakhimpur Kheri	Palia	Massankambh	1.167
76	Lakhimpur Kheri	Dhaurahara	Khagipur	1.928
77	Lakhimpur Kheri	Nighasan	Mallpur	1.979
78	Lakhimpur Kheri	Palia	Bhagawant Nagar	2.302
79	Lakhimpur Kheri	Lakhimpur	Bakkhari	2.390
80	Lakhimpur Kheri	Palia	Digiyanai Chauraha	2.734
81	Lakhimpur Kheri	Nighasan	Ramupur	3.267
82	Lakhimpur Kheri	MitauIi	Pipra JhaIa	3.333
83	Lakhimpur Kheri	Palia	Murar Kheda	3.567
84	Lakhimpur Kheri	Palia	Gadaniya	4.147
85	Lakhimpur Kheri	Nighasan	Singahi Bhiraura	5.896
86	Lakhimpur Kheri	Palia	Kadeya	10.175
87	Lalitpur	Bar	Purapachauri	1.162
88	Lalitpur	Talbehat	Laxmanpura	2.574
89	Mahoba	Kabrai	Ghutbai	1.270
90	Mahoba	Jaitpur	Rawatpura	1.394

91	Mahoba	Kabrai	Bhandra	3.170
92	Mahoba	Kabrai	Kabrai	3.947
93	Mahoba	Jaitpur	Majhgawan Khurd	4.016
94	Mahoba	Panwari	Rivai	13.522
95	Mahrajganj	Nautanwa	Ganeshpur	1.209
96	Maunath Bhanjan	Badraon	Hanurnanganj	1.309
97	Meerut	Meerut Urban	Choudary Niwash	1.057
98	Meerut	Meerut Urban	Shiv Nageswar Temple	1.507
99	Meerut	Meerut Urban	Shatabdi Nagar	1.699
100	Meerut	Daurala	In Kodhi Ashram	1.869
101	Meerut	Meerut Urban	Near Swach Community Toilet	2.048
102	Meerut	Kharkhoda	Kharkhoda	2.320
103	Meerut	Meerut Urban	Near Satbir House	2.353
104	Meerut	Meerut Urban	Sofipur	2.659
105	Meerut	Rajpura	Rajpura	2.798
106	Meerut	Meerut Urban	Rohta Fatak	2.937
107	Meerut	Meerut Urban	Awasiya Gate	3.409
108	Meerut	Meerut Urban	Near Mazar	4.624
109	Meerut	Meerut Urban	Din Dayal House	6.675
110	Meerut	Meerut	Gagol	8.434
111	Mirzapur	Kon	Kantit	1.125
112	Mirzapur	Pahari	Lahaura	1.679
113	Moradabad	Kundarki (Dengapur)	Naronda	5.098
114	Moradabad	Dilari	Faridpur Hazi	10.096
115	Muzaffarnagar	Purqaji	On Road Side	2.416
116	Muzaffarnagar	Budhana	Budhana	4.604
117	Muzaffarnagar	Jansath	Bypass Road	11.211
118	Pilibhit	Amaria	BaIliya	1.561
119	Pilibhit	Bisalpur	Churra Sakatpur	1.641
120	Pilibhit	Puranpur	Babanpur .Tila No.4	2.409
121	Pilibhit	Puranpur	Raipur	4.186
122	Pilibhit	Marauri	Mathana	5.659
123	Pratapgarh	Kalanker	Bhadchak	1.196

124	Raebareli	Harchandpur	Majare Tera, Baraula (Banghlaha Ka Purwa)	1.853
125	Rampur	Milak	Brijpur	1.226
126	Rampur	Chamrauwa	Kajarhai	3.073
127	Rampur	Bilaspur	Faiznagar	3.277
128	Saharanpur	Muzaffarabad	Primary School Kamalpur	1.072
129	Saharanpur	Nanauta	Near Nausad Chicken Shope	2.126
130	Sant Kabir Nagar	Haisar Bazar	Shukul Mundera	2.252
131	Sant Kabir Nagar	Semariyawan	Abbasganj	5.465
132	Sant Kabir Nagar	Mehndawal	Gagnaibabu/Gagnairao	9.769
133	Shahjahanpur	Banda	Mouddinpur	4.860
134	Shahjahanpur	Bhawal Khera	Azizpur	8.583
135	Shahjahanpur	Jaitpur	Nagra	1.010
136	Shahjahanpur	Jalalabad	Masulpur(Nayagaon)	4.058
137	Shrawasti	Sirsiya	Bhujanga	1.066
138	Shrawasti	Ikauna	Jai Chandpur Khatzhara	1.608
139	Siddharth Nagar	Birdpur	Parsa	1.555
140	Siddharth Nagar	Barham	Jhulnipur Chauraha	1.729
141	Siddharth Nagar	Khesrha	Sishoniya	3.277
142	Sitapur	Gondlamau	Karanpur	1.273
143	Sitapur	Pahla	Kanchanpur	4.519
144	Sitapur	Mahmudabad	Bahoranpur	4.523
145	Sonbhadra	Babhani	Adhoura	1.474
146	Sonbhadra	Myorpur	Lovuhan	2.534
147	Sonbhadra	Myorpur	Nakkhu	3.138
148	Sonbhadra	Dudhi	Navgai	7.493
149	Sonbhadra	Myorpur	Dewri	13.669
150	Sonbhadra	Myorpur	Baina	34.646
151	Sonbhadra	Babhani	Adhoura	37.053
152	Sonbhadra	Kone	Rogahi	1.495
153	Sonbhadra	Robertsganj	Jigna	1.871
154	Sonbhadra	Nagawa	Keotam	1.986
155	Sonbhadra	Kone	Naudiha	2.896
156	Sonbhadra	Nagawa	Cherue	4.903
157	Sonbhadra	Chopan	Chikradhawd	5.077
158	Unnao	Fatehpur Chaurasi	Daboli	1.190
159	Unnao	Asoha	Darsawa	1.687
160	Unnao	Hasanganj	Hasewan	8.557
161	Varanasi	Varanasi Urban	Nanak Nagar	1.196
162	Varanasi	Chiraigaon	Chhitouna	2.783

