

GROUND WATER BROCHURE OF BARABANKI DISTRICT, U.P.

(A.A.P.: 2012-2013)

By
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AHG

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DISTRICT AT GLANCE

1. GENERAL INFORMATION

i. Geographical Area (Sq. Km.)	: 3895
ii. Number of Blocks	: 15, Nindaura, Fatehpur, Suratganj, Ramnagar, Dewa Banki, Harakh, Masauli, Sidhaur, Trivediganj, Haidergarh, Dariyabad, Banikodar, Puredalai & S. Gauspur
Number of Villages	: 1843
Developed	: 1812
Under developed	: 31
iii. Population (as on 2011 census)	: 3,257,983
Density of population per sq.km.	: 687 per sq.km.
Literacy	: 47.39%
iv. Normal Annual Rainfall (mm)	: 1056

2. GEOMORPHOLOGY

Major Physiographic Units	: Younger alluvial plain Older alluvial plain
Major Drainages	: The Ghaghra, The Gomti river & their tributaries

3. LAND USE (ha.)

a) Forest area (ha)	: 6298
b) Net area sown (ha)	: 254453
c) Gross area sown (ha)	: 484655
d) Area Sown more than once	: 230202

4. MAJOR SOIL TYPES

: Clayey soil, Loamy soil & Sandy soil

5. AREA UNDER PRINCIPAL CROPS

: Rice, Wheat

6. IRRIGATION BY DIFFERENT SOURCES

(Areas and Number of Structures) (ha)

Dugwells	: Area 3028 ha, Nos. 466
Tubewells Public/ Private	: Total Area 142687 ha, Nos. 386, Nos101439
Tanks/ponds	: Area 22 ha
Canals	: Area 78382 ha, length 1706 km.
Other Sources	: Area 7 ha

	Net Irrigated Area	:	221098 ha
	Gross Irrigated Area	:	417292 ha
	% of Gross Irrigated to Total Area	:	86.10 %
	% of Net area Irrigated to Net area Sown	:	86.90 %
7.	NUMBER OF GROUND WATER MONITORING WELLS OF CGWB (As on 31-3-2012)		
	No. of Dugwells	:	
	No. of Piezometers	:	Nil
8.	PREDOMINANT GEOLOGICAL FORMATIONS	:	Alluvium
9.	HYDROGEOLOGY		
	Pre-monsoon Depth to water level during 2012 (mbgl)	:	2.50 – 11.72
	Post-monsoon Depth to water level during 2012 (mbgl)	:	1.42 – 10.40
	Long term water level trend in 10 years (1998-2012) in m/yr		
	Premonsoon :		Rise 0.004 – 0.220 cm/yr Fall 0.008 – 0.808 cm/yr
	Postmonsoon :		Rise 0.013 – 0.063 cm/yr Fall 0.003 – 0.216 cm/yr
10.	GROUND WATER EXPLORATION BY CGWB (As on 31-3-2012)		
	No of wells drilled (EW, OW, PZ, SH, Total)	:	EW-3, OW-Nil, Deposit well- Nil, PZ-6 (2 each at Barabanki, Daryabad & Fatehpur
	Depth range (m)	:	30.00 - 61.69 for shallow aquifer 198.79 - 211.87 for deep aquifer
	Discharge (litres per second)	:	40-50
	Storativity (S)	:	-
	Transmissivity (m ² /day)	:	387 to 1620 m ² /day
11.	PRESENCE OF CHEMICAL CONSTITUENTS MORE THAN PERMISSIBLE LIMIT (e.g. EC, F, As, Fe)		
	Type of water	:	Alkaline
12.	DYNAMIC GROUND WATER RESOURCES (2009)-in Ham		
	Net Annual Ground Water Availability	:	191684.74
	Allocation for Domestic and Industrial Requirement	:	10202.89

	Net Ground Water Availability for Irrigation	: 191684.73
	Stage of Ground Water Development	: 68.85%
13.	AWARENESS AND TRAINING ACTIVITY	: Nil
	Mass Awareness Programmes organized	
	Date	
	Place	
	No. of participants	
	Water Management Training Programme organized	: Nil
	Date	
	Place	
	No. of participants	
14.	EFFORTS OF ARTIFICIAL RECHARGE & RAINWATER HARVESTING	: Nil
	Projects completed by CGWB (No & Amount spent)	
	Projects under technical guidance of CGWB (Numbers)	
15.	GROUND WATER CONTROL AND REGULATION	:
	Number of OE Blocks	: Nil
	No of Critical Blocks	: Nil
	No of blocks notified	: Nil
16.	MAJOR GROUND WATER PROBLEMS AND ISSUES	: The stage of ground water development is 68.85%.

GROUND WATER SCENARIO OF BARABANKI DISTRICT, U.P.

(A.A.P.: 2012-2013)

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I. INTRODUCTION

Barabanki district covers an area of 3895 sq.km. and forms a part of Sai-Gomti Doab in Ganga basin. It lies between latitudes 26⁰32' and 27⁰21' N and between longitudes 80⁰05' and 81⁰51'E. Administratively the Barabanki district is divided into 17 blocks namely Nindaura, Fatehpur, Suratganj, Ramnagar, Dewa, Banki Harakh, Masauli, Sidhaur, Trivediganj, Haidargarh, Dariyabad, Bani Kodar, Puredalai, Mavai, Rudauli & S. Gauspur (Plate-I). There are 1843 villages out of which 31 villages are under developed and 1812 villages are developed villages.

The total population of the district is 3,257,983, souls as per 2011 census, out of which 1,707,951 (52.43%) are male and 1,550,032 (47.57%) are female.

The net area irrigated is 221098 ha out of which 142687 ha is irrigated by ground water. District has irrigation intensity of 188.74. Net area irrigated to net area sown is 86.90% for the district.

