

ATAL BHUJAL YOJANA (AtalJal)

State : HARYANA

**Department : IRRIGATION & WATER
RESOURCE DEPARTMENT**

BLOCK : RAJOUND

DISTRICT : KAITHAL

YEAR : 2023-2024

*Towards partial fulfilment of requirements for Disbursement of
Incentive under DLI -1*

HYDROGEOLOGICAL REPORT

(YEAR: 2023-24)

STATE	:	HARYANA
DISTRICT	:	KAITHAL
BLOCK/TALUK	:	RAJOUND
BLOCK/TALUK HQs	:	RAJOUND

A		GENERAL INFORMATION			
1.	Geographical area (Ha)	:	24489.9		
2.	No. of Gram Panchayats	:	21		
3.	No. of towns	:	1		
4.	No. of villages	:	23		
5.	Population (2022)	:	Male	Female	Total
			41288	37404	78692
6.	Rainfall (mm) (2022)	:	Monsoon	Non-monsoon	Annual
			523.77	194.06	717.83
7.	River basin	:	Upper Ghaggar Basin		
8.	Major soil types	:	Loamy sand (Tropical arid brown)		

B		LAND USE		
1.	Forest area (Ha)	:	52.53	
2.	Cultivable area (Ha)	:	17363.76	
3.	Net sown area (Ha)	:	16740.14	
4.	Gross cropped area (Ha)	:	35857	

C		CROPPING PATTERN (As in 2022-23)				
1.	Major crops grown	:	Kharif	Rabi	Summer	Perennial
			Paddy	Wheat	Moong	Sugar cane
			Jawar	Mustard	Maize	
			Seasonal vegetable	Potato & other seasonal vegetable		

D		IRRIGATION FACILITIES (As in 2022-23)					
1.	Net irrigated area (Ha)	:	16740.14				
2.	Gross irrigated area (Ha)	:	30668				
3.	Area under irrigation (Ha) (Source-wise)	:	DW	BW/TW	Tanks/Ponds	Canals	Others
			0	23578		7090	0

E		GEOLOGY & HYDROGEOLOGY		
1.	Predominant rocktype	:	Brown Silt, Clay and Sand with Kankar	
2.	Major geological formations	:	Older Alluvium	
3.	Important water-bearing formations	:	Sand	
4.	Status of coverage under NAQUIM	:	Covered.	

F		GROUND WATER CONDITIONS		
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1.	No. of wells used for WaterLevel (WL) monitoring.	:	Open wells			BW/TW/ PZ		
			CGWB	SGWB	Total	CGWB	SGWB	Total
			0	12	12	2	8	10
2.	Monitoring mechanism (Nos.)	:	Manual		DWLR		Telemetry	
			CGWB	SGWB	CGWB	SGWB	CGWB	SGWB
			2	16	0	4	0	4
3.	Monitoring frequency	:	Agency	No. of times monitored/year				
			CGWB	2 times/year Pre and Post Monsoon				
			SGWB	2 times/year Pre and Post Monsoon				
4.	Period of water level data availability.	:	Agency	Period of WL data availability (From - To)				
				From (year)		To (year)		
			CGWB	2015		2023		
			SGWB	2015		2023		
5.	Water level range (m.bgl)	:	Minimum/Village			Maximum/Village		
	Pre-monsoon (2023)		13.8 (Taragarh)			22.1 (Mandwal)		
	Post-monsoon (2023)		14.1 (Kasaan)			20.3 (Mandwal)		
6.	Seasonal WL fluctuation range (m)	:	Minimum/ Village			Maximum/ Village		
			-1.8 (Mandwal)			2.2 (Majra Rohera)		

G GROUND WATER QUALITY								
1.	No. of wells used for Water Quality (WQ) monitoring.		Open Wells			BW/TW/ PZ		
			CGWB	SGWB	Total	CGWB	SGWB	Total
			0	12	12	1	8	9
2.	Monitoring frequency		Agency	No. of times monitored/year				
			CGWB	1 time per year				
			SGWB	1 time per year				
3.	Period of water quality data availability		Agency	Period of WQ data availability (Years)				
			CGWB	2015-2023				
			SGWB	2020 to 2022				
4.	Parameters analysed		Agency	Parameters Analysed				
			CGWB	pH, EC, TH, Ca, Mg, Na, K, CO ₃ , HCO ₃ , SO ₄ , Cl, F, NO ₃				
			SGWB	EC				
			SGWB New	pH, EC, TDS, TH, Ca, Mg, Na, K, CO ₃ , HCO ₃ , SO ₄ , Cl, F, NO ₃				
5.	Known ground water quality issues, if any		As such there is no ground water problem in Rajound Block					

H. GROUND WATER RESOURCES							
1.	Latest assessment year	2022					
2.	Assessment Unit	Block					
3.	Annual extractable GW resource (ha.m)	4413.85					
4.	Current annual GW extraction (ha.m)	8248.59					
5.	Net GW availability for future use (ha.m)	0					
6.	Stage of GW extraction (%)	186.88%					
7.	Category of block/taluk (2022)	Over Exploited					
8.	Category of block/taluk/ in previous assessments	2020	2017	2013	2011	2009	2004
		Over Exploited	Over Exploited	Over Exploited	Over Exploited	Over Exploited	Over Exploited

