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विभाग, जल शक्ति मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River Development and Ganga Rejuvenation,

Ministry of Jal Shakti

Government of India

AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES

RAJSAMAND DISTRICT
RAJASTHAN

पश्चिमी क्षेत्र, जयपुर

Western Region, Jaipur

Government of India

Ministry of Jal Shakti

Central Ground Water Board

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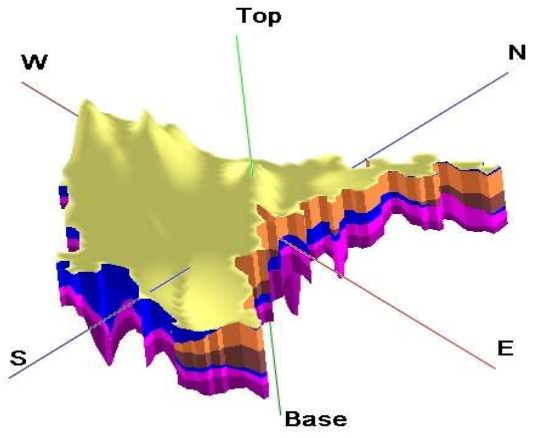
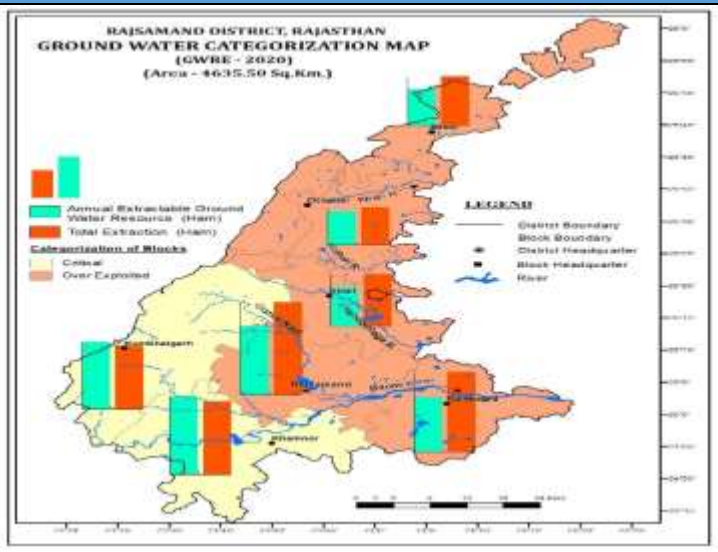
AQUIFER MAPPING AND GROUNDWATER MANAGEMENT PLAN RAJSAMAND DISTRICT, RAJASTHAN





पश्चिमी क्षेत्र, जयपुर

Western Region, Jaipur

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जल शक्ति मंत्रालय, जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

भारत सरकार सरकार

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Report on

AQUIFER MAPPING AND GROUND WATER MANAGEMENT PLAN

RAJSAMAND DISTRICT, RAJASTHAN

(4635.16 sq.km)

AAP 2021-22

पश्चिमी क्षेत्र, जयपुर

Western Region, Jaipur

जल है तो कल है, जल है तो जीवन है।

AQUIFER MAPPING AND MANAGEMENT PLAN
RAJSAMAND DISTRICT, RAJASTHAN
(4635.16 sq.km.)

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1. District at a Glance

Salient Information	District Name	Rajsamand	
	Longitude	73° 28′ 39″ to 74° 24′ 13″ East	
	Latitude	24° 42′ 59″ to 26° 01′ 32″ North	
	Geographical Area sq. km.	4635.16	
	Hilly Area (sq. km.)	1076.55	
	Population (2011)	1156597	
	Highest Elevation (m amsl)	1294	
	Lowest Elevation (m amsl)	376	
	General Elevation (m amsl)	500-625	
Climate	Average Temperature Range (°C) (Year 2020)	Maximum: 23° to 40° C	
		Minimum: 10° to 25° C	
Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	580.4	
	Mean Annual Rainfall (mm) (1991-2020)	612	
	Highest Annual Rainfall (mm) (1991-2020)	801.7 (1996)	
	Lowest Annual Rainfall (mm) (1991-2020)	185.6 (2002)	
	Standard Deviation (mm) (1991-2020)	191.6	
	Coefficient of Variation (%) (1991-2020)	32.2	
Drought Analysis (1991-2020)		**No. of Years of Drought**	**Frequency %**
	No Drought	16	53.33 %
	Mild (0 to -25%)	8	26.66 %
	Moderate (-25% to -50%)	5	16.6 %
	Severe (-50% to -75%)	1	3.33%
	Extreme (-75% to -100%)	-	-

Geomorphology	• Pediment, Buried Pediments and Intermontane Valley of Denudational Origin. • Alluvial Plain, Sandy Alluvial Plains, Flood Plain, Valley Fills and Ravines of Fluvial Origin. • Steep sided relict hills, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.	
Geology	• Alluvium consisting of Sand, Silt and Clay alternating beds of Recent to Sub-Recent age. • Delhi Super Group which consist of Calc-schist, Calc-gneisses and Quartzite which is exposed in the western boundary of the district. • Aravalli Super Group which consist of Phyllite, Mica Schist, Quartzite and Dolomitic Marble exposed in the southern part of the district encompassing Railmagra, Khamnor, Kumbhalgarh and Rajsamand blocks. • Bhilwara Super Group is divided into Mangalwar complex and Sandmata complex which consist of migmatite gneiss, Mica schist, Amphibolite, Granulites, Dolomitic Marble and Ultramafic rocks. This group is eastern and southeastern parts of the district covering Railmagra, Amet and Deogarh blocks.	
Drainage & Hydrology	Drainage **Basin/Sub-Basin**	Chambal, Banas, Berach, Gambhiri, Wagon, etc.
Land Use	Geographical Area (sq. km.)	4635.16
	Forest Area (sq. km.)	262.54
	Net Sown Area (sq. km.)	941.32
	Area sown more than once (sq. km.)	1408.50
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)	20.95
	Gross Irrigated Area by Ground Water (sq. km.)	447.26

	Gross Irrigated Area by all sources (sq. km.)		468.21	
Agriculture	Rain-fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	103.90	45.891	13.54
	Irrigated (sq. km.)	62.42	443.69	13.54
Hydrogeology				
Monitoring Stations (May 2021)	CGWB	27		
	SGWD	227		
	NAQUIM Key Wells	37		
Water Level Behavior		**Pre-Monsoon (May-2021)**	**Post-Monsoon (November-2021)**	
	Water Level (m bgl)	0.3 – 31.98	0.10 – 28.50	
	Water Level Trend (2011-2020)	**Pre-Monsoon**	**Post-Monsoon**	
	Rise	0.04 – 1.65	0.001 – 1.41	
	Fall	0.001 – 2.12	0.008 – 1.46	
Aquifer Disposition	Number of Aquifers (Major)	ONE		
	Number of Zones	TWO		
	I	Weathered Hard Rocks.		
	II	Compact Rocks with Isolated Fractures.		
Status of GW Exploration	**CGWB**	**GWD**		
	19 EW	70 EW		

Chemical Quality of Groundwater	**Electrical Conductivity µS/cm at 25°C**				410 - 13260
	pH				7.01 – 9.9
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable	17.24 %
			500 - 2000	Permissible	70.68 %
			> 2000	Undesirable	13.36 %
		Hardness	**Range (mg/l)**	**Class**	**% samples**
			0 – 75	Soft	0.0 %
			75 – 150	Moderately Hard	5.60 %
			150 – 300	Hard	39.65 %
			> 300	Very Hard	55.17 %
		NO_3 in mg/l	(> 45 mg/l) Permissible Limit		40.51 %
		F in mg/l	(> 1.5 mg/l) Permissible Limit		11.20 %
		U in µg/l	(> 30 µg/l) Permissible Limit		18.91 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**% Samples**
		Salinity Hazard	< 250	Excellent	0.0 %
			250 - 750	Good	10.86 %
			750 - 2250	Permissible	63.91 %
			2250 - 3000	Doubtful	11.30 %
			> 3000	Unsuitable	14.78 %
		SAR	< 10	Excellent	91.73 %
			10 - 18	Good	6.95 %
			18 - 26	Fair	0.86 %
			> 26	Unsuitable	-

		Na%	< 20	Excellent	1.30%
			20 - 40	Good	15.65 %
			40 - 60	Permissible	49.13%
			60 - 80	Doubtful	31.73 %
			> 80	Unsuitable	1.73 %
		Residual Sodium Carbonate (RSC)	< 1.25	Safe	90.0 %
			1.25 - 2.5	Marginal	3.47 %
			> 2.5	Unsuitable	6.08 %
Groundwater Issues	• District has more abstraction of the groundwater resources than its availability and is categorized as Over Exploited with stage of development being 118.94 %. • Frequent Droughts is one of the issues with the frequency being nearly 46 % in the last 30 years, i.e., every alternate year is a drought year. • Limited sub surface space available for storage of groundwater is a major issue as the entire district is covered up by the hard rock terrain with little or no alluvial cover. • Quality of Groundwater is also an issue in the district, as nearly 71.92 % of the samples examined falls into the Very Hard category of Total Hardness classes. F is also on the higher side in about 41.38 % of the samples.			
Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)				3540.09
	Total Annual Ground Water Recharge (mcm)				114.47
	Natural Discharge (mcm)				10.96
	Net Annual Ground Water Availability (mcm)				103.50
	Existing Gross Ground Water Draft for All uses (mcm)				123.11
	Net ground water availability for future irrigation Development (mcm)				4.78
	Stage of Ground Water Development %				118.94

	Category	OE
Supply Side Management	**Water Supply (mcm)**	
	Potential zone area (sq. km.)	3540.09
	Volume of Sub surface Storage Space available for Artificial Recharge (mcm)	227.37
	Surplus Surface water Availability (mcm)	13.85
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	75.56
	Water conserved in catchment area treatment (mcm)	2.22
	Water Conservation Structures	
	Mini Percolation Tanks	5336
	Percolation Tank	1051
	Pacca Check Dams	494
	Anicut	257
	Mini Storage Tanks	12
	Volume of Water expected to be conserved (mcm)	11.027
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	13.247
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.596
	No. of Farm Ponds	496
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for irrigation through Sprinkler (sq. km.)	111.81
	Water Saving by use of Sprinklers (mcm)	8.94
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop	85.77

	Water Saving by Change in Cropping Pattern	8.57
Expected Benefits	Net Ground Water Availability (mcm) 2020	103.50
	Additional GW resources available after Supply side interventions (mcm)	13.247
	Net Ground Water Availability after Supply side intervention (mcm)	111.244
	Existing Ground Water Draft for All Purposes (mcm)	123.117
	GW draft after Supply Side Interventions (mcm)	122.522
	GW draft after Demand Side Interventions (mcm)	105.00
	Present stage of Ground Water Development (%)	**118.94 %**
	Projected Stage of Ground Water Development after Supply Side interventions (%)	**110.138 %**
	Projected Stage of Ground Water Development after Demand Side interventions (%)	**94.38%**

2. Introduction

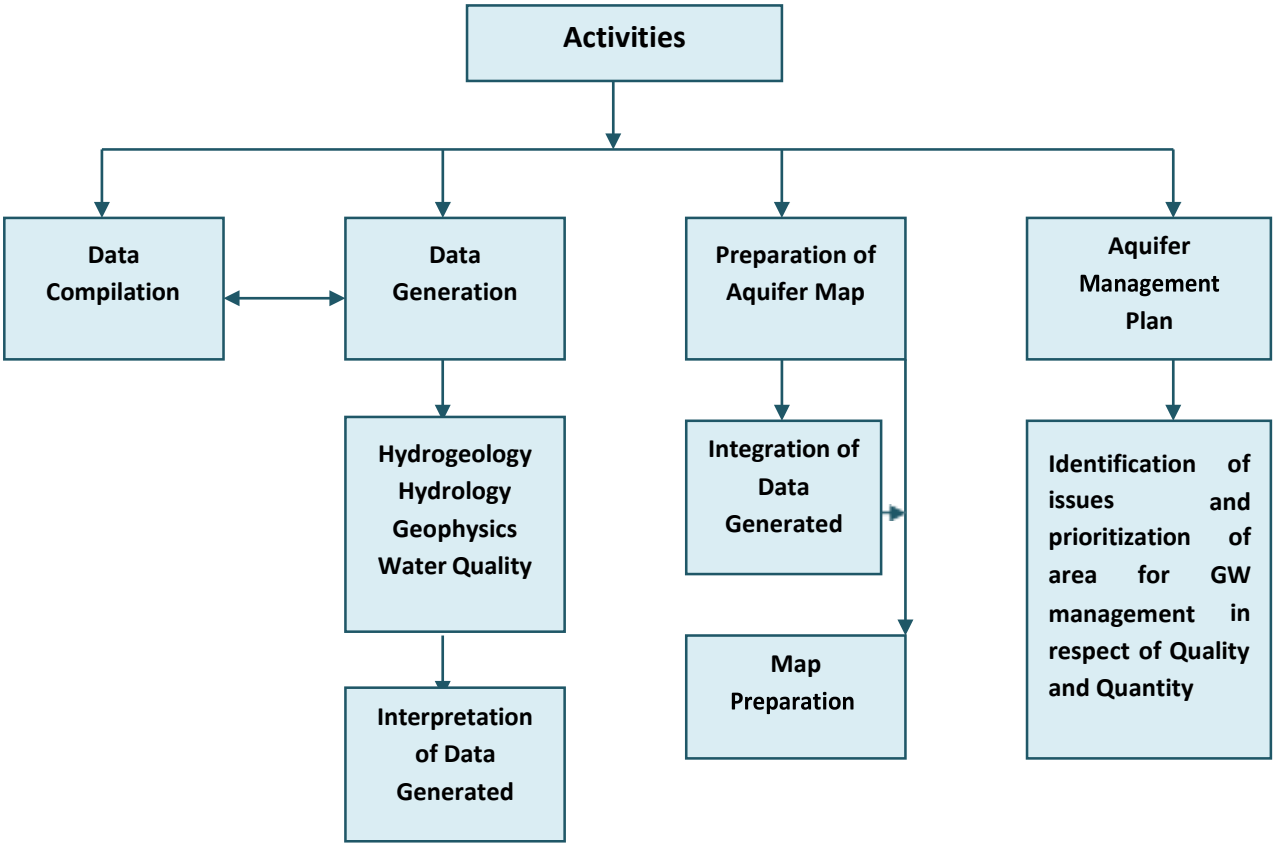
The utilization of groundwater for domestic, livestock and irrigation purposes has been constantly increasing in the arid districts of Rajasthan, especially because of the absence of perennial surface water sources over most part and a rapid growth of human and livestock population which are largely dependent on groundwater for their survival. Because of the increasing trend of groundwater exploitation, it has become necessary to assess the quantity and quality of usable water from different aquifer systems in the region. Groundwater is a precious natural water resource considered as a readily available and safe source of water for domestic, agriculture and industrial uses. Our growing dependability on ground water has started diminishing this resource. The most significant change in the groundwater scenario in India is that the share of bore well irrigation went up from a mere 1 percent during 1960-61 to 60 percent during 2006-07 as per Indian Agricultural Statistic, 2008. About 85% of the rural drinking water supply is also met from ground water sources. Thus, a need was felt for scientific management of groundwater resources and the need has turned to urgency in the present times. There has been a paradigm shift from groundwater development to groundwater management over the last decade. The importance of groundwater for national development has deemed it necessary to be more specific; more general "groundwater management" has become "aquifer management" to answer the specific queries on availability and sustainability. CGWB has taken up National Project on Aquifer Management (NAQUIM) in XII & XIII Plan period to formulate sustainable aquifer management plan.

2.1. Objective

The broad objective of the study is to establish the geometry of the underlying aquifer systems in horizontal and vertical domain and characterize them, so as to work out the development potential and prepare block wise management plan. It is envisaged to assess the aquifer wise availability, utilization and water quality, especially in problematic/vulnerable area. Finally, the aim of this study is to prepare block wise management plan to facilitate the suitable development and management of ground water resources.

2.2. Approach & Methodology

As mentioned above, aquifer mapping is an attempt to integrate the geological, Geophysical, hydrological and chemical field and laboratory analyses are applied to characterize the quality, quantity and sustainability of groundwater in aquifer. Under the National aquifer Program, it is proposed to generate Aquifer maps on 1:50000 scale, which basically aims at characterizing the aquifer geometry, behavior of groundwater levels and status of groundwater development invarious aquifer system to facilitate planning of their sustainable management. The major activities involved in this process include compilation of existing data, identification of data gaps, generation of data for feeling data gaps and preparation of different aquifer layers. Once the maps are prepared, plans for sustainable management of groundwater resources in the aquifers mapped shall be formulated and implemented though participatory approach involving all stakeholders.



2.3. Data Availability

Exercise on Groundwater availability, groundwater monitoring (water level and chemical quality) and exploration had been carried out by CGWB and State Ground Water Department. 27 and 227 number of National Hydrological Stations are being monitored by CGWB, Jaipur and State Groundwater Department, Rajsamand respectively. 19 No. of exploratory wells have been constructed by CGWB and 70 by SGWD (Table 1).

2.4. Data Adequacy

The data collected from State GWD and CGWB, WR, Jaipur have been compiled and analyzed. It has been observed that validation and geo-referencing of the location coordinates, lithologs and hydrogeological data is needed and State GWD data lacks in aquifer parameters. Geophysical data collected needs geo-referencing of the hydrogeological interpretations. It has been observed that available data are limited largely to State highways and main roads only. Hence, to get a clear 3D hydrogeological geometry of the aquifer system and its behavior, there is need to generate data by Groundwater Exploration and to establish more numbers of monitoring stations for better understanding of the groundwater regime behavior in terms of both quantity and quality.

Table 1: Existing Exploratory Data of Rajsamand District

Block	CGWB	GWD
Amet	**7**	**5**
Bhim	**1**	**9**
Deogarh	**3**	**10**
Khamnor	**1**	**17**
Kumbhalgarh	**3**	**9**
Railmagra	**2**	**9**
Rajsamand	**2**	**11**
District	**19**	**70**

Table 2: Depth wise Availability of EWs and PZs in Rajsamand District

Block	No. of EW and PZ in the given Depth Drilled (m)				
	< 50 m	50 m - 100 m	100 m - 150 m	150 m - 200 m	> 200 m
Amet	-	04	01	06	1
Bhim	01	06	02	01	.
Deogarh	-	07	05	01	.
Khamnor	03	10	04	01	.
Kumbhalgarh	-	08	02	01	01
Railmagra	-	07	04	-	-
Rajsamand	-	06	07	.	.
District	**04**	**48**	**25**	**10**	**02**

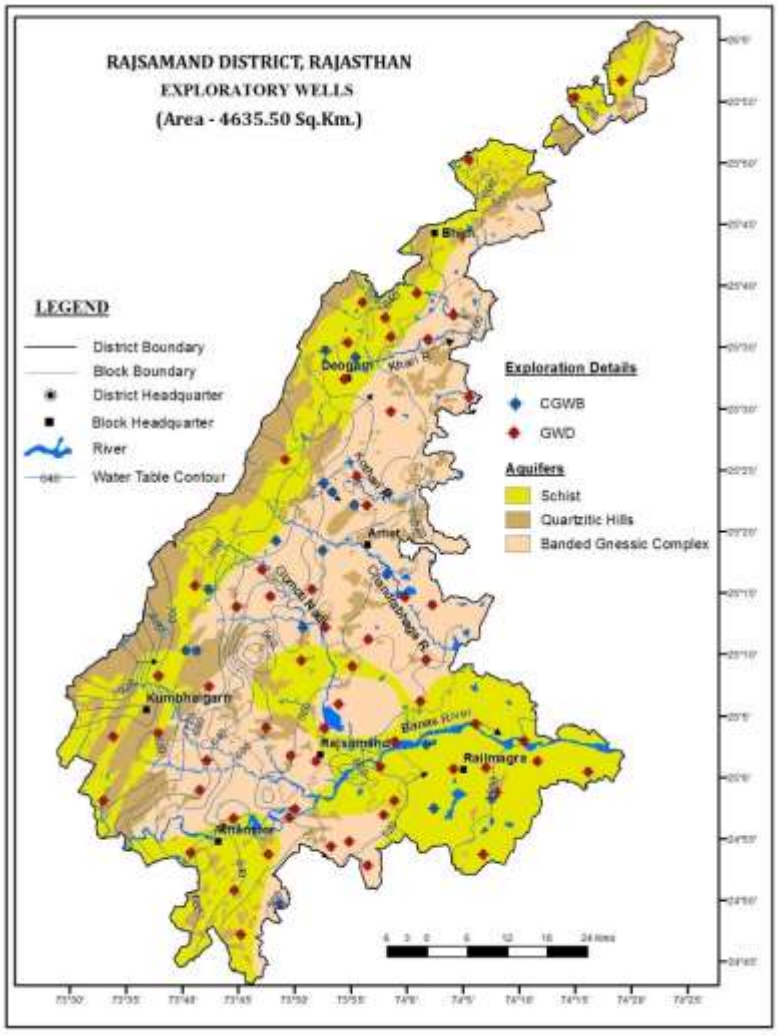


Figure 1: Location of Exploratory Wells, Rajsamand District.

2.5. Data Gap Analysis

Based on the data collected from State GW agencies like GWD, PHED, Water Resources and CGWB regarding groundwater monitoring, exploration, surface water and agriculture, the gaps were identified after plotting on 1:50000 map. Based on this map the gaps were identified for data to be generated like Bed Rock configuration, Saline/ Fresh water interface, Aquifer Continuity andQuality of groundwater in an area. Rajsamand District further needs data to be generated in the gaps (Table 3).

Table 3: Data Availability and Data Gap Analysis in Rajsamand District

S. No.	Study Aspect	Data Requirement	Data Availability	Data Gap
1.	**Rainfall and Other Climatic Data**	7 Meteorological Stations in the area.	Data Partially Available.	Other Climatic data other than rainfall.
2.	**Ground Water Monitoring Regime**	Representative Monitoring Wells distributed all over the Study Area.	CGWB NHS Wells - 27 GWD NHS Wells - 227 NAQUIM Key Wells - 37	Adequate data available.
3.	**Soil**	Soil Map and Soil Infiltration Rate.	Not Available.	Latest GIS based Soil Map and Soil Infiltration rate across the area.
4.	**Land Use**	Latest land use Pattern in GIS Platform.	Not Available.	Latest data in GIS platform required.
5.	**Geomorphology**	Digitized Geomorphological Map.	Available.	--
6.	**Geophysics**	Geophysical Survey in all Toposheets.	Nill	205 location gaps identified.
7.	**Exploration**	Exploratory Wells along with Aquifer Parameters.	Exploratory Wells along with Aquifer Parameters are scatterly available.	Exploration of deeper aquifers is required in all the blocks of the district.
8.	**Recharge Parameters**	Recharge parameters of different soil and aquifer types based on	Recharge parameters are given in Ground Water resource estimation.	--

		Field studies.		
9.	**Discharge Parameters**	Discharge parameters for different GW abstraction structures.	Discharge parameters are given in Ground Water Resource Estimation.	--

2.6. Study Area

Rajsamand district is located in the southern part of Rajasthan. It is bounded in the north by Ajmer district, in the east by Bhilwara and Chittorgarh districts, south by Udaipur district and by the Pali district in the west. It stretches between 23° 31' 49.64" to 24° 30' 16.57" north latitude and 74° 13' 19.93'' to 74° 58' 59.58'' east longitude covering area of 4,629.3 sq. kms. The district is systematically drained by two major rivers viz. Banas and Luni thus the district is part of two river basins wherein significantly large part in the east is part of 'Banas River Basin' and a narrow strip west of Aravalli range is part of 'Luni River Basin'.

As per 2011 Census data the population of the district is 1156597. The rural and urban population is 972777 and 183820 respectively with a density of 248 persons per sq. km.

2.7. Administrative Set Up

The Rajsamand district is administratively divided into seven blocks. The following table summarizes the basic statistics of the district at block level.

S.No.	Block	Area (sq. km)	% of District Area	Population (based on 2011 census)	Total number of towns and villages
1	Amet	523.26	11.29	118949	138
2	Bhim	687.39	14.83	171023	133
3	Deogarh	617.01	13.31	110723	135
4	Khamnor	791.68	17.08	244731	191
5	Kumbhalgarh	788.35	17.01	144231	164
6	Railmagra	608.14	13.12	131800	95
7	Rajsamand	619.33	13.36	235140	136
Total		**4635.16**	**100.00**	**1156597**	**992**

Table 4: Administrative setup of Rajsamand District

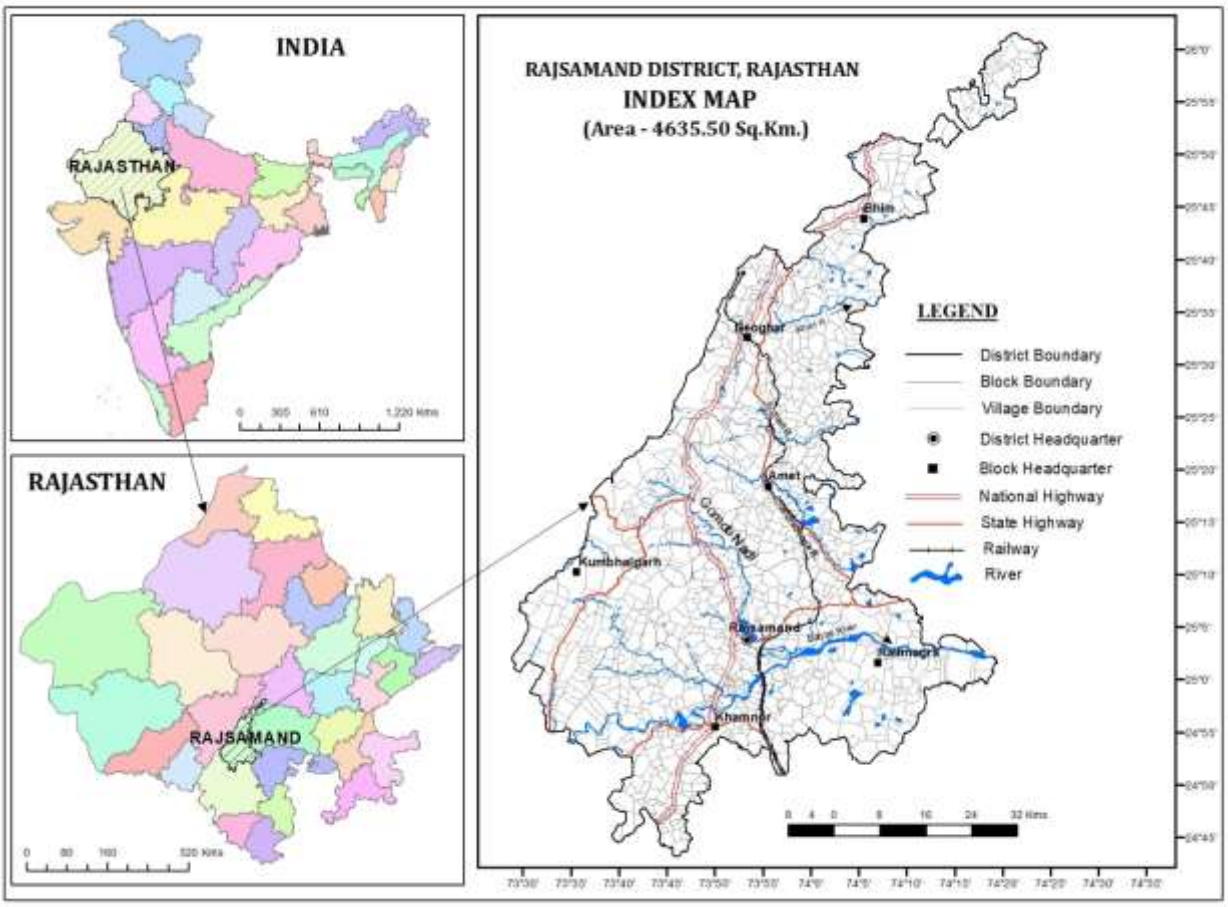


Figure 2: Index Map of Rajsamand District

3. Topography

The district demonstrates ridge valley topography in western part i.e. in the Aravalli hills running in the NE-SW direction. The central and eastern part of the district is relatively plain area forming the foothills part of the Aravalli ranges. The general slope of the terrain is towards the east. The major river of the district is Banas with its tributaries i.e. Khari and Chandrabhaga creating very good drainage system in the area. The general topographic elevation in the district is between 500 to 625 m above mean sea level. Elevation ranges from a lowest of 376m above mean sea level in Bhim block in the NW part of the district to highest of 1294m above mean sea level in Kumbhalgarh block in SW part of the district.

Geomorphology –

Rajsamand district consists of monotonously rolling topography intersected by shallow valleys.

Towards the western part of the district, Aravalli hills, a series of ridges run diagonally in the direction of NE and SW. The highest portion of Aravalli occurs south of Kailwara near Kumbhalgarh fort with an altitude of 1293 m amsl. A typical gneissic plain bearing irregularly carved off gneisses and granites without anyalluvial cover is observed to the highest altitude of above 600 m amsl. The central and eastern parts of the district are relatively plain forming the foot hill part of Aravalliranges. This plain gently slopes towards the east and northeast. In the higher and more rugged part towards the western side, alluvium is scanty whereas in theeastern flank, the alluvium is more continuous and reasonably thick

Table 5: Geomorphologic units, their description and distribution, Rajsamand District

	Landform Unit	Description
Denudational	Buried Pediment	Pediment covers essentially with relatively thicker alluvial, colluvial or weathered materials.
	Pediment	Broad gently sloping rock flooring, erosional surface of low relief between hill and plain, comprised of varied lithology, crisscrossed by fractures and faults.
Fluvial	Alluvial Plain	Mainly undulating landscape formed due to fluvial activity, comprising of gravels, sand, silt and clay. Terrain mainly undulating, produced by extensive deposition of alluvium.
	Alluvial Plain (Sandy)	Flat to gentle undulating plain formed due to fluvial activity, mainly consists of gravels, sand, silt and clay with unconsolidated material of varying lithology, predominantly sand along river.
	Flood Plain	The surface or strip of relatively smooth land adjacent to a river channel formed by river and covered with water when river over flows its bank. Normally subject to periodic flooding.
	Valley Fill	Formed by fluvial activity, usually at lower topographic locations, comprising of boulders, cobbles, pebbles, gravels, sand, silt and clay. The unit has consolidated sediment deposits.
Hills	Denudational, Structural Hill, Linear Ridge	Steep sided, relict hills undergone denudation, comprising of varying lithology with joints, fractures and lineaments. Linear to arcuate hills showing definite trend-lines with varying lithology associated with folding, faulting etc. Long narrow low-lying ridge usually barren, having high run off may form over varying lithology with controlled strike.

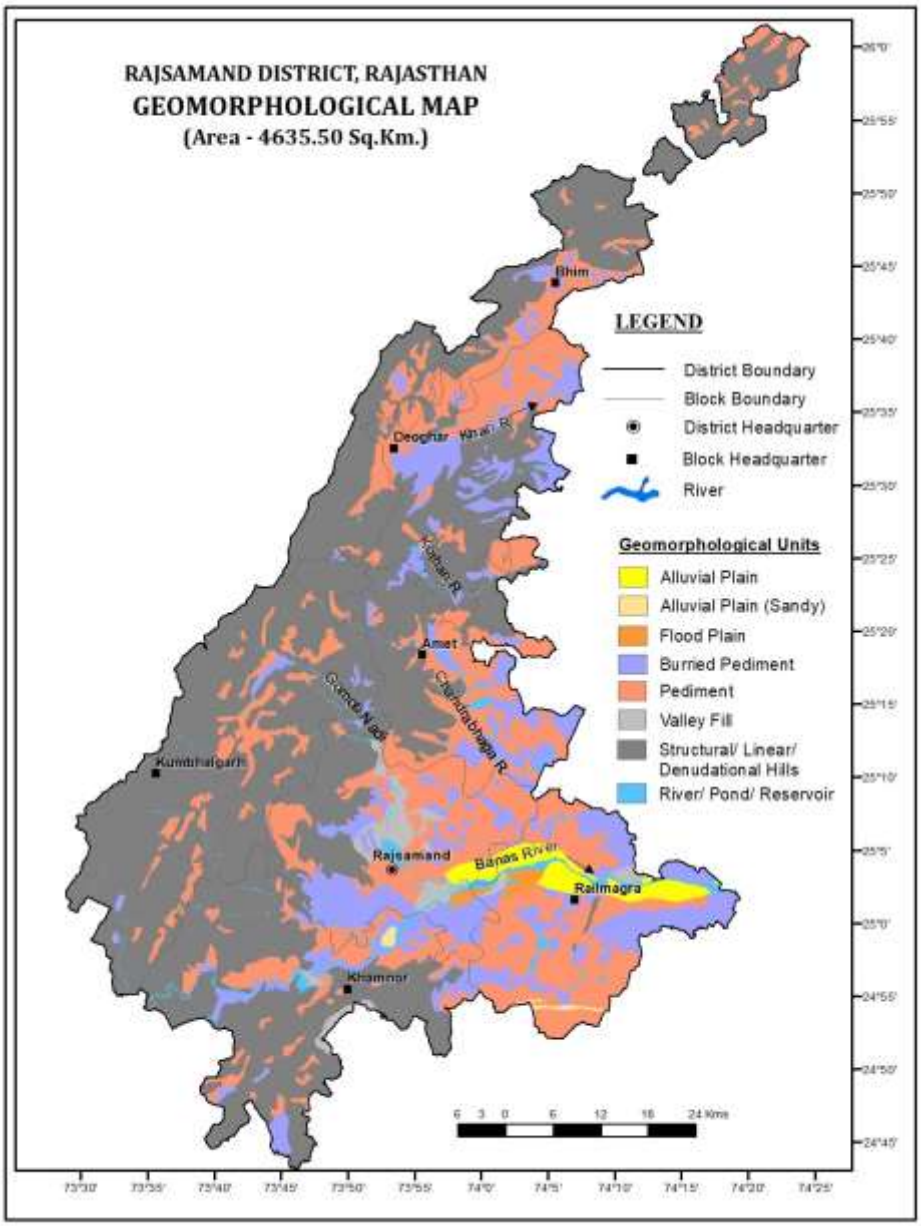


Figure 3: Geomorphology Map of Rajsamand District.

3.1. Drainage

Rajsamand district is drained by Banas river and its tributaries i.e. Khari, Chandrabhaga, Gomati, Kothari, Ahar etc. The river as well as tributaries are ephemeral and flow only in response to heavy precipitation. The predominant drainage pattern in the western hill ranges is rectangular to sub-rectangular and it is dendritic to sub-dendritic in rest of the area. Drainage

pattern in the western hill region is controlled by fractures and joints and in the rest of the area by subsurface lineaments. The area has some lakes and tanks also. The famous Rajsamand lake is situated near the district headquarters Rajsamand and is the main source of supply of drinking water to Rajsamand city. There are small check dams and tanks constructed on the rivers and streams of the district which augment the natural recharge of ground water in the area.

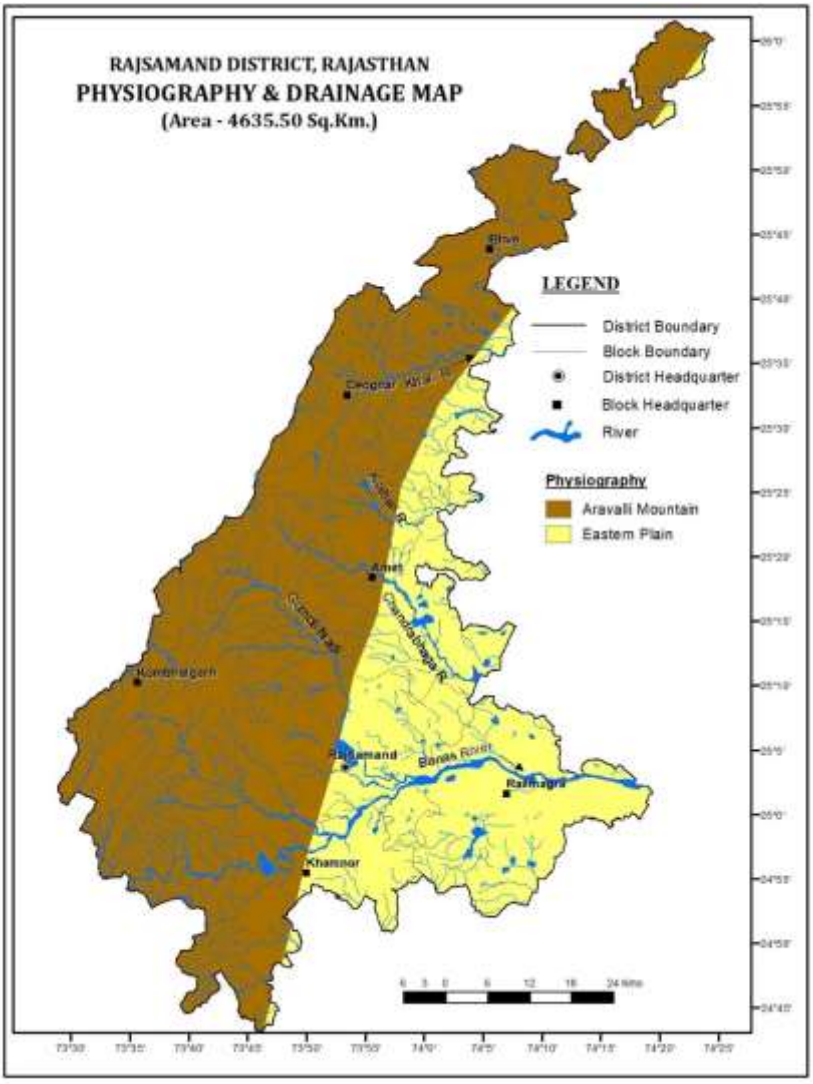


Figure 4: Physiography & Drainage Map of Rajsamand District

4. Climate

The district experiences arid to semi-arid type of climate. Normal rainfall of the district is 587 mm whereas average annual rainfall (1991-2020) has been more than normal rainfall and placed at 612 mm. Almost 93% of the total annual rainfall is received during the southwest monsoon which enters the district in the third or fourth week of June and withdraws in the mid of September. Rainfall data of the district during the period 1991 - 2020 is presented in Table 6. The highest average annual rainfall has been 1154 mm at Railmagra, which lies near the eastern boundary of the district. The lowest average annual rainfall 245 mm has been received at Rajsamand, which lies in the central part of the district. Drought analysis based on agriculture criteria indicates that the district is prone to mild and normal type of droughts. Occurrence of severe and very severe type of drought is very rare.

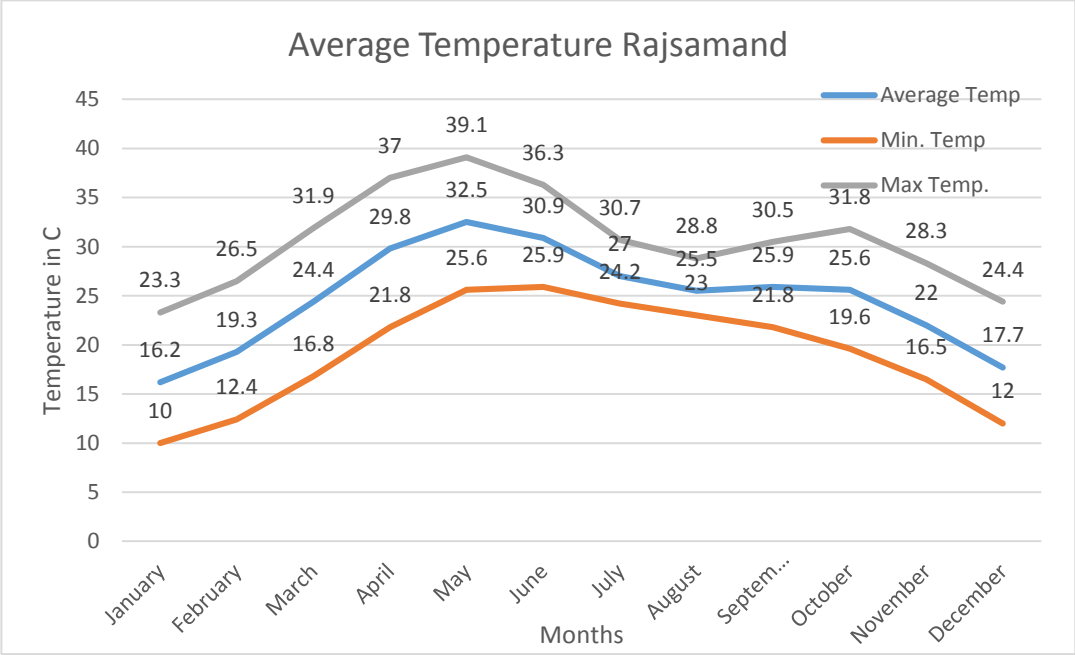


Figure 5: .Monthly Temperature Graph of Rajsamand District

4.1. Variability of Rainfall

Statistical Analysis of rainfall data shows that rainfall in the district is quite erratic. The mean annual rainfall of the area during the study period was 612.0 mm with 191.6 mm standard deviation of 31.2 % CV. High overall coefficient of variation indicate significant intra and inter-

annual fluctuations in the rainfall. The minimum and maximum ever recorded rainfalls were 300.9 mm (in 2002 - the driest year) and 917.6 mm (in 2019 - the wettest year) year respectively. Between the driest and wettest months, the difference in precipitation is 616.7 mm |24.27 inch (Table 6).

Table 6: Statistical Analysis of Rainfall Data for the period 1991-2020

Block	Maximum RF (mm)	Minimum RF (mm)	Maximum RF (Year)	Minimum RF (Year)	Mean (mm)	SD (mm)	CV (%)
Amet	792	264	2006	2002	553.4	146.9	26.5
Bhim	832	286	2019	2002	572.9	153.1	26.7
Deogarh	1015	247	1994	2000	604.2	197.8	32.7
Khamnor	1004	321	2005	2000	618.6	203.3	32.9
Kumbhalgarh	1077	344	2010	2002	706.5	234.1	33.1
Railmagra	1154	249	2016	2002	626.1	217.4	34.7
Rajsamand	1054	245	2019	2000	602.4	188.61	31.3
District	**917.6**	**300.9**	**2019**	**2002**	**612.0**	**191.6**	**31.2**

The drought is a period of abnormal dry weather causing serious hydrological imbalance in the affected area. The study of drought trends is very much useful for these droughts affected regions where the annual rainfall is highly variable with frequent dry spells. The yearly intensity of drought has been determined using the criteria suggested by IMD which is based on the percentage deviation of rainfall from its long term mean and it is given by

D = (Annual Rainfall-Mean Annual Rainfall)/Mean Annual Rainfall*100

Annual drought intensities show that every alternate year experiences drought condition and 2002 was the most drought. The frequency of occurrence of drought in the district is 46.66 % (Table 7).