Figure-5



Manganese (Mn):

The concentration of **Manganese** was found more than 0.3 mg/l at 56 water quality stations and its maximum concentration was found 7.010 mg/l at Karvi block of Chitrakoot district.

Copper (Cu):

Copper concentration was found in all samples within the permissible limit of 1.5 mg/l.

Zinc (Zn):

Zinc concentration was found in all samples within the permissible limit 15 mg/l.

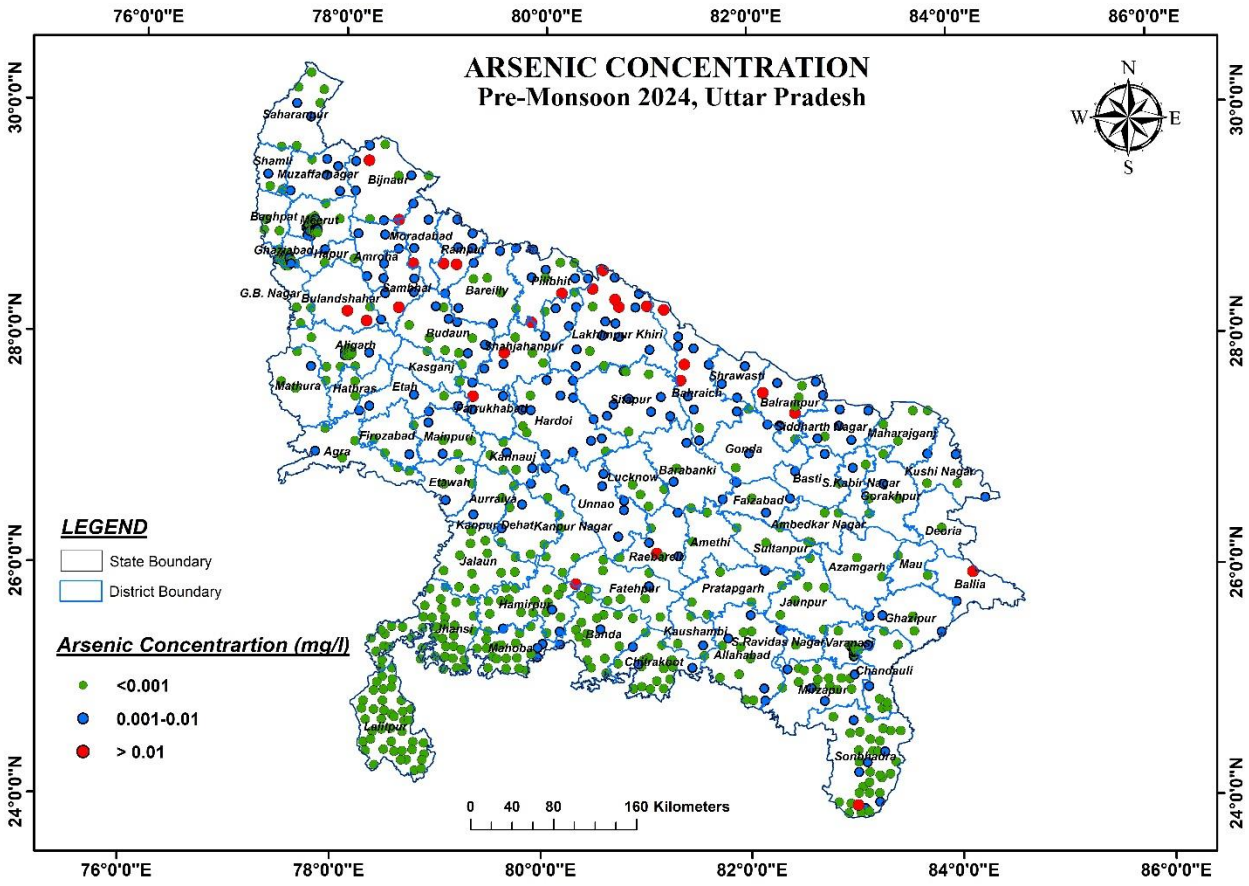
Arsenic (As):