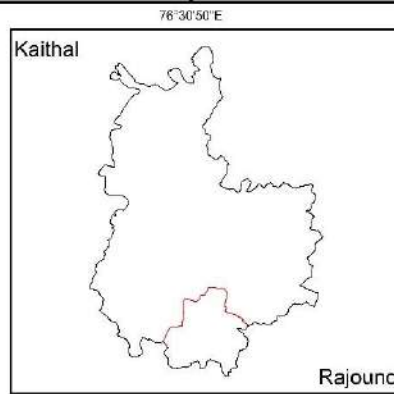
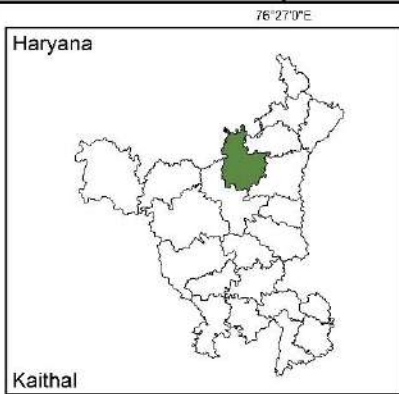
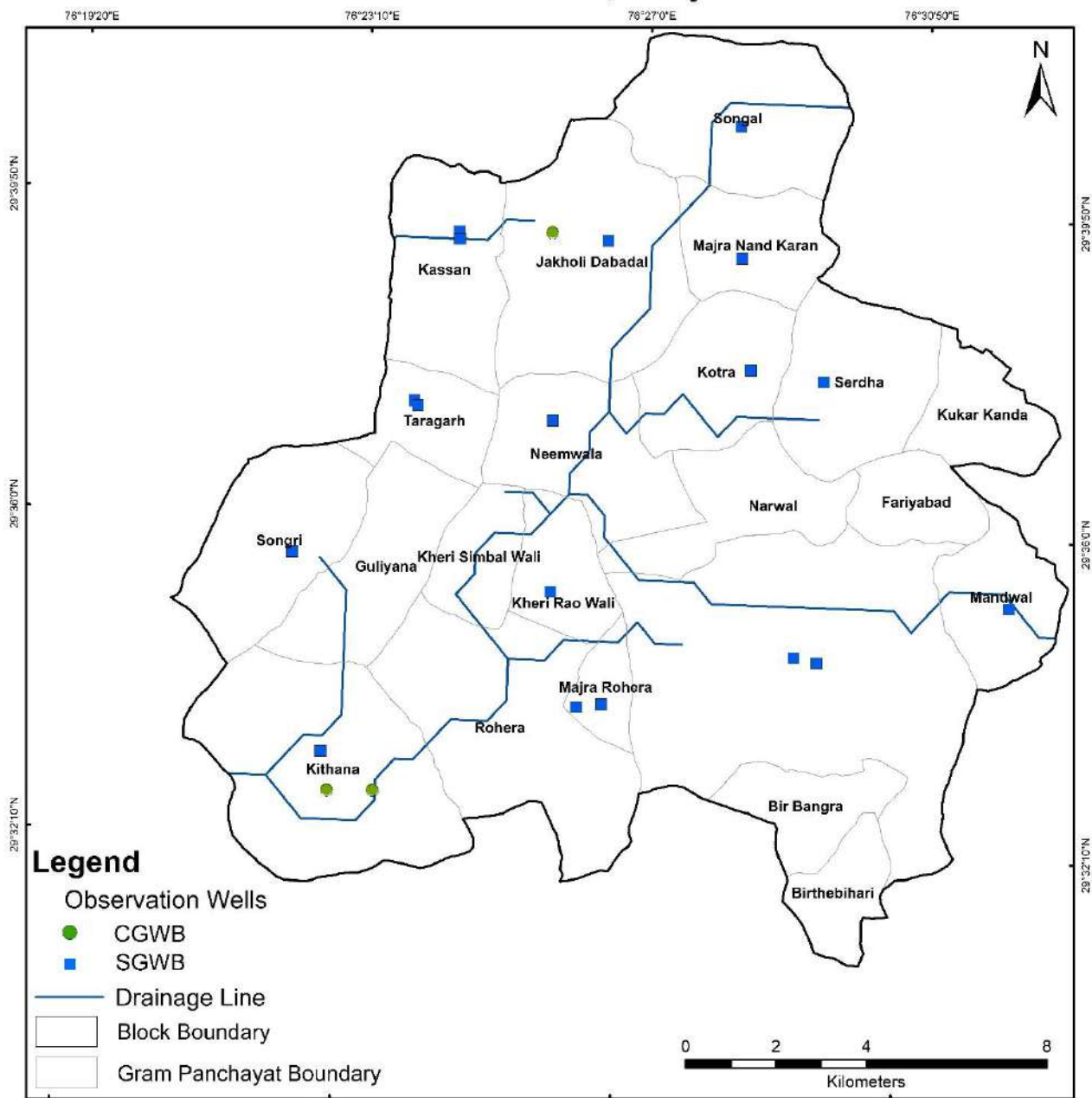
I WATER-RELATED SCHEMES							
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1.	Schemes with a bearing on ground water, being implemented in the block / taluk.		
	Centrally Sponsored /Central Sector Schemes	i)	PMKSY
		ii)	JJM
		iii)	MGNREGA
		iv)	RKVY
	State Schemes	i)	State Plan Scheme (Head 2402)
		ii)	MPMV
		iii)	
		iv)	