Table 7: Drought classification based on % Departure of Rainfall from Long Term Normal value (IMD, 1971)

Percentage Departure of Rainfall from Normal	Intensity of Drought	No of Years (1991-2020)	Percent (%)
> 0	No Drought	16	53.33
0 to -25	Mild Drought	8	26.66
-25 to -50	Moderate Drought	5	16.66
-50 to -75	Severe Drought	1	3.33
< -75	Extreme Drought	-	-

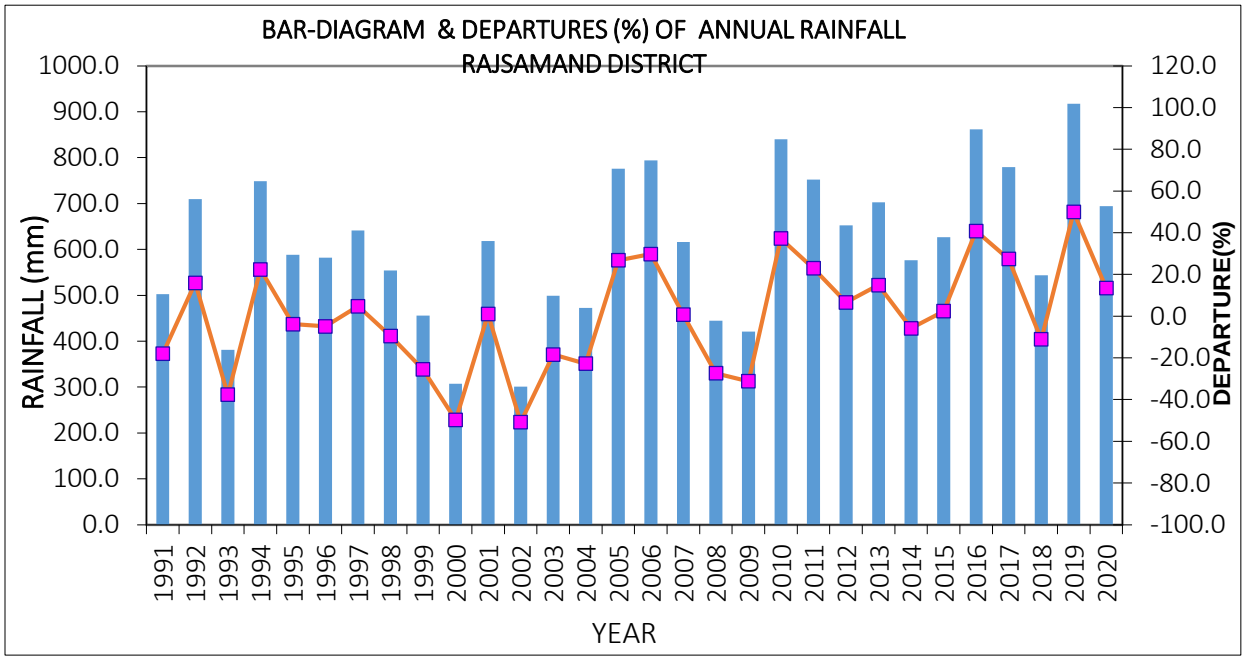


Figure 6: Temporal Variation of Annual Rainfall (1991-2020) in Rajsamand District

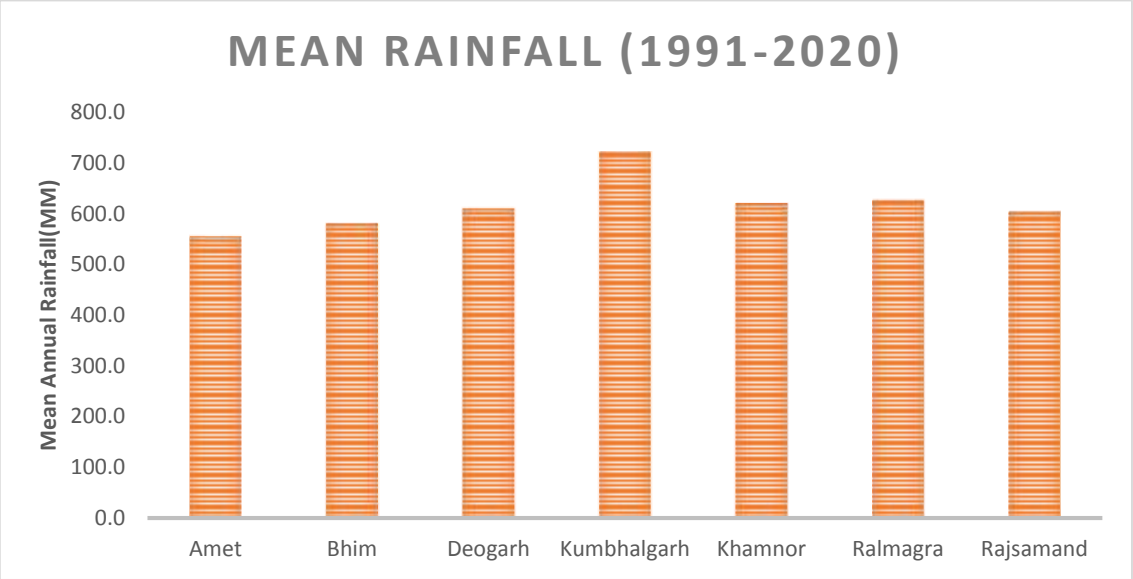


Figure 7: Mean Annual Rainfall (1991-2020) in Rajsamand District

5. Land Use

The total geographical area of the district is 452726 hectares. The net Forest Area including hills in the Rajsamand district is 26254 hectares and net sown area is 94132 hectares. The other uncultivable land excluding current fallow is 127743 hectares and the total fallow land is 32250 hectares as per District Statistical Outlet (Figure 8).

5.1. Forest

The forest is scattered over a large area, mostly in hills and ridges. Those in plains are grass birds or tree savants. The district of Rajsamand is good in forest resources as per the ISFR classification based on Canopy Density the total area under the forest is reported to be 521.79 sq. km which is 11.21 % of the total geographical area of the district, excluding the Scrubs with an area of about 124.23 sq. km. Total 134.91sq. km of the forest area comes under Moderately Dense Forest category (40 – 70 % Crop Density) and the remaining 386.88 sq. km falls under the Open Forest category (<40 % Crop Density). On the other hand, as per the Administrative classification the total forest area is about 40158.23 km2, in which 27740.59 km2 comes under the Reserved Forest category,11920.10 km2 comes under the Protected Forest category and the remaining 497.53 km2 falling under the Unclassed Forest category. The forest falls under the subsidiary and dry tropical category, the principal species of wood found in the district is Dhokra, and the other types of species are Babool, Khair, teak wood, bamboos, katha etc.

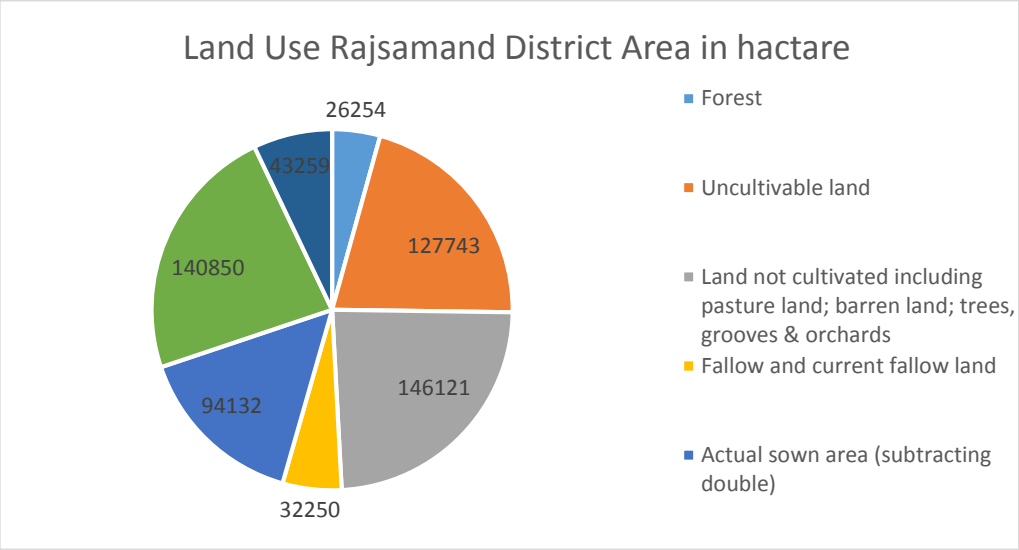


Figure 8: Land use pattern of Rajsamand District

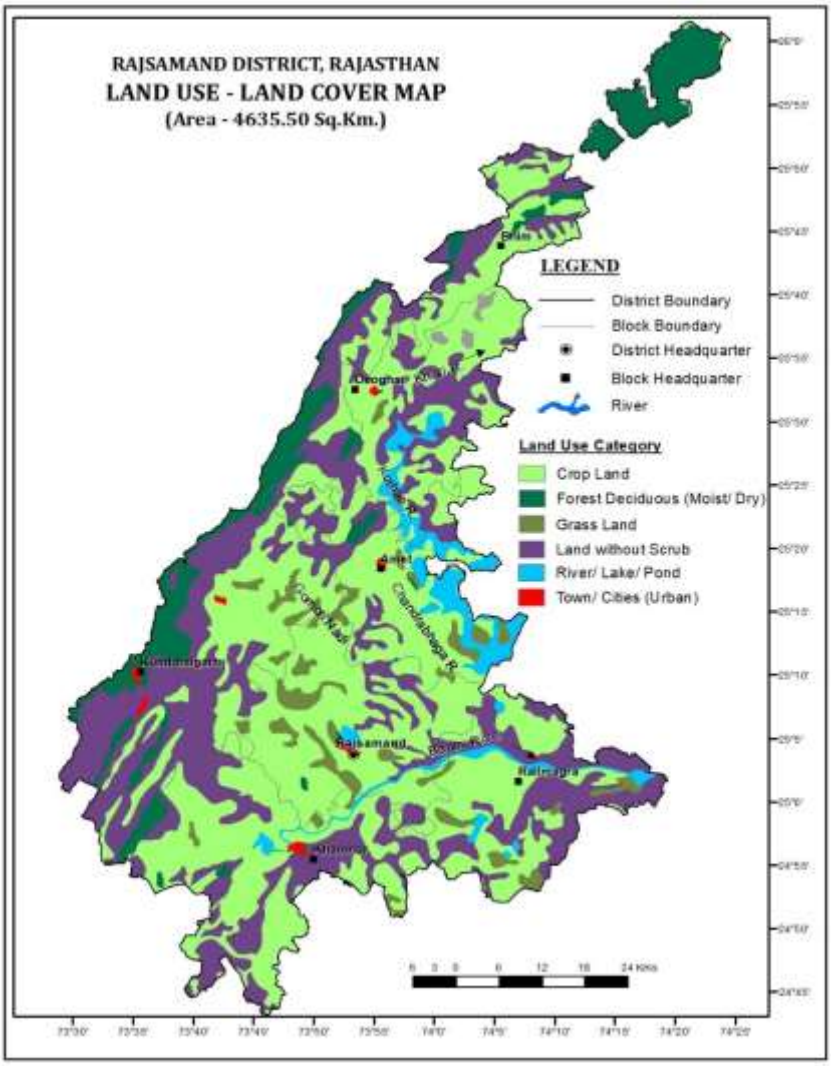


Figure 9: Land Use and Land Cover Map of Rajsamand District

जल है तो कल है, जल है तो जीवन है।

5.2. Soil

Soil is the loose surface material that covers most land. It consists of organic matter and inorganic particles including minerals, gases, liquids, and organisms that together support life. Soil provides the structural support to plants used in agriculture and is also their source of water and nutrients. Earth's body of soil, called the pedosphere, has four important functions:

- as a medium for plant growth
- as a means of water storage, supply and purification
- as a modifier of Earth's atmosphere
- as a habitat for organisms

Table 8: Soil types in Rajsamand district

Type of Soil	Blocks
Sandy Loam	Bhim Deogarh Amet
Clay Loam	Rajsamand Khamnor Railmagra
Heavy Clay	Kumbhalgarh

The soils of the district are mainly lithosols in the western part on slope and some inceptisols as per topography. Texturally it varies from sandy loam in Bhim, Deogarh & Amet blocks to heavy clay in Kumbhalgerh block. The types of soil occurring in the district are classified as follows.

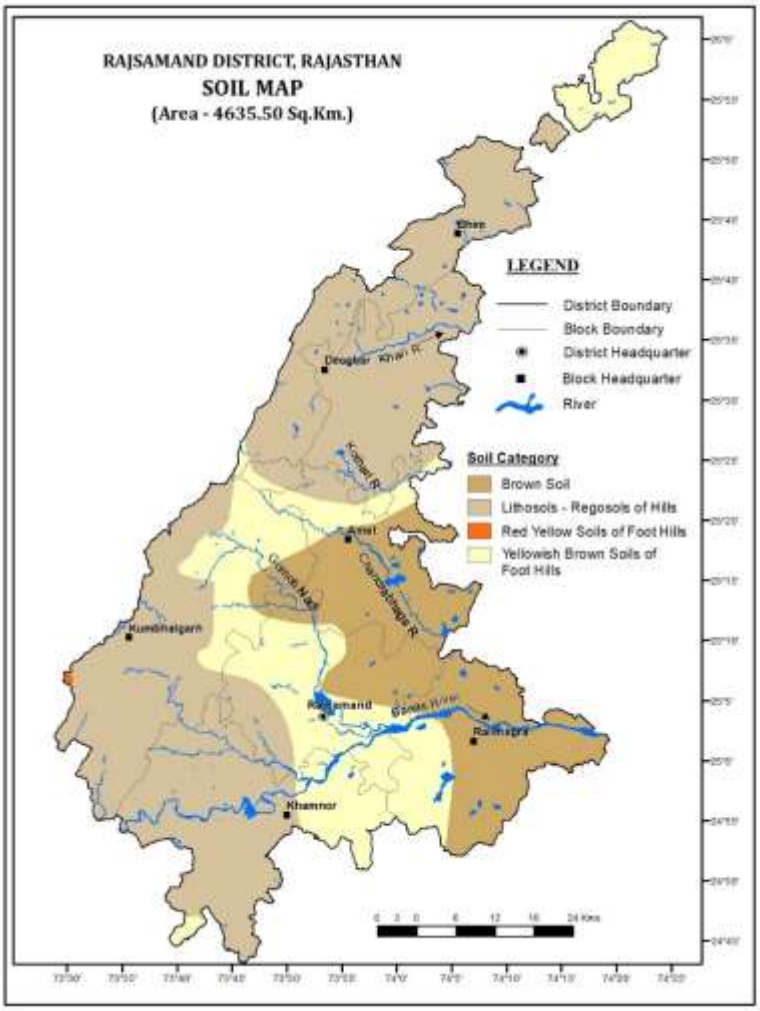


Figure 10: Soil Map of the Rajsamand District.

5.3. Agriculture

The district comprises of seven blocks viz Rajsamand, Bhim, Raillmagra, Deogarh, Amet, Kumbhalgarh and Khamnor with net cultivated area of 109871 hectare and irrigated area of 29730 hectare. The important crops of the district during kharif are maize, sorghum, cotton, Greengram, Blackgram, Cluster bean, sesame, brinjal, chilies, okra and cucurbits while in rabi wheat, barley, gram, mustard, cabbage, onion, and garlic. The important fruit crops of the district are custard apple, aonla and guava and presently pomegranate is also introducing in the area. The land holding of farmer except Railmagra and Khamnor block falls under marginal and small. The average rainfall pattern of the district is approximately 512.7 mm but since last five years rainfall is unevenly distributed. The maximum temperature during summer reached to 48° C and minimum fall down up to 00° C. in winter season.

Table 9: Season wise major crops sown in Rajsamand district

Season	Major Crops Grown
Kharif	Rice, Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton.
Rabi	Wheat, Barley, Gram, Mustard, Pulses, Linseed
Zaid	Jowar, Spices Fruits and Vegetables.

5.4. Irrigation

In district 2475.49 km^2 of area is being irrigated by the groundwater whereas the area irrigated by surface water sources is 135.26 km^2. Ground water plays an important role for irrigation and is utilized through dug wells, dug cum bore wells, tube wells and bore wells run almost by electricity in the area. Out of the total gross sown area of 5489.12 km^2 about 2610.75 km^2 (47.56%) area is irrigated, thus clearly indicating the dependency and importance of groundwater resources for the people of the district (Table 10).

Table 10: Irrigated area of Rajsamand district

Block	Tube wells		Dug wells		Ponds and Canals		Total	
	Net Irrigated	Gross Irrigated	Net Irrigated	Gross Irrigated	Net Irrigated	Gross Irrigated	Net Irrigated	Gross Irrigated
Amet	118	166	2941	3570	0	0	3059	3736
Bhim	50	50	3494	3603	0	0	3544	3653
Deogarh	17	17	4720	8042	224	224	4961	8283
Kumbhalgarh	0	0	3345	3374	37	37	3382	3411
Khamnor	45	45	4972	5431	996	996	6013	6472
Railmagra	706	1024	8200	12067	155	155	9061	13246
Rajsamand	273	380	5629	6957	683	683	6585	8020

6. Geology

The district exposes rocks belonging to the Delhi, Aravalli and Bhilwara Super Groups. The Delhi Super Group is divided into Kumbhalgarh and Gogunda Groups which consists of Calc-schist, calc-gneiss, quartzite, biotite schist, hornblende-schist and calc-silicate rocks. Delhi Super Grouprocks are exposed in the western boundary of the district. Aravalli Super Group is divided into Jharol, Dovda, Nathdwara, Barilake and Kankroli Group. Rock formations in this Group consist of phyllite, mica schist, quartzite, dolomitic marble, amphibolites etc. Aravali Super Group is exposed in southern part of the district encompassing Railmagra, Khamnor, Kumbhalgarh and Rajsamand blocks. Bhilwara Super Group is divided into Mangalwar complex and Sandmata complex which consists of migmatitic gneiss, mica schist, amphibolites, granulite, dolomite marble and ultramafic rocks. This Group is exposed in eastern and southeastern parts of the district covering Railmagra, Amet and Deogarh blocks.

Super Group	Group	Formation
	Recent to Sub-recent	Alluvium, sand, silt and clay
		--X--------X--------X--------X---Unconformity---X--------X--------X-------X--
Delhi	Kumbhalgarh	Calc-schist, calc-gneiss, marble, garnet-biotite schist, mica-schist &migmatites.
	Gogunda	Quartzite, biotite schist, calc-schist, hornblende-schist &calc-silicate rocks.
Aravalli	Jharol	Chlorite-phyllite, phyllite, mica schist, quartzite, dolomitic marble.
	Dovda	Amphibolite, hornblende schist, calc-schist, calc-silicate rocks and migmatites.
	BariLake	Meta basic volcanics
	Kankroli	Chlorite-phyllite, phyllite, muscovite-biotite schist, dolomite, dolomite marble, meta-conglomerate, metaarkose, quartzite, hornblende-schist, amphibole-gneiss and migmatites.
		--X--------X--------X--------X---Unconformity---X--------X--------X-------X--
Bhilwara	Mangalwar complex	Migmatites gneiss, garnetiferrous mica schist, sillimanite mica-schist, impure marble and amphibolite
	Sandmata complex	Paragneiss, granulite, amphibolite, biotite-schist, dolomite marble, quartzite and ultramafic rocks.

Table 11: Detailed Geological Succession of Rajsamand District

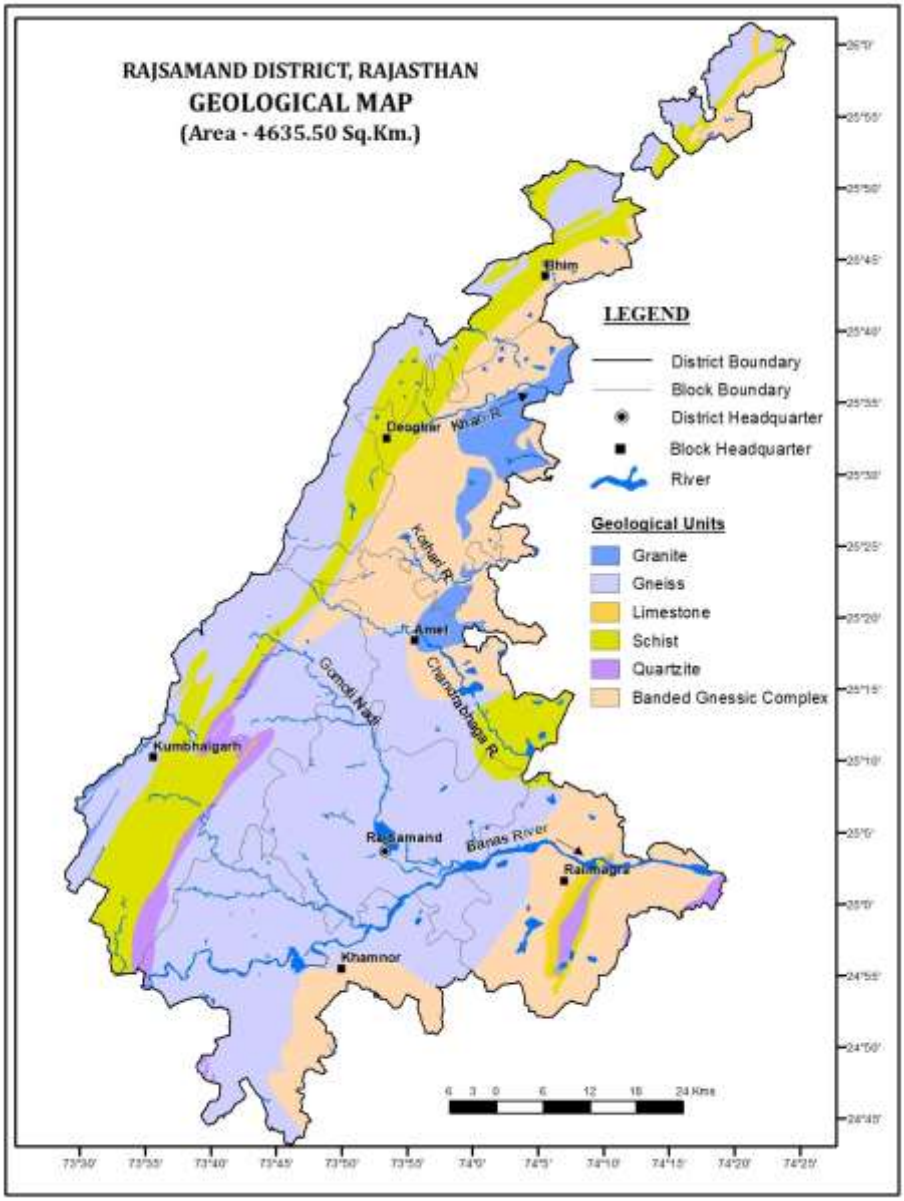


Figure 11: Geological Map of Rajsamand District

6.1. Hydrogeology

Occurrence of ground water in the district is mainly controlled by the topographic and structural features present in geological formations. Ground water occurs mainly under water table conditions in all formations. Important water bearing formations besides alluvium are gneisses, granites, schists, phyllites and limestone. In hard rock formations, occurrence and movement of ground water is governed by foliation/bedding planes, fractures, joints solution cavities and other structurally weak planes. Weathered mantle of hard rocks yields good discharge of water. In alluvium, ground water occurs in interstices of unconsolidated sand and gravel. Locally semi-confined conditions are

encountered in both hard rock and alluvium.

There are only two aquifer types in the district and both these occupy almost equal areas in terms of spatial distribution. There are no aquifers in alluvial formations and the hard rock aquifers in schistose rocks and BGC occupy 41% area each while the remaining 18% is hills. Weathered, fractured and jointed openings in hard rocks lead to formation of aquifers in them. The schistose aquifers are seen as NE-SW trending belt adjacent and parallel to Aravalli ranges in the western part of the district and also in the eastern part of the district as large patch. The area in between the two schistose aquifer regions lies the NE-SW trending, wide central belt of BGC, interspersed with hills and occasionally by schist aquifers.

Table 12: Major Aquifer Potential Zones, their Area and their description

Aquifer in Potential Zone	Area (sq. km)	% age of district	Description of the unit/Occurrence
Schist	1,898.6	41.0	Medium to fine grained compact rock. The litho units are soft, friable and have closely spaced cleavage.
BGC	1,891.3	40.9	Grey to dark colored, medium to coarse grained rocks.
Hills	839.4	18.1	
Total	**4,629.3**	**100.0**	

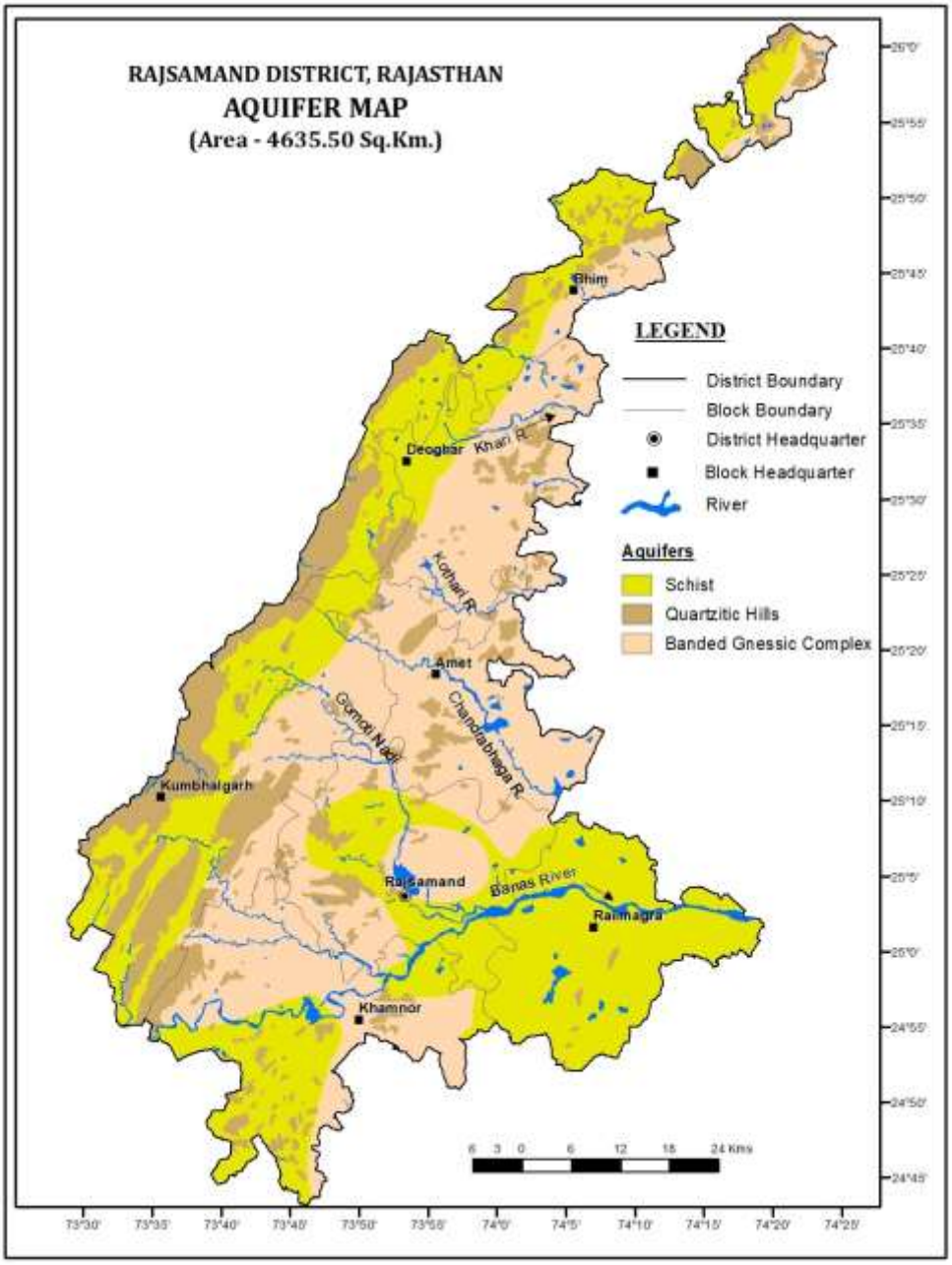


Figure 12: Hydrogeological Map of Rajsamand District

6.2. 3-D and 2-D Aquifer Disposition

The data generated during ground water exploration by constructing exploratory wells, observation wells, slim holes and piezometers (Annexure-A), was utilized to decipher the aquifer disposition in the area. Based on the existing data set 87 observation points were selected for the study of aquifer disposition in 3D and several hydrogeological sections along section lines using Rockworks software shown in Figs. 13-14, to understand the subsurface disposition of aquifer system. Lithological 3D

representation of the study area clearly depicts that it mainly comprises of the hard rock formations belonging to Bhilwara Gneissic Complex crystalline and metamorphic rocks,followed by the Aravalli Super Group of rocks with shallow overlying soil and a minor amount of unconsolidated sediments. While preparing the 3D aquifer disposition diagram and sections these hard rock formations were merged together as Weathered Schist/Gneisse, Compact Schist/Gneisse with Isolated Fractures and Massive Schist/Gneisse of Bhilwara Gneissic Complex and Weathered schist/phyllite/granite gneiss, Compact schist/phyllite/granite gneiss with Isolated Fractures and Massive schist/phyllite/granite gneiss of Aravalli Super Group.

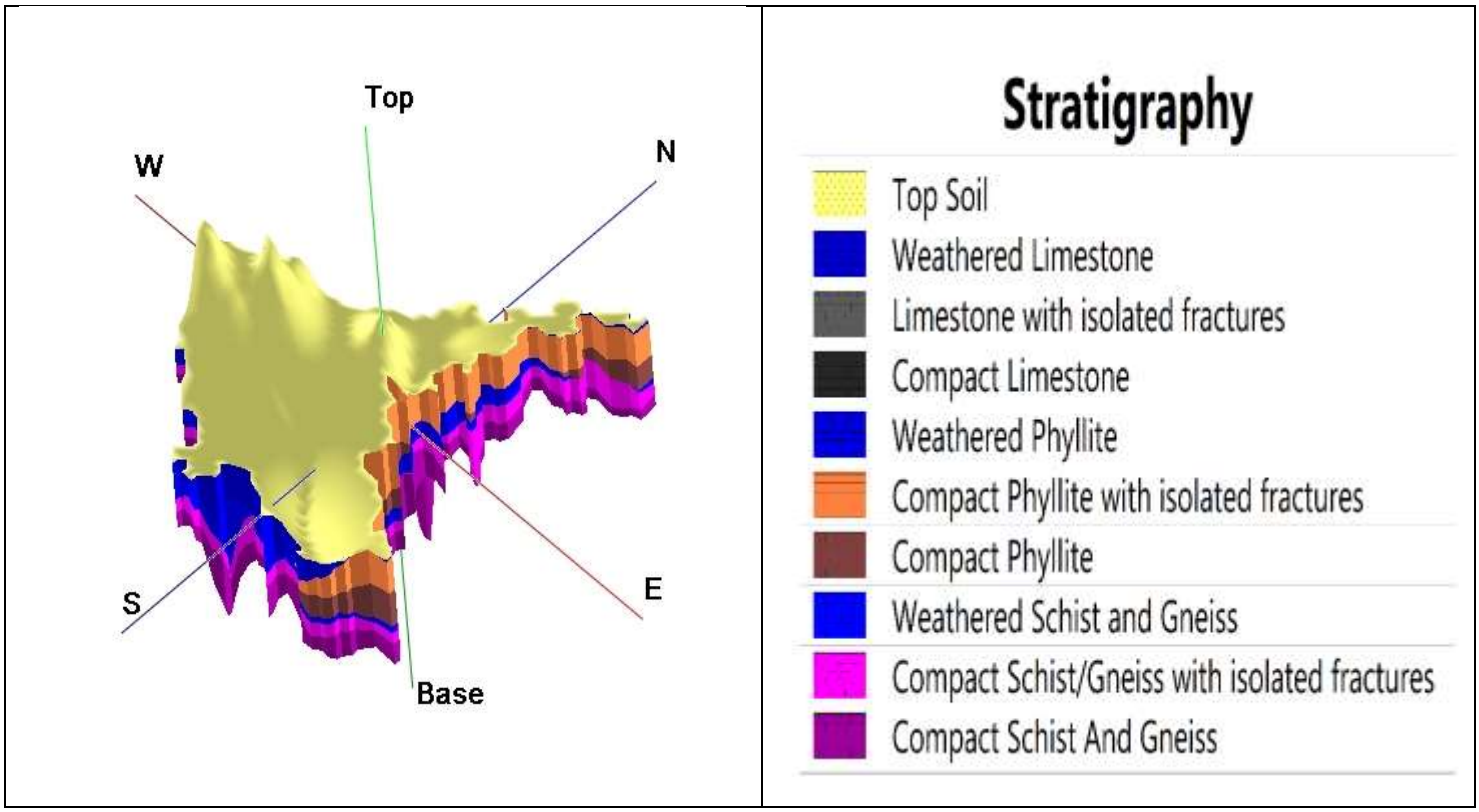


Figure 13: 3D Lithological Model.

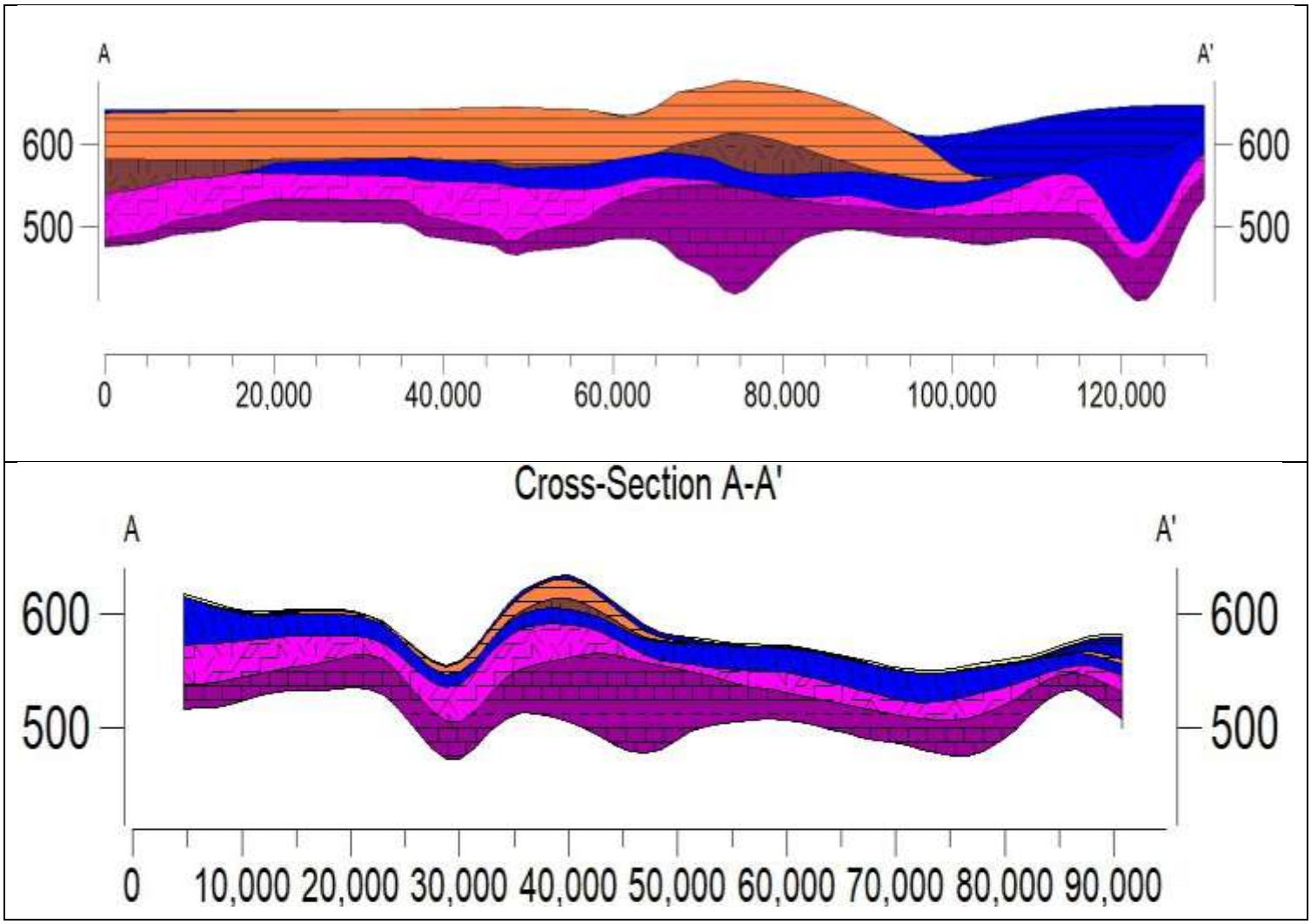


Figure 14: Aquifer Disposition 2D cross section (a) from Saroth to Delwara (b) from Kambla to Dhaneria.

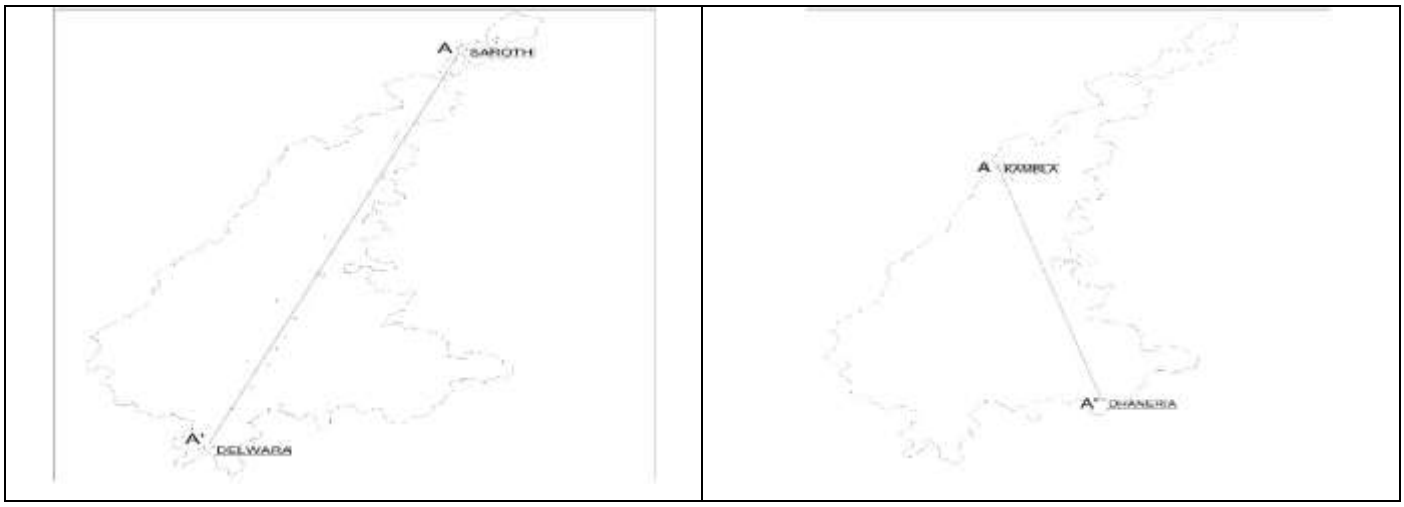


Figure 15: Sections lines of both the 2D sections represented above.

7. Ground Water Dynamics

Central Ground Water Board periodically monitors National Hydrograph Network Stations (NHS) stations in the Rajsamand District, four times a year i.e. in January, May (Pre-monsoon), August and November (Post monsoon). The total number of hydrograph stations in the district is 21. State Ground Water Department monitors water levels in 227 wells two times in a year i.e. in May and November. During field work carried out for NAQUIM studies 36 key wells were established in the area where there was a gap in water level data of previous years (Annexure C). In total 286 wells were monitored during May (Pre-Monsoon) 2021 and November (Post Monsoon) 2021 to generate the water level scenario in the district. The comparative block-wise detail of wells analyzed during both the seasons is tabulated in Table 13 and well-wise details are presented in Annexure C.

Table 13: Block-wise Depth to water Level Ranges in Pre-Monsoon and Post Monsoon in Rajsamand District

Block	Season	Depth to Water Level (m bgl)						Total
		0 - 2	2 - 5	5 - 10	10 - 20	20 - 40	> 40	
Amet	Pre-Monsoon_2021	-	-	04	20	06	-	**30**
	Post Monsoon_2021	-	02	07	19	02	-	**20**
Bhim	Pre-Monsoon_2021	-	04	18	19	-	-	**41**
	Post Monsoon_2021	02	16	19	05	-	-	**41**
Deogarh	Pre-Monsoon_2021	-	03	11	24	02	-	**40**
	Post Monsoon_2021	02	10	21	07	-	-	**40**
Khamnor	Pre-Monsoon_2021	03	06	15	25	03	-	**52**
	Post Monsoon_2021	07	11	19	15	-	-	**52**
Kumbhalgarh	Pre-Monsoon_2021	-	03	13	17	04	-	**37**
	Post Monsoon_2021	-	07	13	14	03	-	**37**
Railmagra	Pre-Monsoon_2021	-	03	10	19	5	-	**37**

	Post Monsoon_2021	01	07	10	16	03	-	**37**
Rajsamand	Pre-Monsoon_2021	02	07	16	16	-	-	**41**
	Post Monsoon_2021	04	16	11	10	-	-	**41**
District	**Pre-Monsoon_2021**	**06**	**28**	**89**	**141**	**22**	**-**	**286**
	Post Monsoon_2021	**18**	**70**	**102**	**87**	**09**	**-**	**286**

7.1. Depth to Water Level – Pre-monsoon (May-2021)

The depth to water levels in Rajsamand district during May 2021 ranges between 1.50 (Dhoinda, Rajsamand block) and 31.98 mbgl (Gunjol, Khamnor block). Deeper water level i.e. more than 20 m bgl has been recorded in 22 observation wells, while Depth to water level between 10 to 20 m bgl has been observed in 141 observation wells along the central portion of the district. Water level between 5to 10 m bgl has been recorded in 89 wells scattered all over the district. 28 monitored wells have depth of water level less than 5 m below ground level and the aerial distribution of them lies along the banks of the drainage in the district such as Banas, and Khari rivers. The Deeper water levels > 30 mbgl are observed in Khamnor and Railmagra blocks. The pre-monsoon depth to water level map is depicted in Fig. 16.

7.2. Depth to Water Level – Post-monsoon (Nov-2021)

The depth to water levels in Rajsamand district during Nov. 2021 ranges from 0.10 mbgl (Dhoinda, Rajsamand block) and 28.50m bgl (Gajpur, Kumbhalgarh block). Shallow water level between 2 m bgl to 10 mbgl is observed in 172 observation wells scattered in all the blocks of the district. A deeper water level between 10 to 40 m bgl is being observed in 96 wells. Comparatively the water levels have become shallower inthe post monsoon season in the eastern parts of the district which lies along the Banas, Chandrabhaga and Khari rivers basin. Spatial variation in post monsoon depth to water levels is shown in Figure 17.