The concentration of **Arsenic** was found above the permissible limit of 0.01 mg/l at 27 water quality stations in 16 districts. The maximum concentration of Arsenic 0.107 mg/l is found in Pilui Fattepur village of Maniyar block of Ballia district.

Table 13: The partly affected blocks exhibiting high values of Arsenic (>0.01 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	As
1	Bahraich	Mihipurwa	Mote Baba	0.040
2	Bahraich	Mahasi	Mahua Chauraha	0.017
3	Bahraich	Shivpur	Baundi	0.024
4	Ballia	Maniyar	Pilui Fattepur	0.107
5	Balrampur	Harraya Satzawa	Laliya Village	0.014
6	Balrampur	Gainsara	Tharunia	0.043
7	Barabanki	Nindaura	Baba ki kuti	0.012
8	Bareilly	Shergarh	Bunchi	0.010
9	Bijnor	Haldaur (Khari Jhalu)	Rohniya	0.016
10	Bulandshahr	Shikarpur	Nawada	0.024
11	Farrukhabad	Kaimganj	Rutaul	0.031
12	Fatehpur	Amauli	Dhana	0.016
13	Lakhimpur Kheri	Palia	Digiyanai Chauraha	0.067
14	Lakhimpur Kheri	Nighasan	Ramupur	0.013
15	Lakhimpur Kheri	Palia	Gahra Farm	0.033
16	Lakhimpur Kheri	Palia	Bhagawant Nagar	0.063
17	Lakhimpur Kheri	Palia	Gadaniya	0.021
18	Moradabad	Chhajlet	Pathanagi	0.025
19	Moradabad	Kundarki (Dengapur)	Naronda	0.013
20	Moradabad	Najibabad	Islampur shihali	0.011
21	Pilibhit	Puranpur	Sabalpur Khas	0.030
22	Rampur	Chamrauwa	Majra Ladauri	0.014
23	Rampur	Milak	Brijpur	0.017
24	Sambhal	Gunnaur	Sonwasarai	0.013
25	Shahjahanpur	Nigohi	Chainpura	0.011
26	Shahjahanpur	Jaitpur	Nagra	0.018
27	Sonbhadra	Myorpur	Chak Chapki	0.033

Figure-6



Lead (Pb):

The concentration of **Lead** was found more than 0.01 mg/l in 2 locations. The value of maximum concentration of lead was found to be 0.013 mg/l at Naugarh block of Chandauli district.

Uranium (U):

The concentration of **Uranium** in **30 samples (4.44%)** was found more than 0.03 mg/l in ground water samples. The **maximum** concentration of **Uranium (0.116 mg/L)** was found in Samserpura location of Bamaur block of Jhansi district.

Table 14: The partly affected blocks exhibiting high values of Uranium (>0.03 mg/l) (2024-25) Pre-monsoon

S. No.	District	Block	Location	U
1	Agra	Fatehpur Sikri	Hiraman	0.088

2	Aligarh	Gonda	Dayapur	0.039
3	Banda	Baberu	Murwal	0.052
4	Bijnor	Jaleelpur	Bhiriya Khera	0.063
5	Budaun	Ujhani	Laxminagra	0.044
6	Etah	Shitalpur	Near to RTO Office	0.046
7	G.B. Nagar	Jewar	Neemka	0.036
8	Ghaziabad	Gaziabad Urban	Inside Bijli Ghar	0.040
9	Ghazipur	Ghazipur	Biraich	0.031
10	Ghazlpur	Sadat	Kaneri	0.034
11	Jalaun	Konch	Sami	0.031
12	Jhansi	Bamaur	Atarsuwan	0.032
13	Jhansi	Bamaur	Samserpura	0.116
14	Jhansi	Bamaur	Dumarai	0.036
15	Kannauj	Talgram	Indergarh	0.041
16	Kanpur Dehat	Maitha	Matikapur	0.040
17	Lalitpur	Bar	Udaipura	0.060
18	Mahoba	Jaitpur	Majhgawan Khurd	0.033
19	Mahoba	Panwari	Khero Kalan	0.034
20	Mathura	Nohjhil	Nankpur Khader	0.044
21	Meerut	Meerut Urban	Din Dayal House	0.040
22	Meerut	Meerut Urban	Mangalpuri	0.036
23	Meerut	Meerut Urban	Zila Niwachan Office Gate	0.039
24	Prayagraj	Baharia	Dunnaiya	0.055
25	Raebareli	Dalmau	Pakra Girifta, Pure Baisanpurwa	0.0301
26	Shahjahanpur	Kalan	Dewada ALTERNATE)	0.087
27	Sonbhadra	Kone	Rogahi	0.098
28	Unnao	Asoha	Darsawa	0.032
29	Unnao	Bighapur	Indamau	0.043
30	Varanasi	Varanasi Urban	Akatha	0.036