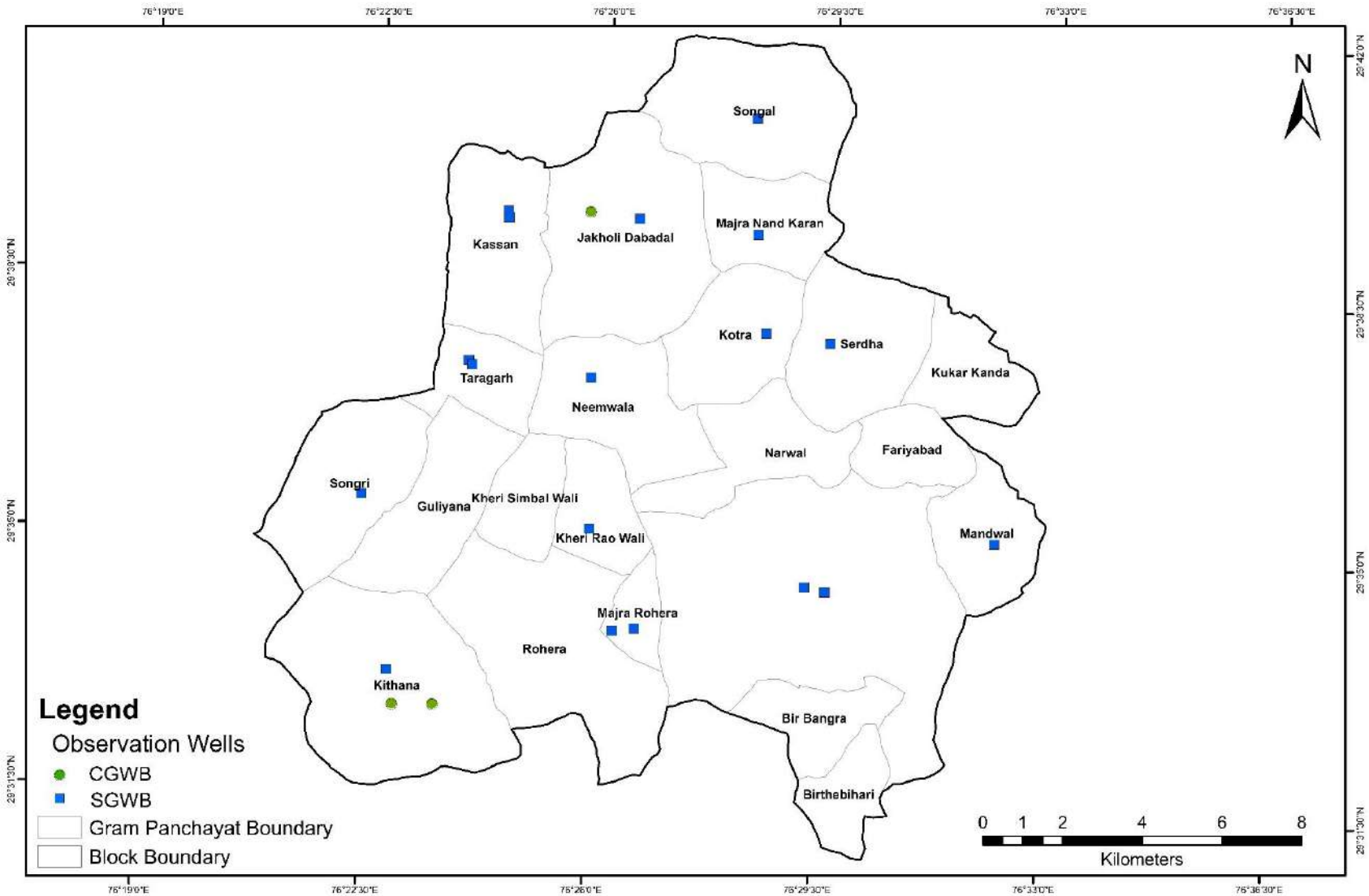
J	GROUND WATER RELATED ISSUES		
1.	Ground water related issues of the block/		
	i) Issues related to GW availability	:	Due to over exploitation groundwater is depleting at higher rates in the block. Significantly large number of shallow tube wells exists in the block.
	ii) Issues related to GW quality	:	The fluoride concentration is found to be higher than the permissible limit at Rajound. Marginal to saline ground water occur in shallow zones in part of Rajound block. In general, deeper zone in Rajound block contains brackish to saline ground water.
	iii) Other issues if any.	:	No

K	ANNEXURES
I	Basic data of observation wells – Attached
II.	Historical water level data – Attached
III.	Historical water quality data – Attached

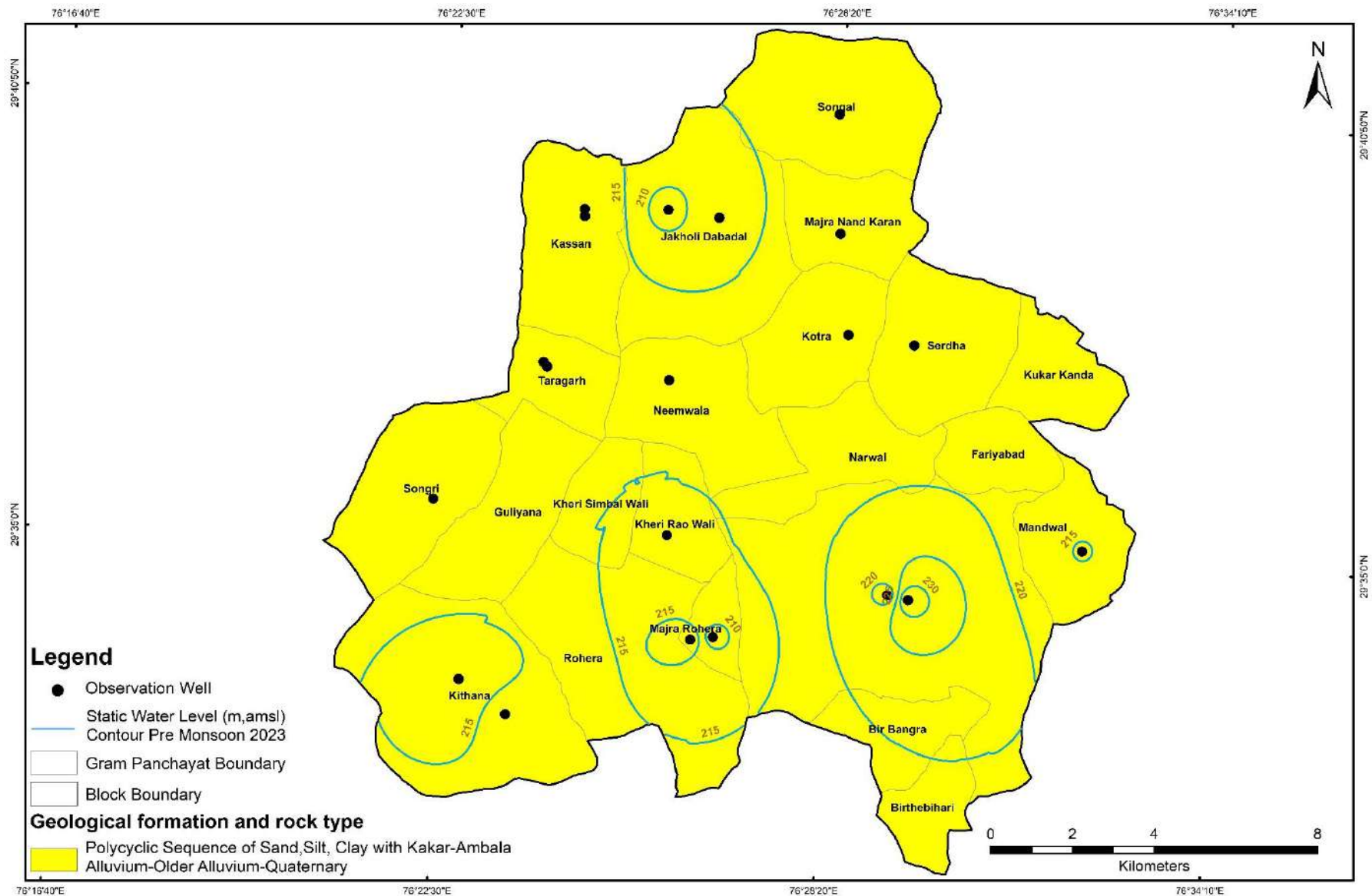
Location Map of Block- Rajound, District- Kaithal, Haryana