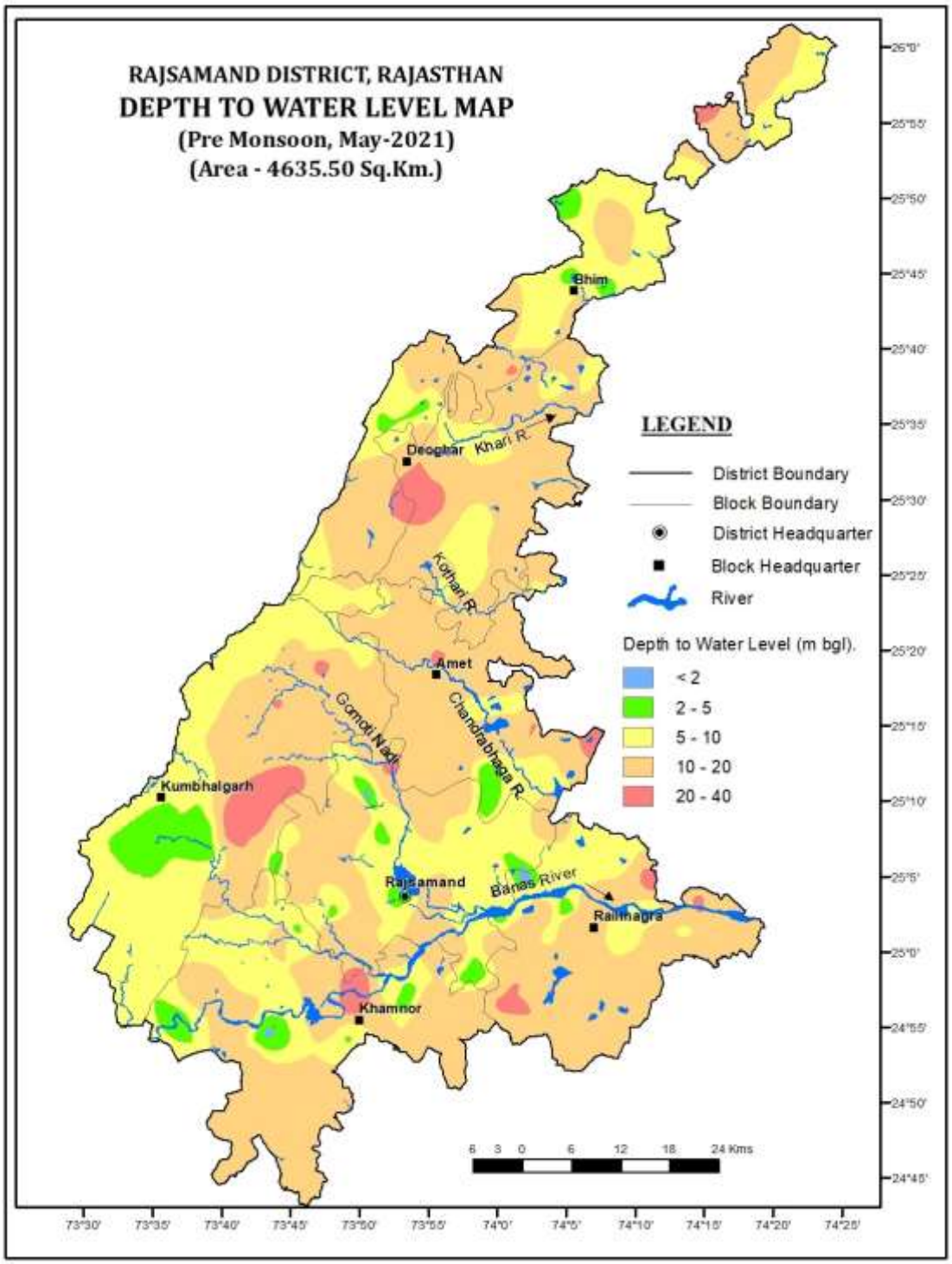


Figure 16: Depth to water level map of May 2021 of Rajsamand District.

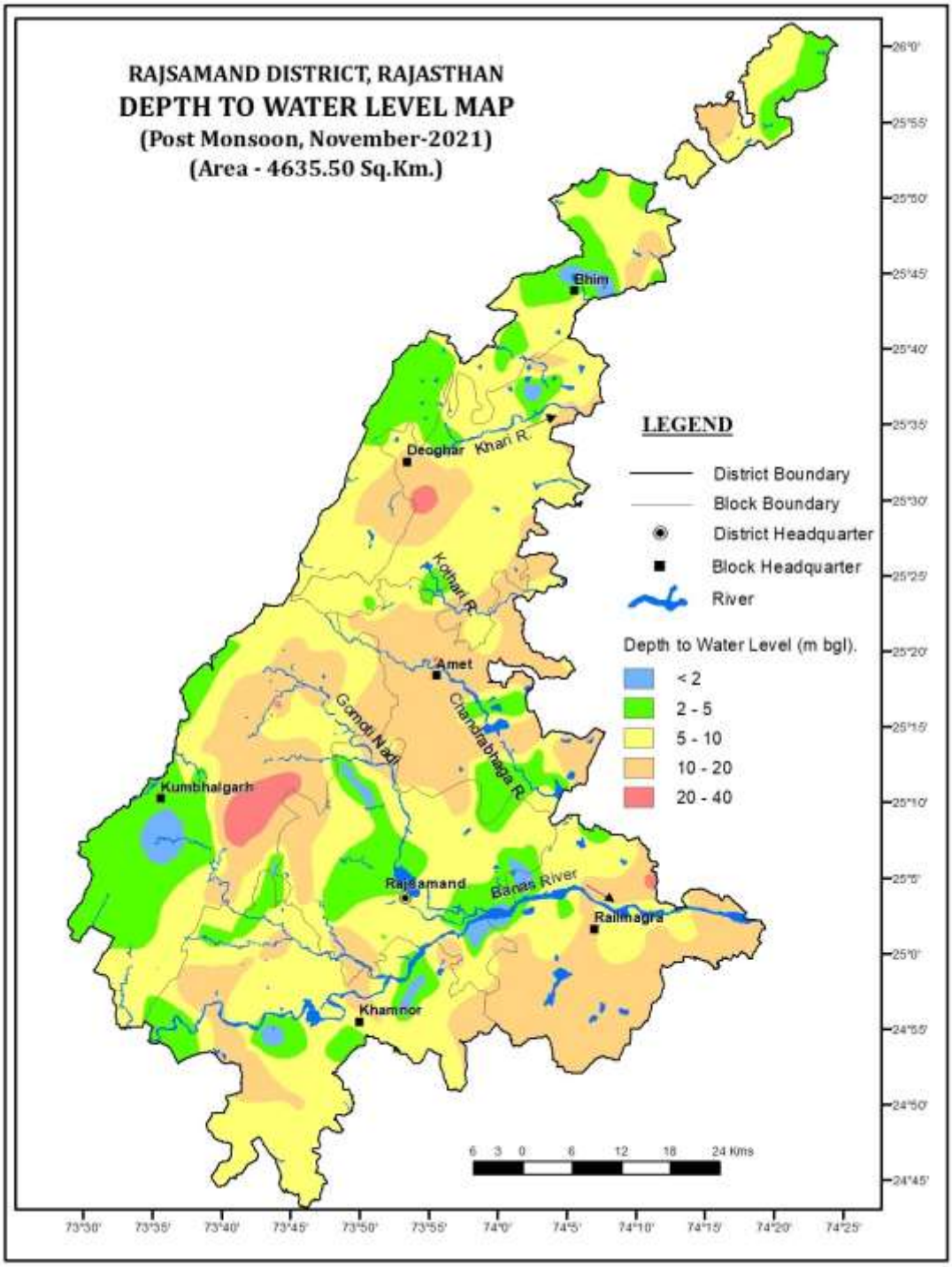


Figure 17: Depth to water level map of November 2021 in Rajsamand District

7.3. Water Level Trend (2011-2020)

For long term trend analysis 218 observation points were considered whose consistent 10 years of water level data was available. During pre-monsoon, rise in water level trend has been recorded at 141 stations and ranges from 0.002 (Galwa Village, Amet Block) to 1.62 m/year (Damodarpura Village, Railmagra Block) while falling trend was observed in 77 stations varying from 0.001 (Solankiyo ka gurha Village, Deogarh Block) to 2.18 m/year (Pharara Village, Rajsamand Block).

During post monsoon, rise in water level trend has been recorded at 97 stations and it ranges between 0.001 m/year (Khothariya Village, Khamnor Block) to 1.41 (Sadri Village, Railmagra Block) while falling trend was observed in 121 stations varying from 0.002 (Malkot Village, Deogarh Block) to 1.46 m/year (Dingrol Village, Amet Block).

Spatially the Rising water level trend has been observed in the Eastern and Western margins of the district covering almost the entire areal extent of the Kumbhalgarh, Khamnor, and Railmagra Blocks. Falling water level trend on the other hand has been observed in the Central portions of the district covering parts of Rajsamand, Amet, and Deogarh Blocks and few small pockets in the other Blocks of the district as shownin Figures 20.

The Rise in the water level trend can be attributed to certain reasons including the increase in the annual rainfall in the last decade with most of the years receiving annual rainfall more than the average rainfall over the last 30 years

The fall in the water level trend in the district can be due to the over-exploitation of the groundwater resources than its recharge, other being the cement industrial plants located in the areas exploiting the groundwater resources for the industrial activities.

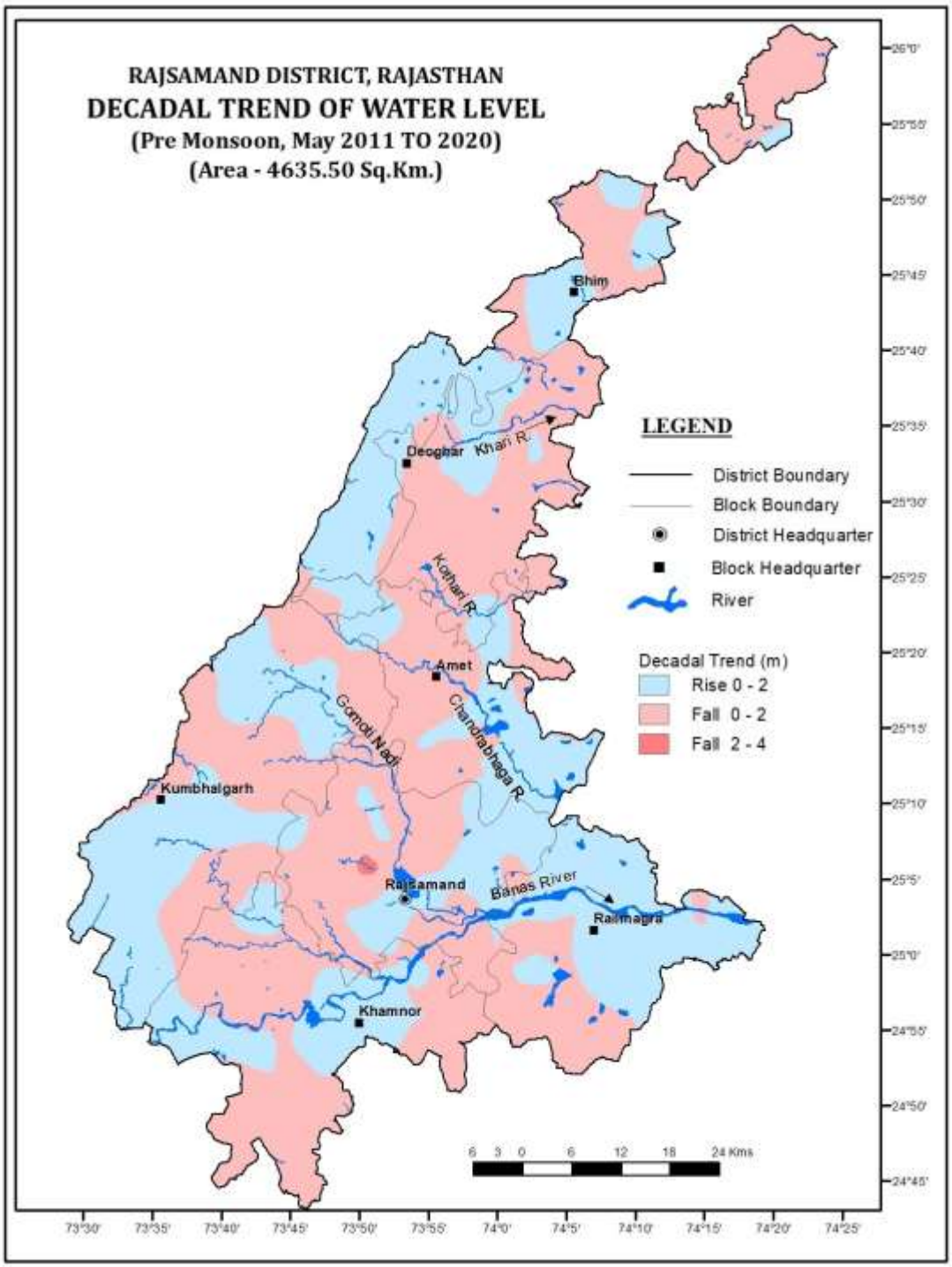


Figure 18: Pre-Monsoon water level trend of the Rajsamand District

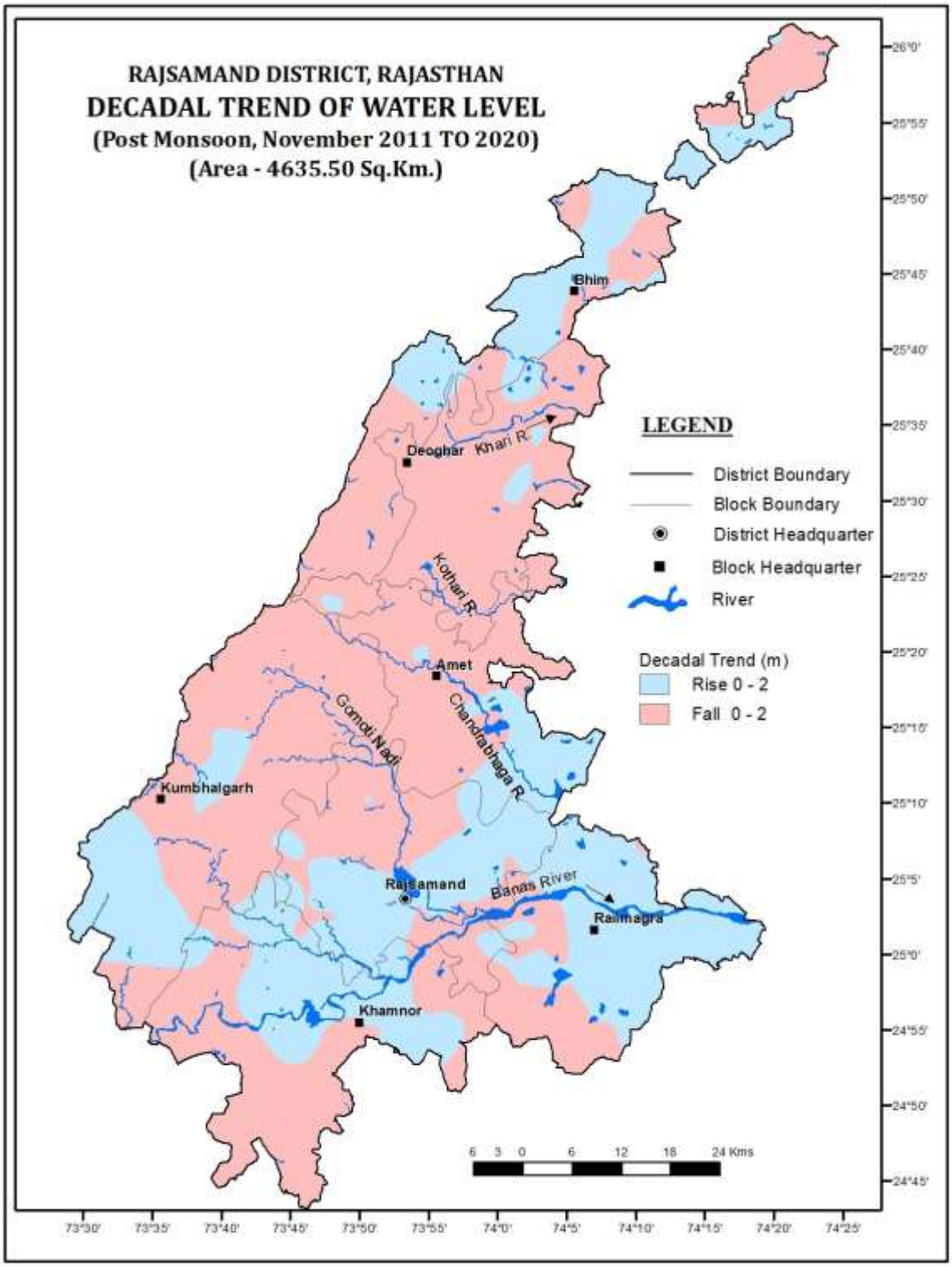


Figure 19: Post-Monsoon water level trend of the Rajsamand District

8. Groundwater Quality

In Groundwater assessment studies the quality of groundwater is of great significance. Groundwater study involves a description of the occurrence of the various constituents in groundwater and the relationship of these constituents to water use. The quality of water is defined as its acceptability with respect to its specific uses. In brief, a total of 232 samples (NAQUIM - 37, CGWB – 21, GWD - 174) collected during pre-monsoon 2021 and GWD collected during pre-monsoon 2020 were analyzed involving use of different instruments such as pH meter, EC meter, Flame Photometer, UV/ Visible Spectrophotometer and Titrimetric methods, for generating the map and to study the spatial variation of ground water quality (Figure 20). The concentrations of the variables were reported in milligram per liter (mg/l) except for EC (micro Siemens per centimeter, µS/cm at 25^0C) and pH. This unit of measurement of variable concentrations was converted to meq/l for hydro- geochemical analysis, wherever necessary. The well-wise quality details are presented in Annexure E.

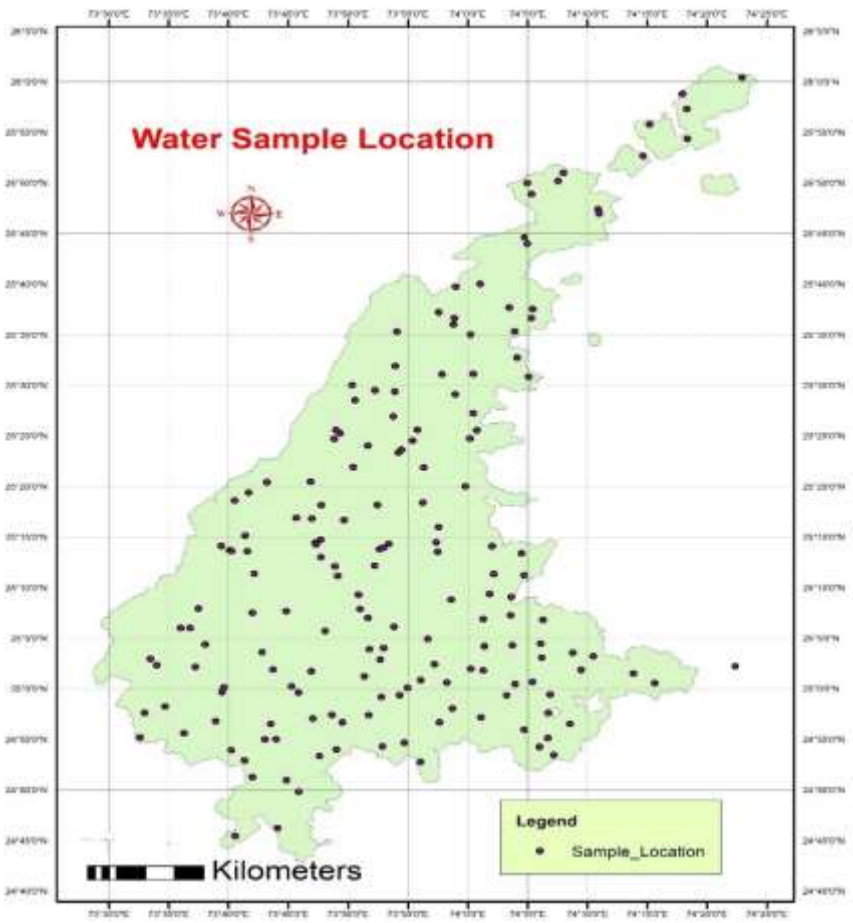


Figure 20: Location Map of the Groundwater Samples of Rajsamand District

The range of hydro geochemical parameters of groundwater and their comparison with the prescribed specification of Indian standard (BIS 2012) are summarized in Table 15, in order to evaluate the suitability of groundwater for drinking and domestic and public health uses.

It has been observed that most of the hydro geochemical parameters of the groundwater samples in the study area are within the maximum permissible limits, although a number of samples exceed the desirable limits of the Bureau of Indian Standards (BIS).

8.1. Suitability of Ground Water for Drinking Purposes

- **Temperature and pH**

The temperature variation of the samples collected under NAQUIM study ranges from 25.5^{o}C to 32^{o}C with a mean value of 28.50^{o}C. The pH indicates the strength of the water to react with the acidic or alkaline material present in the water. The acceptable limit of pH is 6.5 - 8.5. The pH in the groundwater is varied from 7.01 to 9.9 with a mean value of 8.3.

- **Electrical conductivity**

It is a measure of total mineral contents of dissolved solids in water. An increase in dissolved solids causes a proportional increase in electrical conductivity. This is a function of temperature and the ionic strength of the solution. The electrical conductivity values of ground water samples in the area is found to vary within the range 410 to 13260 µS/cm at 25°C with the minimum and maximum values being found at Aret ki Baghal village, Kumbhalgarh Block and at Peepli Ahiran village, Rajsamand Block respectively. Spatial variation map shows that the High electrical conductivity values are noted towards the eastern margin of the district i.e. concentrated mainly in the blocks of the Amet, and Railmagra. High EC values can also be seen at the sporadic locations usually along the periphery of the Bhim, Deogarh and Khamnor blocks (Figure 21).

From the above chemical quality data map and field observations it can be inferred that the groundwater quality in the BGC Formations is on the saline side, while on the other hand the groundwater in the Aravalli exposed in the western margin of the district is relatively fresh.

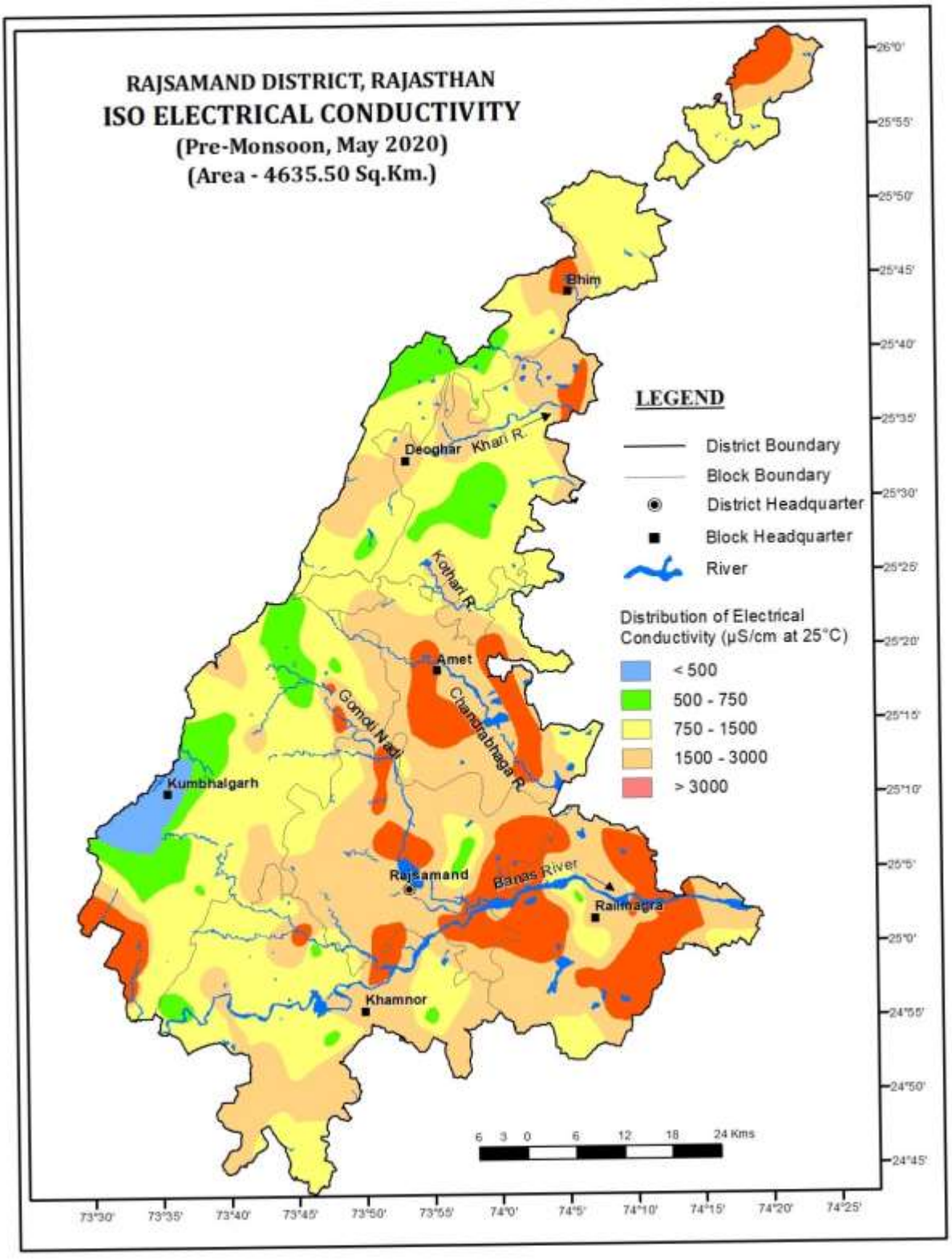


Figure 21: Electrical Conductivity Map of the Rajsamand District

- **Total Dissolved Solids (TDS)**

Total Dissolved Solids (TDS) in water include all dissolved materials in solution, whether ionized or not. It is numerical sum of all mineral constituents dissolved in water and is expressed in mg/l. The TDS contents of ground water are controlled by the mineral dissolution rate, chemical character of ground water and ionic saturation status of solution. The concentration of total dissolved solids in the ground water has been found to vary generally between 209 mg/l at Aret ki Baghal village, Kumbhalgarh Block to 7735 mg/l at Chattarpur, Amet Block with a mean vale of 1193.62 mg/l. TDS in 72.20% of analyzed water samples falls in the category of fresh water, while 27.80% samples have TDS in the range of 3000 - 10,000 mg/l and fall in brackish water category and no sample falling in saline category.

Table 14: Ranges of chemical parameters and their comparison with the Indian standards for Drinking Water

PARAMETERS	BIS Standards for DRINKING WATER (IS 10500: 2012)		TOTAL NO. OF SAMPLE	Concentration below DL		Concentration between DL & PL		Concentration above PL	
(in mg/L)	DL	PL		NO. OF SAMPLE	%	NO. OF SAMPLE	%	NO. OF SAMPLE	%
pH	**6.5 - 8.5**	**No Relaxation**	**232**	.	**.**	121	**52.15**	111	**47.84**
TDS	**500**	**2000**	**232**	40	**17.24**	164	**70.68**	31	**13.36**
TH	**200**	**600**	**232**	39	**16.81**	154	**66.37**	42	**18.10**
Ca	**75**	**200**	**232**	167	**71.98**	62	**26.72**	6	**2.58**
Mg	**30**	**100**	**232**	51	**21.98**	147	**63.36**	37	**15.94**
Na	**.**	**200**	**232**	.	**.**	140	**60.34**	95	**40.94**
K	**.**	**12**	**232**	.	**.**	102	**43.96**	132	**56.89**
Cl	**250**	**1000**	**232**	118	**50.86**	102	**43.96**	15	**6.46**
SO4	**200**	**400**	**232**	209	**90.08**	14	**6.03**	12	**5.72**
NO3	**45**	**No Relaxation**	**232**	140	**60.34**	.	**.**	94	**40.51**
F	**1**	**1.5**	**232**	173	**74.56**	36	**15.51**	26	**11.20**

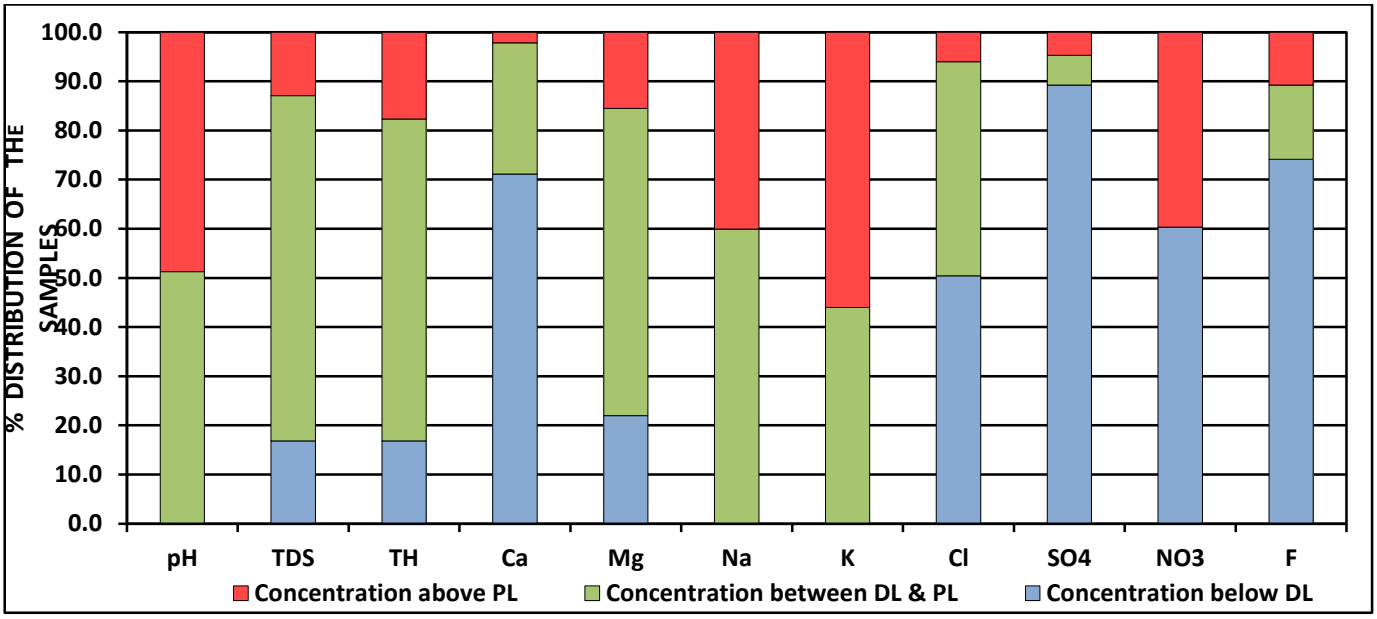


Figure 22: Percentage Distribution of Ground Water Samples as per BIS (2012) Drinking Water Standards

- **Nitrate**

Concentration of nitrate (NO_3^-) has been found to vary from 0.5 mg/l at Gawardi village in Railmagra Block to 427 mg/l at Peepli Ahiran, Rajsamand block. Nitrate concentration exceeds the maximum Permissible Limit of 45 mg/l in drinking water prescribed by BIS (IS-10500:2012) in 40% of the total ground water samples. The concentration of nitrate exceeding the permissible limit of 45 mg/l is found to be concentrated more on the western side of the district as contrary to the eastern side, where the nitrate values are normally below the limit. Higher concentrations of NO^{3-} are attributed to the anthropogenic sources mainly due to the application of more fertilizers and sewage carrying drains. Excess nitrate in drinking water can cause methemoglobinemia in infants,gastric cancer, goiter, birth malformations and hypertensions.

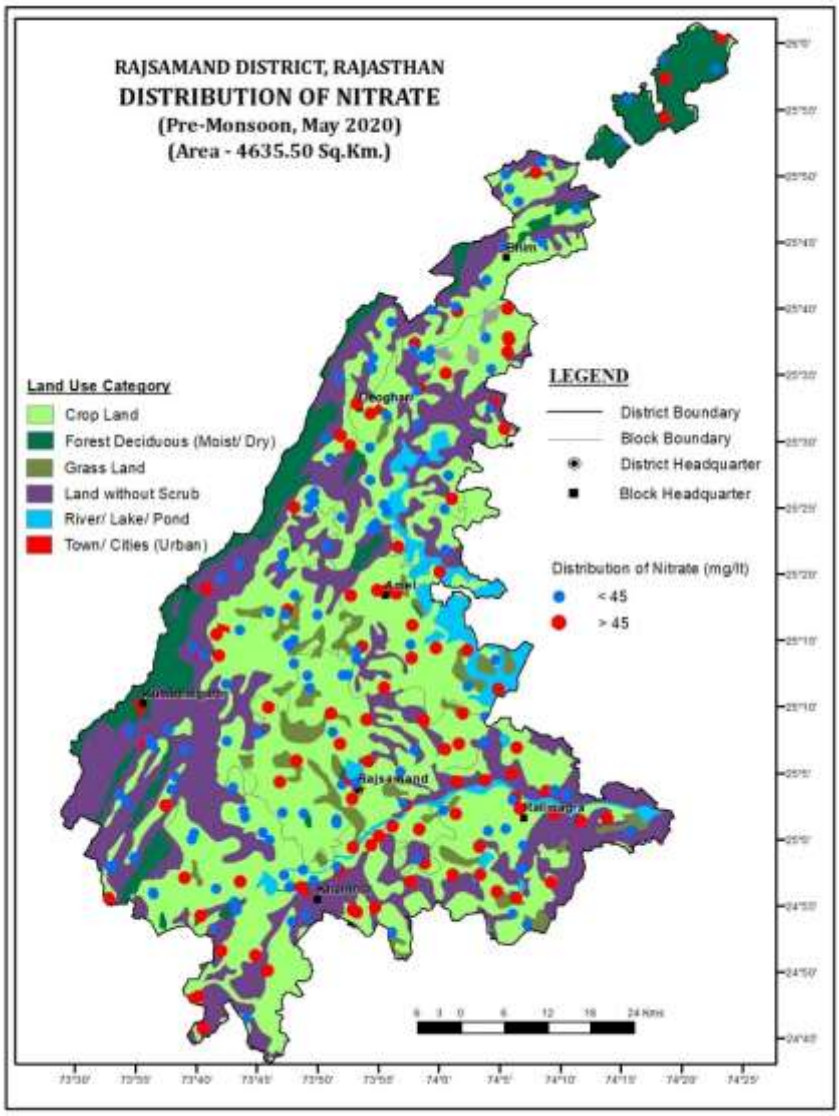


Figure 23: Nitrate Distribution Map of Rajsamand District

- **Fluoride**

Fluoride (F^-) is an essential element for maintaining normal development of healthy teeth and bones. However, higher F concentration causes dental and skeletal fluorosis such as mottling of teeth, deformation of ligaments and bending of spinal cord. Concentration of fluoride in ground water samples has been found to vary between 0.03 mg/l in Asan village Amet Block and 4.87 mg/l in Kothariya village Khamnor Block. With an average value of 0.86 mg/l, 73.70% of samples have F^- concentration within desirable limit of 1 mg/l, whereas it is between desirable and permissible Limits in 15.51% of samples and exceeds the maximum Permissible Limit of 1.5 mg/l (IS-10500: 2012) in only 10.77% of the total analyzed samples. Geogenic factors including weathering of rocks containing

fluorine bearingminerals like fluorite, apatite and micas is the major source of fluoride contamination in the area under observation.

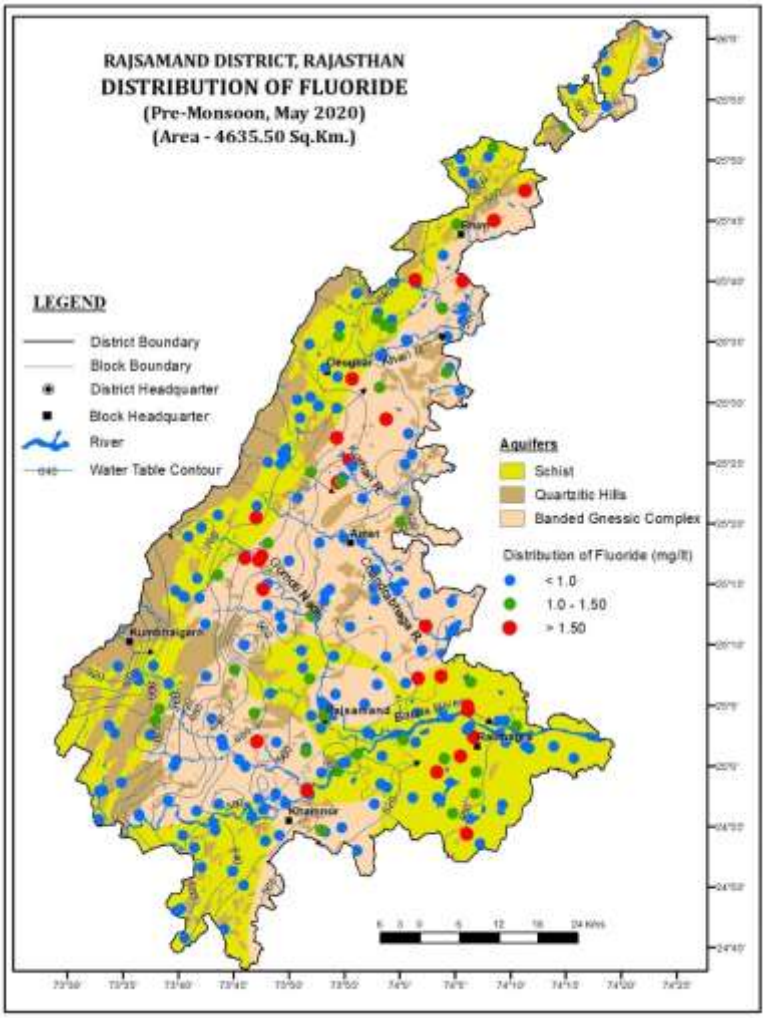


Figure 24: Fluoride Distribution Map of Rajsamand District

- **Uranium**

In the present study under NAQUIM an attempt has been made to evaluate the uranium concentrations in drinking water samples collected from seven blocks of the Rajsamand district. Estimation of uranium has been done by using LED Fluorimeter instrument. World Health organization (WHO) assumes that uranium content up to 30µg/l can be tolerated in drinking water. For Uranium analysis 38 samples were collected during 2021 pre-monsoon under NAQUIM study. It was observed that in 81% samples the concentration measured is within the guideline value defined by the WHO and in only 19 % of samples U-concentrations exceed 30 µgl−1 value (Figure 25). Data analysis also reveals

that samples Kuraj, Dhanwal and Kunwariya village exceed the threshold of 60 µgl−1 recommended by AERB, DAE, India, 2004. To understand the effect of high uranium concentration on human health still requires extensive field work and interaction with the people and collaboration with the health institutes. Author is of the viewpoint that the higher concentrations observed in ground water samples might be due to leaching of uranium from adjoining/basement granite rich rock formations that includes BGC. The anthropogenic activities urbanization and wide spread use of pesticides/fertilizers which is responsible for increase in the TDS/ salinity of the region might also are another cause. But, overall it is evident that the plausible source of high uranium observed in this region may be of geogenic in nature.

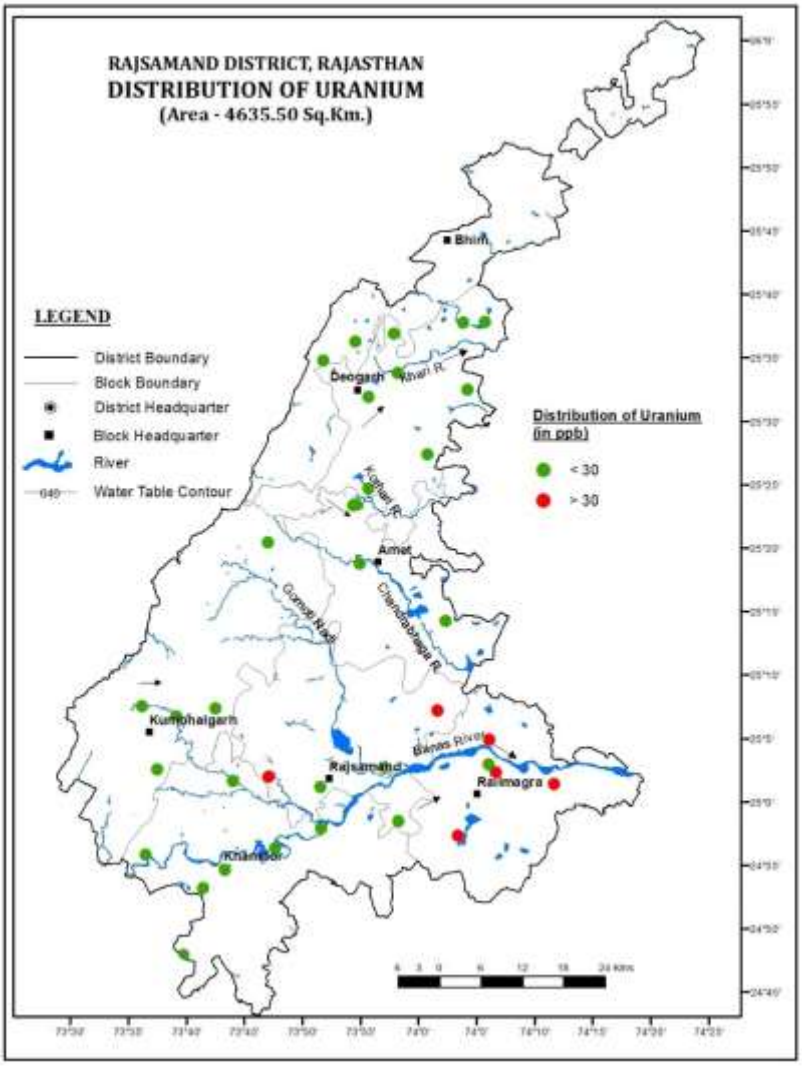


Figure 25: Uranium Distribution Map of Rajsamand District

- **Total Hardness**

TH has been found to vary between 105 mg/l and 1860 mg/l, indicating soft to very hard type of ground water. High hardness may cause precipitation of calcium carbonate and encrustation on water supply distribution systems. Long term consumption of extremely hard water might lead to an increased incidence of urolithiasis, anencephaly, parental mortality and cardio-vascular disorders. In the district, Total Hardness exceeds the recommended maximum Permissible Limit of 600 mg/l (IS-10500: 2012) in 17% of total analyzed ground water samples, while 16% of the sample are within the desirable limit of 200 mg/l. Total hardness in excess of the maximum Permissible Limit has been reported from parts of Amet, Deogarh, Rajsamand, and Railmagra Blocks of the district.