The district Barabanki is drained by river Ghaghra & its tributaries in the north eastern part and Gomti & its tributaries in the southern part. The Ghagra river has a tendency to flow in many channels and shift its course over a wide area in different rainy seasons. The Gomti river enters the district south west of Barabanki town. It leaves the district near Subeha in the south eastern part. Its tributaries are Kalyani Nadi, Reth and Bel Nalas.

II. CLIMATE & RAINFALL

The climate of the district is subtropical type, characterised by hot weather during summer followed by rainy season from June to September followed by winter from October to February. There is no meteorological observatory in Barabanki, nearest observatory is at Lucknow at about 25 km west from Barabanki. The highest and lowest temperature is 44.9⁰C during May and 4.8⁰C during January. The maximum and minimum relative humidity recorded is 85% during July and 39% during April respectively. The maximum wind speed is 4.9 km/hr in June and minimum is 1.6 km/hr. in November. The potential evapotranspiration is 1379.1 mm.

The annual normal rainfall data of Nawabganj, Ramsanehi Ghat, Fatehpur and Haidergarh rain gauge station is 1173.4 mm, 1058.4 mm, 982.4 mm & 1011.6 mm respectively. The annual normal rainfall of the district is 1056 mm.

III. GEOMORPHOLOGY & SOIL TYPES

GEOMORPHOLOGY:

Physiographically the area can be divided into two distinct units namely upland alluvial plain and low land alluvial plain. The upland alluvial plain occupies the inter fluvial areas of the river Gomti and Ghaghra and forms the water divided of these two rivers. These plains are gently undulating in nature and have been eroded by the rivers during the recent time. The low land alluvial plain are newer alluvium and are prone to flooding during the monsoon. These lands have been carved out by the rivers in the comparatively recent times. Several lakes and ponds are remarkable features in this unit.

SOILS:

The land surface of the district is covered by shallow soils cover. These are well drained clayey soils on very gently sloping land with moderate erosion. In water divide area the soils are very shallow somewhat excessively drained loamy soils. The soil cover is thin at places along river beds where sands are predominated.

IV. GROUND WATER SCENARIO

HYDROGEOLOGY:

The Barabanki district lies on the quaternary sediments comprising sand, silt clays & kankar in various proportions. The district forming a part of Sai Gomit doab and cause divide into two units viz older alluvium and younger alluvium. The older alluvium generally occupies land higher than the younger alluvium which is confined in the river channels or in the vicinity occupying low land area. Younger alluvium is generally affected by flood during the monsoon period.

The water bearing formation is alluvium and comprises sand, silt, clays & kankar. The occurrence of kankar at different depth is common. The interstices pore space between different grains is occupied by ground water and interstices act as ground water conduit. The ground water occurs under water table condition in shallow aquifer whereas the ground water in deeper aquifer occurs under semi confined to confined conditions. Based on subsurface geological configuration on the basis of lithological log of state government and Central Ground Water Board the two tier aquifer system has been identified.

The first aquifer extends from the base of top clay layer to varying depth from 60 to 90 m. This aquifer comprises medium sand and is followed by a prominent clay layer of thickness ranging from 10 to 20 m. However the clay layer occurs generally in form of lenses and altogether disappear at Bidhar outside eastern most part of the area (Plate IVb).

However in the southern part, the setting changes appreciably for thinning of discrete sand units or aquifer upto 150 m depth. The cumulative thickness of aquifer ranges from 6 to 26 m and the intervening clays dominate. Over all it can be inferred as multiple aquifer system.

WATER BEARING FORMATIONS, PROPERTIES AND OCCURRENCES:

The water bearing formation is alluvium and comprises sand, silt, clay & kankar. The occurrence of kankar at different depth is common. The interstices pore

space between different grains is occupied by ground water and the interstices act as ground water conduits. The ground water in shallow aquifer occurs under unconfined condition whereas in deeper aquifer it occurs under semi confined to confined conditions.

DEPTH TO WATER LEVEL:

Based on premonsoon water level data of May 2012 of hydrograph stations a depth to water level map for premonsoon period has been prepared (Plate-II). The depth to water level in the district ranges from 2.50 mbgl 11.72 mgl and has been reported from Kabulpur and Datauli Chanda respectively. In major area depth to water ranges between 5.00 to 10.00 mbgl. The deeper water levels have been recorded along the rivers and areas away from the canal commands. During Pre-monsoon period deepest water levels have been recorded in the southern part of the area whereas shallow water level less than 5.00 mbgl has been reported from Northwestern and southeastern part of the district. No area is water logged during premonsoon period.

During monsoon season the natural ground water recharge takes place by percolation of rainfall that infiltrate and meets the ground water. After monsoon period the depth to water level is at the shallowest level during postmonsoon period. A depth to water level map of November 2012 has been prepared (Plate-III). During postmonsoon period the depth to water level ranges from 1.19 m to 12.10 mbgl.

The general depth to water level in the area ranges from less than 1.42 m to 10.40 mbgl. In the postmonsoon period deepest water level i.e. 10.40 mbgl have been recorded from Datauli Chanda (Plate-III). In general during post monsoon period larger area of the district falls between 5 to 10 mbgl except north Central as well as southern part of the district. Shallowest water level have been recorded in the flood plains of Ghaghra and canal commands.