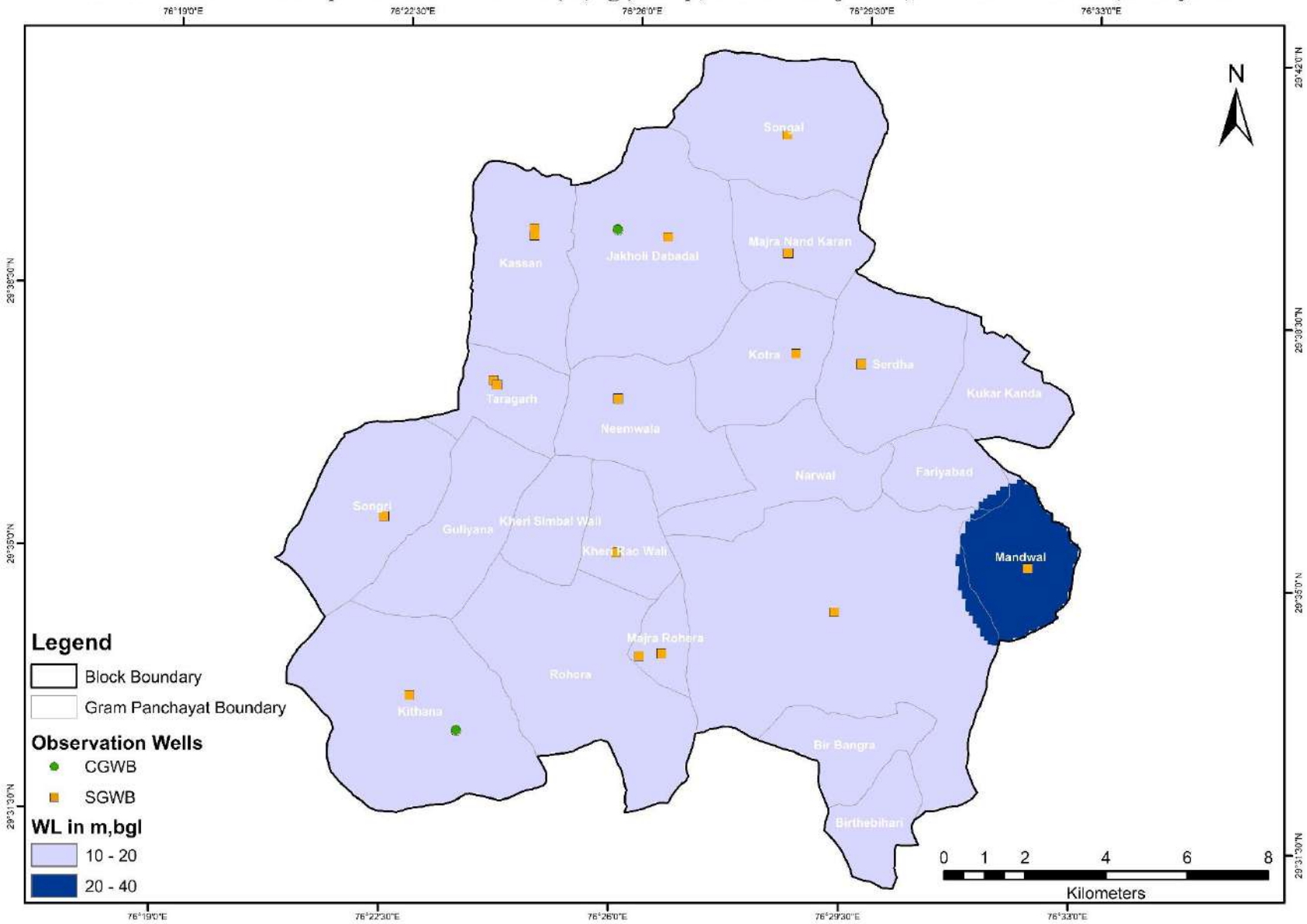
Location of Observation Wells for Monitoring Water Levels and Water Quality, Block-Rajound, District- Kaithal, Haryana