8.2. Suitability of Ground Water for Irrigation Purposes

The ground water used for irrigation is an important factor in productivity of crop, its yield and quality of irrigated crops. The quality of irrigation water depends primarily on the presence of dissolved salts and their concentrations. The Electrical Conductivity (EC), Sodium Absorption Ratio (SAR) and Residual Sodium Carbonate (RSC) are the most important quality criteria, which influence the water quality and its suitability for irrigation. The quality of groundwater based on EC and SAR is discussed in Table 15.

Table 15: Classification of groundwater quality based on suitability of water for irrigation purposes

Parameter	Class	Range	Groundwater Class(Irrigation Uses)	Number of Samples	Percent of Samples
Salinity Hazard (Richards,1954)	C1	< 250	Excellent	0	0.0
	C2	250 - 750	Good	25	10.86
	C3	750 - 2250	Permissible	145	63.91
	C4	2250 - 3000	Doubtful	25	11.30
	C5	> 3000	Unsuitable	34	14.78
SAR (Wilcox,1955)	S1	< 10	Excellent	211	91.73
	S2	10 - 18	Good	16	6.95
	S3	18 - 26	Doubtful	02	0.86
	S4	> 26	Unsuitable	-	-
Na% (Wilcox,1955)		< 20	Excellent	3	1.30
		20 - 40	Good	37	15.65
		40 - 60	Permissible	112	49.13
		60 - 80	Doubtful	73	31.73
		>80	Unsuitable	04	1.73
Residual Sodium Carbonate (RSC) (Eaton1950; Wilcox et al. 1954)		< 1.25	Safe	207	90.0
		1.25 - 2.5	Marginal	08	3.47
		> 2.5	Unsuitable	14	6.08

High saline water cannot be used on soils with restricted drainage and requires special management for salinity control. Plants with good salt tolerance should be selected for such areas. Very high salinewater is not suitable for irrigation under ordinary conditions but may be used occasionally under veryspecial circumstances. The soil must be permeable, drainage must be adequate, irrigation water must be applied in excess to provide considerable leaching and salt tolerance crops/plants should be selected.

Sodium Adsorption Ratio (SAR): High concentration of sodium in water produces undesirable

effects of changing soil properties and reducing soil permeability and thus reduces the supply of water needed for the crops. It is calculated from the ratio of sodium to calcium and magnesium by the following formula:

$$\mathbf{SAR= Na^{+}/ [(Ca^{2+}+Mg^{2+})/2]^{0.5}}$$ where all ionic concentrations are expressed in meq/l.

Cumulative effect of salinity and sodium hazard in the study area can be study by plotting sodium-absorption ratio and electrical conductivity (Figure 29) data on US Salinity Laboratory diagram (USSL, 1954).

Sodium Percent (Na %): The sodium in irrigation waters is usually denoted as percent of sodium. According to Wilcox (1955), in all-natural waters Na% is a common parameter to assess its suitability for irrigational purposes. The sodium percent (Na %) values were obtained by using the following equation:

$$\mathbf{Na\%= [Na^{+}+K^{+}] \times 100/ [Ca^{2+}+Mg^{2+}+Na^{+}+K^{+}]}$$ all ionic concentrations are expressed in meq/l.

Low sodium (alkali) water can be used for irrigation on almost all soils with little danger of the development of harmful levels of exchangeable sodium. Medium sodium water will present an appreciable sodium hazard in fine textured soils having high cation exchange capacity especially under low leaching conditions. This water can be used on coarse textured or organic soils with good permeability.

Residual Sodium Carbonate (RSC): Residual Sodium Carbonate (RSC) has been used to determine the harmful effect of carbonate and bicarbonate on the quality of water for agricultural purpose and is estimated by the formula.

$$\mathbf{RSC = (HCO^{-3}+CO^{-3}) - (Ca^{2+}+Mg^{2+})}$$ where all ionic concentrations are expressed in meq/L.

According to the RSC classification for irrigation purposes, the water samples with values greater than 2.5 meq/l are unsuitable for irrigation. Groundwater of the study area is classified on the basis of RSC and is presented in Table 15

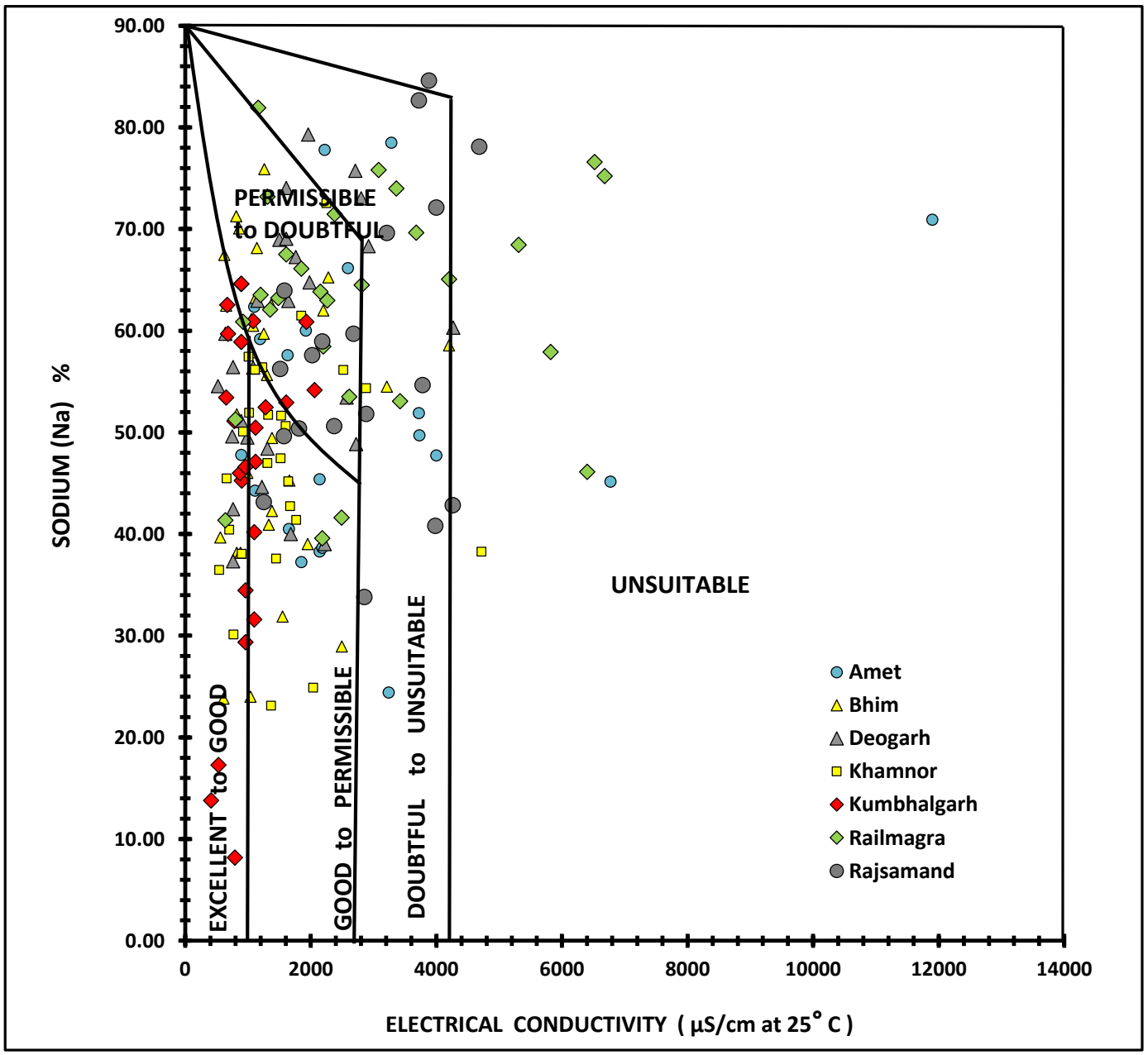


Figure 26: Wilcox diagram showing variation of salinity hazard and sodium hazard of the study area.

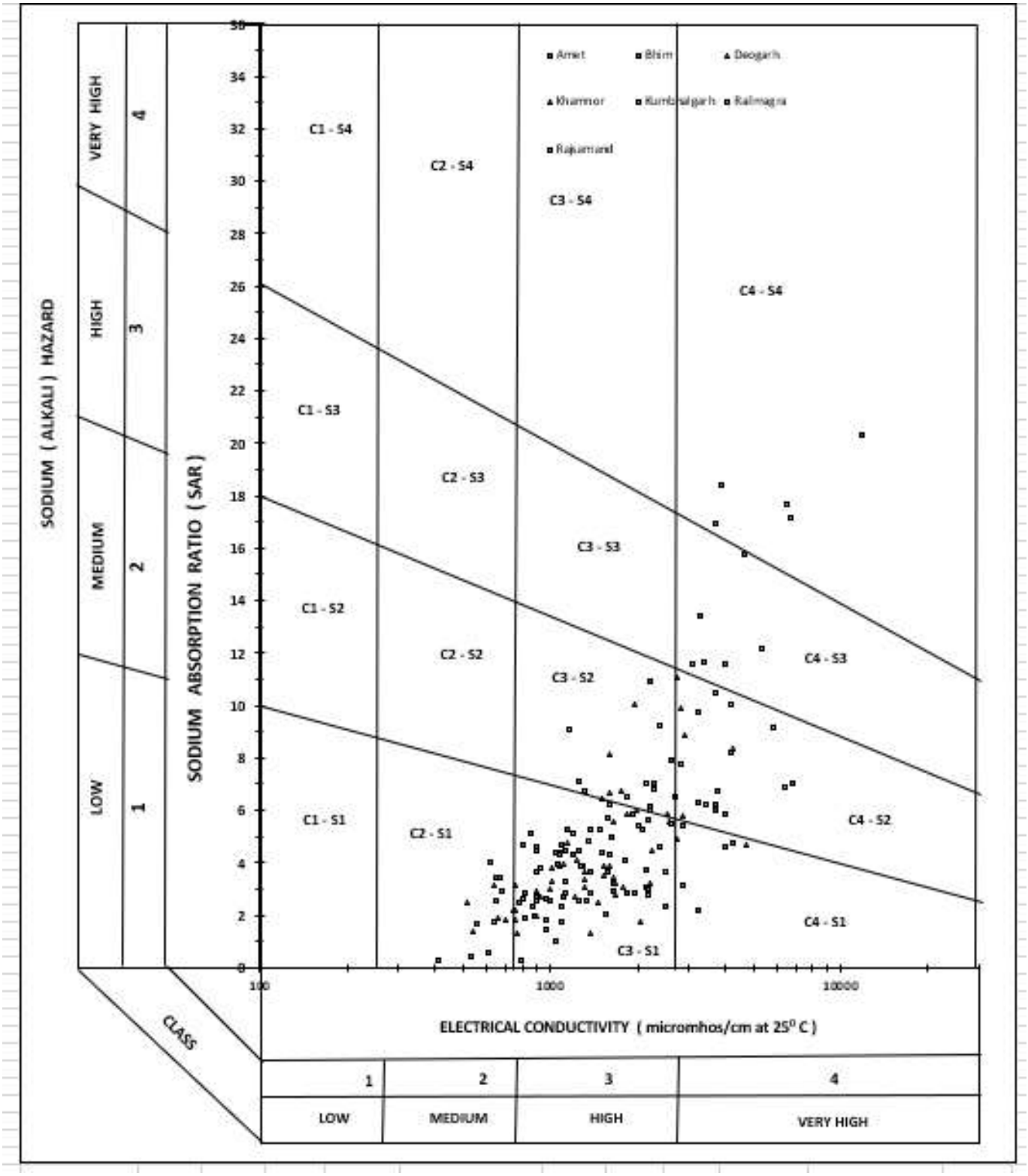


Figure 27: USSL diagram showing variation of salinity hazard and sodium hazard of the study area.

8.3. Heavy Metals

To understand the presence of the heavy metals in the groundwater and to also analyze the effect of the pollution due to the industries and mining activities in the district a total of 58 samples were collected and analyzed for six heavy metals (Table 16), To decide the suitability of groundwater for drinking purpose the standards proposed by the Bureau of Indian Standards (BIS) for drinking water (IS-10500:2012) were used. The results of analysis of heavy metals are given in Annexure F.

Table 16: The concentrations of Heavy Metals in groundwater samples of Rajsamand District

Parameters	BIS: 2012		Total number of Samples	Samples < DL		Samples between DL and PL		Samples > PL	
	DL	PL		Number of Samples	%	Number of Samples	%	Number of Samples	%
Fe (mg/l)	1	No Relaxation	58	37	94.82	.	.	3	5.17
Cu (mg/l)	0.05	1.5	58	40	68.96	18	31.03	.	.
Mn (mg/l)	0.1	0.3	58	53	91.37	5	8.62	.	.
Zn (mg/l)	5	15	58	57	98.20	1	1.7	.	.
Pb (mg/l)	0.01	No Relaxation	58	57	98.20	.	.	1	1.7
Ni (mg/l)	0.02	No Relaxation	58	57	98.20	.	.	1	1.7

Fe: Iron is the most commonly available metal on earth. During the study, Iron content in ground water samples varied from below detection limit (BDL) to 3.90 mg/l with the maximum value being found at Kundwa village of Deogarh Block. Out of the total samples collected, 94.82 % of the samples have iron content within the permissible limit and only 5.17 % exceeds the limit.

Cu: In study area Cu varies from BDL to 0.278 mg/l with nearly 69 % of samples are found within the desirable limit and the rest 31 % being within the permissible limit. The maximum value of 0.278 mg/l was observed at sampling site Tal in the Deogarh Block.

Mn: In study area of Rajsamand district, the value of Mn varies between BDL to 0.260 mg/l with the maximum value being observed at Barar village of Bhim Block. However, out of the total groundwater samples 91 % water samples are within the desirable limit, 9 % of the sample falls between desirable and permissible limit and no samples exceeding the permissible limit.

Zn: The desirable limit of Zinc is 5.0 mg/l and out of 58 samples only one sample exceeds the desirable limit but falls within the permissible limit in the Olnakhera village of Amet Block, with concentrations falling in the range from BDL to 8.09 mg/l.

Pb & Ni: Both Lead & Nickel are highly toxic metals and they should normally be present only within traces. The concentrations of Ni and Pb were within the acceptable limit in all the samples except one. The concentrations of Lead in groundwater samples ranged from BDL to 0.105 mg/l, with the maximum concentration being found from Olnakhera of Amet Block. The concentrations of Nickel in groundwater samples ranged from BDL to 0.02mg/l with the maximum concentration being found at Olnakhera village of Amet Block.

9. Groundwater Related Issues

9.1. Over Exploitation of groundwater

The present stage of development in 05 blocks of the district is categorized as Over Exploited and 02 blocks as Critical. The stage of development has sharply increased in Deogarh block as compared to 2017 in 2020 (Figure 31). The main reason for increase in stage of groundwater development is overdraft for irrigation purpose. The demand of groundwater in agriculture has increased drastically over the decade. The declining trend of stage of groundwater extraction is being observed in all the remaining blocks. The total draft in the district has increased from 122.78 mcm in 2017 to 123.11 mcm in 2020 which shows overall decline in the stage of development from 121.39 in 2017 to 118.94 in 2020. There is increase in groundwater availability from 101.14 mcm in the year 2017 to 103.50 mcm in 2020 is mainly attributed to the amount of rainfall received during the years of resource estimation with the year 2019 receiving more than 50% of average rainfall of the district over the last 30 years

9.2. Erratic Rainfall and Drought

The long-term rainfall analysis of Rajsamand District over a period of 30 years from 1991 - 2020 shows a maximum number of negative departures (53%) of rainfall with respect to average (612 mm) rainfall, whereas positive departures is observed in (47%) of the years. As a result, a mild drought is encountered in the district in 27% of the total years. This, along with withdrawal of more groundwater than the natural recharge has resulted in the decline in water levels over the years. The dependency on the rainfall is such that if there is a deficit of rainfall in a particular year, a majority of the small dams built

on the local nallas in the district runs out dry causing severe problems for the availability of drinking and irrigation water in the district. Thus, with a drought frequency of 53 % in addition with the hard rock terrain the erratic distribution of rainfall years is a major problem in the area.

9.3. Declining Water Level Trend (2011-2020)

The analysis of decadal water level trend (2011 – 2020) indicates that the district has significant areas that had undergone a declining water level trend over the years. The decline trend in Pre-Monsoon season is observed in 57 % of the wells in the district area covering the Rajsamand, Amet, Deogarh, and Bhim Blocks with few pockets in the other blocks. In Post-Monsoon season nearly 59% of the wells is showing declining trend covering the central part of the district composing of Kumbhalgarh, Amet, Deogarh, Blocks and few portions of Khamnor, and Bhim blocks. The long-term depleting nature of water level causes reduction in storage, which in turn leads to water scarcity.

9.4. Limited sub surface storage availability

There is limited sub surface space available for storage of groundwater as the entire district is covered up by the hard rock terrain with little or no alluvial cover and that too restricted to the flood plains of the drainage in the district. As the thickness of suitable weathered area is less therefore the possibility to recharge groundwater is also very less.

9.5. Quality of Groundwater

The quality of groundwater is also an issue mainly in the western part of the district with the EC exceeding the values of 2250 and even 3000 µS/cm in parts of Railmagra, Rajsamand, Amet and Deogarh blocks. Apart from the high salinity values, the Nitrate concentrations is also a major quality issue in the area with nearly 40% of the samples exceeding the permissible limit of Nitrate in the district covering almost the entire spatial area and total hardness exceeding more 300 mg/l in more 50% samples.

10. Groundwater Resources

The Groundwater resources have been reassessed in 2020 based on the methodology recommended by Groundwater Estimation Committee (2015). The block wise resources for Rajsamand district are given in Table 25. Perusal of data indicates that out of 7 blocks 5 blocks falls under Over Exploited category and 2 blocks under Critical with stage of ground water development of the district being 118.95 %, with Khamnor block having the lowest stage of development of 93.50 % and the Railmagra block having

the highest with value of 146.87 %.

Due to over development of groundwater further exploitation of this precious resource must be checked. Artificial recharge is a difficult task in the district as the country rock is composed exclusively of hard rocks, water level gradient is steep and storage capacity is low. Under such condition there is likelihood that recharged water will reappear as base flow. Any induced water application will create localized mound with no change in trend of declining water level in adjacent areas.

Since the stage of ground water development has already crossed 100%, for sustainable utilization of water resources conjunctive use of surface and groundwater is inevitable. Water Harvesting is the only solution through construction of bunds, anicuts, and rooftop harvesting structures. The area has undergone poly-phase deformation in geological past, which has resulted in a complex structure (folded, faulted and jointed) that may not be conducive for such structures. Therefore, site of these structures should be selected carefully.

10.1. Supply Side Management

The supply side management of ground water resources is proposed based on availability of surplus surface water within river sub basins and micro watersheds and their artificial recharge in unconfined aquifers. The feasibility of the area for recharge, specific yield of the aquifer, the unsaturated volume of the aquifer, the aquifer thickness as well as the unsaturated depth below 3 mbgl is also taken into consideration during AR.

Plantation and catchment area treatment are primary requirement for runoff generation in any area. Plantation of trees of local species will not only benefit local villagers but also reduce soil erosion and stability in the area. Most of the lakes/ponds are dried up due to non-availability of runoff despite above normal rainfall. Treatment of catchment will generate runoff and rejuvenate unused surface water conservation structures. The catchment area treatment is considered to be taken up in the area which will utilize about 2.22 mcm of surface water surplus available out of the total of 13.85 mcm. Catchment Area Treatment is proposed in 10% of Pasture Land and Barren Land includes Plantations, Staggered Trenches (ST) & Continuous Contour Trenches (CCT) and this is presumed toutilize about 5% of rainfall runoff generated in the identified area.

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of hard rocks, water level gradient is steep and storage capacity is low. Under such condition there is likelihood that recharged water will reappear as base flow. Any induced water application will create localized mound with no change in trend of declining water level in adjacent areas.

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For utilizing remaining surface water surplus of 11.62 mcm a total of 7105 structures (Figure 44) are proposed to be constructed which will include 5287 Mini Percolation Tank, 1053 Percolation Tank, 496 Pacca Check dams, 257 Anicuts, 12 Mini Storage Tanks.

- Structures are proposed on untapped stream, based on its order for catchment area treatment.
- Mini Percolation Tank (MPT) – Proposed on 1st order stream with a Catchment area less than 5 ha. Capacity has been proposed as 1000 m^3. Volume of MPT has been considered as recharge/conservation of surface water.
- Percolation Tank (PT) – Proposed on 2nd order stream with a Catchment area 5 to 10 ha. Capacity has been proposed as 2000 m^3. Volume of PT has been considered as recharge/conservation of surface water.
- Pacca Check Dam (PCD) – Proposed on 3rd order stream with a Catchment area 10 to 20 ha. Capacity has been proposed as 4000 m^3. Volume of PCD has been considered as recharge/conservation of surface water.
- Anicut– Proposed on 4th order stream with a Catchment area greater than 20 ha. Capacity hasbeen proposed as 6000 m^3. Volume of anicut has been considered as recharge/ conservation of surface water.
- MST– Proposed on 5th order stream with a Catchment area greater than 40 ha. Capacity has been proposed as 9000 m^3. Volume of MST has been considered as recharge/ conservation of surface water.

After construction of water conservation structures, volume of 0.596 mcm surface water remains unutilized this can be conserved by construction of Farm Ponds. Farm Ponds are proposed in 25% of Arable Land, considering one farm pond of 1200 m^3 capacity in 3 ha of land. A total of 496 number of farm ponds is proposed in the district.

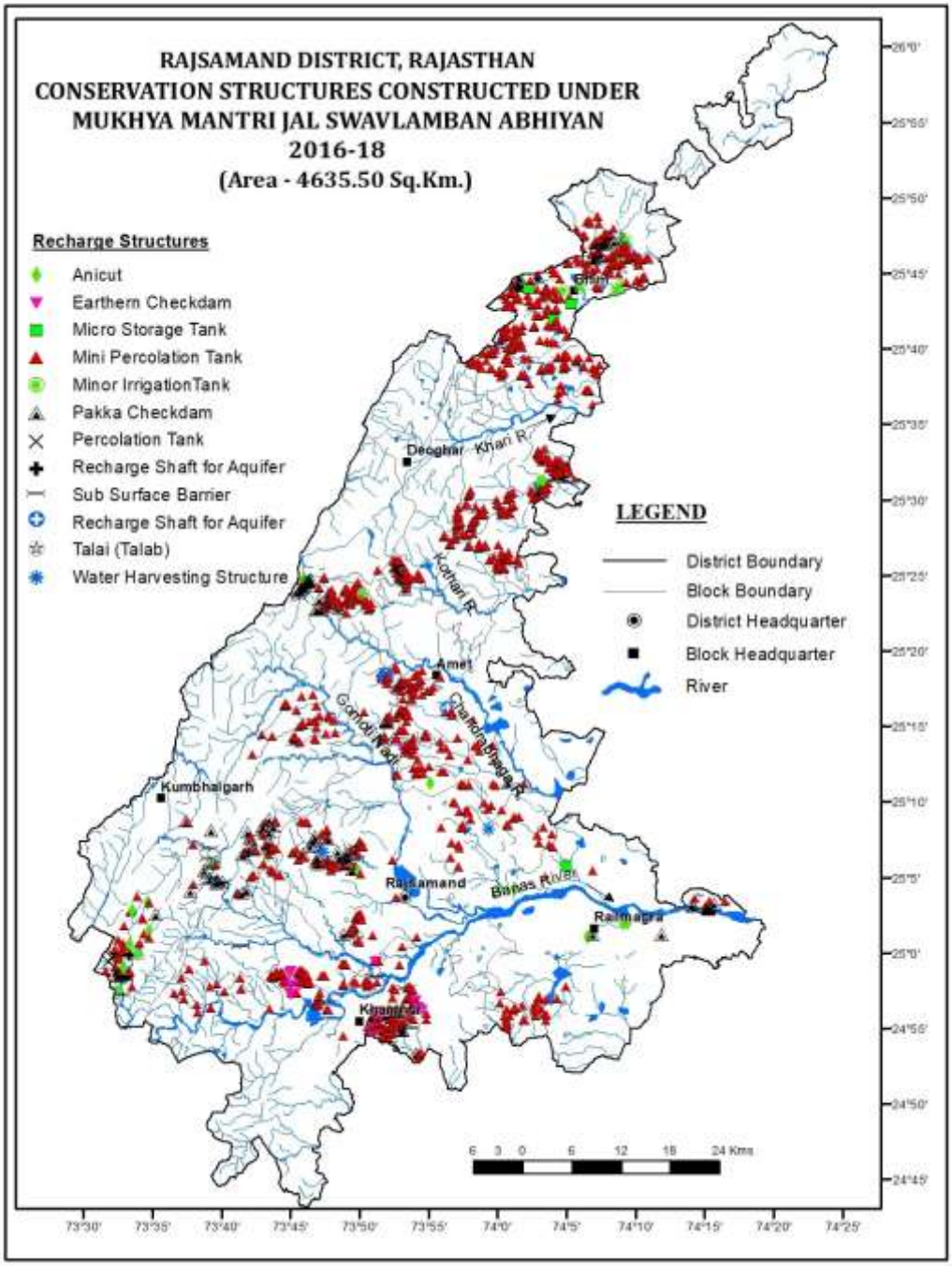


Figure 28: Location Points of the Water Conservation Structures under the MJSA project

10.2. Demand Side Management

The demand side management includes water saving by using interventions such as use of sprinkler irrigation in the areas where Rabi crop is being irrigated through ground water and changing the area under more water intensive i.e. wheat crop to gram. The water saving by adopting micro irrigation practices as well as the change in cropping pattern has been proposed in has been proposed in all the blocks of the district for the sustainable development of the groundwater. Even though after implementation of supply side management options in the current scenario, the water saving is still less to compensate the withdrawal. So, there is a need of adopting micro-irrigation techniques for water intensive crops or change in cropping pattern or both are required to save water.

It can be seen that hardly any enhancement in ground water resources can be conserved through artificial recharge due to constraints of availability of surplus/non-committed surface water. However, considerable improvement in ground water situation can be achieved with implementation of the suggested demand side management interventions.

The micro-irrigation techniques viz. sprinkler or drip irrigation, which are proposed to be adopted in 11181.5 hc area of the district which can save a total of 8.9452 mcm water. Similarly, if the 25% of cropping area under wheat cultivation be changed to gram crop it can save water up to 8.577 mcm (Table 17 & 18).

Table 17: Block-wise proposal for adopting Micro-Irrigation in Rajsamand District

Block	Net Irrigated Area through Ground Water (DW+TW)	Gross Irrigated Area through Ground Water (DW + TW)	25% of Gross Irrigated Area Changed to Sprinkler Irrigation	Water Saving Through Sprinkler Use in mcm
Amet	3059	3736	934	0.7472
Bhim	3544	3653	913.25	0.7306
Deogarh	4737	8059	2014.75	1.6118
Khamnor	5017	5476	1369	1.0952
Kumbhalgarh	3345	3374	843.5	0.6748
Railmagra	8906	13091	3272.75	2.6182
Rajsamand	5902	7337	1834.25	1.4674
District	**34510**	**44726**	**11181.5**	**8.9452**

**Area In Hectare* **DW = Dug Well* **TW = Tube Well* **Source: Ground Water District Outline*

Table 18: Block-wise proposal for Crop Change and Water Saving in Rajsamand District

Block	Area Under Wheat	25% of Area Under Wheat Changed to Gram	Water Saving Through Crop Change in mcm
Amet	2625	656.25	0.6562
Bhim	3053	763.25	0.7632
Deogarh	3352	838	0.838
Khamnor	5354	1338.5	1.3385
Kumbhalgarh	2963	740.75	0.74075
Railmagra	8341	2085.25	2.0852
Rajsamand	8620	2155	2.155
District	**34308**	**8577**	**8.577**

**Area in Hectare* **Source: Ground Water District Outline*

10.3. Expected Benefits

The impact of groundwater management plans on the groundwater system in the district after its implementation is evaluated and the outcome shows significant improvement in groundwater scenario in all blocks as given in the Table 18. After implementation of interventions the total Stage of Groundwater Extraction will improve from 118.95 % to 94.38 %, i.e., a significant change of one third of the original value can be achieved

Table 19: Block-wise Proposal of Water Conservation Structures in Rajsamand District

Block	Geographical Area of Block(sq. km)	Hilly Area (sq. km)	Potential Area (sq. km)	Area recommended for Catchment area treatment (ha) (10% of PL+BL)	Mini Percolation Tank	Percolation Tank	Pacca Check dam	Anicut	MST	No of Recharge/ Farm Pond (One farm pondin 3 ha land proposed in 25%of arable land)
Amet	523.26	58.37	465.19	842	621	156	31	33	3	99
Bhim	687.39	350.23	337.16	1063	722	121	67	12	1	15
Deogarh	617.01	226.25	390.76	1248	620	132	64	34	1	95
Khamnor	791.68	115.82	675.86	1098	915	210	91	45	1	128
Kumbhalgarh	788.35	251.79	536.56	1374	971	158	108	50	1	6
Railmagra	608.14	7.96	600.18	1164	716	123	61	40	2	37
Rajsamand	619.33	66.13	534.38	873	722	153	74	43	3	117
District	**4635.16**	**1076.5**	**3540.09**	7656	**5287**	**1053**	**496**	**257**	**12**	496

Table 20: Block-wise Water Availability after Supply Side Interventions in Rajsamand District.

Block	Potential Area (sq. km)	Volume of sub surface storage space available forartificial recharge (MCM)	Surface water Surplus (mcm)	Surplus water utilized in Catchment area treatment (mcm)	Surplus water utilized in RechargeShaft / Injection well (mcm)	Surplus water utilized by Water Conservation Structures (mcm)	Surplus water utilized by Farm Pond (mcm)
Amet	465.19	32.09	1.63	0.23	0.00	1.28	0.12
Bhim	337.16	9.85	1.61	0.28	0.00	1.31	0.02
Deogarh	390.76	20.73	1.79	0.32	0.00	1.35	0.11
Khamnor	675.86	37.63	2.47	0.34	0.00	1.98	0.15
Kumbhalgarh	536.56	28.69	2.48	0.44	0.00	2.03	0.01
Railmagra	600.18	32.96	1.85	0.34	0.00	1.46	0.04
Rajsamand	534.38	65.42	2.02	0.27	0.00	1.61	0.14
District	**3540.09**	**227.37**	**13.85**	2.227	0.00	1.027	0.5956

Table 21: Ground Water Availability & Stage of Groundwater Extraction after Supply Side and Demand Side Interventions in Rajsamand District

Block	Annual Extractable Ground Water (mcm)	Current annual gross ground water extraction for 'All Uses' (mcm)	Present Stage of GW Extraction %	Additional Water Recharge after Supply side interventions (mcm)	Projected Stage of GW Extraction % after Supply Side Interventions	Additional Water Availability after Demand side interventions	Gross ground water extraction for 'All Uses' after Demand side interventions (mcm)	Projected Stage of GW Extraction % after Demand side interventions
Amet	10.7562	14.3047	132.99	0.8703	122.01	1.4034	12.78	109.94
Bhim	9.9144	13.5333	136.50	0.9354	124.56	1.4938	12.02	110.80
Deogarh	9.0955	10.2690	112.90	0.9995	100.59	2.4498	7.71	76.33
Khamnor	21.4380	20.0448	93.50	1.3278	87.37	2.4337	17.46	76.68
Kumbhalgarh	18.4225	17.4875	94.92	1.4585	87.92	1.4155	16.06	80.80
Railmagra	14.9793	22.0049	146.90	1.0737	136.80	4.7034	17.26	107.50
Rajsamand	18.8976	25.4735	134.79	1.0757	126.83	3.6224	21.71	108.70
District	**103.5035**	**123.1176**	**118.95**	**7.7409**	**110.13**	**17.522**	**105.00**	**94.38**

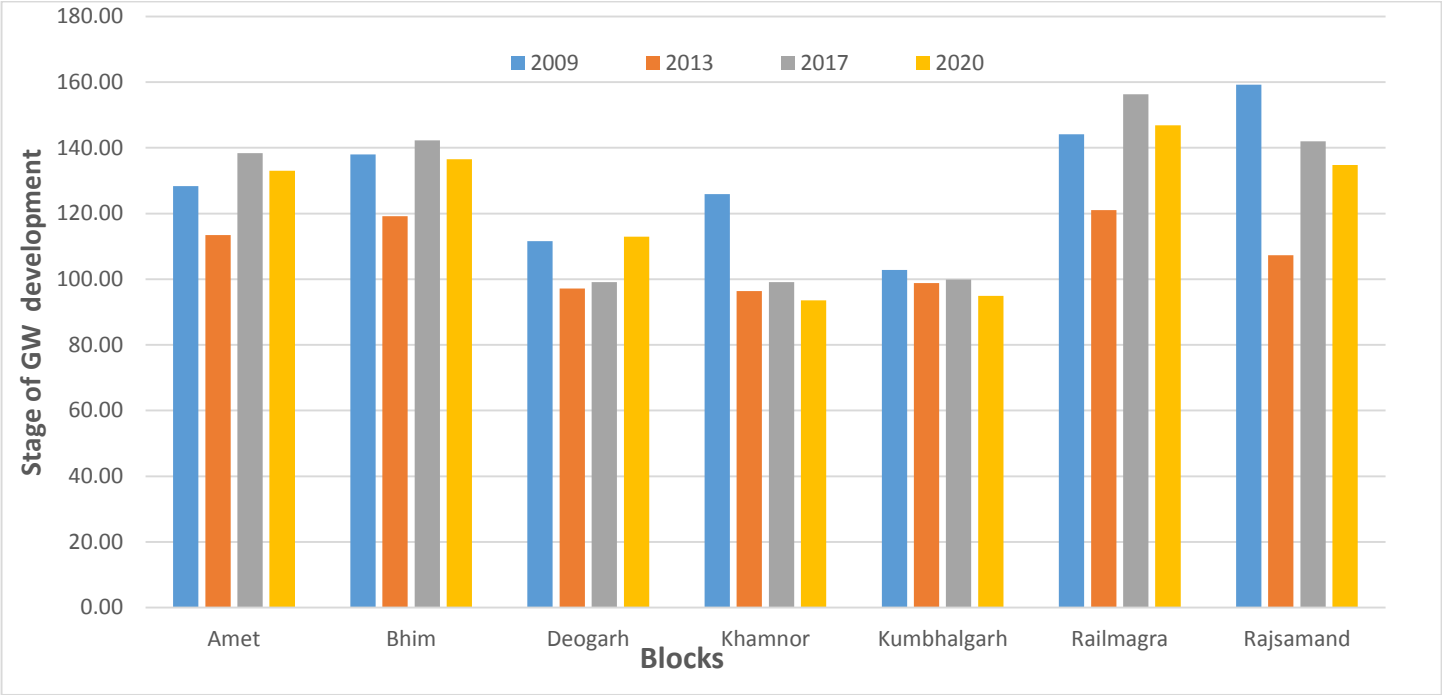


Figure 29: Block wise Stage of Groundwater Development through the years in Rajsamand district.

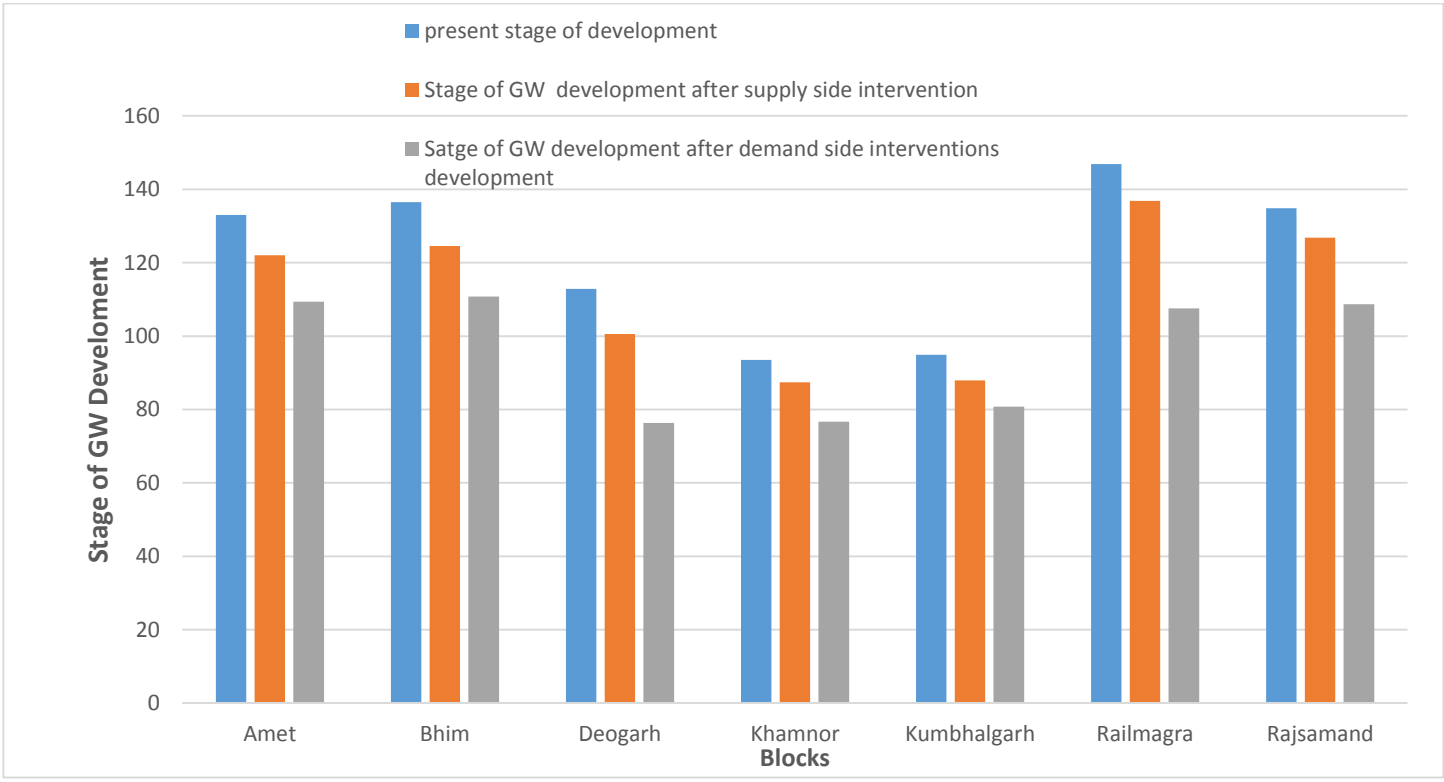


Figure 30: Expected Change in Stage of Ground Water Extraction after Proposed Interventions.

11. Public Interaction Programmes (PIPs) under the NAQUIM Study in the field area of Rajsamand District, Rajasthan.

Public Interactions Programs with the locals of the district were held at Mohi, Sansera and Sangawas Gram Panchayats of the district. The motive of these programs was to understandthe ground reality of the groundwater conditions in the district and also to educate and encouragethe locals about the management and conservation of groundwater resources in the future. The field photos of the interaction programs are depicted in Figure 33.

Figure 31: Public Interaction Programs under NAQUIM in Rajsamand District.

12. Sum Up

Intensive studies were carried out to prepare block wise aquifer maps and aquifer management plans of the district based on data generated in-house, data gap analysis, data acquired from State Govt. departments. All the available data was brought on GIS platform and conforming to an integrated approach, block wise GIS maps on various relevant themes were prepared along with the aquifer management plans of Rajsamand District.

1. Rajsamand district is located in the southern part of the state of Rajasthan covering an area of 4635.16 km^2. It has an average elevation of 500 - 625 meters above Mean Sea Level. The district is systematically drained by two major rivers viz. Banas and Luni with a major portion of the district forming part of Banas River Basin. The district is divided into Eleven Blocks namely Amet, Bhim, Deogarh, Khamnor, Kumbhalgarh, Railmagra and Rajsamand. There are 11 Tehsils, 8 Panchayat Samities, 1080 Villages and 214 Gram Panchayats for better decentralization of the power.
2. The Rajsamand district experiences arid to semi-arid type of climate and remains quite dry and parched. The average temperature in Rajsamand for the year 2021 was 25.4 °C| 77.8 °F. May and June are considered the hottest months of the year when temperature crosses 45°C. The variation in annual temperature is around 24.7 °C | 76.4 °F. The mean annual rainfall of the area during the study period was 612 mm. Annual drought intensities show that most of the years in the last 20th century had observed mild to moderate drought with few years of normal rainfall (1991-2000), whereas in the 21st century a majorityof the years have received more than normal rainfall with only few years experiencing mild to moderate drought (2001-2021). The frequency of occurrence of drought in district is 46.66 %.
3. Rajsamand district is drained by Banas River and its tributaries i.e. Khari, Chandrabhaga, Gomati, Kothari, Ahar etc. The river as well as tributaries are ephemeral and flow only in response to heavy precipitation. The predominant drainage pattern in the western hill ranges is rectangular to sub-rectangular and it is dendritic to sub-dendritic in rest of the area. Drainage pattern in the western hill region is controlled by fractures and joints and in the rest of the area by subsurface lineaments. The area has some lakes and tanks also. The famous Rajsamand Lake is situated near the district headquarters Rajsamand and is the main source of supply of drinking water to Rajsamand city. There are small check dams and tanks constructed on the rivers and streams of the district which augment the natural recharge of ground water in the area.
4. Agriculture activity in the district is extensive and the major source of occupation of the

locals and is carried out in both the Kharif and Rabi seasons. The season-wise major crops grown in the area are Wheat, Barley, Gram, Mustard, Pulses, Green Peas grown in the Rabi season and Jowar and Bajra, Moong, groundnut, Maze, Soyabean Cotton Rice in Kharif season. Very small area is used for cultivation of fruits and vegetables (699 ha). Out of the total gross sown area of 140850 ha about 46821 ha area is irrigated through dug wells tube wells which nearly make up 33.24 % of the total gross sown area.

5. There are only two aquifer types in the district and both these occupy almost equal areas in terms of spatial distribution. There are no aquifers in alluvial formations and the hardrock aquifers in schistose rocks and BGC occupy 41% area each while the remaining 18% is hills. Weathered, fractured and jointed openings in hardrocks lead to formation of aquifers in them. The schistose aquifers are seen as NE-SW trending belt adjacent and parallel to Aravalli ranges in the western part of the district and also in the eastern part of the district as large patch. The area in between the two schistose aquifer regions lies the NE-SW trending, wide central belt of BGC, interspersed with hills and occasionally by schist aquifers.
6. 3D and 2D aquifer disposition diagram shows two aquifer systems in the district. Water in Aquifer I occur under phreatic condition in the weathered hard crystalline and sedimentary rocks. Aquifer II is composed of compact rocks with isolated and scattered factures and joints.
7. Groundwater in Rajsamand district is generally good for drinking and irrigation purposes, with only few locally and sparsely spaced pockets of saline water.
8. The management plan has been proposed to manage the ground water resources. Supply side management practices are proposed in all the blocks. By adopting this management, a 2.22 mcm of water can be conserved under catchment area treatment, 11.027 mcm of water can be conserved under by construction of conservation structures and 0.59 mcm of water can be conserved through farm ponds. Demand Side Management practice include adopting the micro-irrigation techniques and change in cropping pattern is also suggested in all the blocks of the district. A total of 17.522 mcm of water can be saved under this which will bring the stage of groundwater extraction to 94.38 % from the existing 118.95 %.