WATER LEVEL FLUCTUATION:

The pre & postmonsoon water level and fluctuation in shallow aquifer as observed in hydrograph station is summarised as follows (Table-1):

Table-1

**PRE-POSTMONSOON WATER LEVEL & FLUCTUATION DATA OF
BARABANKI DISTRICT, U.P.**

(As on 2012)

Sl. No.	Name of Station	Premonsoon DTW mbgl May 2012	Postmonsoon DTW mbgl Nov 2012	Fluctuation (m)
1	Baba ki kuti	4.83	2.74	2.09
2	Barabanki(New)	7.09	4.10	2.99
3	Bariu bagh	6.38	5.74	0.64
4	Bhanmau	2.88	2.88	
5	Bhiwal	7.10	2.90	4.20
6	Chaubisi	5.28	2.52	2.76
7	Daryabad	4.69	2.54	2.15
8	Datauli chanda	11.72	10.40	1.32
9	Dewa	4.50	2.40	2.10
10	Fatehpur (new)	4.93	3.05	1.88
11	Gutauna	6.23	2.55	3.68
12	Kabulpur	2.50	2.50	
13	Kaisarganj	7.18	7.18	
14	Kalkeshwar temp	9.88	8.24	1.64
15	Kitlupur	4.08	2.22	1.86
16	Kotwa sarai	9.01		
17	Masauli chaurah	6.42	3.77	2.65
18	Purwa amarsingh	3.56	1.99	1.57
19	Ramnagar	6.60	5.47	1.13
20	Rani katra	7.03	5.77	1.26
21	Rasauli	5.64	1.42	4.22
22	Rudauli1	4.09	3.06	1.03
23	Sarai barai	5.90	2.45	3.45
24	Sidhaur	7.05	2.91	4.14
25	Subeha	7.48		
26	Sundhia mau	6.01	4.20	1.81
27	Tikaitnagar	5.35	5.35	
28	Trivediganj	7.11	2.52	4.59

The water level fluctuation during pre & postmonsoon period ranges 0.64 to 4.59 m. The low fluctuation in an alluvial and flat drainage basin gives a crude estimate that in Barabanki district shallow aquifer is highly permeable.

LONG TERM WATER LEVEL TREND:

Changes in storage resulting from differences between recharge and withdrawal causes levels to vary in time. Based on water level data of several years a long term water level trend for pre & postmonsoon period has been worked out and summarised as follows (Table-2):

Table-2

LONG TERM WATER LEVEL TREND OF WELLS OF BARABANKI DISTRICT, U.P.

Sl. No.	Location	Premonsoon		Postmonsoon	
		Rise (cm/yr.)	Fall (cm/yr.)	Rise (cm/yr.)	Fall (cm/yr.)
1.	Fatehpur (new)		0.0143		0.1287
2.	Tikaitnagar		0.0101	0.0131	
3.	Ramnagar		0.0093		0.0244
4.	Daryabad	0.0043			0.0287
5.	Bhanmau		0.0451		0.033
6.	Sundhia mau		0.0753		0.096
7.	Sarai barai		0.1884		0.1648
8.	Purwa amarsingh		0.0173		0.0247
9.	Badosarai	0.0185		0.0384	
10.	Bariu bagh		0.1424		0.0303
11.	Rani katra		0.0084	0.0297	
12.	Rudauli1	0.2207		0.0204	
13.	Ramsanehighat	0.0116		0.0635	
14.	Barabanki(New)	0.0064			0.0035
15.	Gutauna		0.1297		0.0469
16.	Zaidpur		0.8081		
17.	Dewa		0.0655		0.0166
18.	Kursi		0.1274		0.2196

Sl.	Location	Premonsoon		Postmonsoon	
19.	Kaisarganj		0.2765		0.0463
20.	Kalkeshwar temp		0.24		0.349
21.	Baba ki kuti		0.045		0.1164
22.	Kitlupur		0.0199	0.0207	
23.	Masauli chaurah	0.0183			0.042
24.	Rasauli		0.0285	0.0005	
25.	Subeha	0.0147		0.0657	
26.	Sidhaur		0.2257		0.0373
27.	Kotwa sarai	0.0582		0.197	
28.	Datauli chanda		0.3241		0.4534
29.	Chaubisi		0.0999		0.0606
30.	Kabulpur		0.2134		0.0616
31.	Trivediganj		0.3763		0.108
32.	Bhiwal		0.377		
33.	Babaganj		0.5158		

GROUND WATER MOVEMENT:

The general flow of ground water is NW-SE which has been modified at many places by rivers and canal system. The slope of ground water has also been modified by the drainage system of the area. As such, near the main canals and branch canals the ground water slope is flatter than near the rivers. This is due to the influent nature of the canals and effluent nature of the rivers. The ground water slope in the area varies from 0.12 to 3.4 per km. The highest water table elevation is more than 120 mamsl in the northwest parts and the lowest is less than 94 mamsl in the southeast parts of the area .

GROUND WATER EXPLORATION:

Six piezometers have been drilled by Central Ground Water Board at Barabanki, Daryabad & Fatehpur with two piezometer at each place, one for shallow & one for deep aquifer. In addition one deposit well has been constructed at FCI Godown Barabanki. The transmissivity ranges from 417 m²/day to 1621 m²/day for deep aquifer and from 387.6 m²/day to 866 m²/day for shallow aquifer. The depth

drilled of these piezometers ranges between 30 to 61.69 for shallow aquifer and between 198.78 m to 211.87 m. for deep aquifer.

In addition to above number of tubewells have been drilled by State Irrigation Department. The depth of these wells generally ranges from 60 to 110 mbgl. These wells are constructed to meet the irrigation requirement.

During AECP 3 number of exploratory tubewells were constructed down to depth 200 metres tapping 40-45 metres of aquifer thickness. The yield of these wells varies between 40-50 lps at a drawdown of 4-8 meters.

GROUND WATER QUALITY:

In general the quality of ground water is good both for drinking and irrigation purposes. 15 water samples were collected during earlier reappraisal survey carried out in Barabanki district. The analytical results are given in Table-3 and discussed as follows:

Domestic Purpose:

- a. **Hydrogen Ion Concentration:** The pH of water sample varies between 8.2 & 8.4 which falls in the safe limit of drinking water norms (ISI standards 1983).
- b. To understand the spatial distribution of the EC a map has been prepared. The map reveals that the EC in the area is below 750 microsiemens/cm² at most of the places except the crescent shape area covering parts of Sidhaur, Harakh, Dewa, Fathepur, Suratganj and Ram Nagar blocks (Plate-V). A small isolated patch having the EC less than 325 microsiemens/cm at 25⁰C has been marked around Mali in the block Barabanki.
- c. **Total Hardness as CaCO₃:** The total hardness as CaCO₃ of the ground water varies between 95 & 360 ppm against the permissible limit of 195 to 435 ppm which indicates good quality of water.