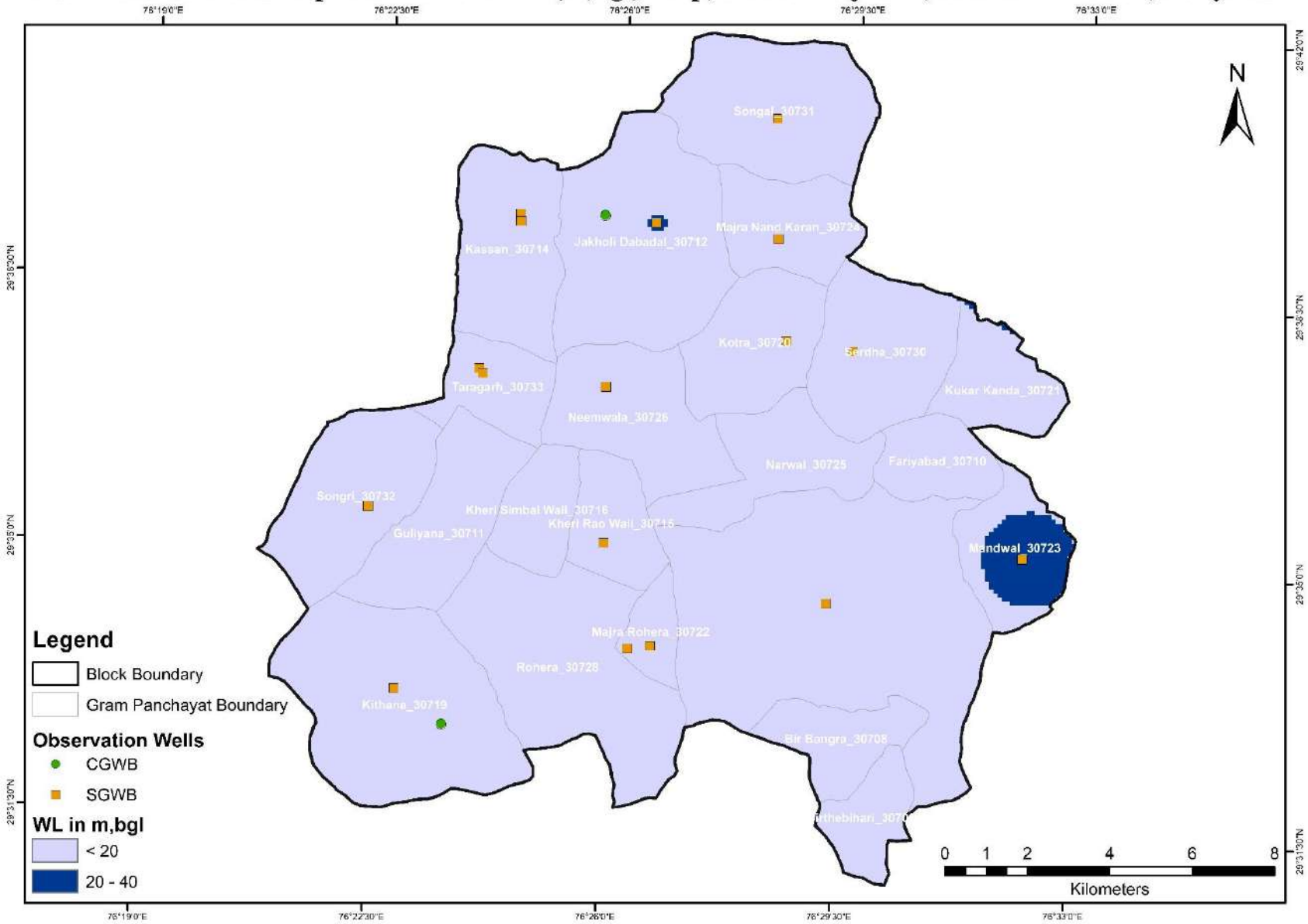
Hydrogeological Map, Block- Rajound, District- Kaithal, Haryana



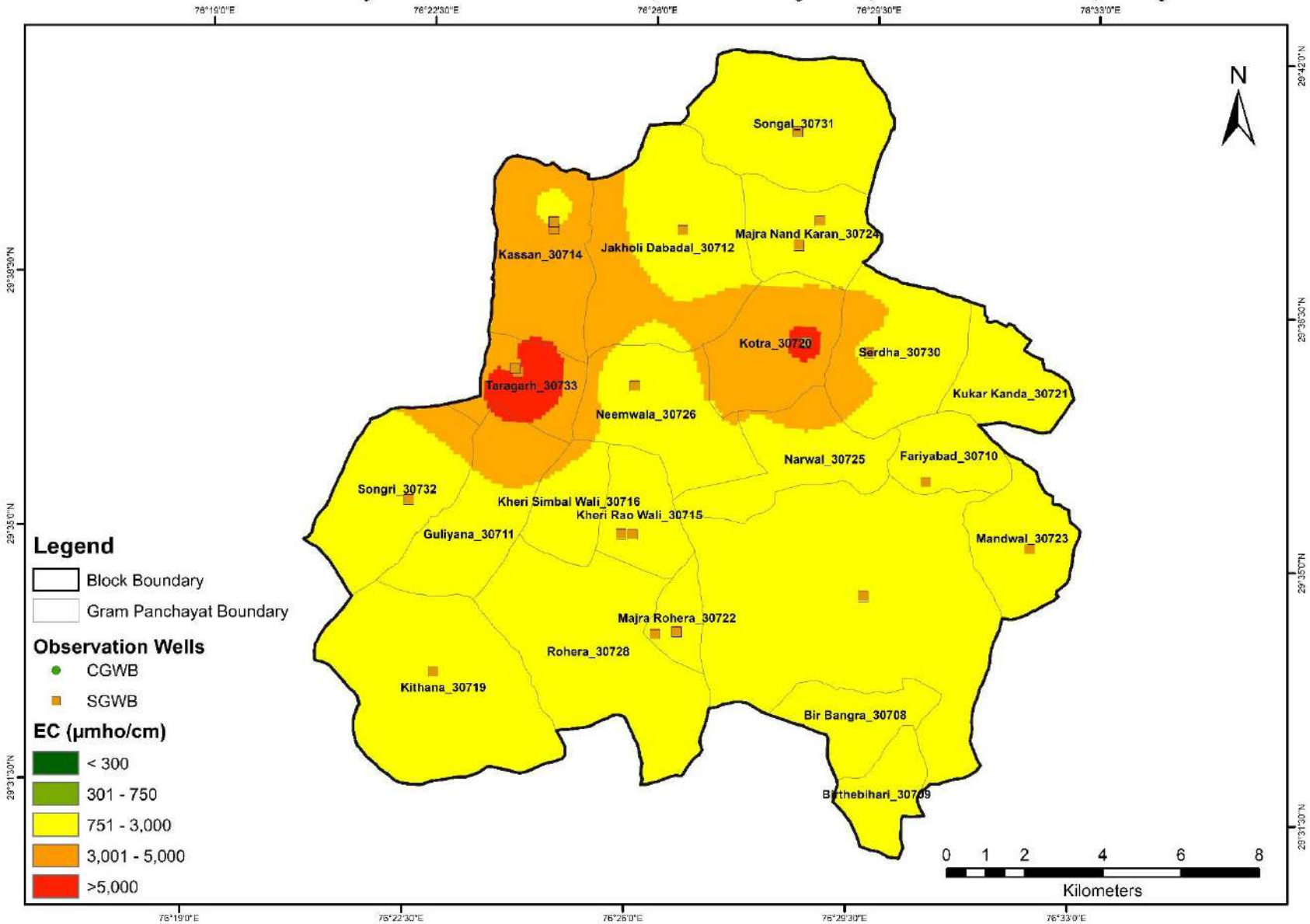
Pre Monsoon 2023 Depth to Water Level (m,bgl) Map, Block - Rajound, District - Kaithal, Haryana