13. Recommendations

- The interventions discussed above needs to be implemented to bring down the Stage of Ground Water Development down and put a halt to further decline of ground water levels.
- The interventions above need to be supported by regulation on extraction from deeper aquifer. So, the deeper ground water resources are protected for future generation and also serve as ground water sanctuary in times of distress/drought.
- Land based interventions like construction of lined farm ponds, rehabilitation of existing farm ponds along with horticulture plantation as may be feasible to take on to increase the availability of irrigation water during both Kharif (July to October) as well as Rabi (October to March) season.
- The additional groundwater resource available after adopting supply side management strategies is 7.74 mcm which can be sufficiently utilized in the water conservation measures to enhance the crop production by using micro irrigation and crop diversification practices and better ground water development. It is suggested adopt demand side management practice in the water stressed i.e. over exploited blocks of the district.
- Agricultural and urban runoff tainted with chemical pesticides and fertilizers are the sources of waste water from domestic and agriculture sites. Effluents from industries, mining sites etc. are also responsible for huge amount of waste water generation. Considering wastewater as a resource, it can be cleaned to such standards that it can be reused in a number of ways, e.g. for flushing toilets, laundry machines or for irrigation of crops.
- In terms of the critical issues for the drinking water such as source sustainability, water quality management and better operation and maintenance, it is important that strong grassroots awareness is generated. Thus, IEC activities and capacity building activities needs to be aggressively propagated to establish the institutional framework for participatory ground water management.
- Farmers should be trained for adopting more efficient irrigation techniques and water conservation practices and boosting recharge. Awareness among stakeholders & their Participation for ground water recharge and conjunctive use of available resource. Farmers

should be trained for adopting more efficient irrigation techniques and water conservation practices and boosting recharge.

- As it is peek time to move from source to resource much effort has to be made in the direction of preserving catchments, more plantations to conserve more water and multi-disciplinary approach to save more water viz. Diversification in agriculture (horticulture, vegetables, green houses, agro-forestry, fodder crops, Diversification of Livelihoods (Agriculture, Animal Husbandry, Self-Employment), limiting extensive groundwater withdrawals which will in turn require limiting agricultural electricity subsidies provided by state governments and rationing of power.

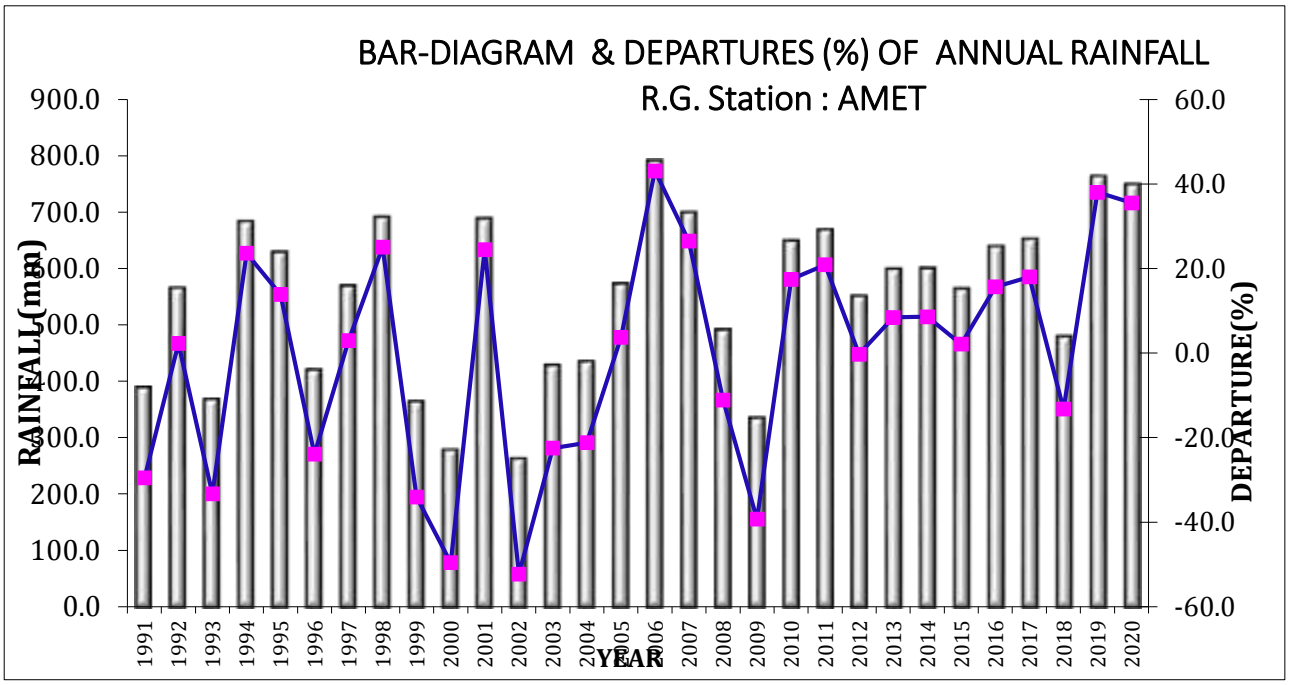
- Sustainable management of the area is required to be taken off to improve the quality and quantity of the groundwater and regular monitoring is therefore recommended.

14. BLOCK-WISE AQUIFER MAPS AND MANAGEMENT PLANS

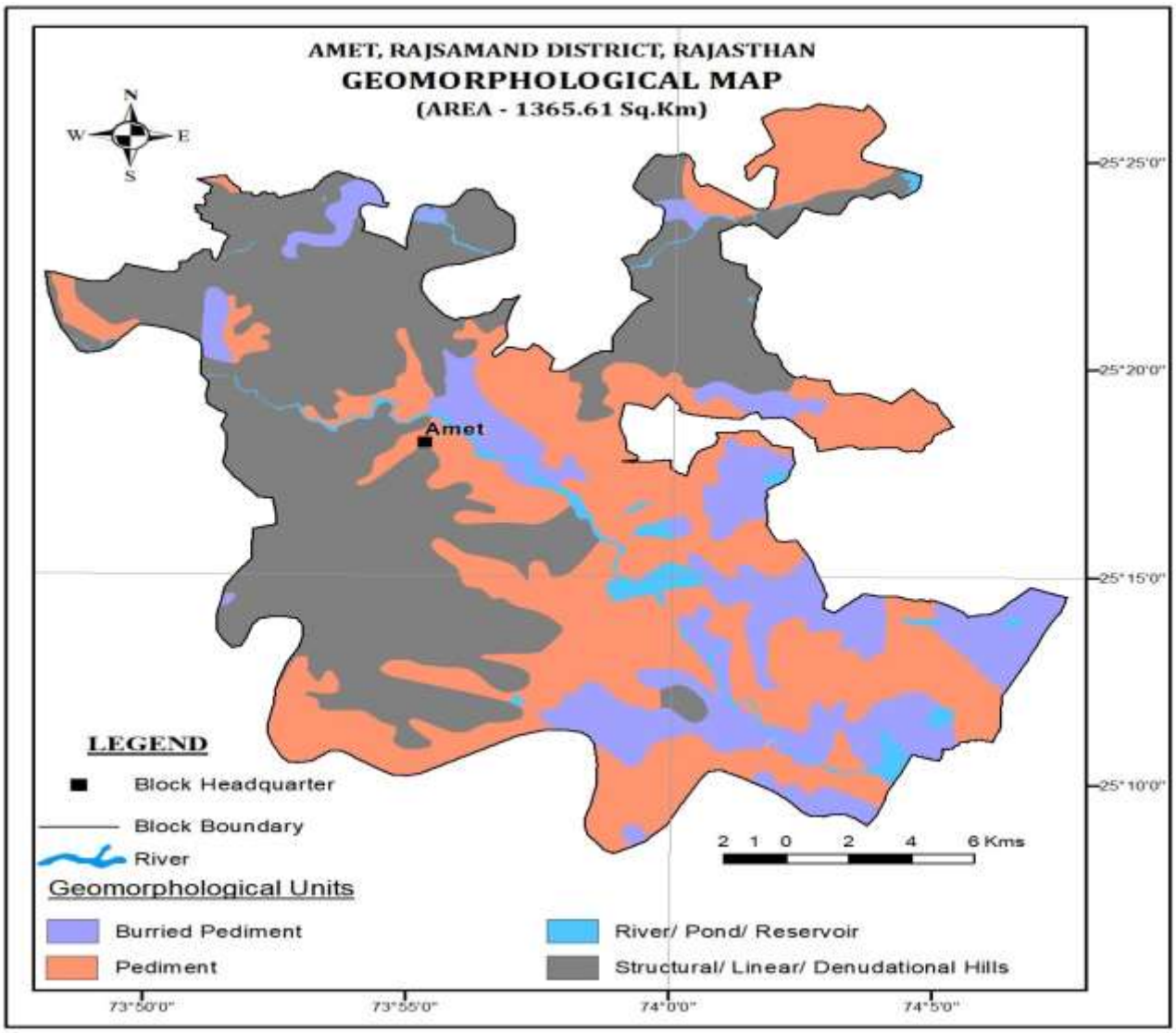
- AMET BLOCK.
- BHIM BLOCK.
- DEOGARH BLOCK.
- KHAMNOR BLOCK.
- KUMBHALGARH BLOCK.
- RAILMAGRA BLOCK.
- RAJSAMAND BLOCK.

14.1. AMET BLOCK

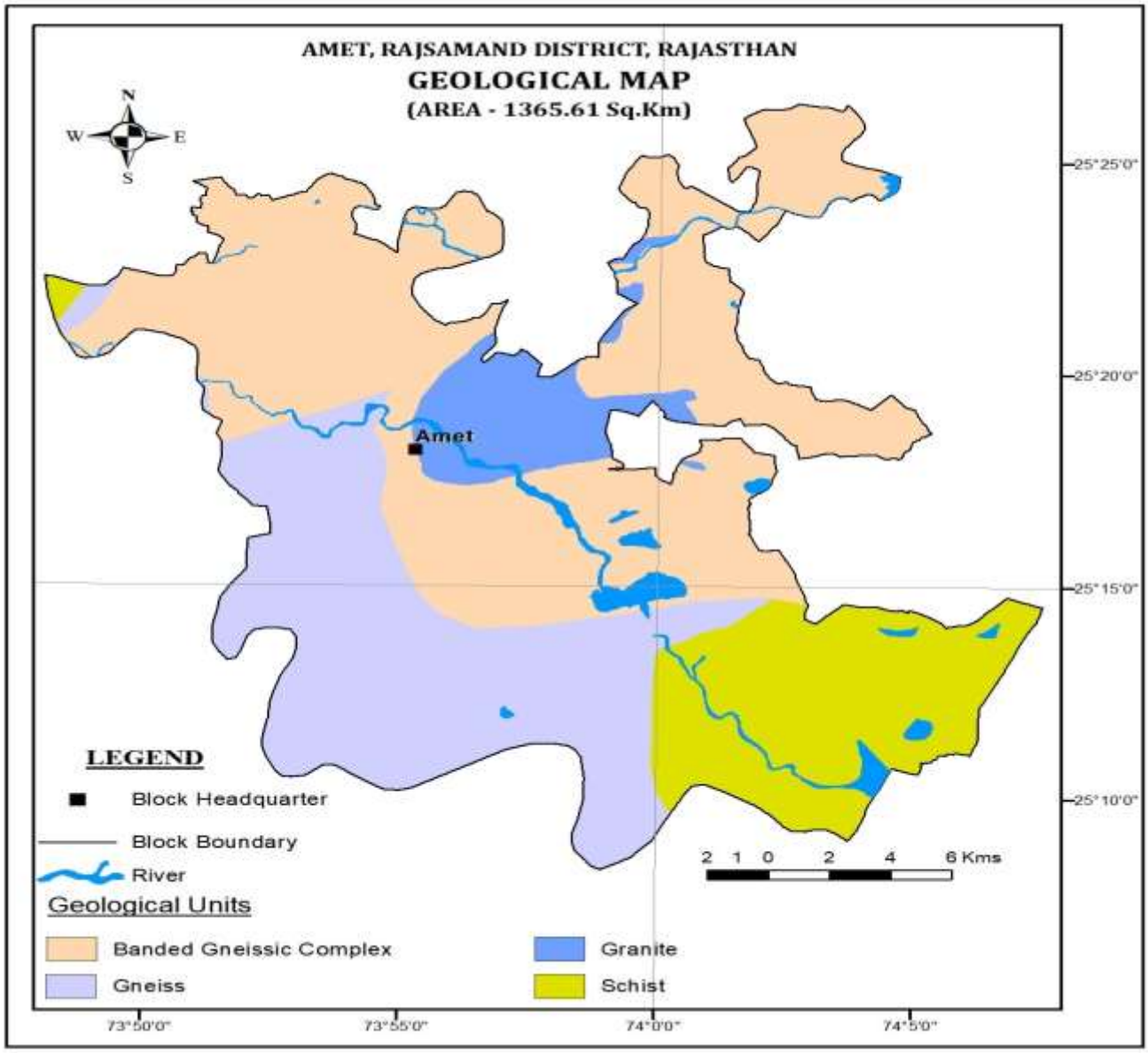
Salient Information	Block Name	Amet
	Longitude	73° 48′ 07″ to 74° 07′ 24″ East
	Latitude	25° 08′ 15″ to 25° 26′ 24″ North
	Geographical Area (sq. km.)	523.26
	Hilly Area (sq. km.)	58.37
	Population (2011)	118949
	Highest Elevation (m amsl)	515
	Lowest Elevation (m amsl)	935
Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	544.7
	Mean Annual Rainfall (mm) (1991-2020)	553
	Highest Annual Rainfall (mm) (1991-2020)	792 (2006)
	Lowest Annual Rainfall (mm) (1991-2020)	264 (2002)
	Standard Deviation (mm) (1991-2020)	146.9
	Coefficient of Variation (%) (1991-2020)	26.5



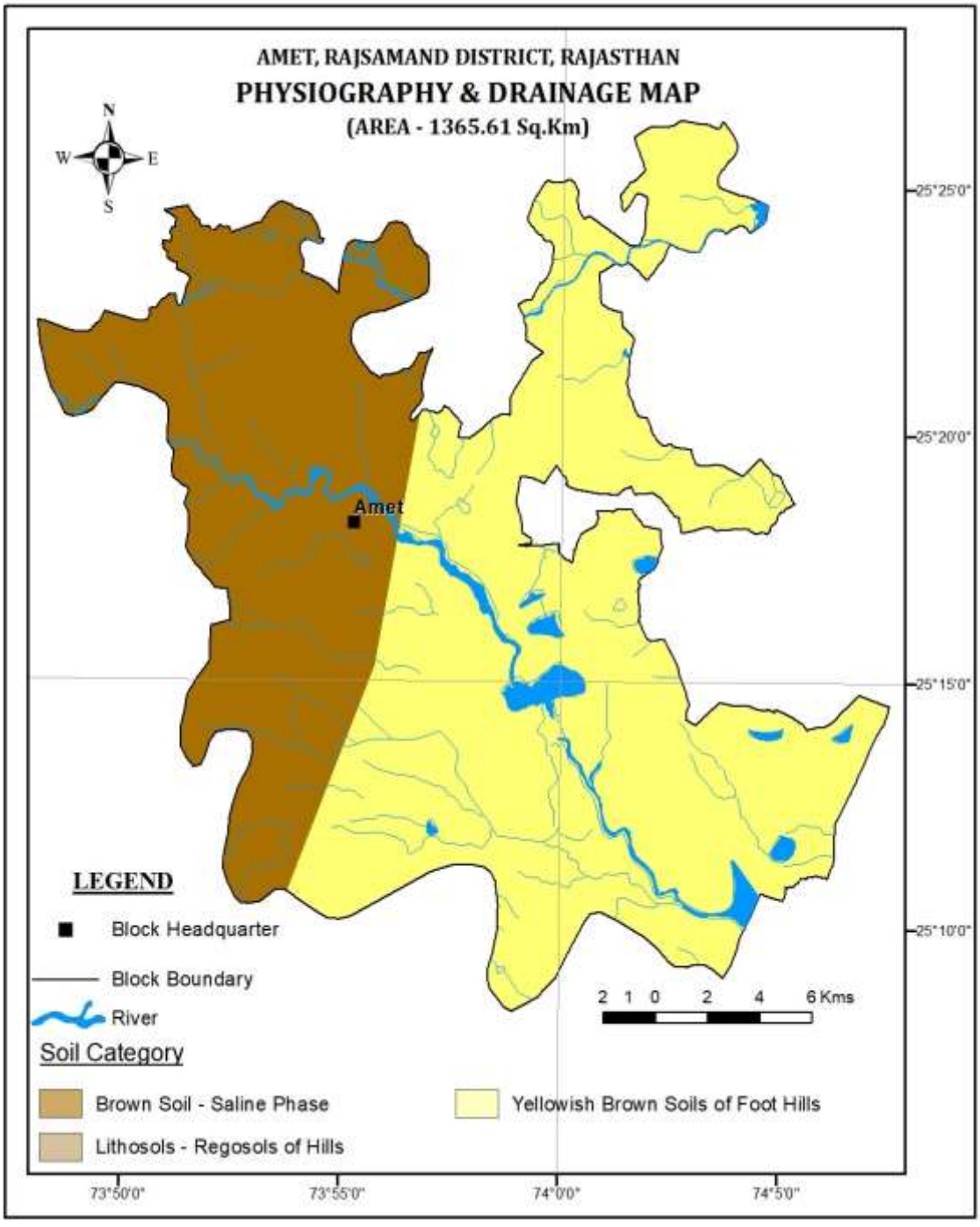
		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	18	60 %
	Mild (0 to -25%)	06	20 %
	Moderate (-25% to -50%)	05	16.6 %
	Severe (-50% to -75%)	01	3.33 %
	Extreme (-75% to -100%)	-	-
Geomorphology	• Pediplain, Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints,fractures and lineaments associated with folding, faulting etc.		



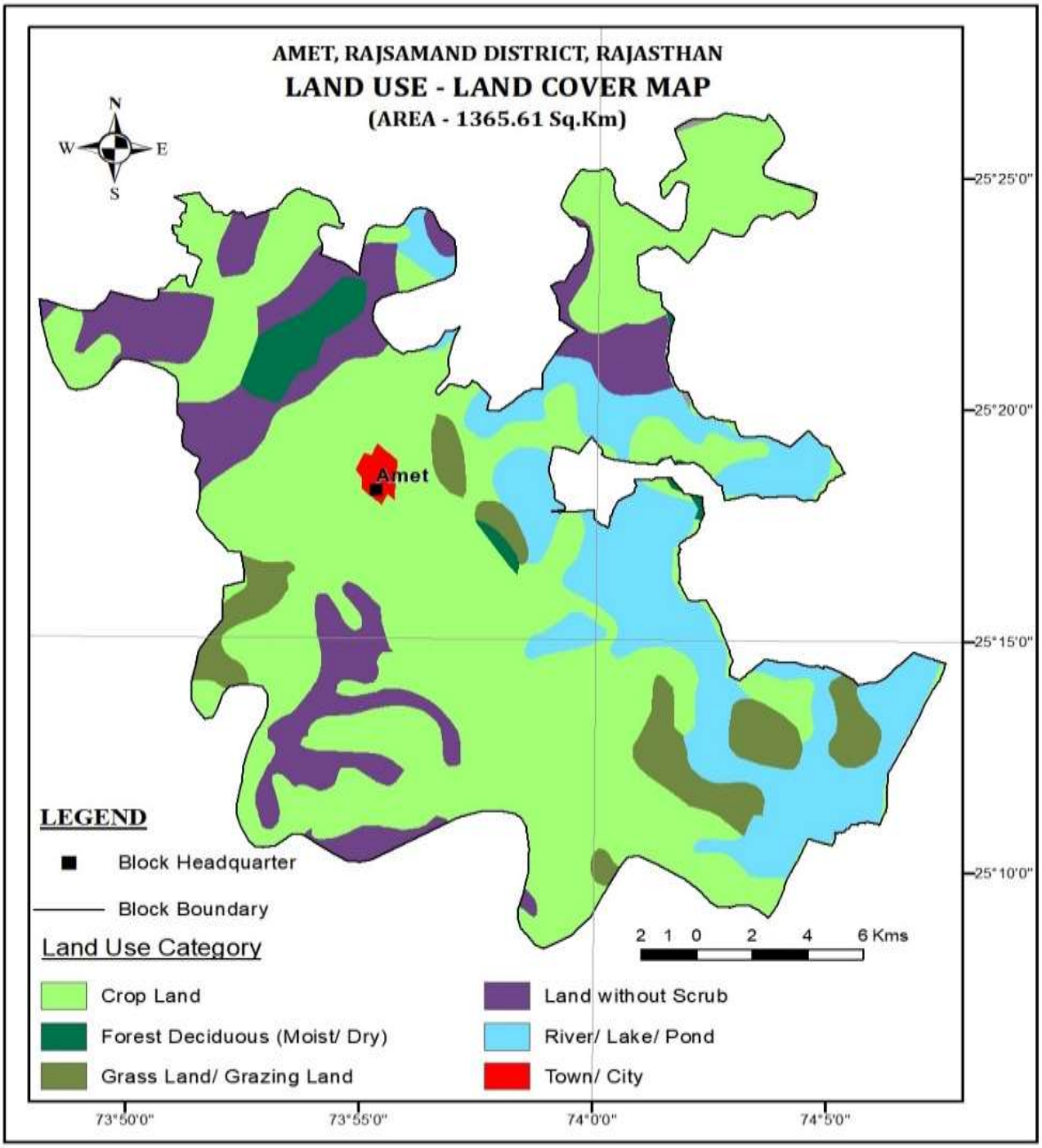
Geology	Geologically the area is represented by Banded Gneissic Complex, Mica Schist of the Bhilwara Super group.

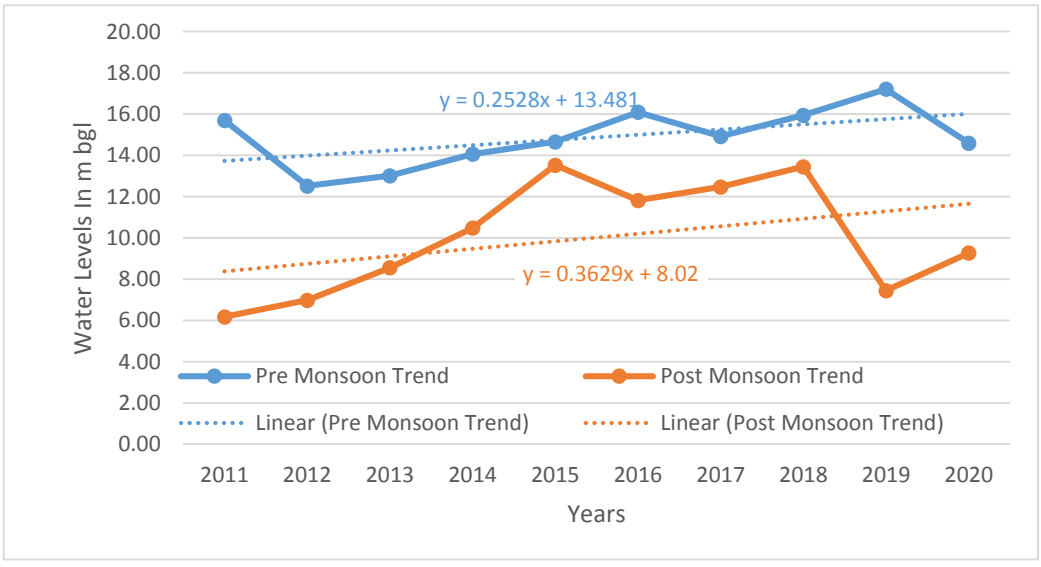


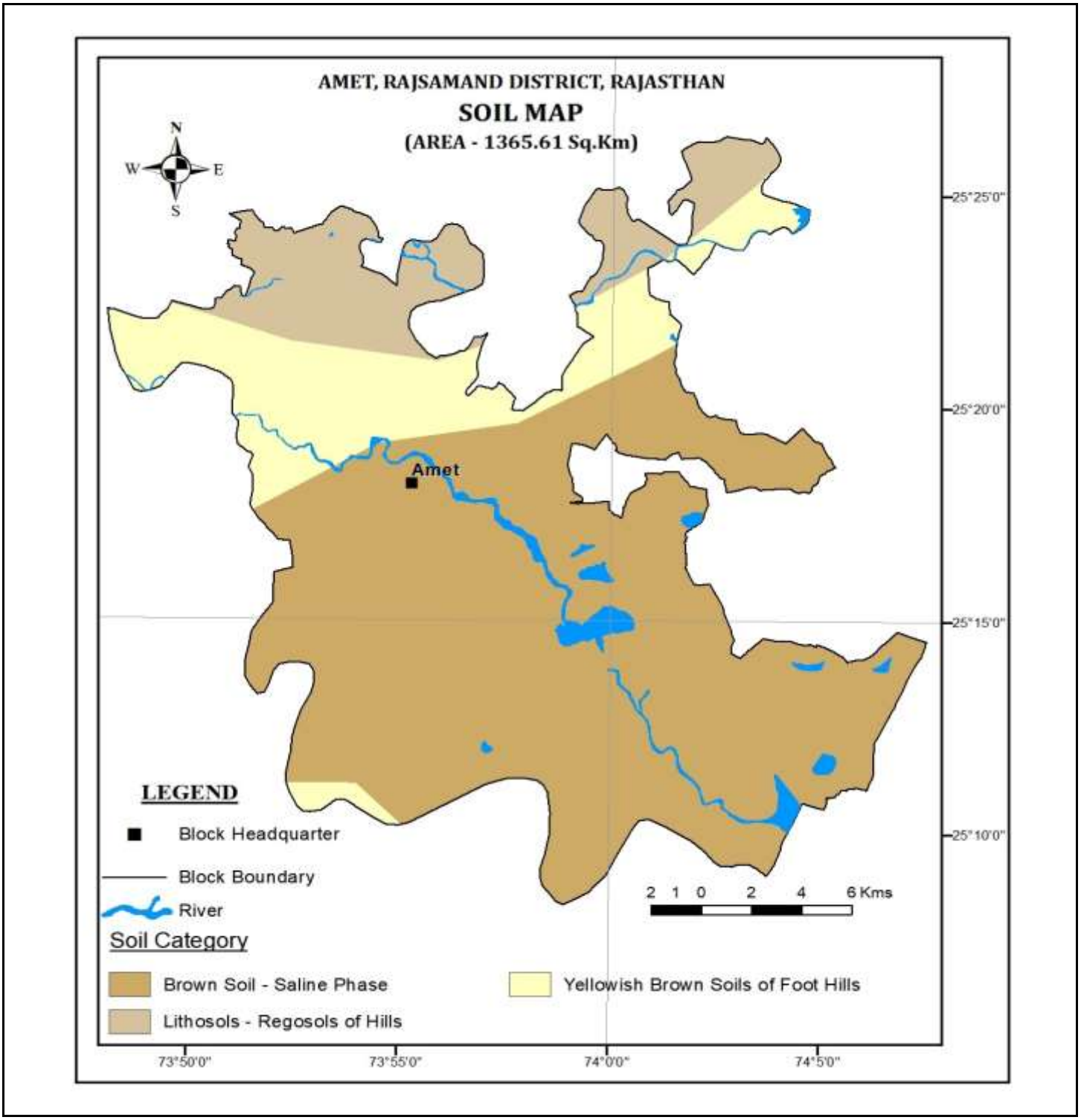
Physiography and drainage



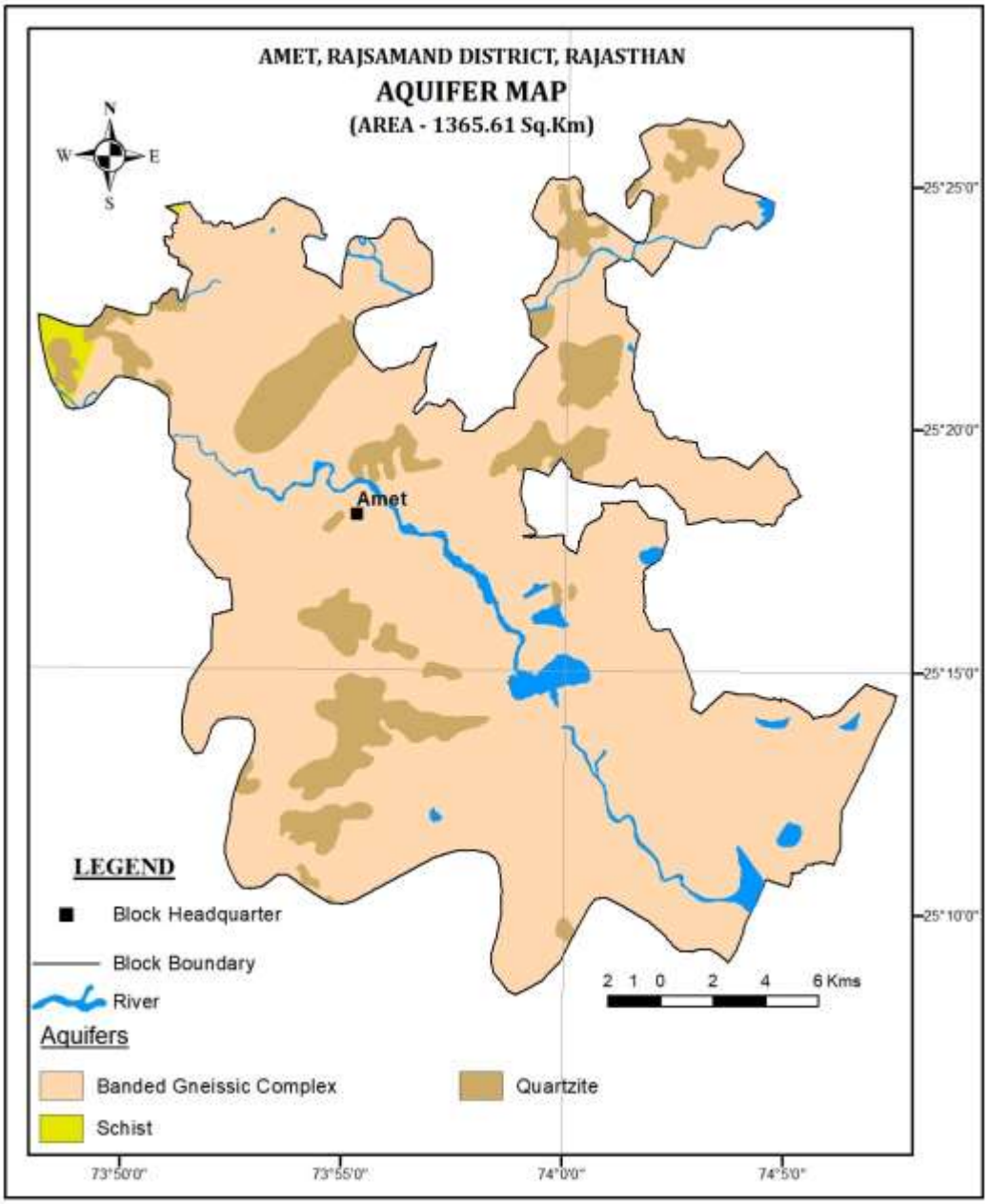
Land Use	Geographical Area (sq. km.)	523.26
	Forest Area (sq. km.)	8.06
	Net Sown Area (sq. km.)	117.17
	Area sown more than once (sq. km.)	36.94

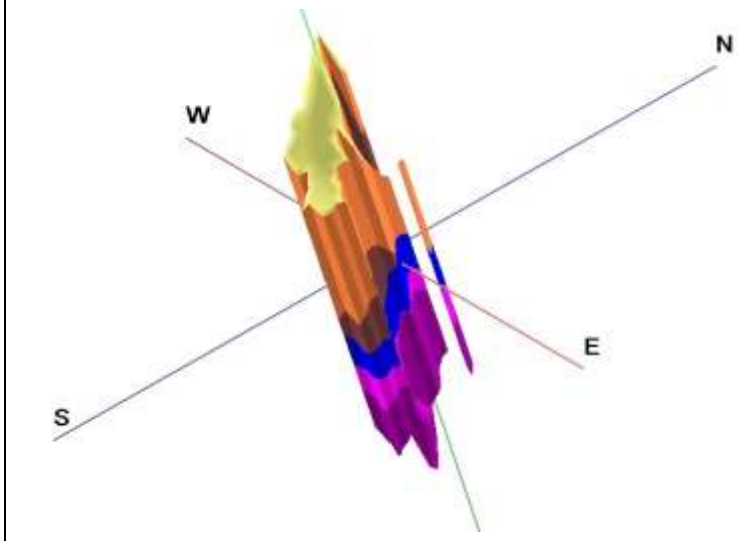


Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			0
	Gross Irrigated Area by Ground Water (sq. km.)			37.56
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	275.63	257.42	1.59
	Irrigated (sq. km.)	8.77	254.17	1.59
Hydrogeology				
Monitoring Stations	CGWB			02
	SGWD			13
	NAQUIM Key - Wells			05
Water Level Behavior		**Pre - Monsoon (May - 2021)**		**Post - Monsoon (November - 2021)**
	Water Level (m bgl)	0.30 – 301.98		0.10 – 28.50
	Water Level Trend (2011-2020)	**Pre - Monsoon**		**Post - Monsoon**
	Average Trend (m/year)	0.34 (Fall)		0.38 (Fall)
		Pre - Monsoon		**Post - Monsoon**
	Rise	-0.52 (Amet)		- 0.76 (Murda)
	Fall	1.46 (Nadiawala)		1.46 (Dingrol)
				
Soil Type	Soil is sandy to silty loam, yellowish brown colored lithosols of the foot hills.			


AMET, RAJSAMAND DISTRICT, RAJASTHAN
SOIL MAP
(AREA - 1365.61 Sq.Km)
N
W
E
S
Amet
25°25'0"
25°20'0"
25°15'0"
25°10'0"
73°50'0"
73°55'0"
74°0'0"
74°5'0"
LEGEND
Block Headquarter
Block Boundary
River
2 1 0 2 4 6 Kms
Soil Category
Brown Soil - Saline Phase
Yellowish Brown Soils of Foot Hills
Lithosols - Regosols of Hills

Status of GW Exploration		CGWB	GWD
		07 (EW)	05 (EW)
Basic Aquifer Characteristics	Aquifer	Schist (Sc), Gneiss (Gn).	
	Discharge of Wells (lps)	Dugwell	1.75 - 2.00
		Borewell	1.90 - 2.25
		Tubewell	
		DCB	1.70 - 2.00

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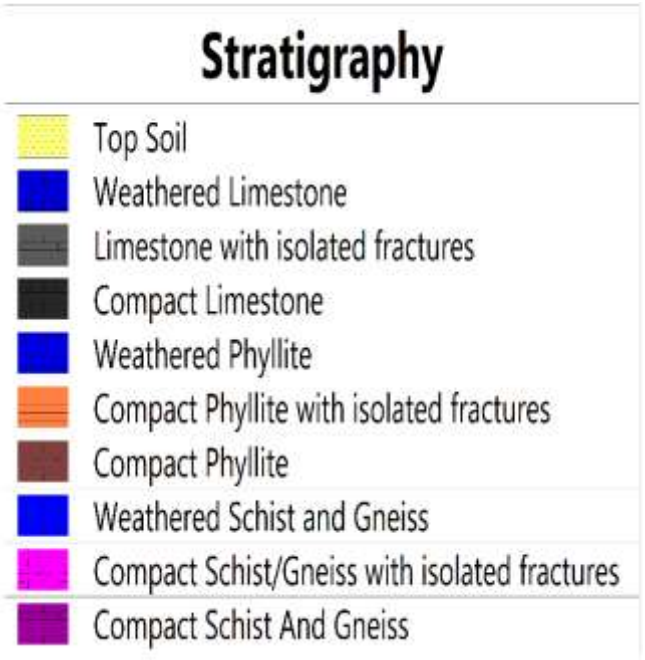
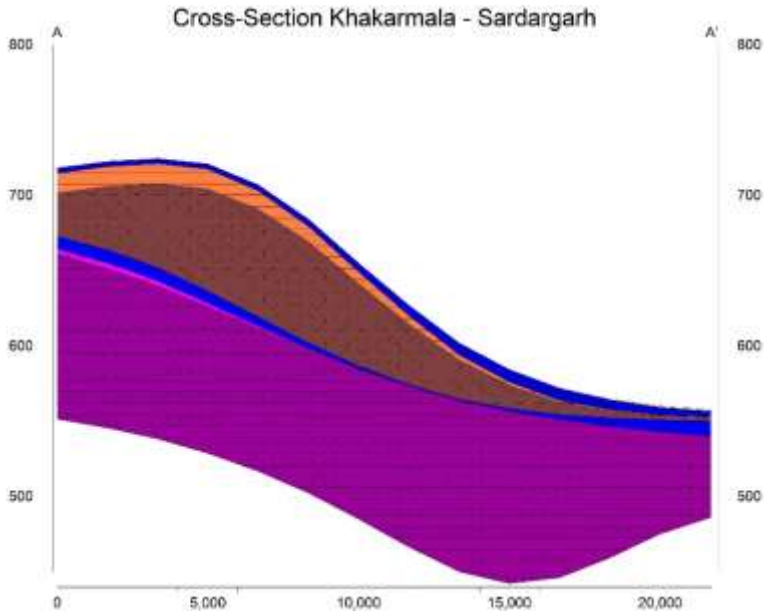

Stratigraphy
Top Soil
Weathered Limestone
Limestone with isolated fractures
Compact Limestone
Weathered Phyllite
Compact Phyllite with isolated fractures
Compact Phyllite
Weathered Schist and Gneiss
Compact Schist/Gneiss with isolated fractures
Compact Schist And Gneiss


Cross-Section Khakarmala - Sardargarh
A
A'
800
700
600
500
0
5,000
10,000
15,000
20,000


A
KHAKARMALA
ASAN
BHIKAWAS
KHOSUNDI
A'
SARDARGARH
DUNA KA KHERA
SIYANA
JAITPURA

Chemical Quality Of Groundwater(2020-21)	**Electrical Conductivity** in **µS/cm at 25°C**			500 - 1730	
	pH			7.24 – 8.7	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	3.7 %
			500 - 1000	Permissible for drinking	40.74 %
			> 1000	Undesirable	55.55
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	3.7 %
			150 – 300	Hard	33.33 %
			> 300	Very Hard	66.66 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		55.55 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		92.59 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		100.0 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class(Irrigation Uses)**	**Percent of Samples**
		Salinity –Hazard (EC in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	-
			750 - 2250	Permissible	70.37 %
			2250 - 3000	Doubtful	3.70%
			> 3000	Unsuitable	25.92%
		SAR	< 10	Excellent	88.88 %
			10 - 18	Good	7.40%
			18 - 26	Fair	3.70%

			> 26	Unsuitable	-
		Na%	< 20	Excellent	-
			20 - 40	Good	14.81 %
			40 - 60	Permissible	55.55 %
			60 - 80	Doubtful	29.62%
			> 80	Unsuitable	-
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 14.30 mcm which is more than the Annual Availability of 10.75 mcm, thus the district is deficit of 3.55 mcm of groundwater with the stage of groundwater development being 132.99 %. • Frequent droughts (20.0% mild, 16.6% moderate & 3.33% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Unconfined Aquifer system. • Limited Sub Surface Storage Space available for artificial recharge of groundwater.				
Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)			465.19	
	Total Annual Ground Water Recharge (mcm)			11.95	
	Natural Discharge (mcm)			1.19	
	Net Annual Ground Water Availability (mcm)			10.75	
	Existing Gross Ground Water Draft for All uses (mcm)			14.30	
	Net ground water availability for future irrigation Development (mcm)			0.00	
	Stage of Ground Water Development %			132.99 %	
	Category			Over Exploited	
Supply Side	**Water Supply (mcm)**				

Management	Potential zone area (sq. km.)	465.19
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	32.09
	Surplus Surface Water Availability (mcm)	1.63
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	8.42
	Water conserved in catchment area treatment (mcm)	0.23
	Water Conservation Structures	
	Mini Percolation Tanks	621
	Percolation Tank	156
	Pacca Check Dams	31
	Anicut	33
	Mini Storage Tanks	03
	Volume of Water expected to be conserved (mcm)	1.28
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	1.51
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.12
	No. of Farm Ponds	99
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	9.34
	Water Saving by use of Sprinklers (mcm)	0.7472
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	6.56

	Water Saving by Change in Cropping Pattern (mcm)	0.6562
Expected Benefits	Net Ground Water Availability (mcm), GWRE - 2020	10.75
	Additional GW resources available after Supply side interventions (mcm)	0.87
	Net Ground Water Availability after Supply side intervention (mcm)	11.62
	Existing Ground Water Draft for All Purposes (mcm)	14.30
	GW draft after Supply Side Interventions (mcm)	14.18
	GW draft after Demand Side Interventions (mcm)	12.78
	Present stage of Ground Water Development (%)	132.99 %
	Projected Stage of Ground Water Development after Supply Side interventions (%)	122.01 %
	Projected Stage of Ground Water Development after Demand Side interventions (%)	109.94 %

** sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

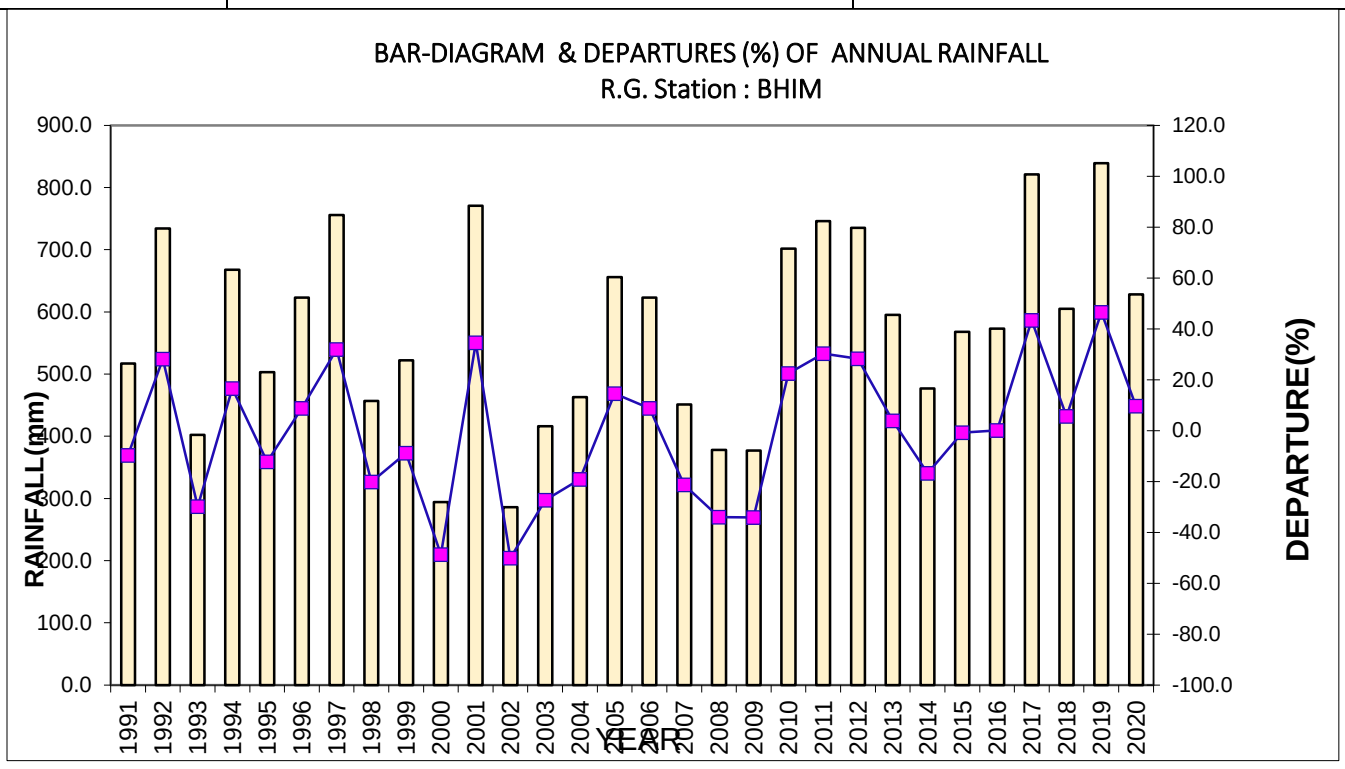
** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

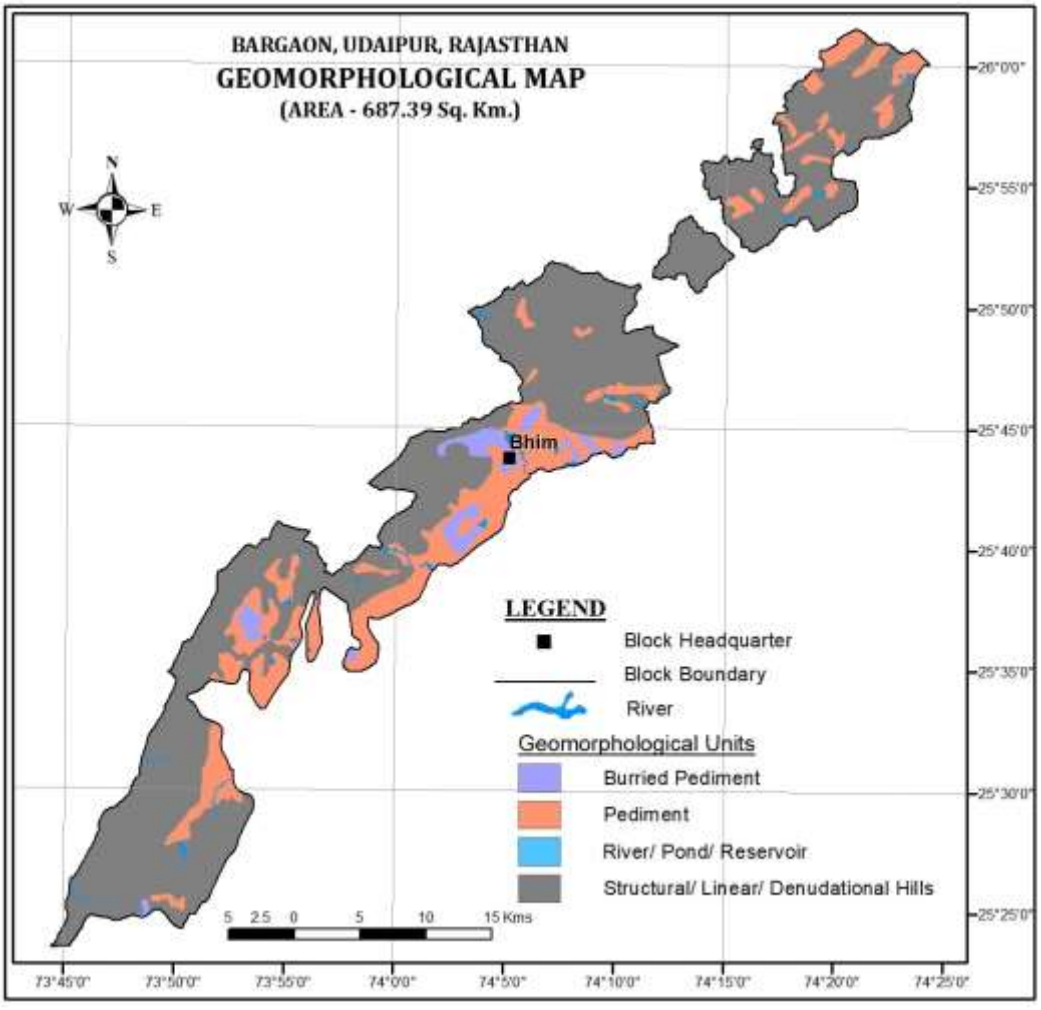
** mbgl - Meter below ground level.