Irrigational Purposes:

Ground water satiability has been judged on the basis of Na, K, Ca & Mg for irrigational purposes. The SAR values have been calculated. The SAR value of ground water varies from 0.2 to 4.4. Based on SAR value the quality of ground water is categorised as excellent. All the samples falls in the water class C₃S₁.

Table-3

ANALYTICAL RESULTS OF WATER SAMPLES, DISTRICT BARABANKI, U.P.

Well No.	Location	EC micro mhos	pH	CO ₃	HCO ₃	Cl	F	NO ₃	SO ₄	TH	Ca	Mg	Na	K	TDS
				Value in mg/l											
1.	Haidergarh	500	8.2	nd	305	14	0.5	0.43	5	190	12	39	38	4.7	300
2.	Trivediganj	725	8.4	nd	403	14	0.65	16	4	280	24	53	39	3.8	435
3.	Harakh	572	8.2	nd	329	14	0.53	nd	40	320	24	63	4.9	5.6	343
4.	Sidahur	557	8.2	nd	305	7.1	0.32	5.4	28	240	36	36	24	2.6	334
5.	Banikadar	627	8.2	nd	366	14	0.6	nd	8	260	56	29	30	3.4	376
6.	Masauli	625	8.2	nd	366	7.1	0.86	nd	4	280	48	39	13	3.7	375
7.	Banki	541	8.2	nd	305	14	0.64	nd	5	180	24	29	41	4.6	325
8.	Nindaura	422	8.2	nd	232	14	0.67	nd	36	170	32	22	34	3.8	253
9.	Dewa	400	8.2	nd	244	7.1	0.93	nd	20	180	36	22	23	2.8	240
10.	Fatehpur	530	8.3	nd	293	21	0.28	nd	18	210	44	24	32	7.7	318
11.	Suratganj	519	8.2	nd	281	21	0.25	nd	5	180	36	22	36	3.4	311
12.	Ramnagar	500	8.4	nd	220	57	0.29	nd	8	200	36	27	30	4.6	300
13.	Sirauli Gauspur	325	8.2	nd	159	14	0.3	nd	30	150	36	15	15	2.3	195
14.	Pure dalai	600	8.2	nd	268	21	0.26	33	55	330	72	36	2.6	1.3	360
15.	Dariyabad	637	8.4	nd	366	14	0.48	3.4	5	250	40	36	35	2	382

GROUND WATER RESOURCES:

The estimation of ground water resource is a basic pre requisite for sustainable development without causing adverse effect on the ground water regime. The ground water resources of Barabanki district are as follows:

1.	Annual ground water recharge	=	212983.04 ham
2.	Existing gross ground water draft for all uses	=	131986.72 ham
3.	Net ground water availability for future irrigation	=	56386.14 ham
4.	Stage of ground water development	=	68.85%
5.	Allocation for domestic & industrial requirement supply upto 2025 yrs	=	10202.89 ham

Blockwise net annual ground water availability, gross ground water draft for all uses, stage of ground water development category of block are shown in categorisation map (Plate IV). Blockwise details are shown in table given below (Table-4):

Table 4(a)

**DYNAMIC GROUND WATER RESOURCES OF BARABANKI DISTRICT,
U.P.
(As on 31.03.2009)**

Sl. No.	Assessment Units - Blocks/ District	Recharge from Rainfall during Monsoon Season	Recharge from Other Sources during Monsoon Season	Recharge from Other Sources during Non-Monsoon Season	Total Annual Ground Water Recharge	Provision for Natural Discharges	Net Ground Water Availability
(All Units in Hectare Meter)							
1	BANIKUDAR	4657.94	2236.00	4238.08	12087.72	1208.77	10878.95
2	BANKI	4321.04	2668.18	4729.94	12719.64	1271.96	11447.68
3	DARIYABAD	3984.25	2670.17	5432.18	12904.08	1290.41	11613.67
4	DEWA	5172.94	4732.82	9202.73	20306.21	2030.62	18275.59
5	FATEHPUR	5609.22	3984.98	8023.49	18909.52	1890.95	17018.57
6	HAIDERGARH	5961.12	1676.62	3323.57	12004.00	1200.40	10803.60
7	HARAK	4472.96	2548.40	4581.36	12638.37	1263.84	11374.53
8	MASAULI	3365.29	2256.76	3782.26	10183.50	1018.35	9165.15
9	MAWAI	4562.30	1311.10	1848.99	8784.76	878.48	7906.28
10	NINDORA	5508.14	2484.61	4147.96	13409.26	1340.93	12068.33
11	PUREDALAI	4136.67	757.80	1305.79	7041.49	704.15	6337.34
12	RAM NAGAR	7197.33	2551.56	4515.51	15359.71	1535.97	13823.74
13	RUDALI	5087.83	1535.50	2229.15	10037.29	1003.73	9033.56
14	SIDDHAUR	6023.70	2409.89	4675.02	14183.32	1418.33	12764.99
15	SIRALI GAUSPUR	3570.01	571.18	997.61	5864.80	586.48	5278.32
16	SURATGANJ	7197.33	2258.17	3646.01	14796.82	1479.68	13317.14
17	TRIVEDIGANJ	5312.17	2024.04	3384.02	11752.55	1175.26	10577.30
	TOTAL	86140.24	38677.78	70063.67	212983.04	21298.30	191684.74

Table 4(b)