Post Monsoon 2023 Depth to Water Level (m,bgl) Map, Block - Rajound, District - Kaithal, Haryana



Electrical Conductivity of Groundwater-2023, Block - Rajound, District - Kaithal, Haryana



ANNEXURE: 1
BASIC DATA OF MONITORING WELLS

State	Haryana					District	Kaithal			Block	Rajound				
S.No	Well ID	GP Name	Name of the village	Site Name	Latitude	Longitude	Type of Well (DW/Pz)	Reduced Level (m,asl)	Aquifer Type/Lithology	Height of Measuring (m,agl)	Depth (m,bgl)	Diameter (m)	Purpose of Monitoring (WL/WQ)	Monitoring Mechanism	Agency
1	Ja_29.657_7 6.442	Jakholi Dabadal_3 0712	Jakhouli	Panchayati	29.65701	76.44211	DW	232.76	Unconfined and Confined	1.25	24.5	2	Both	Manual	SGWB
2	Ka_29.658_7 6.408	Kassan_30 714	Kasaan	Panchayati	29.65775	76.40812	DW	232.28	Unconfined and Confined	1.25	19	2	Both	Manual	SGWB
3	Kh_29.587_7 6.432	Kheri Rao Wali_3071 5	Kheri Raowali	Panchayati	29.58664	76.43201	DW	229.5	Unconfined and Confined	1.25	21.5	2	Both	Manual	SGWB
4	Ki_29.621_7 6.431	Neemwala _30726	Kichana	Panchayati	29.62078	76.43107	DW	232.21	Unconfined and Confined	1.25	19.5	2	Both	Manual	SGWB
5	Ki_29.553_7 6.381	Kithana_30 719	Kithana	Panchayati	29.55315	76.38103	DW	228.3	Unconfined and Confined	1.25	22.5	2	Both	Manual	SGWB
6	Ma_29.587_7 6.537	Mandwal_30 723	Mandwal	Panchayati	29.5866	76.53671	DW	234.6	Unconfined and Confined	1.25	25.5	2	Both	Manual	SGWB
7	N_29.654_7 6.473	Majra Nand Karan_307 24	N.K.Majra	Panchayati	29.6545	76.47279	DW	235.6	Unconfined and Confined	1.25	26	2	Both	Manual	SGWB

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8	Ra_29.574_7 6.493	Rajaund	Rajaund (Chocked)	In BDPO Office	29.57439	76.49337	TW	NA	Unconfined and Confined	0.7	20	0.254	Both	Manual	SGWB
9	Ro_29.565_7 6.445	Majra Rohera_30 722	Rohera	Panchay ati	29.56456	76.44462	DW	226.15	Unconfined and Confined	1.25	23	2	Both	Manual	SGWB
10	Se_29.631_7 6.492	Serdha_307 30	Serdha	Panchay ati	29.63052	76.49245	DW	234	Unconfined and Confined	1.25	24	2	Both	Manual	SGWB
11	So_29.681_7 6.471	Songal_307 31	Songal	Panchay ati	29.68077	76.4714	DW	233.98	Unconfined and Confined	1.25	23.5	2	Both	Manual	SGWB
12	So_29.593_7 6.373	Songri_307 32	Songri	Panchay ati	29.59264	76.37283	DW	229.58	Unconfined and Confined	1.25	21.5	2	Both	Manual	SGWB
13	Ta_29.624_7 6.399	Taragarh_3 0735	Taragarh	Panchay ati	29.62372	76.39926	DW	231.7	Unconfined and Confined	1.25	19	2	Both	Manual	SGWB
14	W29393007 6254501	Jakholi Dabadal_3 0712	Jakhauli	Jakhauli- Pz	29.66083	76.42917	PZ	223	Unconfined to Semi Confined	0.6	100	152mm	WL	Manual	CGW B
15	Ra_29.574_7 6.493	Rajaund	Rajaund	In BDPO Office	29.575	76.488	TW	222.52	Unconfined and Confined	0.7	100	0.254	Both	Manual	SGWB
16	HR_GW_36 9	Kassan_30 714	KASSAN	Govt. Primary School	29.65622	76.40824	PZ	233	Semi Confined to Confined	0.5	60	0.1	Both	Telemetr y	SGWB
17	HR_GW_37 2	Kotra_307 20	KOTRA	Govt. Primary School	29.63228	76.47577	PZ	235	Semi Confined to Confined	0.5	75	0.1	Both	Telemetr y	SGWB