14.2. BHIM BLOCK

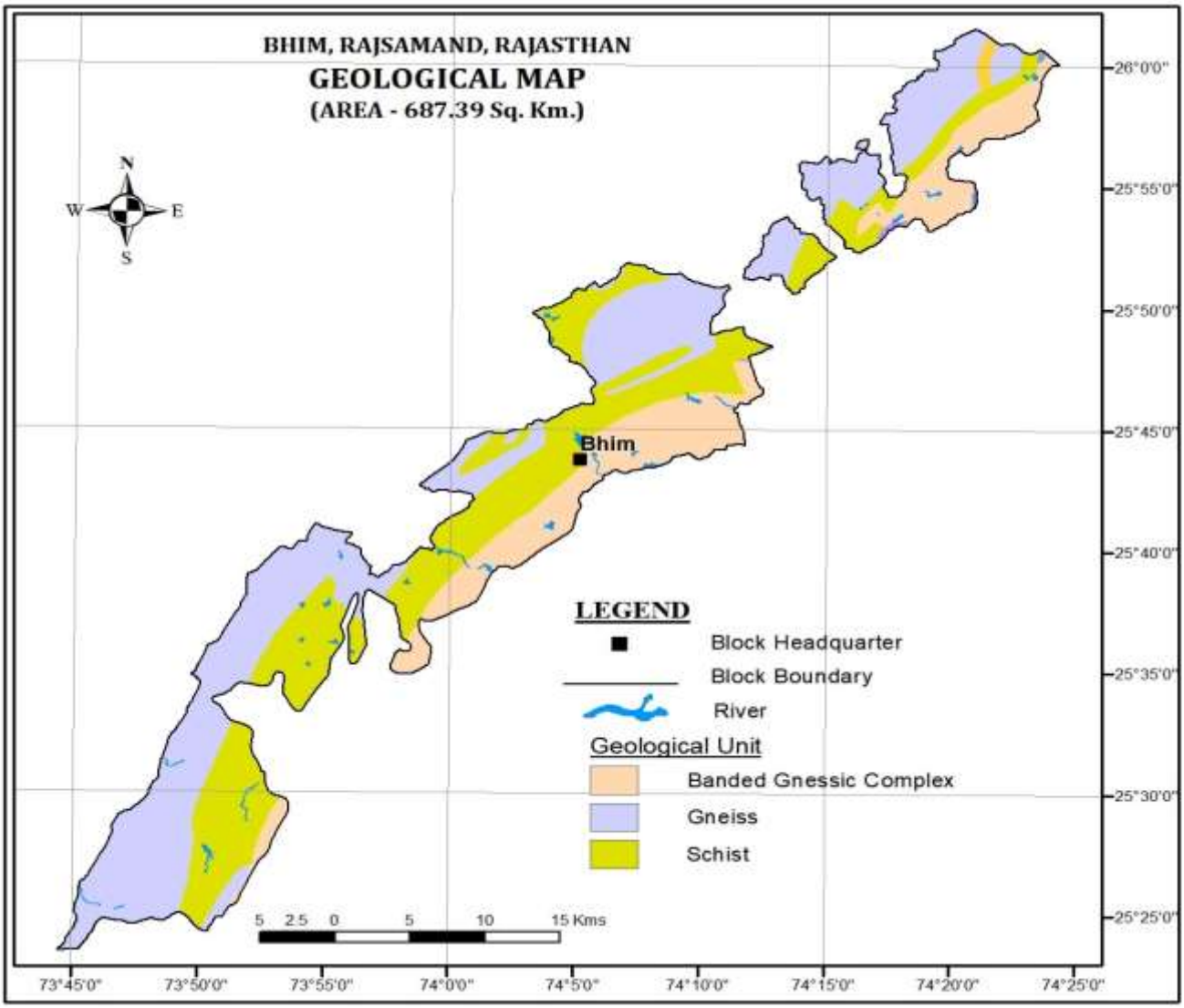
Salient Information	Block Name	Bhim
	Longitude	73° 44′ 24″ to 74° 24′ 13″ East
	Latitude	25° 23′ 24″ to 26° 01′ 31″ North
	Geographical Area (sq. km.)	687.39
	Hilly Area (sq. km.)	350.23
	Population (2011)	171023
	Highest Elevation (m amsl)	376
	Lowest Elevation (m amsl)	920
Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	524.8
	Mean Annual Rainfall (mm) (1991-2020)	572.9
	Highest Annual Rainfall (mm) (1991-2020)	832 (2019)
	Lowest Annual Rainfall (mm) (1991-2020)	286 (2002)
	Standard Deviation (mm) (1991-2020)	153.1
	Coefficient of Variation (%) (1991-2020)	26..7



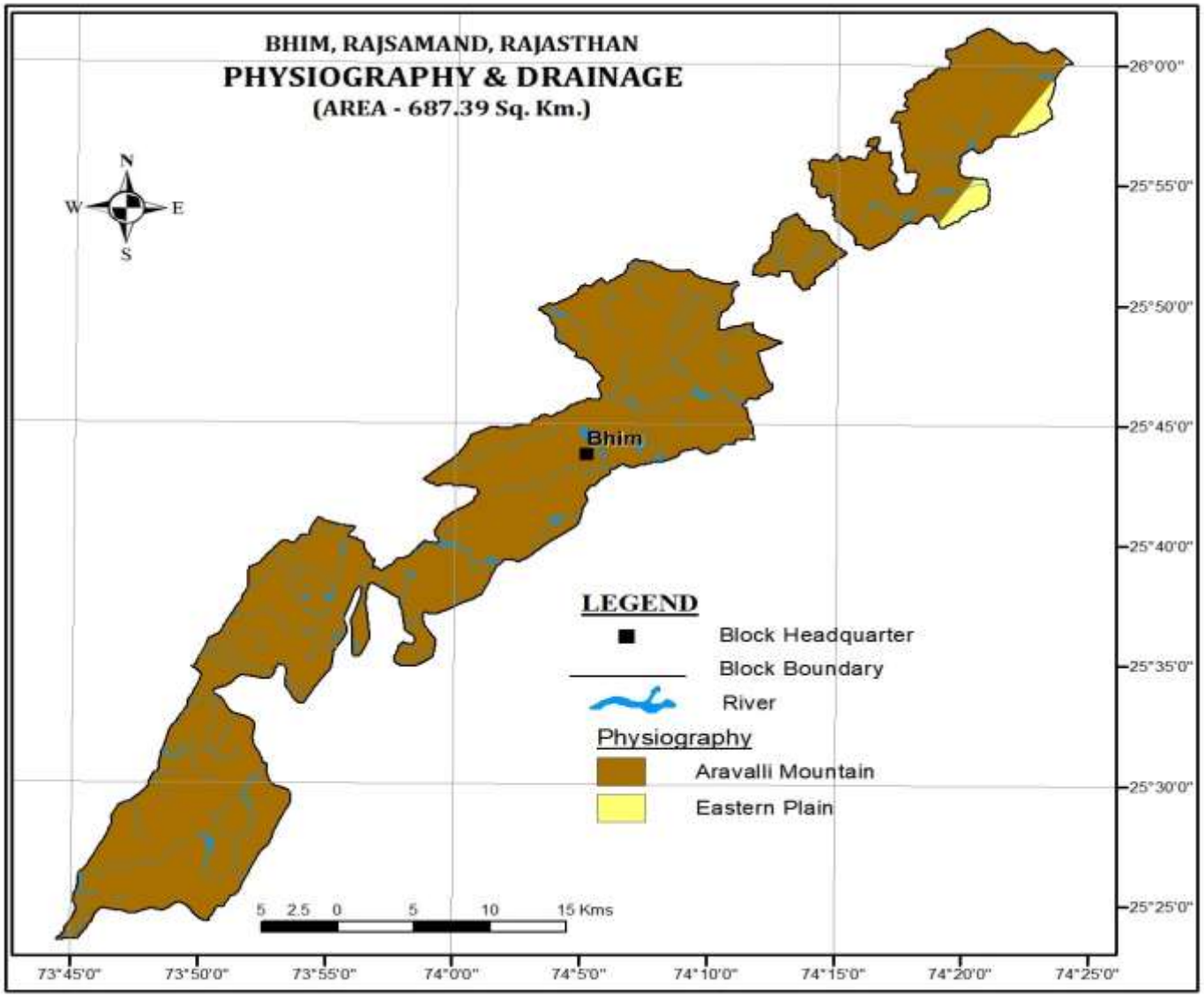
		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	16	53.33 %
	Mild (0 to -25%)	8	26.66 %
	Moderate (-25% to -50%)	5	16.66 %
	Severe (-50% to -75%)	01	3.33 %
	Extreme (-75% to -100%)	-	-
Geomorphology	• Pediplain, Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.		



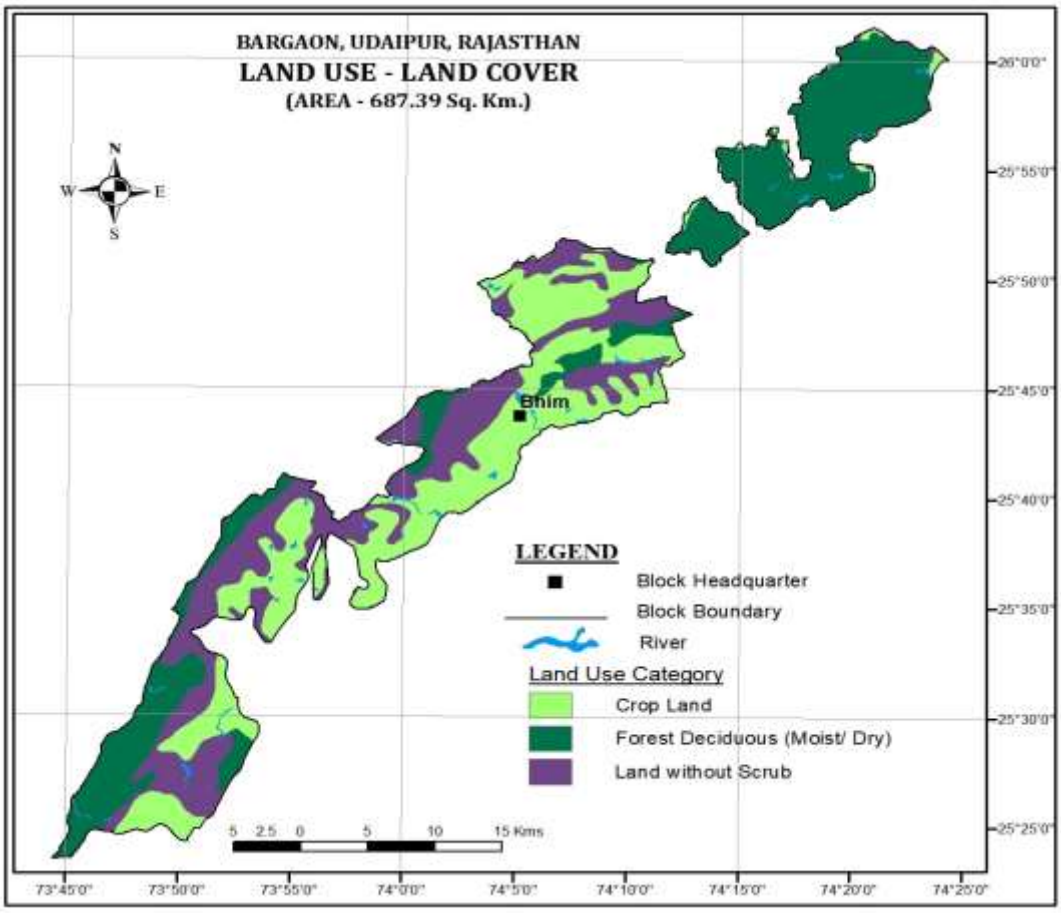
Geology	Geologically the area is represented by and Gneisses, Schist and Banded Gneissic Complex of Bhilwara Super Group.



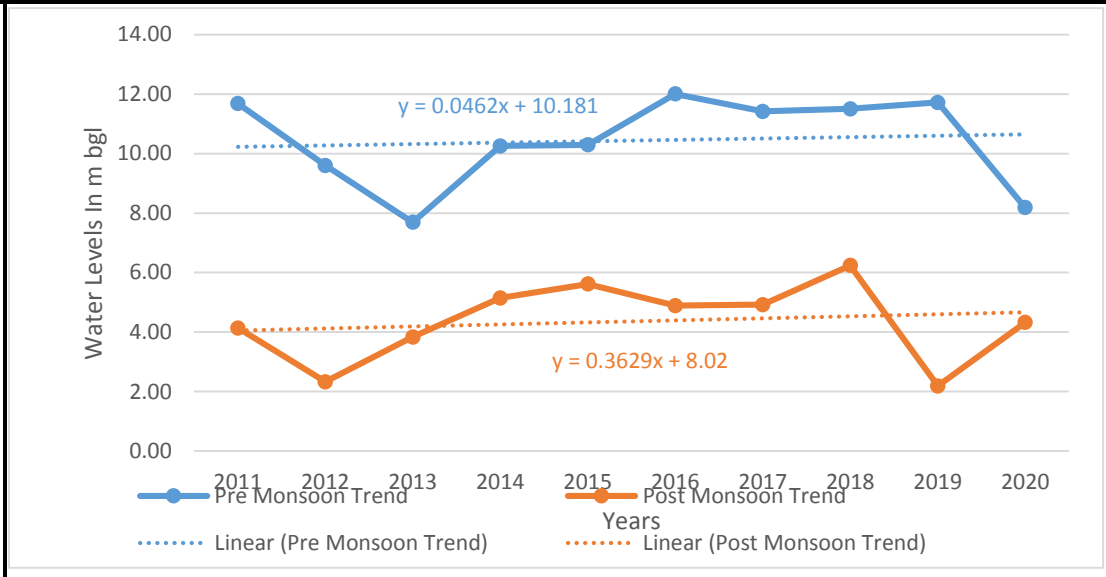
Physiography and Drainage	

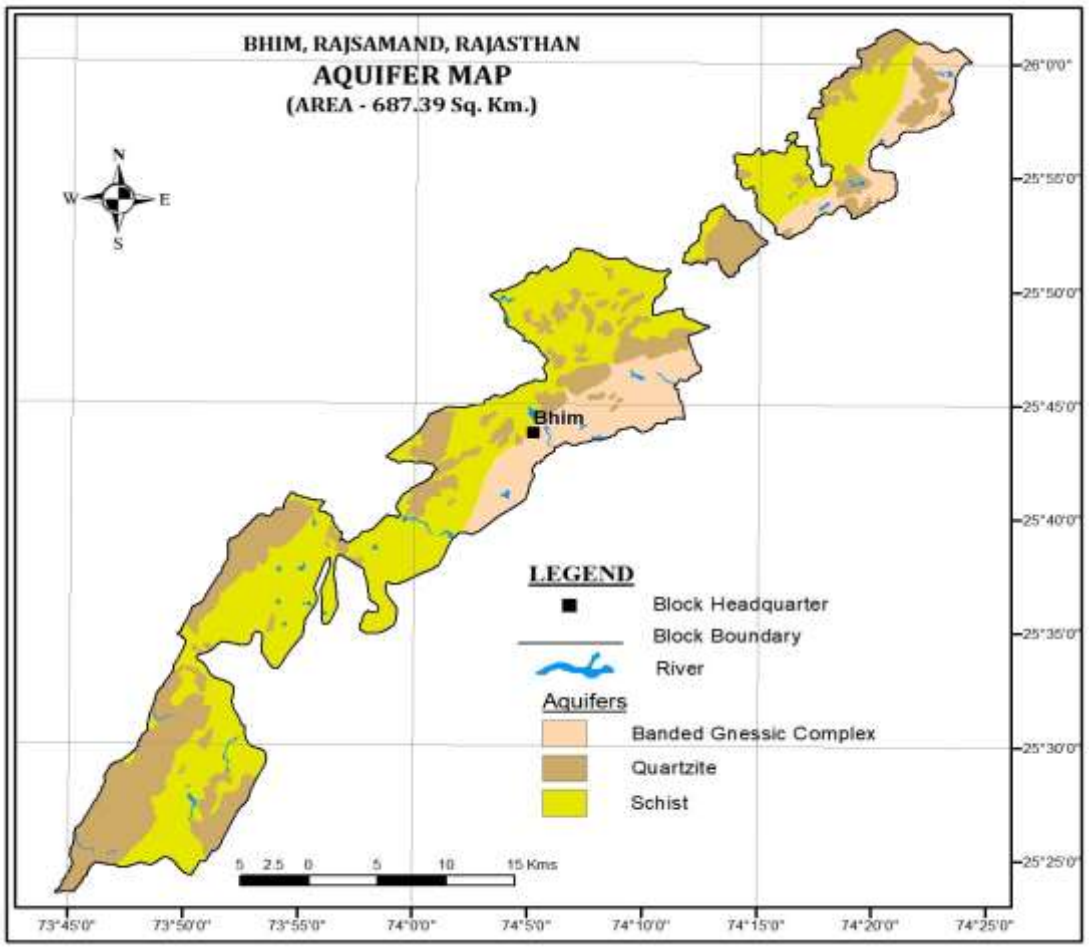


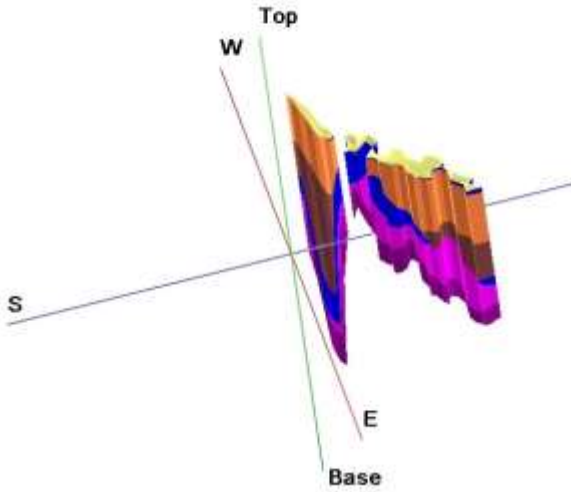
Land Use	Geographical Area (sq. km.)	687.39
	Forest Area (sq. km.)	145.56
	Net Sown Area (sq. km.)	98.01
	Area sown more than once (sq. km.)	39.00

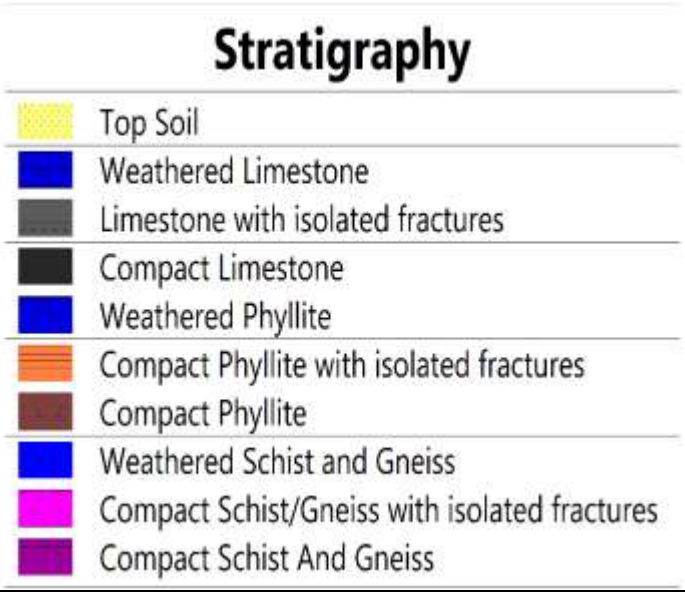


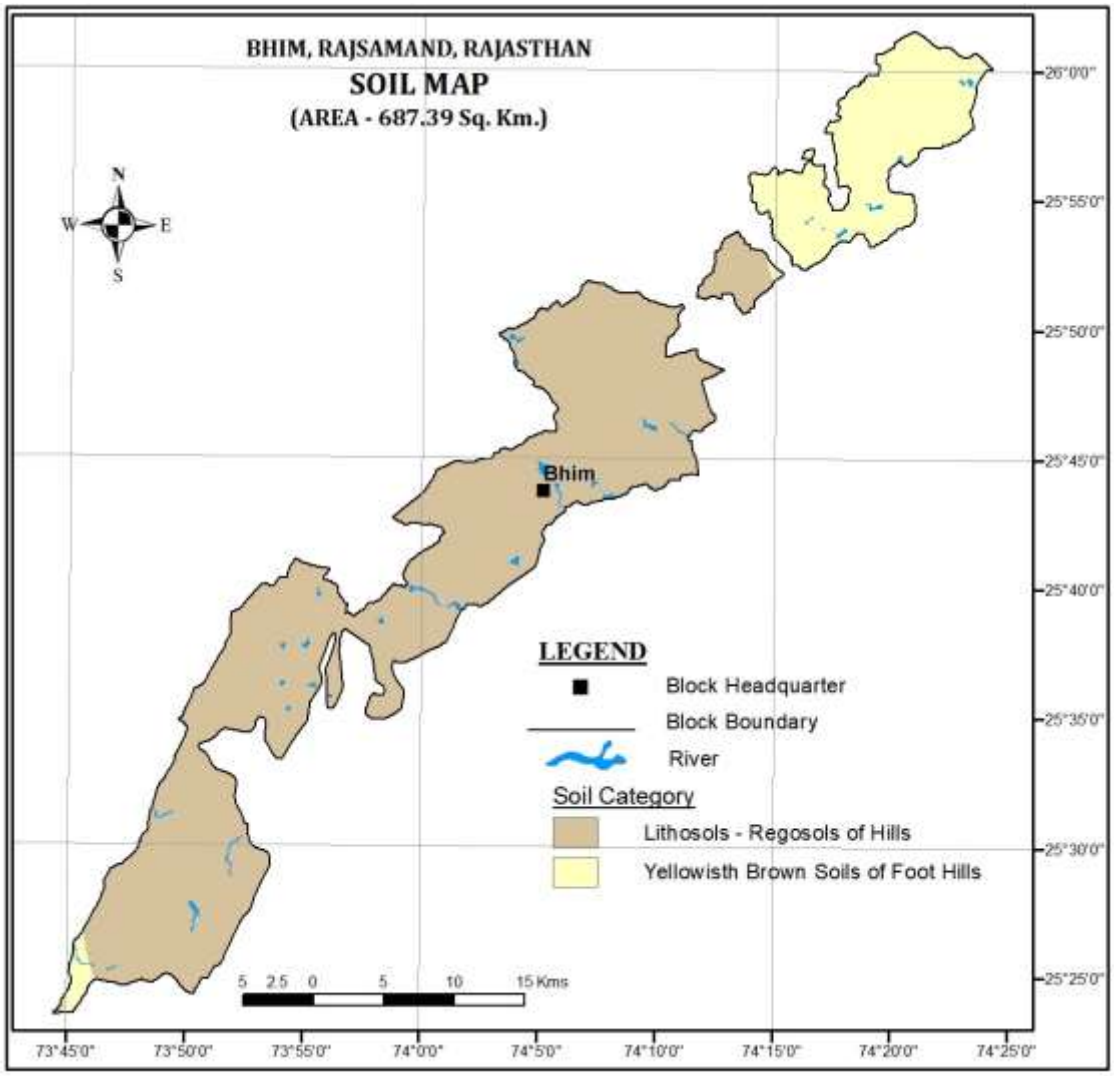
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			35.44
	Gross Irrigated Area by Ground Water (sq. km.)			36.53
	Gross Irrigated Area by Other Sources (sq. km.)			0.00
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulse.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	275.69	241.02	3.56
	Irrigated (sq. km.)	92.43	241.02	3.56
Hydrogeology				
Monitoring Stations	CGWB			08
	SGWD			33

<table>
<tr><td></td><td colspan="2">NAQUIM Key - Wells</td><td>01</td></tr>
<tr><td rowspan="8">Water Level Behavior</td><td></td><td>Pre - Monsoon (May - 2021)</td><td>Post - Monsoon (November - 2021)</td></tr>
<tr><td>Water Level (m bgl)</td><td>3.29 – 20.21</td><td>1.40 – 12.25</td></tr>
<tr><td>Water Level Trend (2011-2020)</td><td>Pre - Monsoon</td><td>Post - Monsoon</td></tr>
<tr><td rowspan="2">Average Trend (m/year)</td><td>0.03 (Rise)</td><td>0.10 (Fall)</td></tr>
<tr><td>Pre - Monsoon</td><td>Post - Monsoon</td></tr>
<tr><td>Rise</td><td>- 0.54 (Dewair)</td><td>- 0.37 (Nalai Lampura)</td></tr>
<tr><td>Fall</td><td>0.59 (Rajwa)</td><td>0.72 (Baghana)</td></tr>
<tr><td colspan="3"> 
</td></tr>
<tr><td>Soil Type</td><td colspan="3">Soil is sandy to silty loam, yellowish brown colored lithosols of the foot hills and highly drained black soils.</td></tr>
</table>

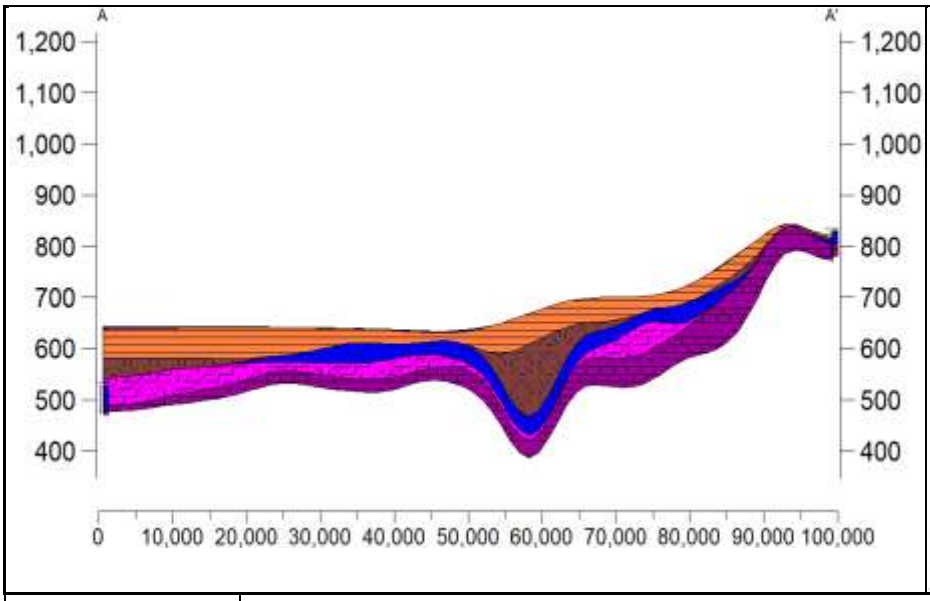

BHIM, RAJSAMAND, RAJASTHAN
AQUIFER MAP
(AREA - 687.39 Sq. Km.)
N
W
E
S
Bhim
LEGEND
Block Headquarter
Block Boundary
River
Aquifers
Banded Gnessic Complex
Quartzite
Schist
5 2.5 0 5 10 15 Kms
26°0'0"
25°55'0"
25°50'0"
25°45'0"
25°40'0"
25°35'0"
25°30'0"
25°25'0"
73°45'0"
73°50'0"
73°55'0"
74°0'0"
74°5'0"
74°10'0"
74°15'0"
74°20'0"
74°25'0"


Top
W
S
E
Base


Stratigraphy
Top Soil
Weathered Limestone
Limestone with isolated fractures
Compact Limestone
Weathered Phyllite
Compact Phyllite with isolated fractures
Compact Phyllite
Weathered Schist and Gneiss
Compact Schist/Gneiss with isolated fractures
Compact Schist And Gneiss



Status of GW Exploration		GWD	CGWB
		09 (EW)	01 (EW)
Basic Aquifer Characteristics	Aquifer	Quarzite (Qz), Shale (Sh)and Gneiss (Gn).	
	Discharge of Wells (lps)	Dugwell	1.75 - 2.00
		Borewell	1.90 - 2.25
		Tubewell	
		DCB	1.70 - 2.00



Chemical Quality Of Groundwater(2020-21)	**Electrical Conductivity** in **µS/cm at 25°C**			560-11200	
	pH			7.26-8.90	
	Suitabilityfor Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	21.21 %
			500 - 1000	Permissible for drinking	57.57 %
			> 1000	Undesirable	21.21 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	12.12%
			150 – 300	Hard	48.48 %
			> 300	Very Hard	36.36 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		72.72 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		90.90 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		100.0 %
	Suitability	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**

	for Irrigation	**Salinity – Hazard (EC** in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	12.5 %
			750 - 2250	Permissible	75.0 %
			2250 - 3000	Doubtful	12.5 %
			> 3000	Unsuitable	6.25
		SAR	< 10	Excellent	100.0 %
			10 - 18	Good	-
			18 - 26	Fair	-
			> 26	Unsuitable	-
		Na%	< 20	Excellent	-
			20 - 40	Good	25.0 %
			40 - 60	Permissible	34.37 %
			60 - 80	Doubtful	40.62 %
			> 80	Unsuitable	-
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 13.53mcm which is more than the Annual Availability of 9.91 mcm, thus the district is deficit of 3.62 mcm of groundwater with stage of groundwater development being 136.50 % • Frequent droughts (26.66% mild, 16.66% moderate & 3.33% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • The declining water level trend (2011-2020) of 0.10 m/year. • Poor Sustainability of the Unconfined Aquifer system. • Limited Sub Surface Storage available for artificial groundwater recharge.				
Groundwater	Ground Water Recharge Worthy Area (sq. km.)				337.16

Resource & Extraction (GWRE-2020)	Total Annual Ground Water Recharge (mcm)	11.01
	Natural Discharge (mcm)	1.10
	Net Annual Ground Water Availability (mcm)	9.91
	Existing Gross Ground Water Draft for All uses (mcm)	13.53
	Net ground water availability for future irrigation Development (mcm)	0.00
	Stage of Ground Water Development %	136.50 %
	Category	Over Exploited
Supply Side Management	**Water Supply (mcm)**	
	Potential zone area (sq. km.)	337.16
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	9.85
	Surplus Surface Water Availability (mcm)	1.61
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	10.63
	Water conserved in catchment area treatment (mcm)	0.28
	Water Conservation Structures	
	Mini Percolation Tanks	722
	Percolation Tank	121
	Pacca Check Dams	67
	Anicut	12
	Mini Storage Tanks	01
	Volume of Water expected to be conserved (mcm)	1.31
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	1.59
	Farm Ponds	

	Surplus available for farm pond (mcm)	0.02
	No. of Farm Ponds	15
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	9.13
	Water Saving by use of Sprinklers (mcm)	0.7306
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	7.63
	Water Saving by Change in Cropping Pattern (mcm)	0.7632
Expected Benefits	Net Ground Water Availability (mcm), GWRE - 2020	9.91
	Additional GW resources available after Supply side interventions (mcm)	0.93
	Net Ground Water Availability after Supply side intervention (mcm)	10.84
	Existing Ground Water Draft for All Purposes (mcm)	13.53
	GW draft after Supply Side Interventions (mcm)	13.51
	GW draft after Demand Side Interventions (mcm)	12.02
	Present stage of Ground Water Development (%)	136.50 %
	Projected Stage of Ground Water Development after Supply Side interventions (%)	126.56 %
	Projected Stage of Ground Water Development after Demand Side interventions (%)	110.80 %

** sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

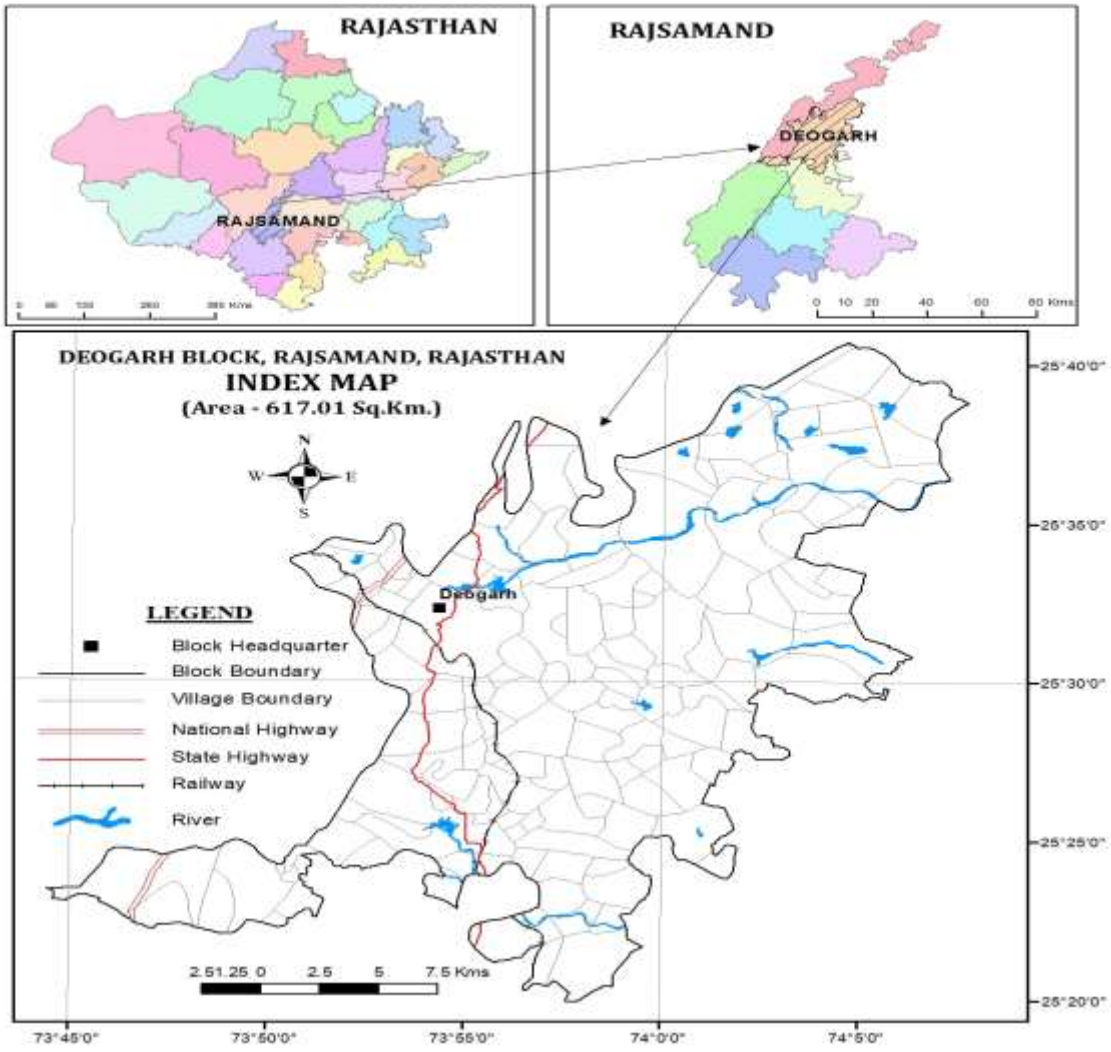
** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

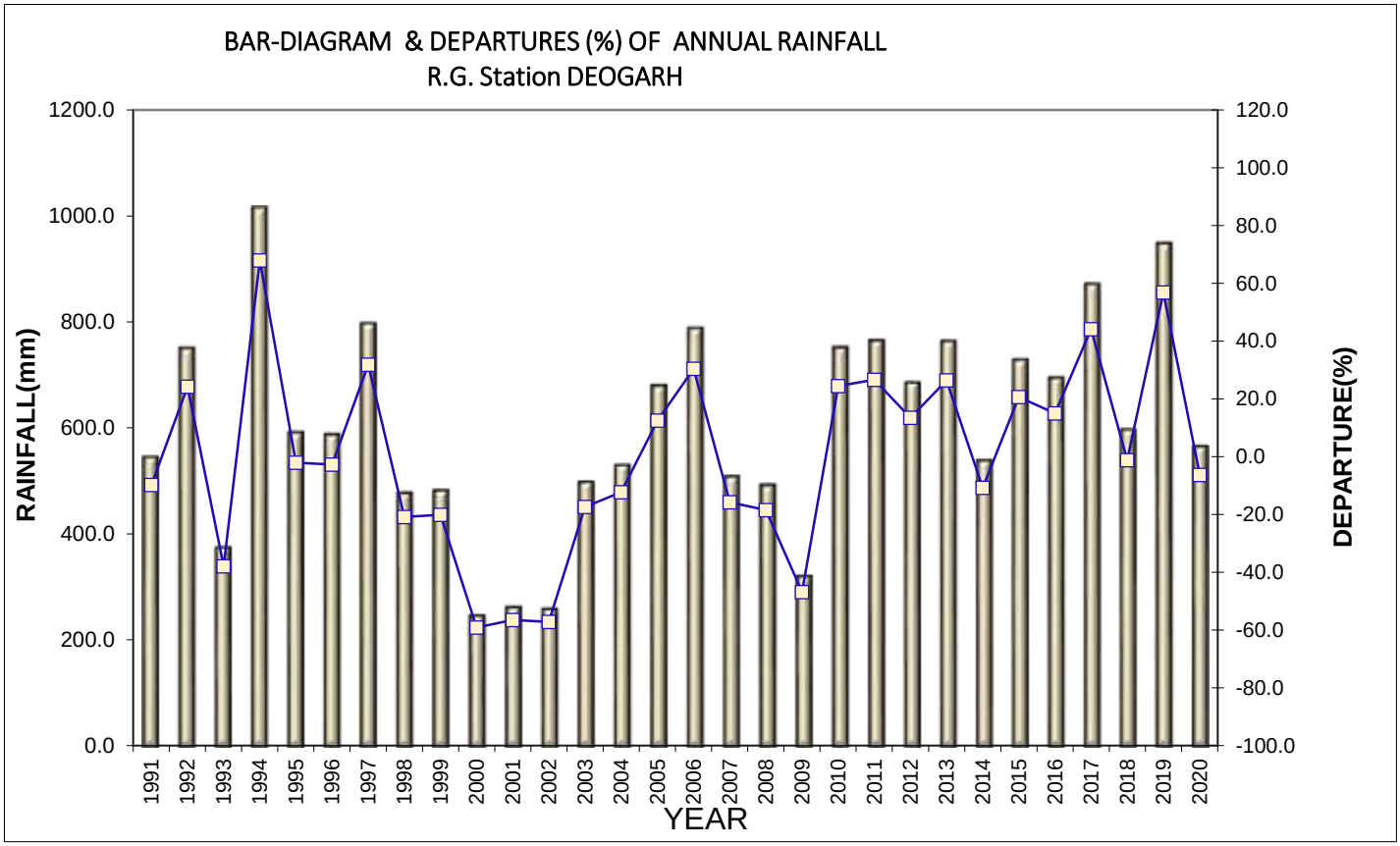
** mbgl - Meter below ground level.