S.No.	Blocks/ District	Existing Gross Ground Water Draft for Irrigation	Existing Gross Ground Water Draft for Domestic & Industrial Water Supply	Existing Gross Ground Water Draft for All Uses	Provision for Domestic and Industrial Requirement Supply for 2025	Net Ground Water Availability for future Irrigation development	Stage of Ground Water Development (%)	Category
(Units in Hectare Meter)								
1	BANIKUDAR	8081.20	498.36	8579.56	844.87	1952.88	78.86	Safe
2	BANKI	8492.40	504.23	8996.63	840.36	2114.92	78.59	Safe
3	DARIYABAD	7071.20	343.00	7414.20	486.98	4055.49	63.84	Safe
4	DEWA	9132.80	408.34	9541.14	609.96	8532.83	52.21	Safe
5	FATEHPUR	9897.20	485.91	10383.11	710.24	6411.13	61.01	Safe
6	HAIDERGARH	6095.70	381.94	6477.64	526.50	4181.40	59.96	Safe
7	HARAK	7164.40	369.37	7533.77	547.76	3662.37	66.23	Safe
8	MASAULI	6292.40	381.15	6673.55	556.15	2316.60	72.81	Safe
9	MAWAI	5270.40	316.38	5586.78	365.63	2270.25	70.66	Safe
10	NINDORA	9488.80	467.57	9956.37	717.96	1861.57	82.50	Safe
11	PUREDALAI	4530.80	245.53	4776.33	284.31	1522.23	75.37	Safe

S.No.	Blocks/ District	Existing Gross Ground Water Draft for Irrigation	Existing Gross Ground Water Draft for Domestic & Industrial Water Supply	Existing Gross Ground Water Draft for All Uses	Provision for Domestic and Industrial Requirement Supply for 2025	Net Ground Water Availability for future Irrigation development	Stage of Ground Water Development (%)	Category
12	RAM NAGAR	7667.20	378.28	8045.48	556.42	5600.12	58.20	Safe
13	RUDAULI	6600.00	588.35	7188.35	1161.38	1272.18	79.57	Safe
14	SIDDHAUR	8991.60	437.41	9429.01	623.24	3150.15	73.87	Safe
15	SIRAULI GAUSPUR	3900.00	335.16	4235.16	481.99	896.33	80.24	Safe
16	SURATGANJ	9948.00	394.09	10342.09	416.21	2952.93	77.66	Safe
17	TRIVEDIGANJ	6471.60	355.95	6827.55	472.93	3632.77	64.55	Safe
	TOTAL	125095.70	6891.02	131986.72	10202.89	56386.15	68.86	Safe

GROUND WATER DEVELOPMENT & MANAGEMENT:

The ground water in the area is being developed by borewells and dugwells. The blockwise details are as follows (Table-5):

Table-5

BLOCKWISE STATUS OF GROUND WATER STRUCTURES

Sl. No.	Name of Block	Govt. Tubewell	Permanent wells / masonry wells	Pumpsets			
				Electricity run	Diesel run	Others	Total
1.	Nindaura	52	0	107	9474	62	9643
2.	Fatehpur	18	17	602	8488	97	9187
3.	Suratganj	24	0	141	12562	97	12800
4.	Ramnagar	22	172	64	5583	38	5685
5.	Dewa	2	0	170	6386	38	6594
6.	Banki	8	0	98	5713	267	6078
7.	Harakh	11	0	68	5983	72	6123
8.	Masauli	6	0	246	5211	92	5549
9.	Sidhaur	12	24	323	7348	97	7768
10.	Triveiganj	0	0	138	5735	92	5965
11.	Haidargarh	2	0	228	3983	32	4243
12.	Daryabad	2	0	99	4769	143	5011
13.	Bari Kodar	9	164	207	5518	411	6136
14.	Pure Delai	15	89	48	2884	45	2977
15.	S Gauspur	19	0	29	7638	13	7680
	Total	202	466	2568	97275	1596	101439

The district has 202 tubewells, 466 permanent wells and 101439 pumpsets fitted on borwells / wells for irrigation purposes. These borewells are being used for withdrawing ground water for irrigation purposes. The stage of ground water development in different blocks varies from 52% to 82% for Dewa and Nindaura Blocks respectively.

V. GROUND WATER MANAGEMENT STRATEGY

- (i) The Barabanki district comprises alluvial areas. The majority of cultivation of the area are having small land holding. The fragmented nature of land holding is creating an hardship to an individual farmer to develop the ground water resources economically. Moreover there are rising & falling trend of water levels in different blocks. In view of it mass awareness programme should be taken up for conjunctive use of ground water at block/ levels. Canal water may be regulated through Pani Panchayat managed by farmer so as to implement the conjunctive use of surface & ground water effectively.
- (ii) Marginal farmers be given loaning at subsidized rate through financial institution for developing ground water abstraction structures. The cultivators should be educated regarding the availability of ground water resources.
- (iii) Most of the ground water abstraction structures are fitted with diesel pumpsets. The pumping cost is higher to these farmers. Power availability may be enhanced by taking up power projects in public sector or on built and operate system.
- (iv) The canal main branches / distributaries & minors should be lined to minimise the seepage in canal command areas. It will make availability of more water on tail ends.
- (v) Use of the ground water may be increased so as to reduce the areas prone to water logging especially where rising trend of water level is very conspicuous.
- (vi) Multiple cropping system (mainly cash crops) should be encouraged on the as the gross area sown in Jayad is very less. It will improve the economy of the farmers.

VI. AWARENESS & TRAINING ACTIVITY

Mass awareness programme and water management training programme by CGWB has not take place in the district so far.

VII. AREAS NOTIFIED BY CGWA/SGWA

None of the area has been notified in the district so far.