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18	HR_GW_37 5	Majra Rohera_30 722	MAJRA ROHERA	Govt. Primary School	29.56382	76.43893	PZ	234	Semi Confined to Confined	0.5	75	0.1	Both	Telemetr y	SGWB
19	HR_GW_38 2	Taragarh_3 0733	TARAGA RH	Govt. Primary School Taragarh	29.62274	76.40019	PZ	234	Semi Confined to Confined	0.5	60	0.1	Both	Telemetr y	SGWB
20	W29324507 6233501	Kithana_30 719	Kathana	Kathana -Pz	29.5458	76.3931	PZ	234	Unconfined to Semi Confined	0.5	102	0.1	WL	Manual	CGW B
21	W29324507 6233501	Kithana	Kithana	Kithana	29.63	76.38778	Tube Well	223	Alluvium	0.6	NA	1.5	WQ	Manual	CGW B

ANNEXURE: 2
HISTORICAL WATER LEVEL (WL) DATA OF MONITORING WELLS

State	Haryana	District	Kaithal	Block	Rajaund
Month of Pre-monsoon Water Level Measurement					June
Month of Post-monsoon water Level measurement					October

S.No.	Observation Point	Source	Well Types	Co-ordinate		Water Level (m)																	
				Latitude	Longitude	2015		2016		2017		2018		2019		2020		2021		2022		2023	
						Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Jakholi Dabadal_30712	SGWB	Dug Well	29.65701	76.44211	13.9	14.9	15.8	16.4	17.0	16.9	17.8	17.8	19.8	19.4	19.9	21.1	19.5	19.7	19.5	20.0	18.4	20.2
2	Kassan_30714	SGWB	Dug Well	29.65775	76.40812	11.5	12.0	13.5	14.5	14.0	13.8	14.6	15.4	15.5	16.1	16.4	17.1	15.5	15.7	15.0	15.8	14.9	14.1
3	Kheri Rao Wali_30715	SGWB	Dug Well	29.58664	76.43201	11.8	12.7	12.5	13.1	13.9	13.9	13.3	14.2	15.0	16.9	15.6	16.5	17.0	16.9	16.0	16.1	16.6	17.2
4	Neemwala_30726	SGWB	Dug Well	29.62078	76.43107	11.9	12.6	13.9	15.1	16.1	17.3	16.9	17.8	18.8	17.8	17.6	18.1	16.6	16.5	16.1	16.4	15.3	16.4
5	Kithana_30719	SGWB	Dug Well	29.55315	76.38103	15.9	16.1	17.1	17.1	17.5	17.5	18.6	18.4	19.0	17.7	18.3	19.0	19.2	18.4	18.3	17.8	17.6	18.4
6	Mandwal_30723	SGWB	Dug Well	29.58666	76.53671	16.3	17.8	18.3	19.3	19.6	19.7	20.4	21.3	21.8	20.3	22.1	21.8	22.3	22.0	22.0	23.7	22.1	20.3
7	Majra Nand Karan_30724	SGWB	Dug Well	29.6545	76.47279	14.8	15.9	16.1	17.6	16.9	17.1	17.9	18.3	18.0	18.8	18.5	19.3	18.5	18.8	17.9	18.7	18.0	19.3
8	Rajaund (Chocked)	SGWB	Tube Well	29.57439	76.49337	14.1	14.7	15.8	16.3	16.6	16.6	17.5	18.5	17.2	16.8	17.0	17.8	16.5	16.4	16.3	NA	NA	NA
9	Majra Rohera_30722	SGWB	Dug Well	29.56456	76.44462	13.9	15.0	15.5	15.9	15.9	16.2	17.3	16.9	17.1	16.9	18.2	18.9	18.3	18.6	18.1	19.6	17.9	19.1
10	Serdha_30730	SGWB	Dug Well	29.63052	76.49245	15.5	16.0	17.4	18.9	18.6	19.2	20.1	19.7	19.5	20.1	20.0	20.6	20.4	20.5	19.9	20.2	19.1	19.1
11	Songal_30731	SGWB	Dug Well	29.68077	76.4714	13.6	14.8	15.5	16.5	15.9	15.8	16.5	17.5	17.6	19.0	18.4	19.2	18.3	18.6	17.8	19.2	17.4	18.2

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12	Songri_30732	SGWB	Dug Well	29.59264	76.37283	13.8	14.0	15.8	16.8	16.6	17.1	18.2	17.4	17.7	17.9	16.5	17.3	16.5	15.6	15.5	16.7	15.5	16.9	
13	Taragarh_30735	SGWB	Dug Well	29.62372	76.39926	12.9	12.2	13.5	14.6	14.0	13.9	14.7	14.5	15.9	17.9	16.7	17.3	16.0	15.2	15.1	14.3	14.8	16.0	
14	Jakholi Dabadal_30712	CGWB	Piezometer	29.66083	76.42917	11.5	12.8	12.8	13.7	13.3	13.8	13.8	14.1	14.0	15.5	14.9	16.0	14.7	15.4	19.5	15.5	15.4	16.7	
15	Rajaund	SGWB	Tube Well	29.57528	76.48806	14.1	14.7	15.8	16.3	16.6	16.6	17.5	18.5	17.2	16.8	17.0	17.8	16.5	16.4	16.3	18.0	16.2	17.7	
16	Kassan_30714	SGWB	Piezometer	29.65622	76.40824	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.3	14.1
17	Kotra_30720	SGWB	Piezometer	29.63228	76.47577	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17.3	16.2
18	Majra Rohera_30722	SGWB	Piezometer	29.56382	76.43893	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.7	18.9
19	Taragarh_30733	SGWB	Piezometer	29.62274	76.40019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.8	15.4
20	Kithana_30719	CGWB	Piezometer	29.5458	76.3931	14.3	15.3	15.4	16.1	16.4	16.5	16.9	16.1	16.0	17.7	17.1	17.5	17.4	16.5	16.3	15.5	15.6	16.7	