14.3. DEOGARH BLOCK

Salient Information	Block Name	Deogarh
	Longitude	73° 44′ 25″ to 74° 07′ 42″ East
	Latitude	25° 19′ 55″ to 25° 41′ 42″ North
	Geographical Area (sq. km.)	617.01
	Hilly Area (sq. km.)	226.25
	Population (2011)	110723
	Highest Elevation (m amsl)	937
	Lowest Elevation (m amsl)	533

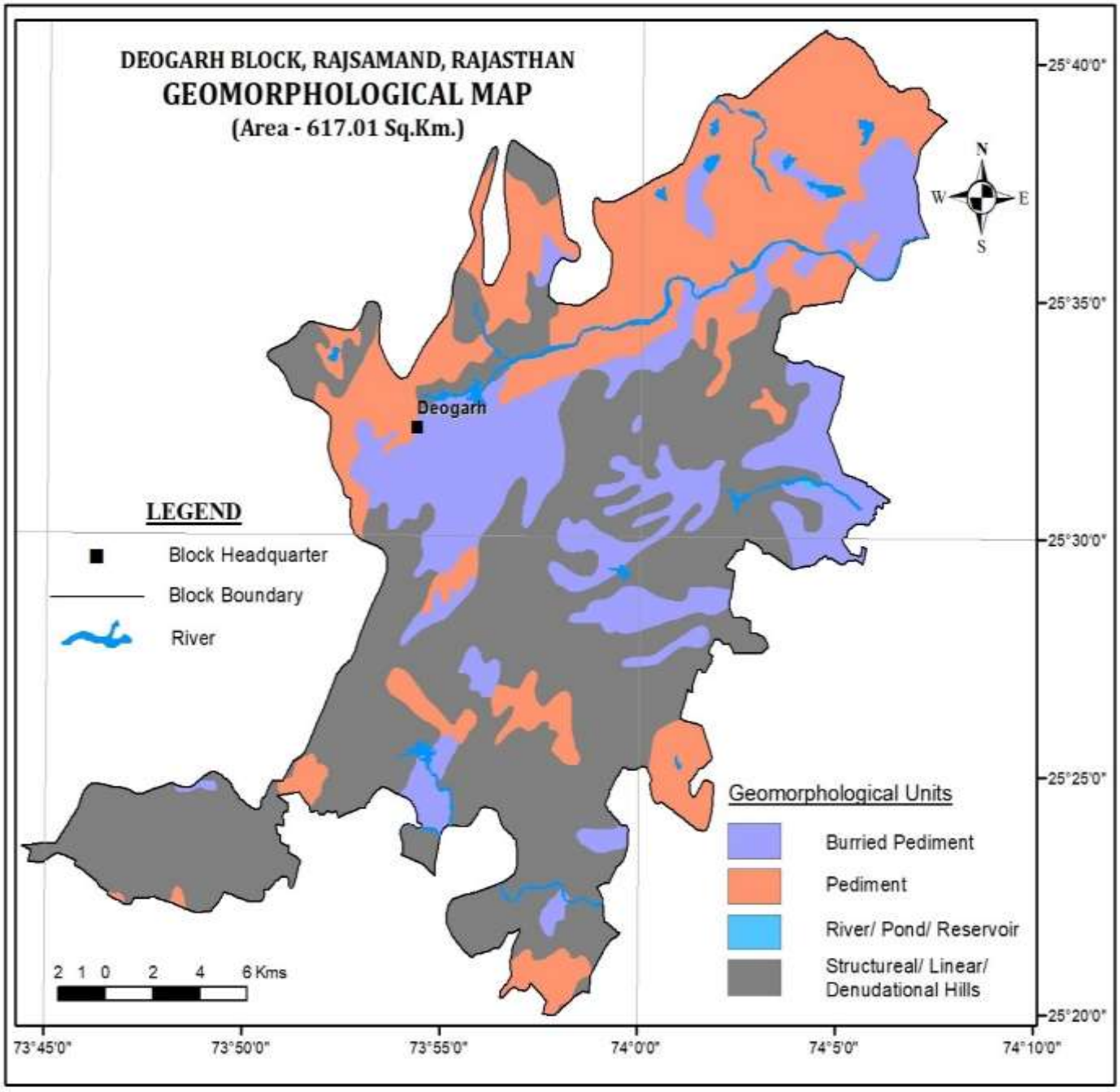


Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	517.7
	Mean Annual Rainfall (mm) (1991-2020)	604.2
	Highest Annual Rainfall (mm) (1991-2020)	1015 (1994)
	Lowest Annual Rainfall (mm) (1991-2020)	247 (2000)
	Standard Deviation (mm) (1991-2020)	197.8
	Coefficient of Variation (%) (1991-20200	32.7

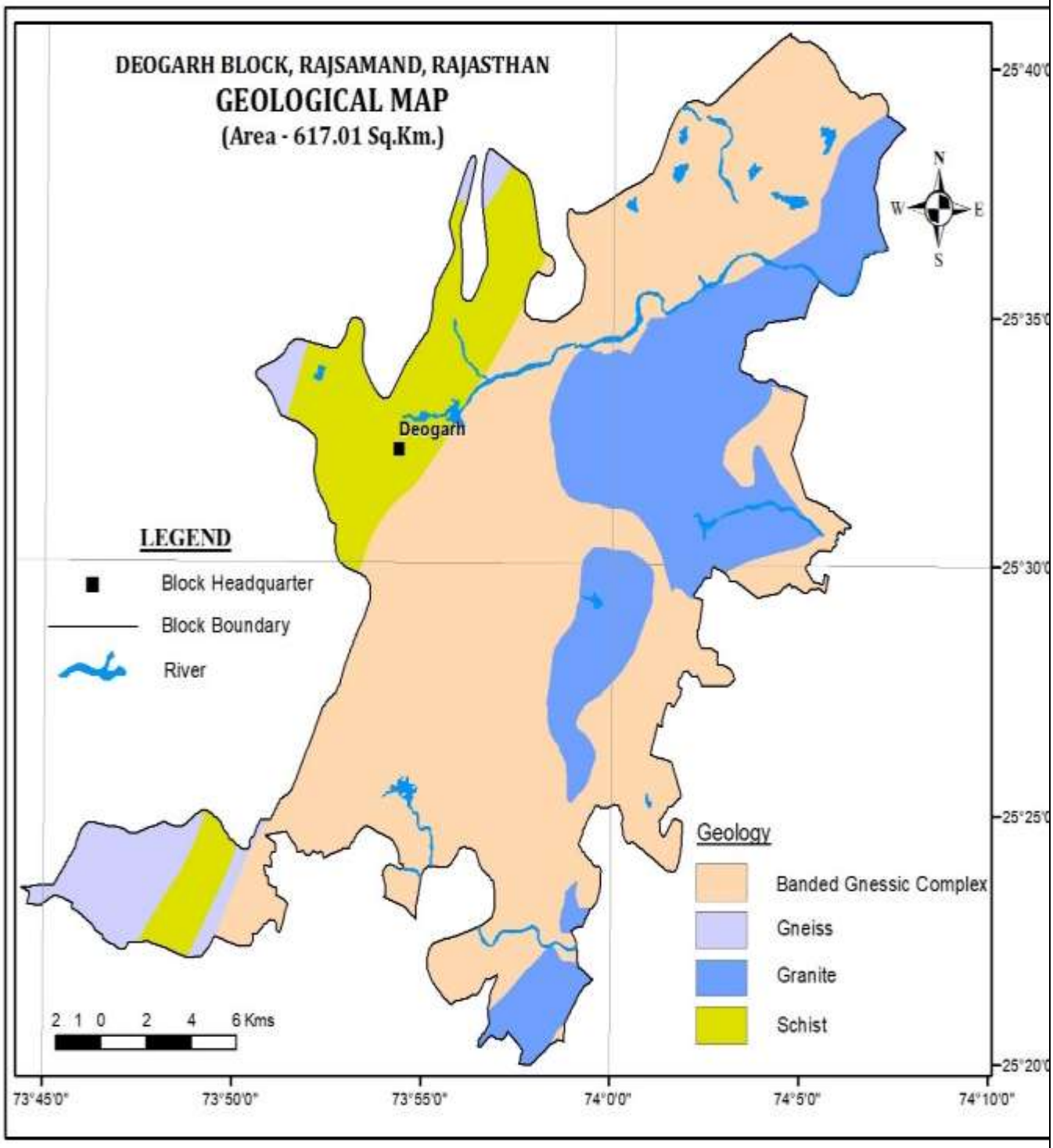


		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	13	43.33 %
	Mild (0 to -25%)	12	40 %
	Moderate (-25% to -50%)	02	6.66 %
	Severe (-50% to -75%)	03	10 %
	Extreme (-75% to -100%)	-	-

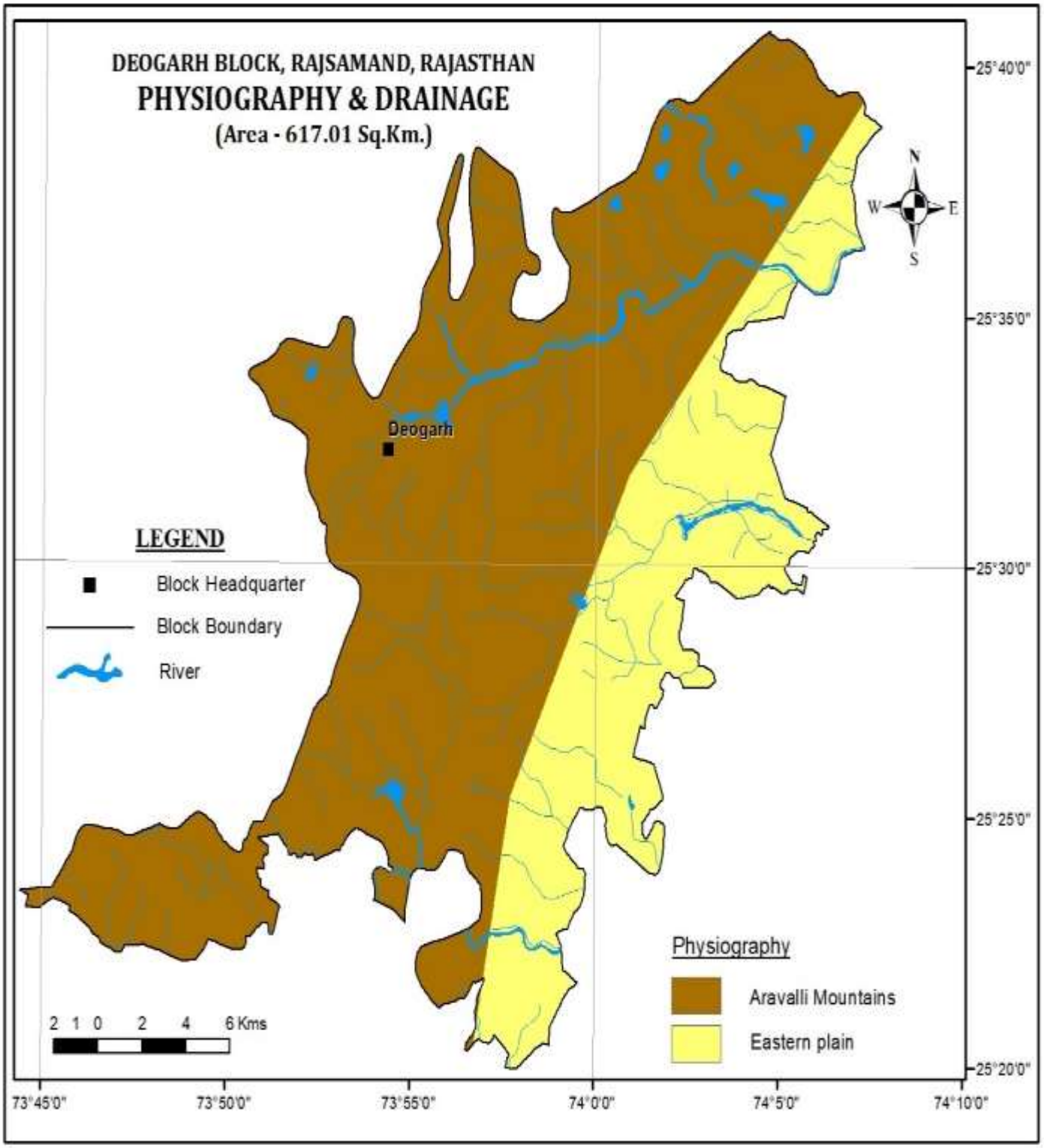
Geomorphology	• Pediments, Intermontane Valley & Burried Pediments of Denudational Origin. • Alluvial Plain and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.



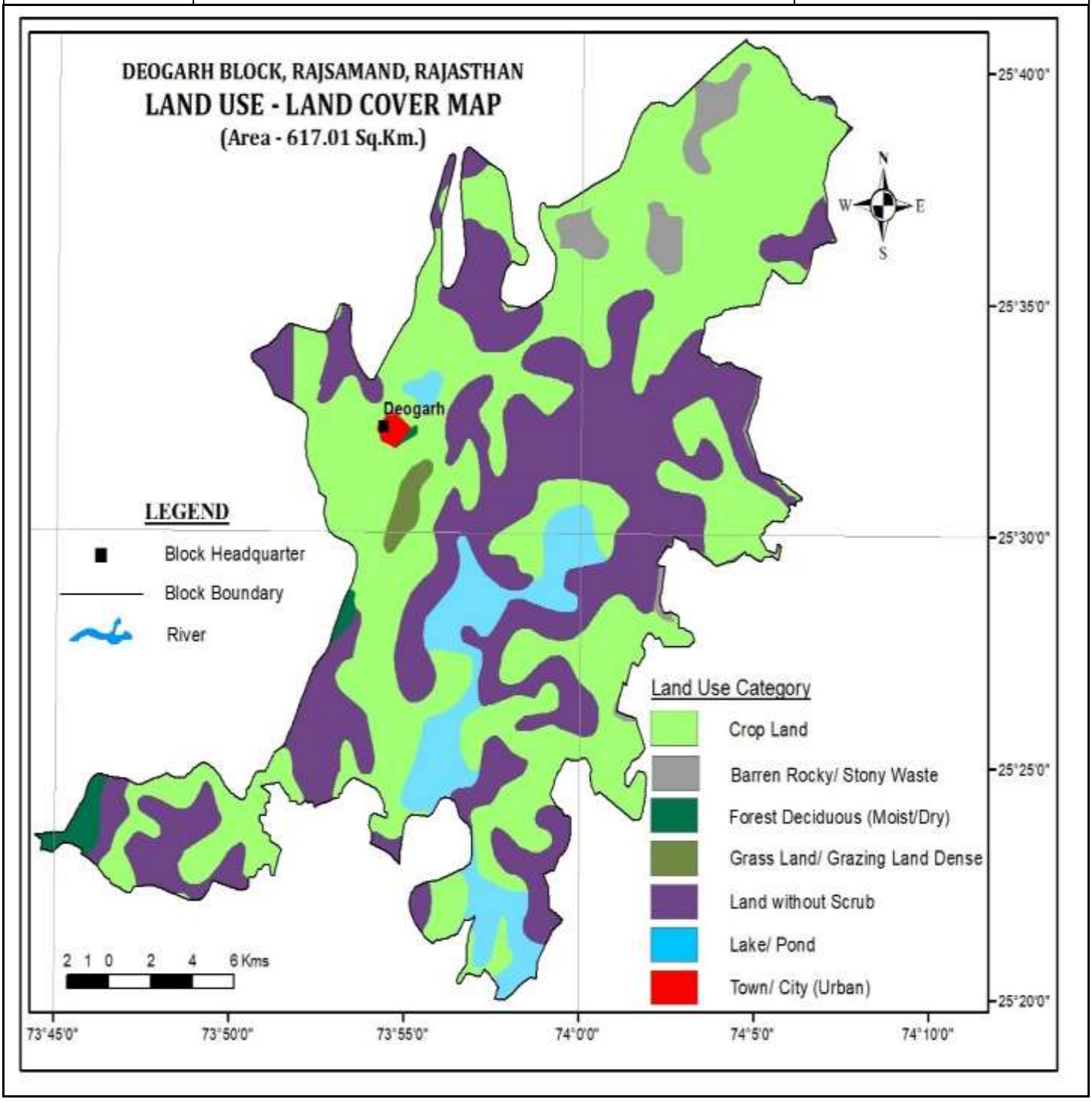
Geology	Geologically, the area is represented by Schists and Gneisses of Bhilwara Gneissic Complex and the Berach Granites.



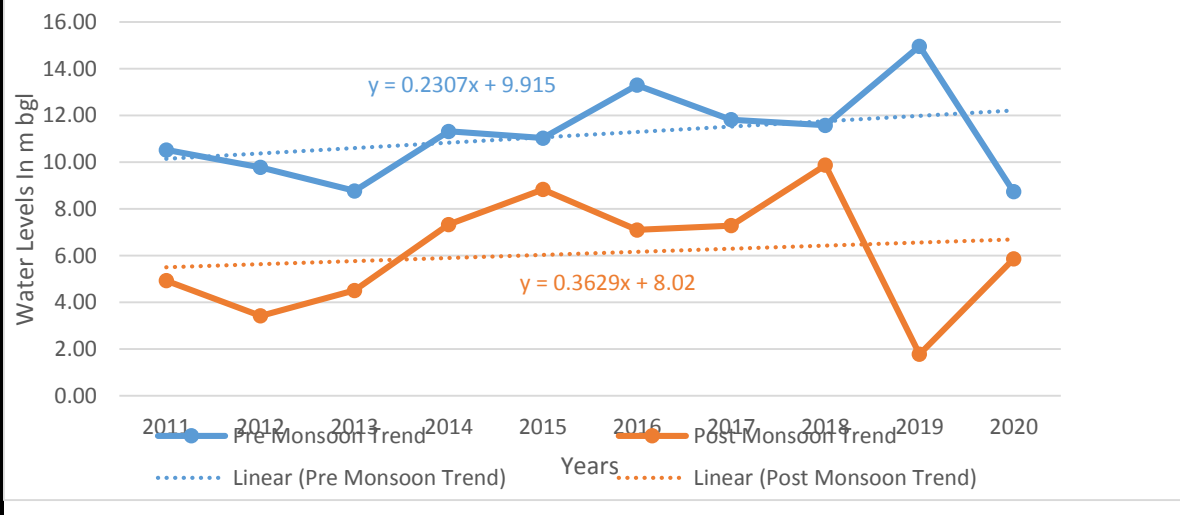
Physiography and Drainage	



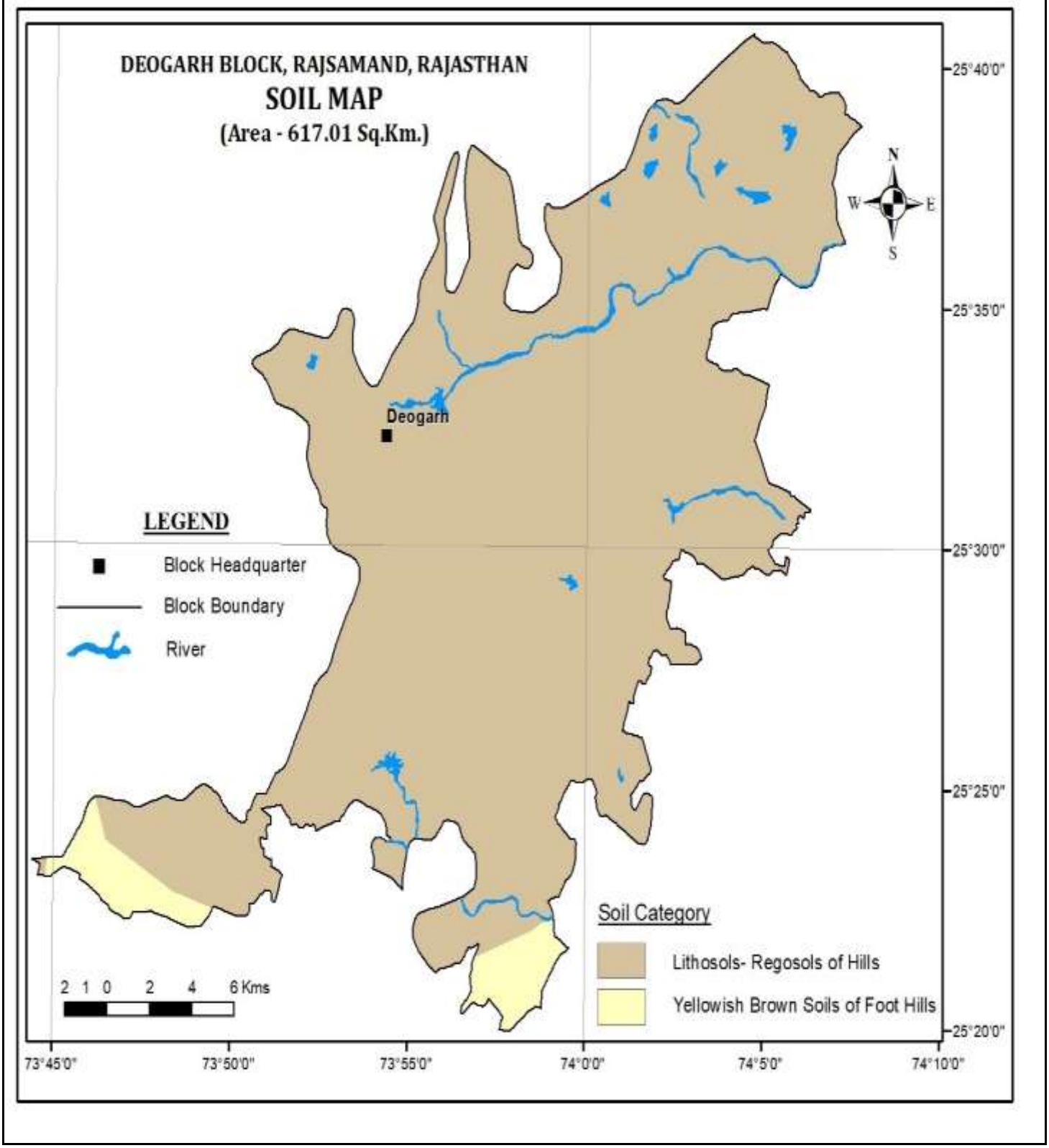
Land Use	Geographical Area (sq. km.)	617.01
	Forest Area (sq. km.)	30.40
	Net Sown Area (sq. km.)	80.09
	Area sown more than once (sq. km.)	51.33



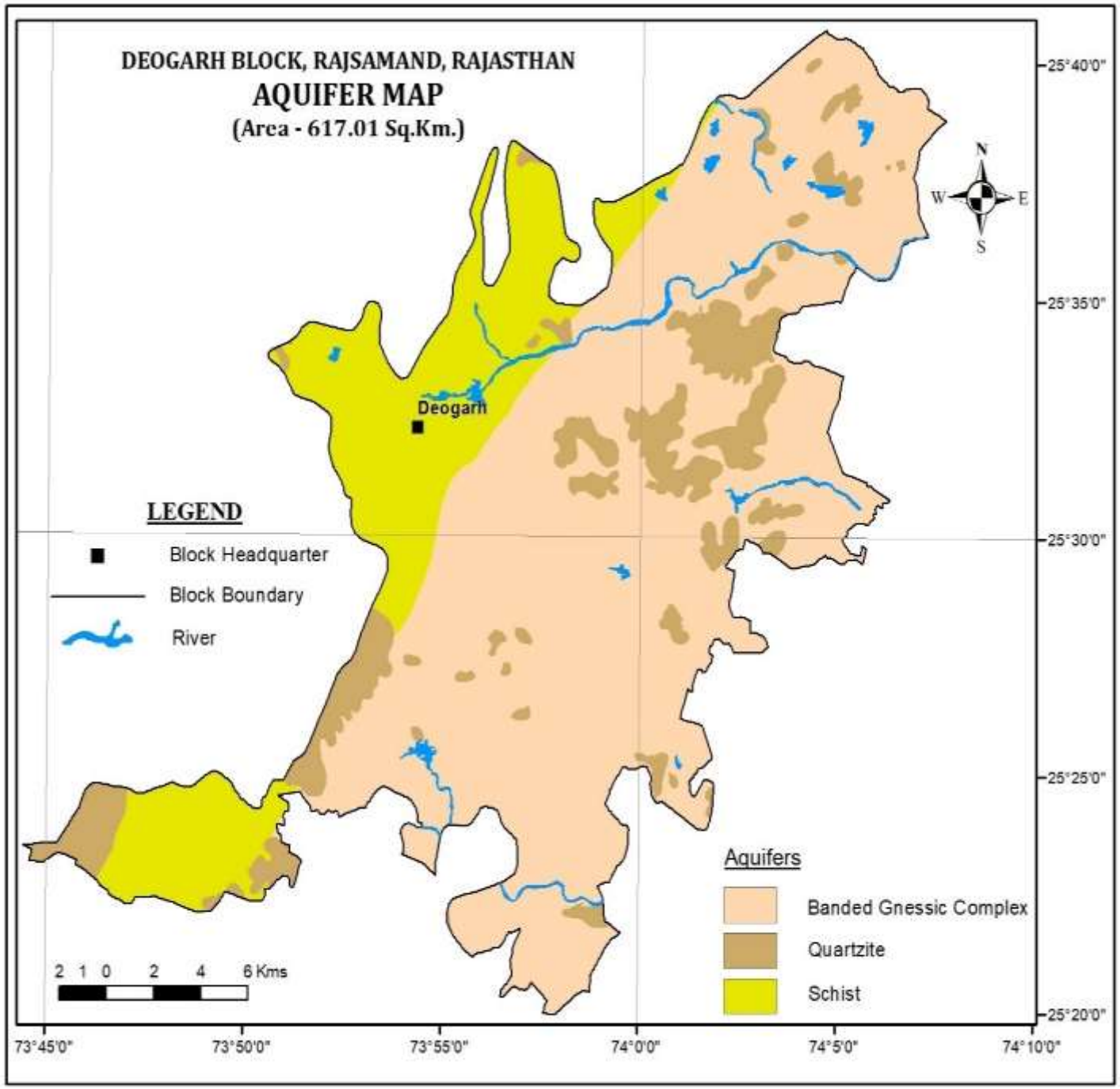
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			2.24
	Gross Irrigated Area by Ground Water (sq. km.)			80.59
	Gross Irrigated Area by Other Sources (sq. km.)			0.00
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	286.36	229.19	0.25
	Irrigated (sq. km.)	38.58	228.97	0.25
Hydrogeology				
Monitoring Stations	CGWB			02
	SGWD			20
	NAQUIM Key - Wells			04
Water Level Behavior		**Pre - Monsoon (May - 2021)**		**Post - Monsoon (November - 2021)**
	Water Level (m bgl)	4.0 – 25.08		0.98 – 19.45
	Water Level Trend (2011-2020)	**Pre - Monsoon**		**Post - Monsoon**
	Average Trend (m/year)	0.23 (Fall)		0.12 (Fall)
	Rise	- 0.35 (Vijaypura)		- 1.12 (Vijaypura)
	Fall	1.23 (Anjna)		0.66 (Madariya)



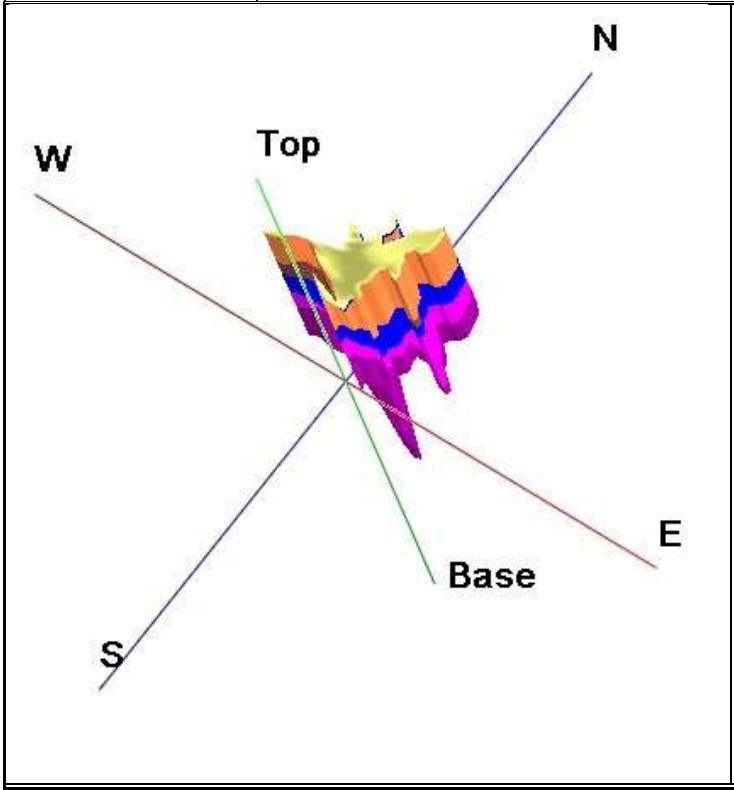
Soil Type	• Soil is sandy to silty loam, yellowish brown colored lithosols of the foot hills.

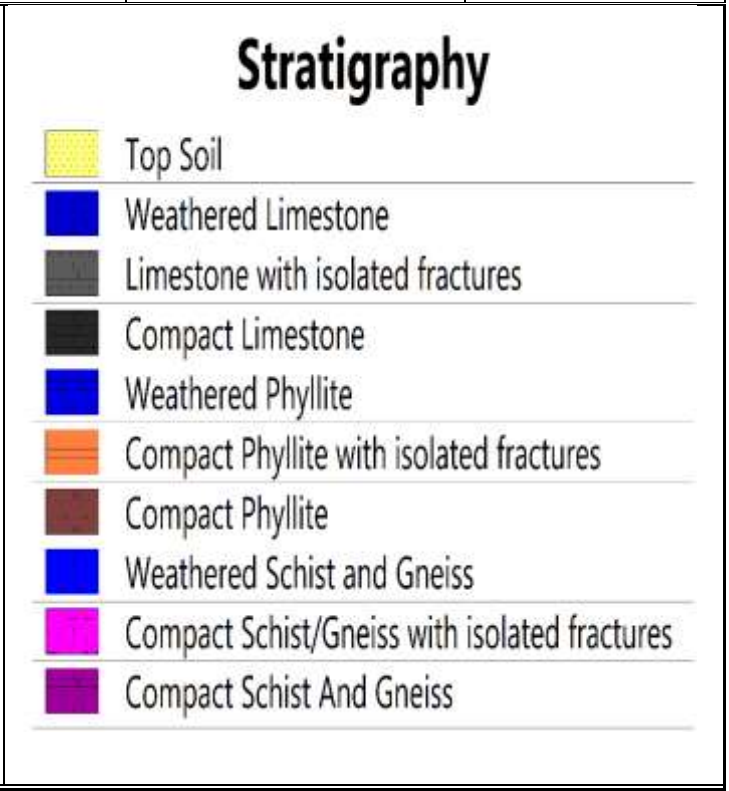


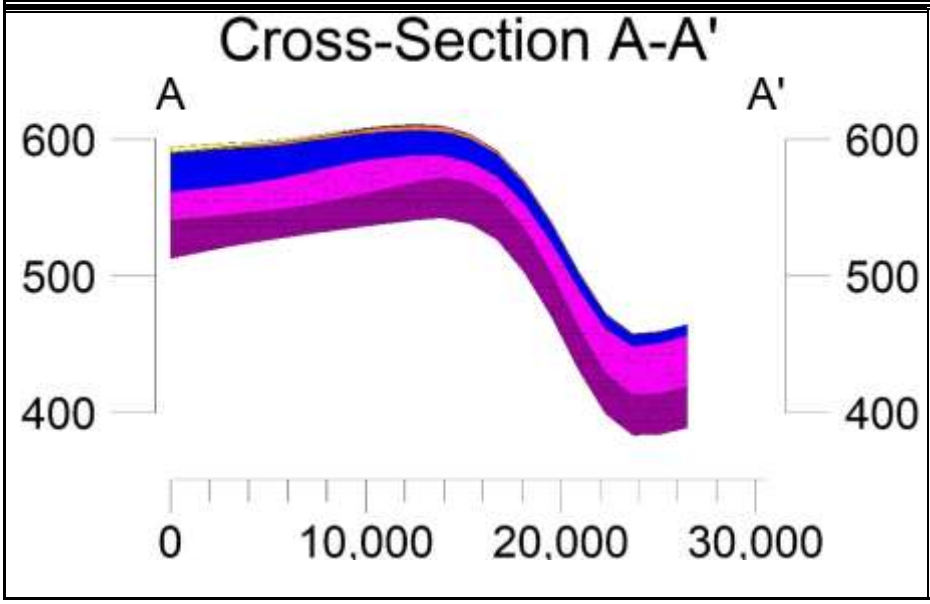
Status of GW Exploration	GWD	CGWB
	10 (EW)	03 (EW)
Aquifer	Schist (Sc) and Gneiss (Gn).	



Basic Aquifer Characteristics	Discharge of Wells (lps)	Dugwell	2.00 - 2.10
		Borewell	1.65 - 1.90
		Tubewell	
		DCB	1.75 - 2.00







Chemical Quality Of Groundwater (2020-21)	**Electrical Conductivity** in **µS/cm at 25°C**			520-4270	
	pH			7.01-8.95	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	20 %
			500 - 1000	Permissible for drinking	35 %
			> 1000	Undesirable	44 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	6.66 %
			150 – 300	Hard	52.94 %
			> 300	Very Hard	41.17 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		58.82 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		85.29 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		100 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**
		Salinity – Hazard (EC in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	11.76 %
			750 - 2250	Permissible	64.70 %
			2250 - 3000	Doubtful	17.64 %
			> 3000	Unsuitable	5.88 %
		SAR	< 10	Excellent	94.11 %
			10 - 18	Good	5.88 %
			18 - 26	Fair	-
			> 26	Unsuitable	-

		Na%	< 20	Excellent	-
			20 - 40	Good	8.82 %
			40 - 60	Permissible	47.05 %
			60 - 80	Doubtful	44.11 %
			> 80	Unsuitable	-
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 10.26 mcm which is more than the Annual Groundwater Resource Availability of 9.09 mcm, thus the district is deficit of 1.17 mcm of groundwater with the stage ofgroundwater development being 112.90 %. • Frequent droughts (40% mild, 2.66% moderate & 10% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Aquifer system.				
Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)				390.76
	Total Annual Ground Water Recharge (mcm)				9.57
	Natural Discharge (mcm)				4.78
	Net Annual Ground Water Availability (mcm)				9.09
	Existing Gross Ground Water Draft for All uses (mcm)				10.26
	Net ground water availability for future irrigation Development (mcm)				0.00
	Stage of Ground Water Development %				112.90 %
	Category				Over Exploited
Supply Side Management	**Water Supply (mcm)**				
	Potential zone area (sq. km.)				390.76

	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	20.73
	Surplus Surface Water Availability (mcm)	1.79
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	12.48
	Water conserved in catchment area treatment (mcm)	0.32
	Water Conservation Structures	
	Mini Percolation Tanks	620
	Percolation Tank	132
	Pacca Check Dams	64
	Anicut	34
	Mini Storage Tanks	1
	Volume of Water expected to be conserved (mcm)	1.35
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	1.67
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.11
	No. of Farm Ponds	95
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	20.14
	Water Saving by use of Sprinklers (mcm)	1.61
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	8.38
	Water Saving by Change in Cropping Pattern (mcm)	0.838

Expected Benefits	Net Ground Water Availability (mcm), GWRE - 2020	9.09
	Additional GW resources available after Supply side interventions (mcm)	0.99
	Net Ground Water Availability after Supply side intervention (mcm)	10.09
	Existing Ground Water Draft for All Purposes (mcm)	10.26
	GW draft after Supply Side Interventions (mcm)	10.15
	GW draft after Demand Side Interventions (mcm)	7.71
	Present stage of Ground Water Development (%)	112.90 %
	Projected Stage of Ground Water Development after Supply Side interventions (%)	100.59 %
	Projected Stage of Ground Water Development after Demand Side interventions (%)	76.33 %

** sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

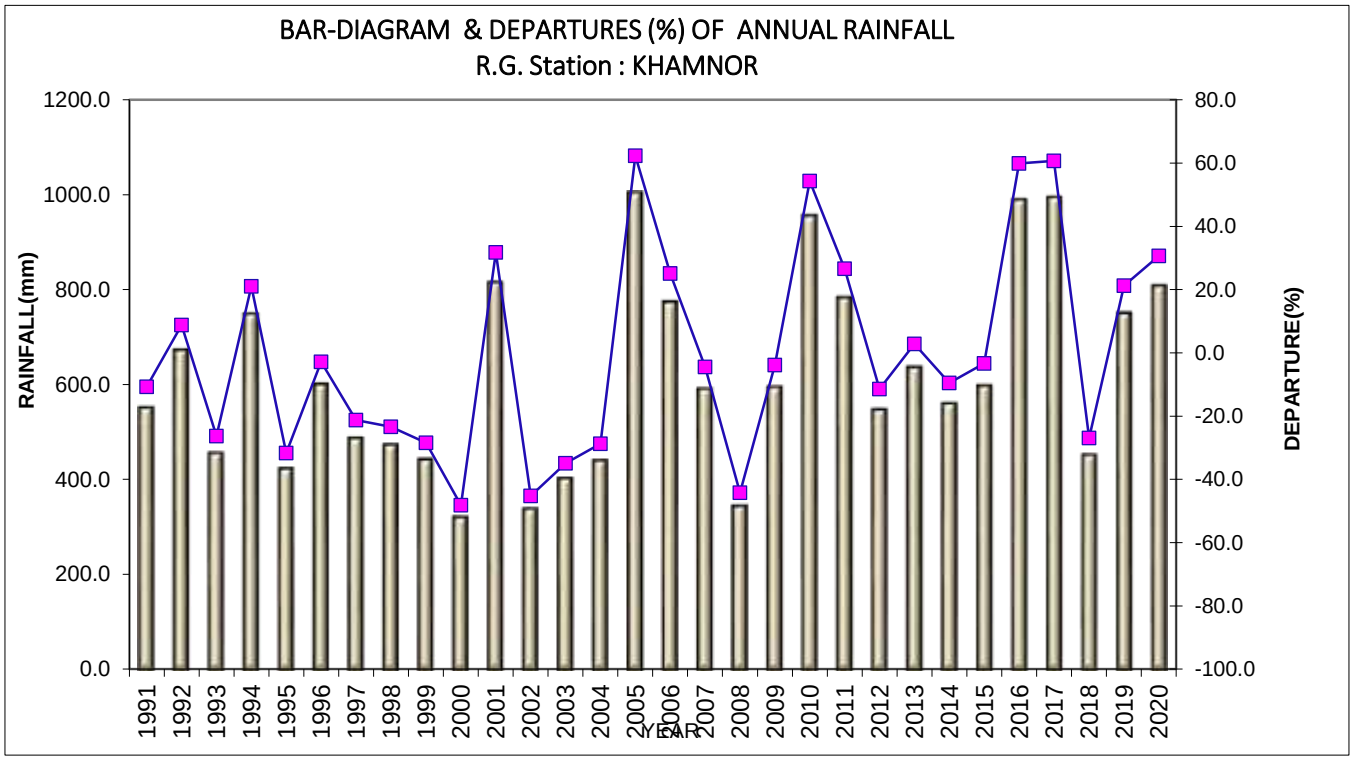
** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

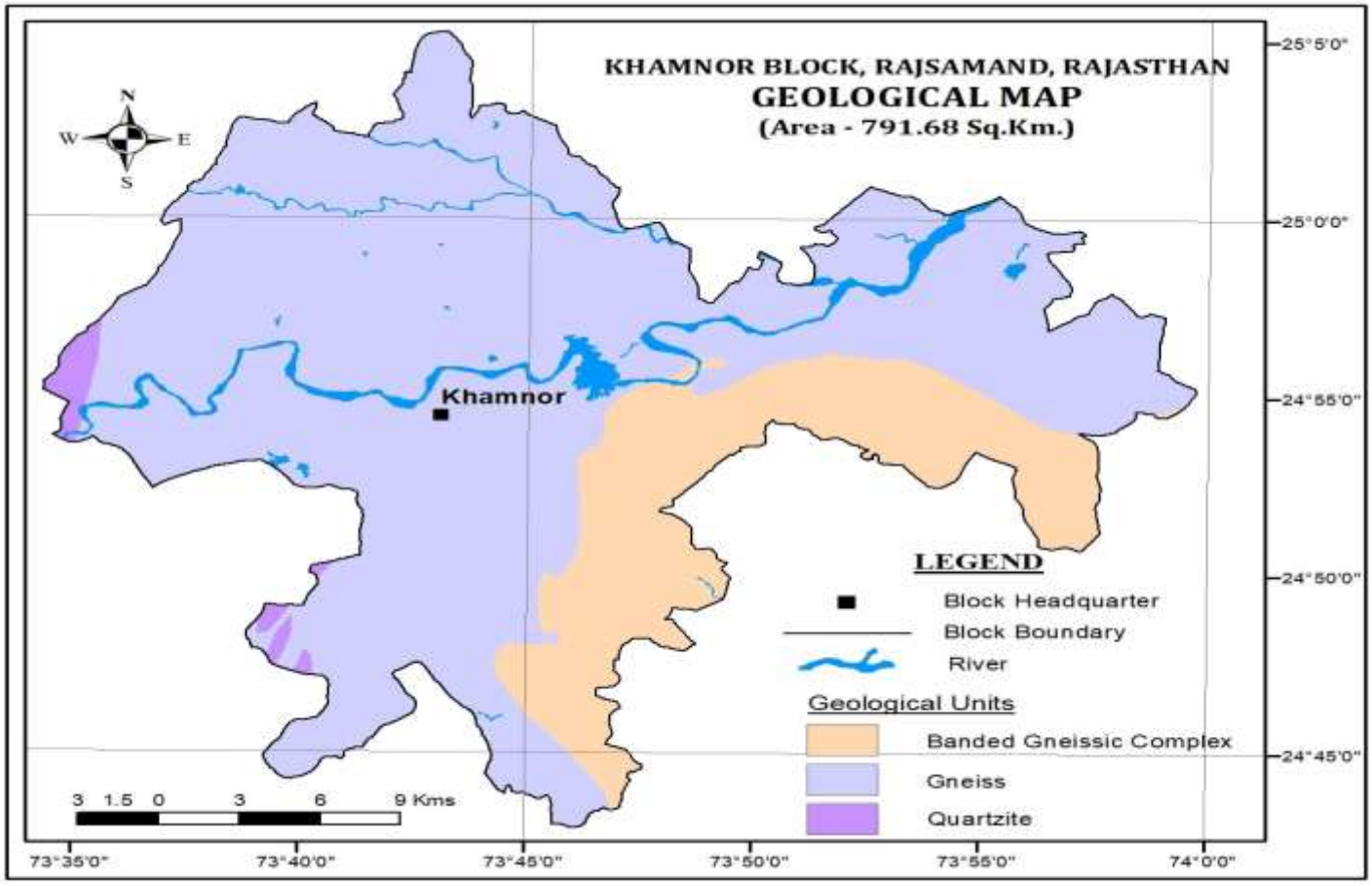
** mbgl - Meter below ground level.