Figure-7

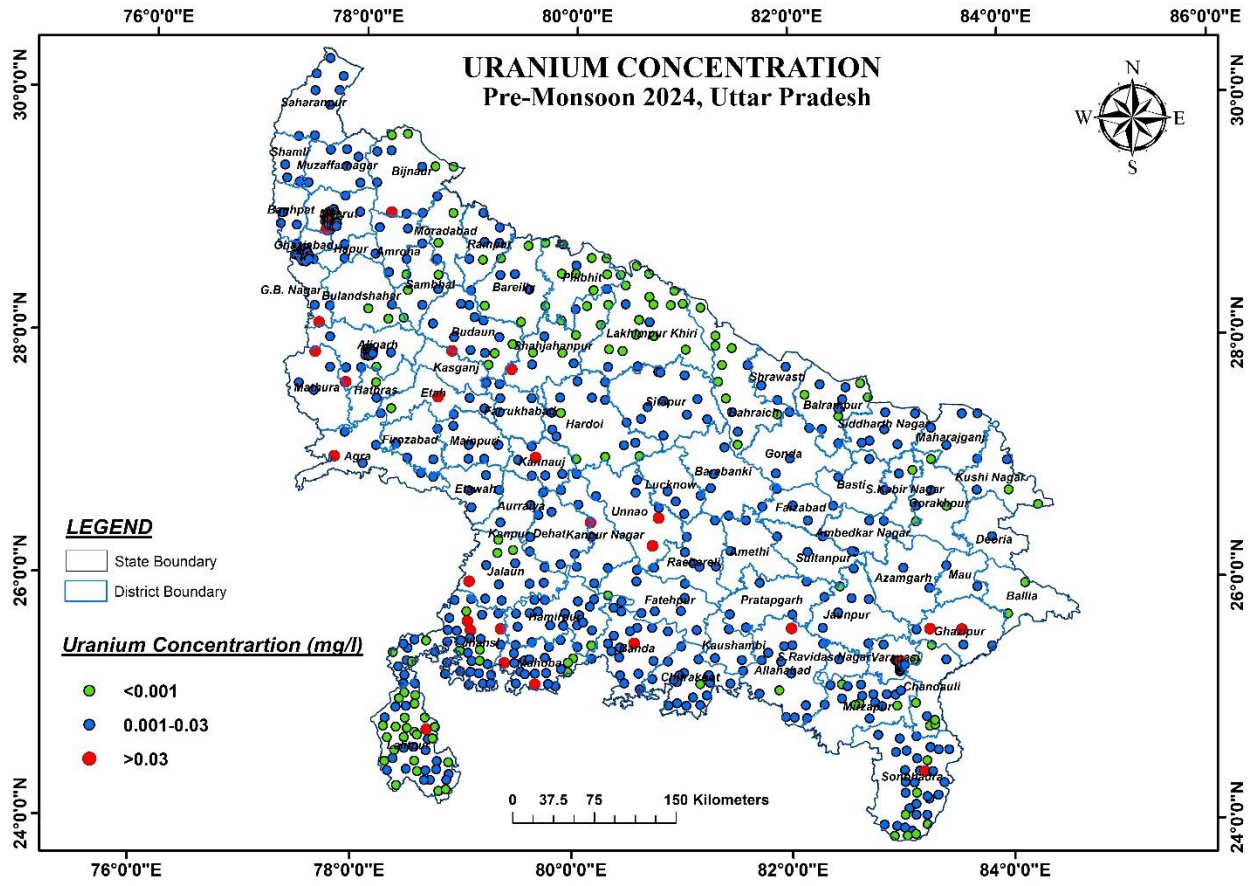


Table 15: Statistical distribution of Heavy Metals in Uttar Pradesh (2024-25) Pre-Monsoon

Heavy Metal	Minimum (mg/l)	Maximum (mg/l)	Average (mg/l)	Districts affected partly
Chromium	0	0.016	0.000	0
Iron	0	37.118	1.201	51
Manganese	0	7.010	0.747	29
Copper	0	0.081	0.001	0
Zinc	0	13.353	0.365	0
Arsenic	0	0.107	0.002	16
Lead	0	0.013	0.001	2
Uranium	0	0.116	0.009	23