ANNEXURE: 3
HISTORICAL WATER QUALITY (WQ) DATA OF MONITORING WELLS

State	Haryana	District	Kaithal	Block	Rajound
Month of Collection of samples for WQ monitoring*					June

Village	Source	Type of well	Latitude	Longitude	Year	pH	EC	TDS	TH	Ca	Mg	Na	K	CO ₃	HCO ₃	SO ₄	Cl	F	NO ₃
Kithana	CGWB	Tw	29.63	76.38777778	2015	8.45	3930	ND	698.0	33.0	150.0	571.0	90.0	23.0	190.4	720.0	633.0	1.75	201.00
Kithana	CGWB	Tw	29.63	76.38777778	2016	8.6	2936	ND	498.0	61.0	79.0	450.0	4.0	36.0	227.0	80.0	800.0	3.20	4.51
Kithana	CGWB	Tw	29.63	76.38777778	2017	7.7	8150	ND	1721.0	273.0	253.0	868.0	18.0	0.0	293.0	1208.0	1503.0	BDL	15.00
Kithana	CGWB	Tw	29.63	76.38777778	2018	7.88	2840	ND	540.0	16.0	121.0	450.0	15.0	0.0	537.0	534.0	355.0	1.31	46.00
Kithana	CGWB	Tw	29.63	76.38777778	2019	8.8	1987	ND	160.0	12.0	32.0	388.0	9.0	72.0	403.0	162.0	255.0	2.75	19.00
Kithana	CGWB	Tw	29.63	76.38777778	2020	8.97	5170	ND	671.0	36.0	141.0	884.0	14.0	252.0	793.0	126.0	978.0	1.41	15.00
Kithana	CGWB	Tw	29.63	76.38777778	2021	8.51	4876	ND	745.2	43.9	154.5	779.0	7.0	48.0	153.7	968.0	833.1	0.30	30.00
Kithana	CGWB	Tw	29.63	76.38777778	2022	8.02	5420	ND	798.0	48.0	164.8	884.0	6.7	0.0	183.0	1234.0	867.0	0.23	28.00
Kithana	CGWB	Tw	29.63	76.38777778	2023	8.07	1650	ND	260.0	44.0	36.5	255.0	8.8	0.0	524.6	192.0	120.7	1.10	1.51
Taragarh_30733	SGWB	Pz	29.622737	76.400186	2023	8.04	11330	6242.8	898.96	248.1	67.79	1800	195	0	99.8	195.38	4496.2	3.31	108.61
Kassan_30714	SGWB	Pz	29.656215	76.408238	2023	8.19	4840	2911.4	419.24	115.7	30.58	840	90	0	46.9	91.1	2096.9	2.47	50.65
Kotra_30720	SGWB	Pz	29.63228	76.475773	2023	8.26	5480	3703.5	533.3	147.2	39.88	1065	115	0	59	115.82	2667.8	2.97	64.43
Majra Rohera_30722	SGWB	Pz	29.563817	76.438933	2023	8.37	1227	778.7	334.84	93.4	25.26	145	25	0	291.5	38.13	258.9	1.68	28.8

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Name of District	Name of Block	Source	Name of village/ OW data	Latitude	Longitude	Value of EC June 2020	Value of EC June-2021	Value of EC June-2022	Value of EC June- 2023
Kaithal_66	Rajound_509	SGWB	Jakhouli	29.657	76.4421	1700	1200	2300	2400
Kaithal_66	Rajound_509	SGWB	Kichana	29.6208	76.4311	1950	1200	2100	1900
Kaithal_66	Rajound_509	SGWB	Kasaan	29.6578	76.4081	2500	1500	1700	1700
Kaithal_66	Rajound_509	SGWB	Kithana	29.5531	76.381	1250	1300	1400	1800
Kaithal_66	Rajound_509	SGWB	Mandwal	29.5866	76.5367	1650	3700	2500	2100
Kaithal_66	Rajound_509	SGWB	N.K.Majra	29.6545	76.4728	1950	2400	2200	2200
Kaithal_66	Rajound_509	SGWB	Rohera	29.5646	76.4446	2050	1000	1200	1900
Kaithal_66	Rajound_509	SGWB	Songri	29.5926	76.3728	1050	1400	1000	1200
Kaithal_66	Rajound_509	SGWB	Serdha	29.6305	76.4924	1750	2300	2800	2900
Kaithal_66	Rajound_509	SGWB	Songal	29.6808	76.4714	2500	1400	1800	1800
Kaithal_66	Rajound_509	SGWB	Taragarh	29.6237	76.3993	850	1000	900	1600
Kaithal_66	Rajound_509	SGWB	Rajaund	29.5744	76.4934	1100	1100	1300	1500
Kaithal_66	Rajound_509	SGWB	KheriRaowali	29.5866	76.432	850	1000	1200	1500
Kaithal_66	Rajound_509	SGWB	Taragarh_30733	29.62274	76.400186	NA	NA	NA	11330
Kaithal_66	Rajound_509	SGWB	Kassan_30714	29.65622	76.408238	NA	NA	NA	4840
Kaithal_66	Rajound_509	SGWB	Kotra_30720	29.63228	76.475773	NA	NA	NA	5480

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Kaithal_66	Rajound_509	SGWB	Majra Rohera_30722	29.56382	76.438933	NA	NA	NA	1227
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