VIII. RECOMMENDATIONS

Barabanki district has 56386 ham of ground water availability for future irrigation. To increase the agricultural productivity the main requirement is that the ground water should be developed in a planned and scientific manner. The recommendations are as follows:

- (i) Ground water exploration programme may be taken up in the district to the depth of 1000 m. To depict and understand the subsurface geological configuration and optimum feasibility of development.
- (ii) The district is backward industrially. The water based industry may be promoted for utilising the resources in a planned manner.
- (iii) High yielding variety and use of improved technology be adopted to get maximum production per unit of water.
- (iv) Crops consuming more water may be planted in the water logged areas to combat the water logging prone areas.
- (v) National hydrograph stations optimisation may be taken up in the district and duplicate wells showing similar trends and wells very close to surface water bodies may be replaced and located at appropriate place.

INDEX MAP OF BARABANKI DISTRICT, U.P.

SCALE

km. 5 0 5 10 15 km.

Shallow		Deep	
61.69	-	203.85	-
30.36	387	112 - 135	1620
43.51		150-160	170-180

Shallow		Deep	
30	-		
16 - 22	417		
198.74			
60.7 - 70.5		710	
137.8 - 144.3			

200.00	-
95.111	-
117.133	-
157.105	-

700.00	-
62.78	-
96.100	-
126.146	-

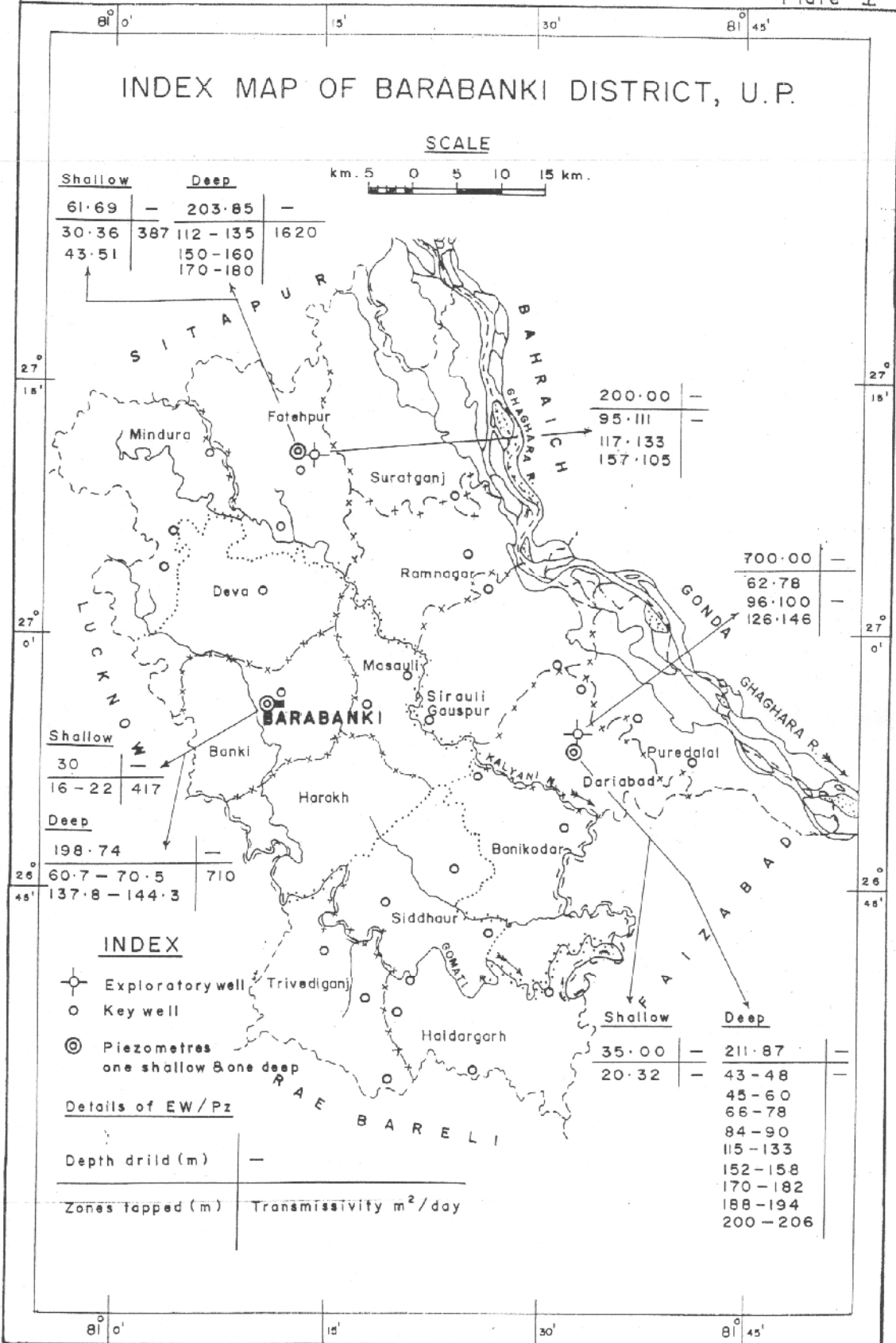
Shallow		Deep	
35.00	-	211.87	-
20.32	-	43-48	-
		45-60	
		66-78	
		84-90	
		115-133	
		152-158	
		170-182	
		188-194	
		200-206	

INDEX

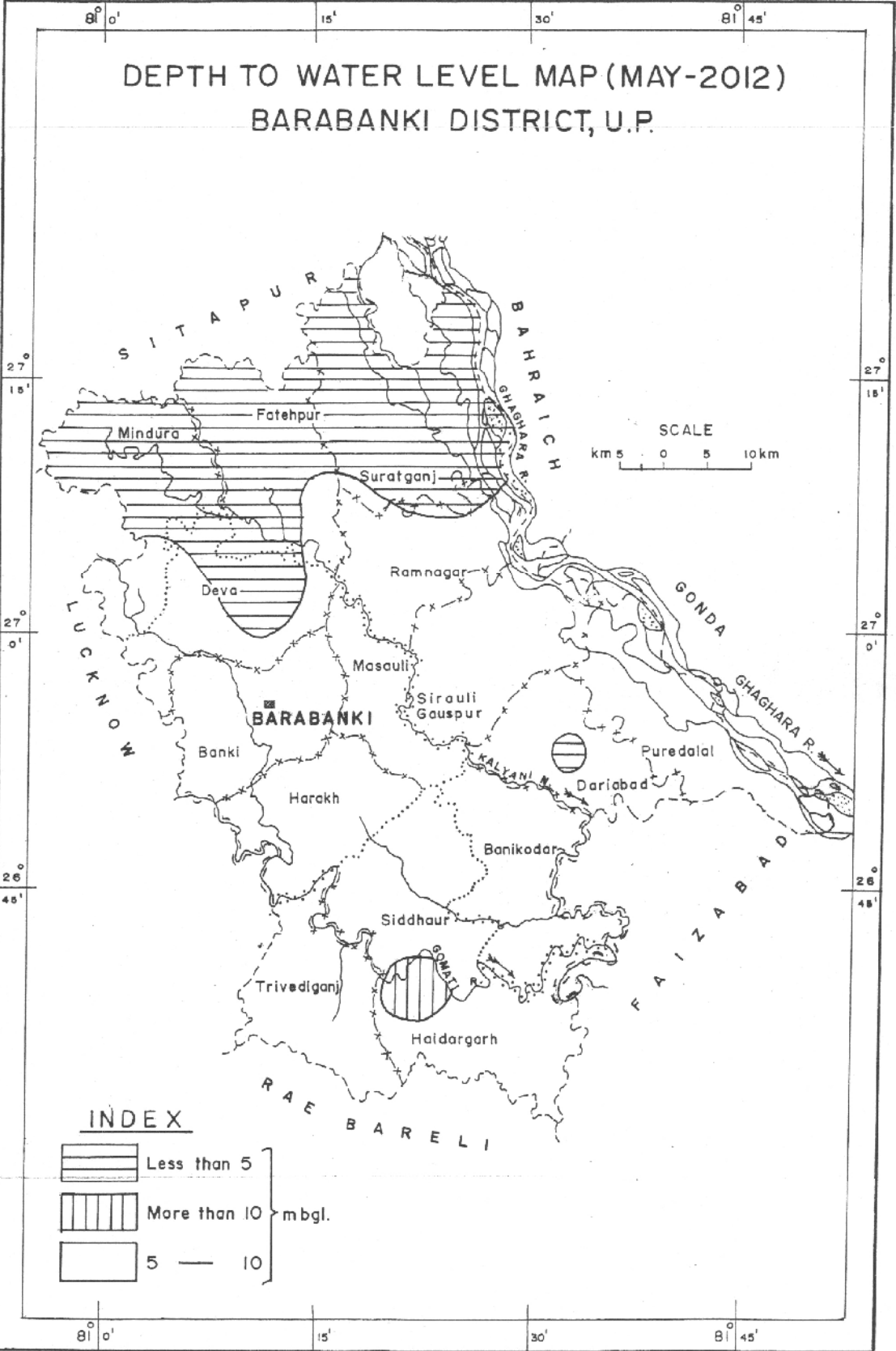
- ⊕ Exploratory well
- Key well
- ⊙ Piezometres one shallow & one deep

Details of EW/Pz

Depth drild (m)	-
Zones tapped (m)	Transmissivity m ² /day

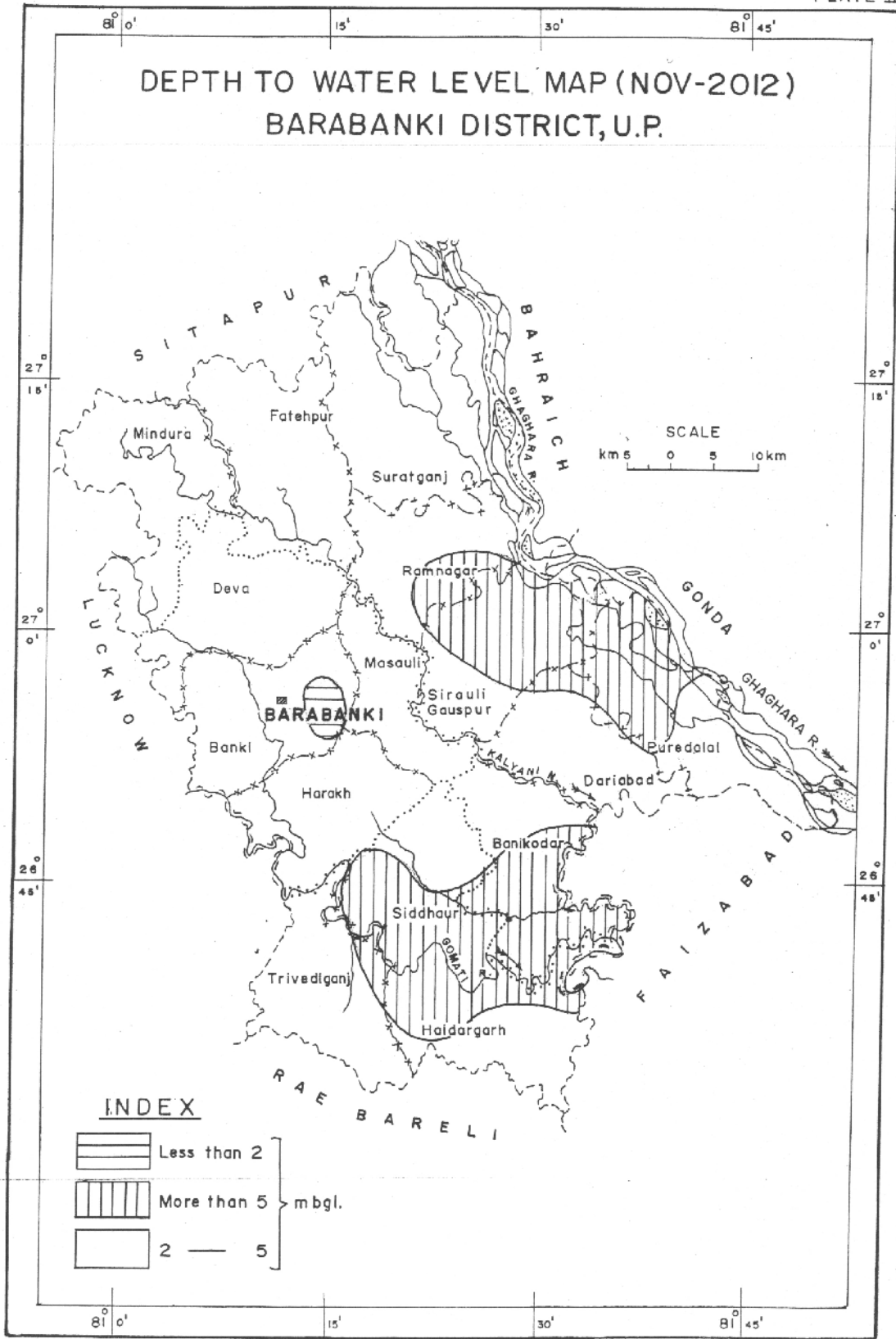


DEPTH TO WATER LEVEL MAP (MAY-2012) BARABANKI DISTRICT, U.P.

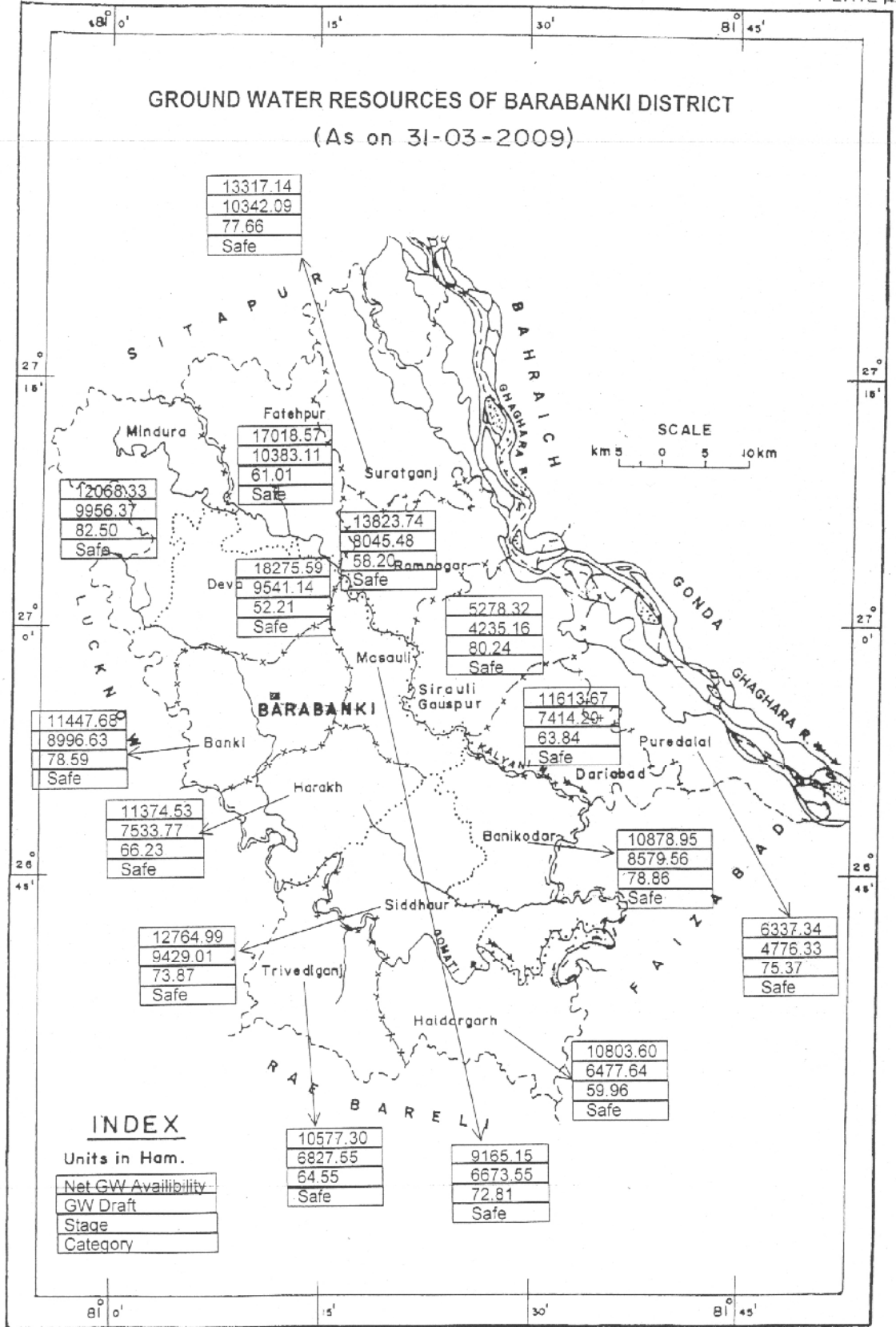


C.G.W.B.,NR,(RAKESH) Drg. No. 6839/99, (N.C.Pandey) Drg. No. 1863/13

DEPTH TO WATER LEVEL MAP (NOV-2012) BARABANKI DISTRICT, U.P.



C.G.W.B., NR, (RAKESH) Drg. No. 6839/99, (N.C. Pandey) Drg. No. 1864/13



C.G.W.B.,NR,(RAKESH) Drg. No. 6839/99 , 1867/13