14.4. KHAMNOR BLOCK

Salient Information	Block Name	Khamnor
	Longitude	73° 34′ 17″ to 73° 59′ 46″ East
	Latitude	24° 42′ 52″ to 25° 05′ 13″ North
	Geographical Area (sq. km.)	791.68
	Hilly Area (sq. km.)	115.68
	Population (2011)	202715
	Highest Elevation (m amsl)	1194.4
	Lowest Elevation (m amsl)	511.4
Rainfall Analysis	Normal Rainfall (mm) (1901-1972)	620.2
	Mean Annual Rainfall (mm) (1991-2020)	618.6
	Highest Annual Rainfall (mm) (1991-2020)	1004 (2005)
	Lowest Annual Rainfall (mm) (1991-2020)	247 (2000)
	Standard Deviation (mm) (1991-2020)	203.03
	Coefficient of Variation (%) (1991-2020)	32.9

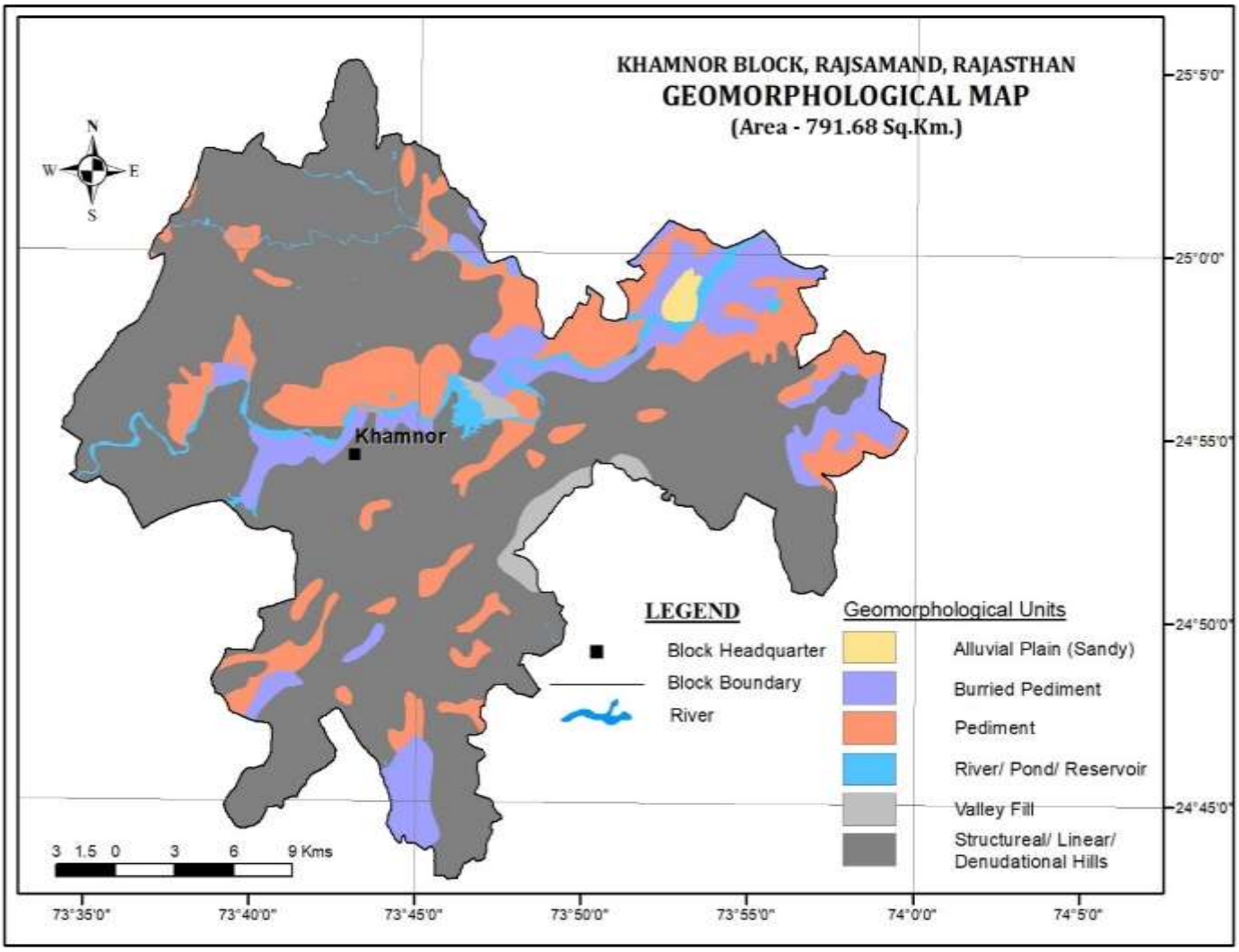


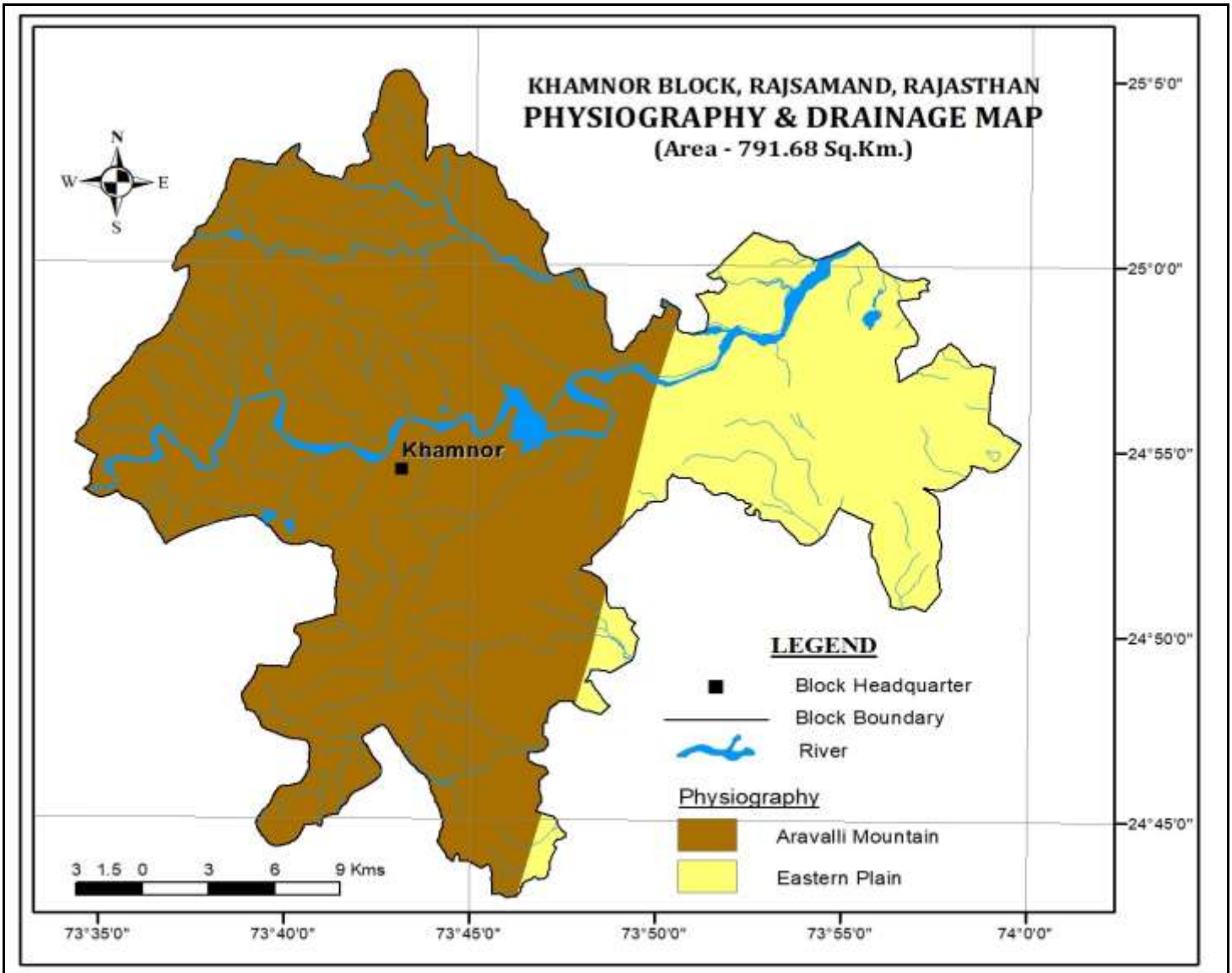
Geology	Geologically, the area is represented by Gneiss and Schist of the Bhilwara Super Group.



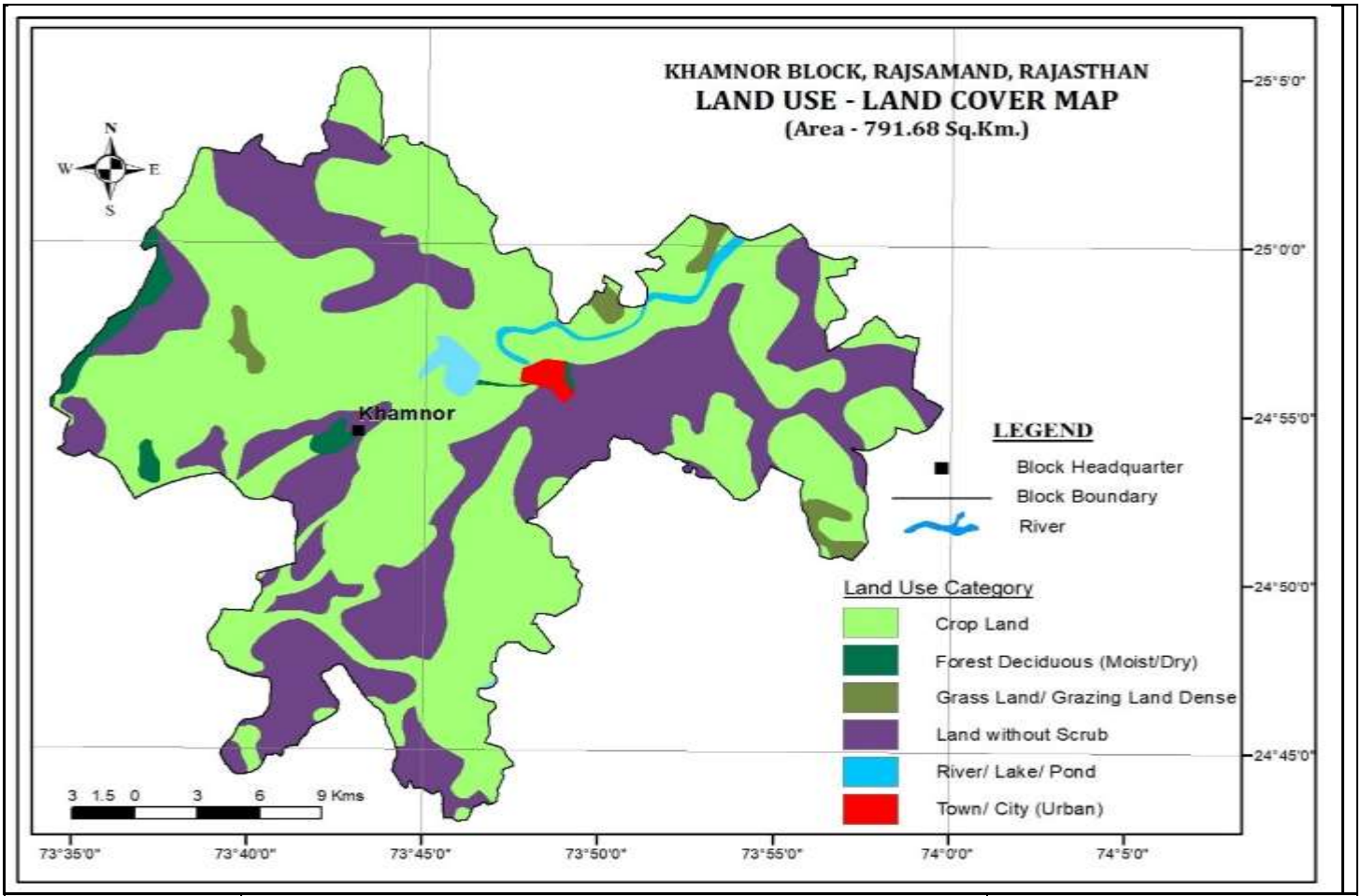
Physiography / Drainage

		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	09	30.0 %
	Mild (0 to -25%)	09	30.0 %
	Moderate (-25% to -50%)	09	30.0 %
	Severe (-50% to -75%)	03	10 %
	Extreme (-75% to -100%)	-	-
Geomorphology	• Pediplain, Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain, Ravines and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.		

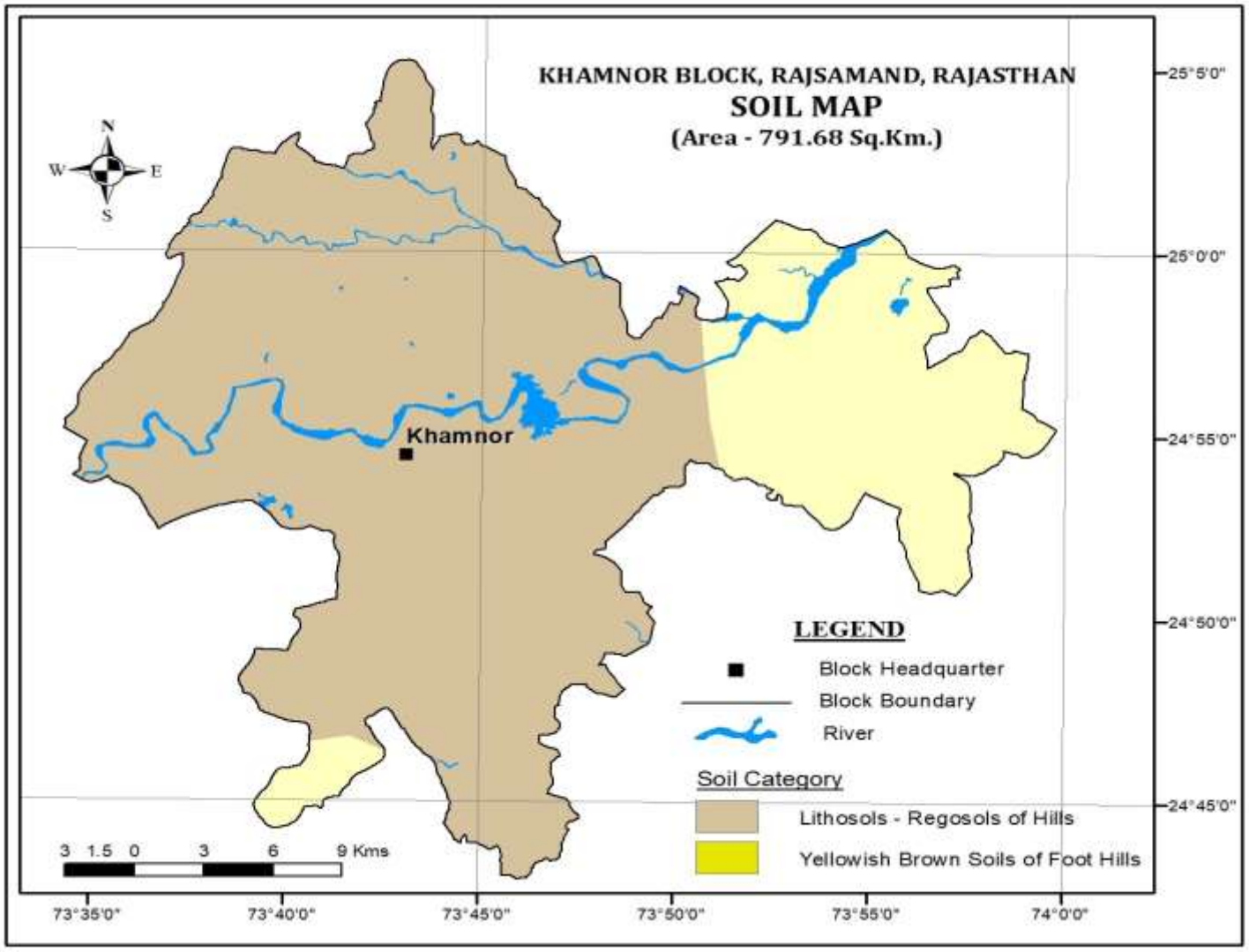




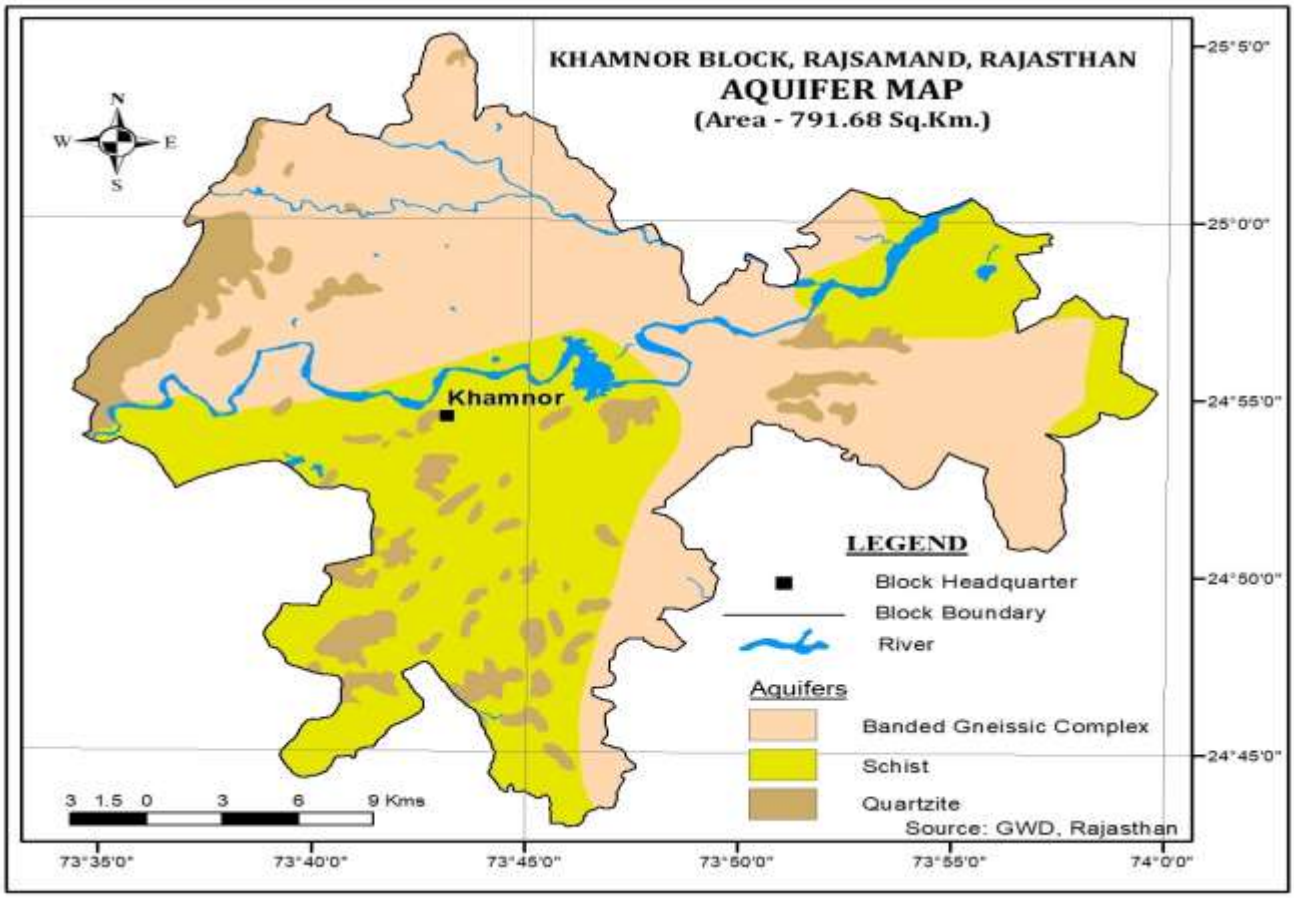
Land Use	Geographical Area (sq. km.)	791.68
	Forest Area (sq. km.)	23.44
	Net Sown Area (sq. km.)	154.88
	Area sown more than once (sq. km.)	65.65

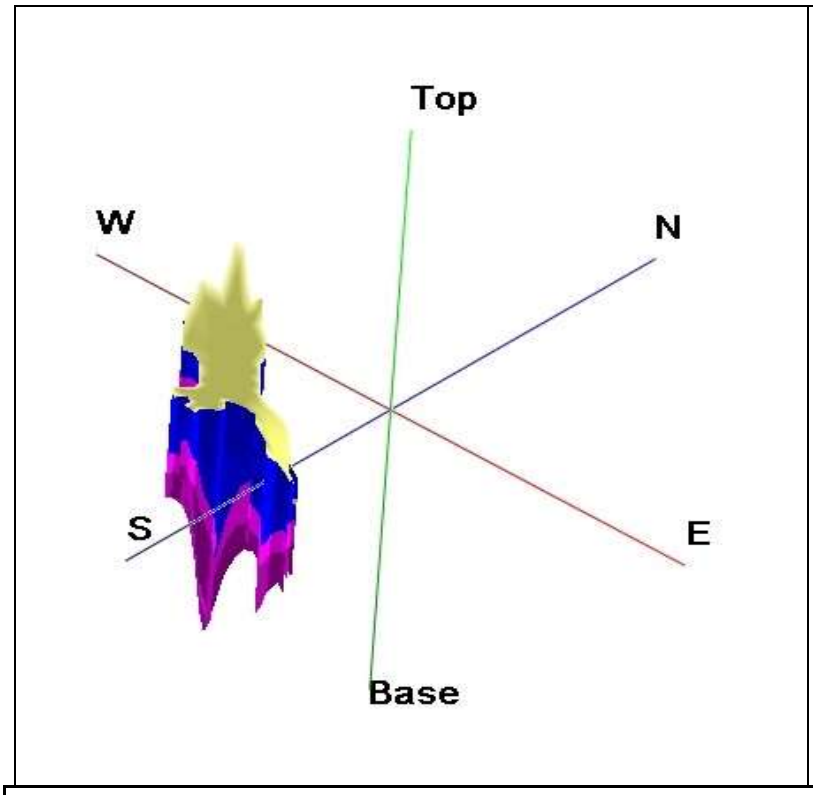


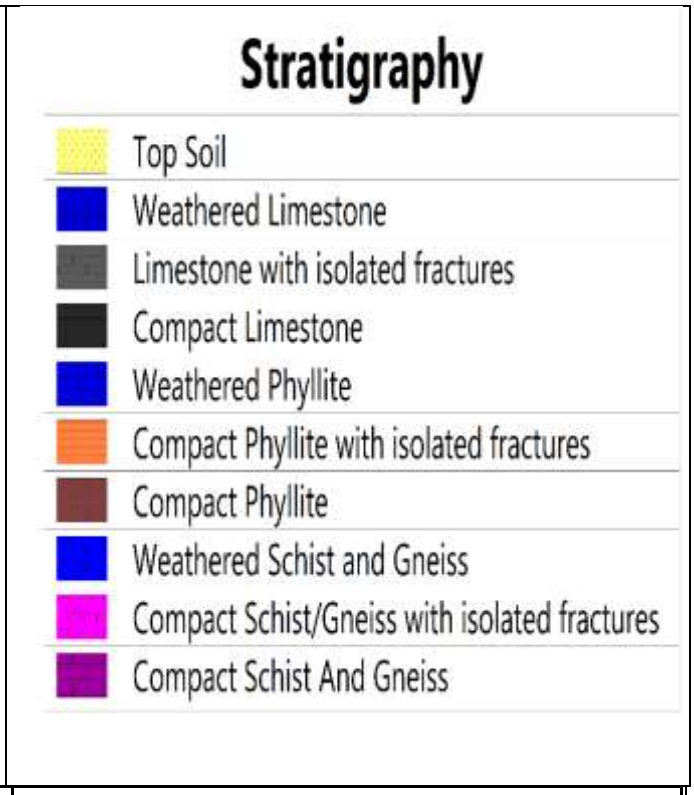
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			9.96
	Gross Irrigated Area by Ground Water (sq. km.)			54.76
	Gross Irrigated Area by Other Sources (sq. km.)			0.00
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Castor,Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	220.87	175.26	0.94
	Irrigated (sq. km.)	17.94	163.83	0.94
Hydrogeology				
Monitoring Stations	CGWB			01
	SGWD			44
	NAQUIM Key - Wells			07

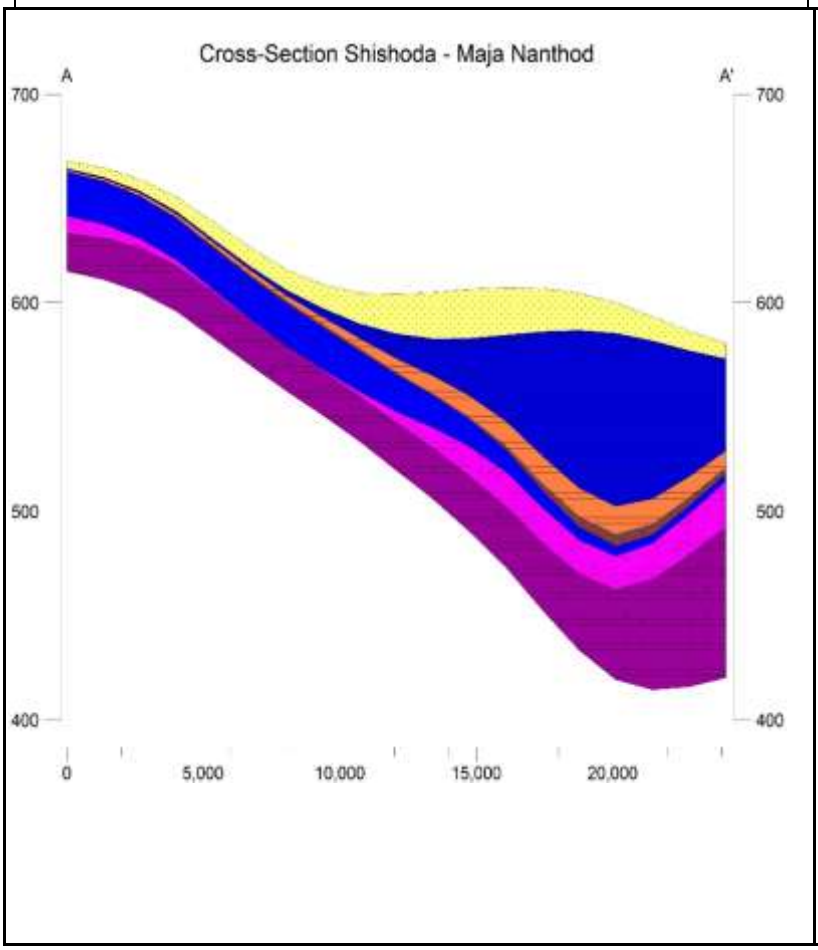


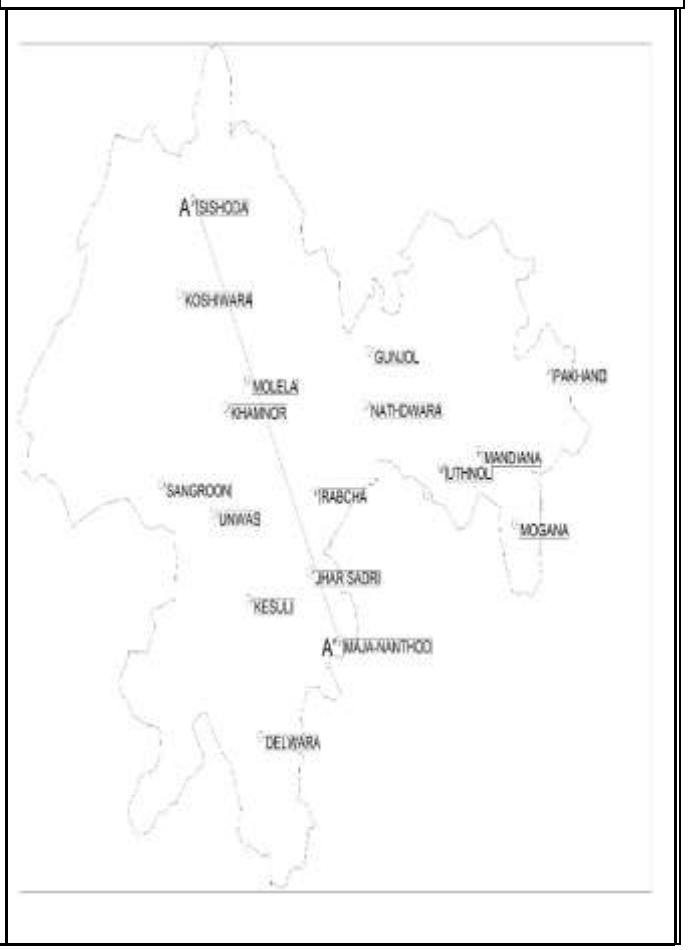
Status of GW Exploration		**GWD**	**CGWB**
		-	01 (EW)
Basic Aquifer Characteristics	Aquifer		
	Discharge of Wells (lps)	Dugwell	1.75 - 2.00
		Borewell	1.90 - 2.20
		Tubewell	
		DCB	1.70 - 2.10


KHAMNOR BLOCK, RAJSAMAND, RAJASTHAN
AQUIFER MAP
(Area - 791.68 Sq.Km.)
N
W
E
S
Khamnor
LEGEND
Block Headquarter
Block Boundary
River
Aquifers
Banded Gneissic Complex
Schist
Quartzite
Source: GWD, Rajasthan
3 1.5 0 3 6 9 Kms
25°5'0"
25°0'0"
24°55'0"
24°50'0"
24°45'0"
73°35'0"
73°40'0"
73°45'0"
73°50'0"
73°55'0"
74°0'0"


Top
W
N
S
E
Base


Stratigraphy
Top Soil
Weathered Limestone
Limestone with isolated fractures
Compact Limestone
Weathered Phyllite
Compact Phyllite with isolated fractures
Compact Phyllite
Weathered Schist and Gneiss
Compact Schist/Gneiss with isolated fractures
Compact Schist And Gneiss


Cross-Section Shishoda - Maja Nanthod
A
A'
700
600
500
400
0
5,000
10,000
15,000
20,000


A
SISHODA
KOSHWARA
GUNJOL
PAKHAND
MOLELA
KHAMNOR
NATHDWARA
MANDIANA
UTHNOL
SANGROON
RABCHA
UNWAS
MOSANA
JHAR SADRI
KESUJI
A'
MAJA NANTHOO
DELWARA

Chemical Quality Of Groundwater(2020-21)	**Electrical Conductivity** in **µS/cm at 25°C**			540-12000	
	pH			7.18-9.25	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	12.50 %
			500 - 1000	Permissible for drinking	47.50 %
			> 1000	Undesirable	40.0 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	2.5 %
			150 – 300	Hard	28.20 %
			> 300	Very Hard	68.65 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		52.50 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		97.5 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		100.0 %
	Suitability	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**

Extraction (GWRE-2020)	Natural Discharge (mcm)	2.38
	Net Annual Ground Water Availability (mcm)	21.43
	Existing Gross Ground Water Draft for All uses (mcm)	20.04
	Net ground water availability for future irrigation Development (mcm)	1.44
	Stage of Ground Water Development %	93.50 %
	Category	Critical
	Water Supply (mcm)	
	Potential zone area (sq. km.)	675.86
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	37.63

	for Irrigation	**Salinity – Hazard (EC** in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	10.25 %
			750 - 2250	Permissible	74.35 %
			2250 - 3000	Doubtful	10.25 %
			> 3000	Unsuitable	5.12%
		SAR	< 10	Excellent	100.0 %
			10 - 18	Good	-
			18 - 26	Fair	-
			> 26	Unsuitable	-
		Na%	< 20	Excellent	-
			20 - 40	Good	17.94 %
			40 - 60	Permissible	71.79 %
			60 - 80	Doubtful	10.25 %
			> 80	Unsuitable	-
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 20.04 mcm which is very close to the Annual Groundwater Resource Availability of 21.43 mcm, thus the district has only 1.39 mcm of groundwater for future development with the stage of groundwater development being 93.50 %. • Frequent droughts (30.0% mild, 30.0% moderate & 10.0% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Aquifer system. • Limited Sub Surface Storage available for artificial groundwater recharge.				
Groundwater Resource &	Ground Water Recharge Worthy Area (sq. km.)			675.86	
	Total Annual Ground Water Recharge (mcm)			23.82	

Supply Side Management	Surplus Surface Water Availability (mcm)	2.47
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	10.93
	Water conserved in catchment area treatment (mcm)	0.34
	Water Conservation Structures	
	Mini Percolation Tanks	915
	Percolation Tank	210
	Pacca Check Dams	91
	Anicut	45
	Mini Storage Tanks	01
	Volume of Water expected to be conserved (mcm)	1.98
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	2.32
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.15
	No. of Farm Ponds	128
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	13.69
	Water Saving by use of Sprinklers (mcm)	1.09
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat togram.	13.38
	Water Saving by Change in Cropping Pattern (mcm)	1.33
	Net Ground Water Availability (mcm) 2020	21.43

Expected Benefits	Additional GW resources available after Supply side interventions(mcm)	1.32
	Net Ground Water Availability after Supply side intervention (mcm)	22.76
	Existing Ground Water Draft for All Purposes (mcm)	20.04
	GW draft after Supply Side Interventions (mcm)	19.89
	GW draft after Demand Side Interventions (mcm)	17.46
	Present stage of Ground Water Development (%)	93.50 %
	Projected Stage of Ground Water Development after Supply Sideinterventions (%)	77.75 %
	Projected Stage of Ground Water Development after Demand Sideinterventions (%)	76.68 %

** sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

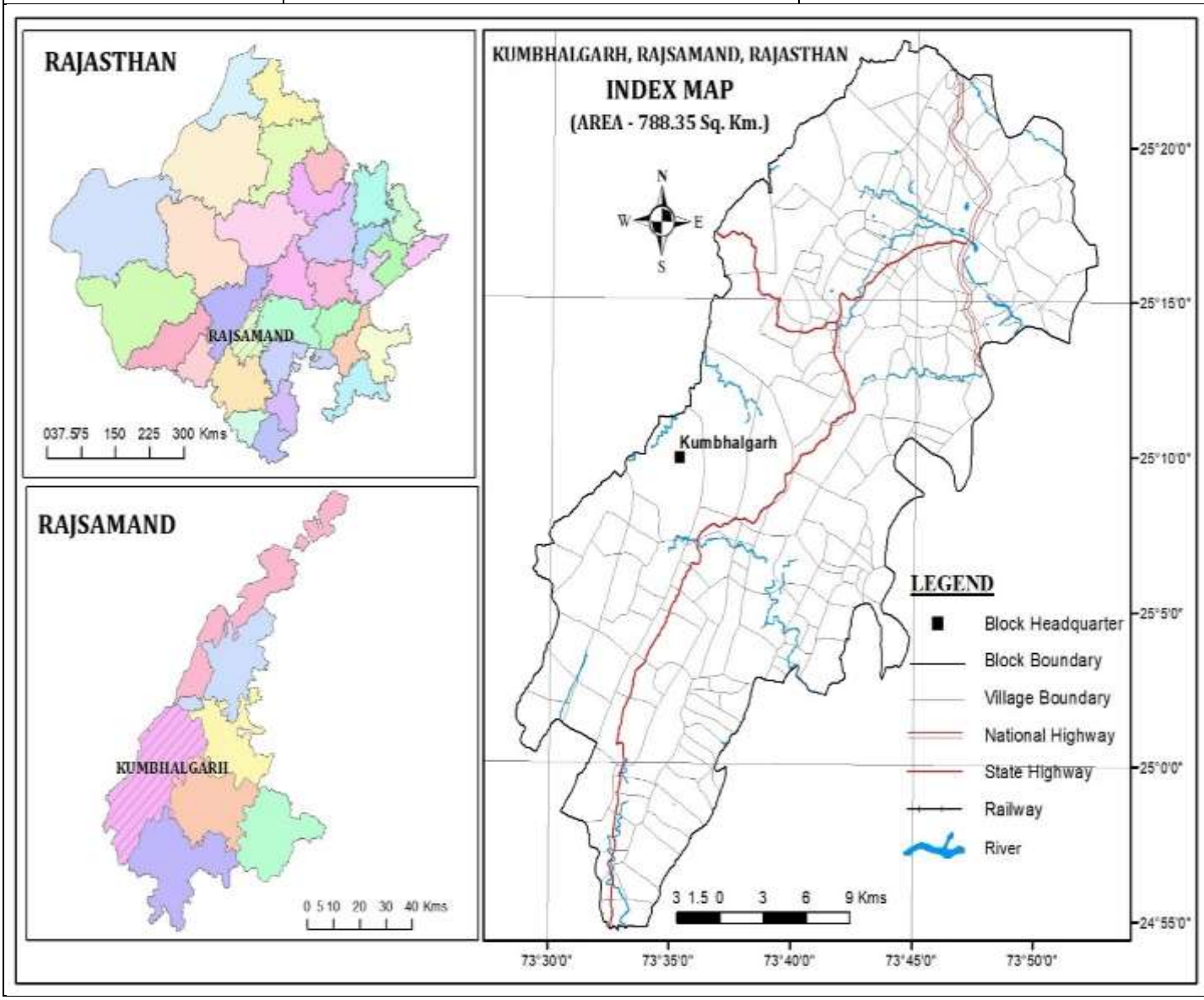
** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

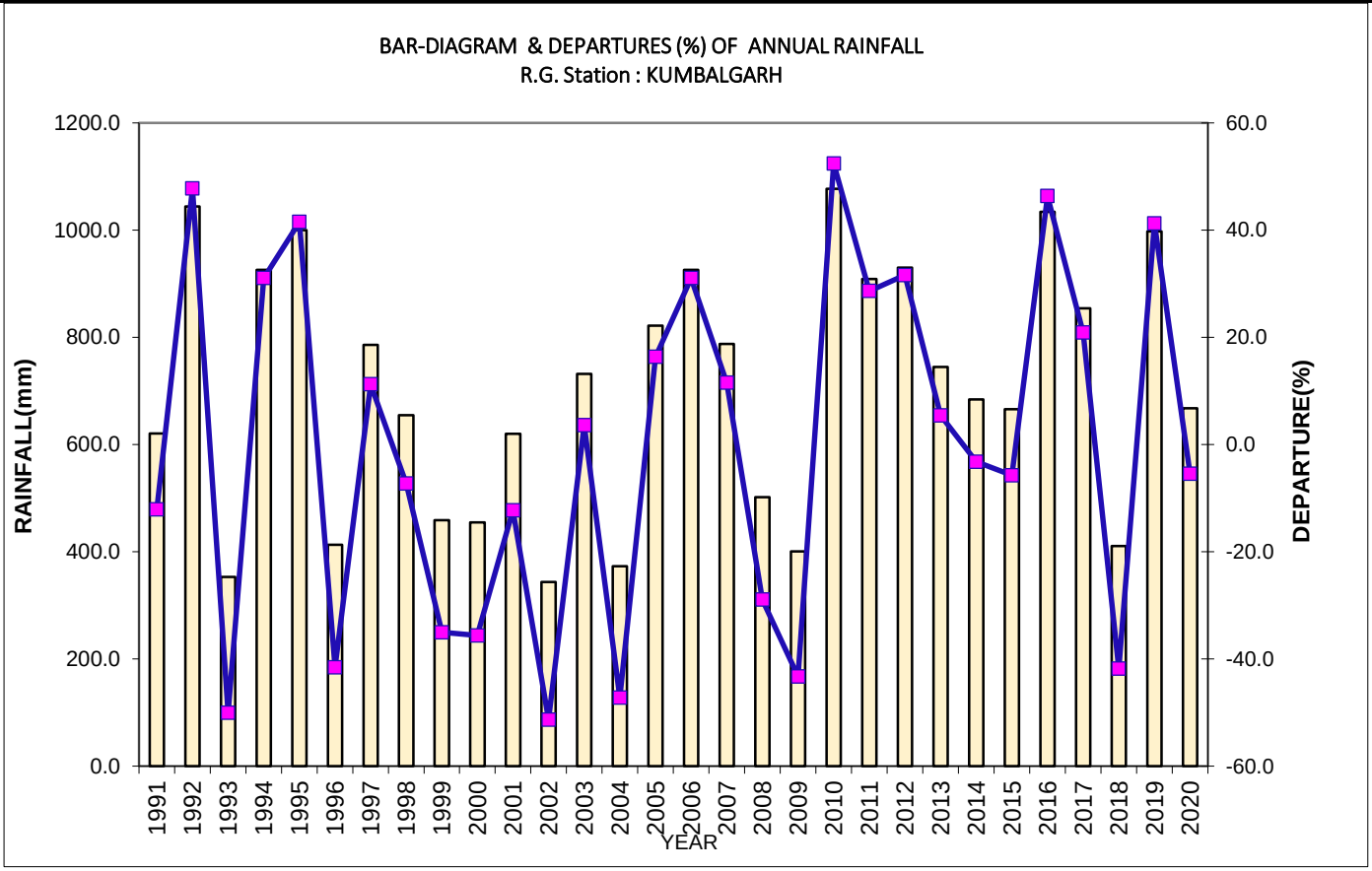
** mbgl - Meter below ground level.

14.5. KUMBHALGARH BLOCK

Salient Information	Block Name	Kumbhalgarh
	Longitude	73° 28′ 40″ to 73° 28′ 40″ East
	Latitude	24° 54′ 34″ to 25° 23′ 24″ North
	Geographical Area (sq. km.)	788.35
	Hilly Area (sq. km.)	251.79
	Population (2011)	144231
	Highest Elevation (m amsl)	1294
	Lowest Elevation (m amsl)	419

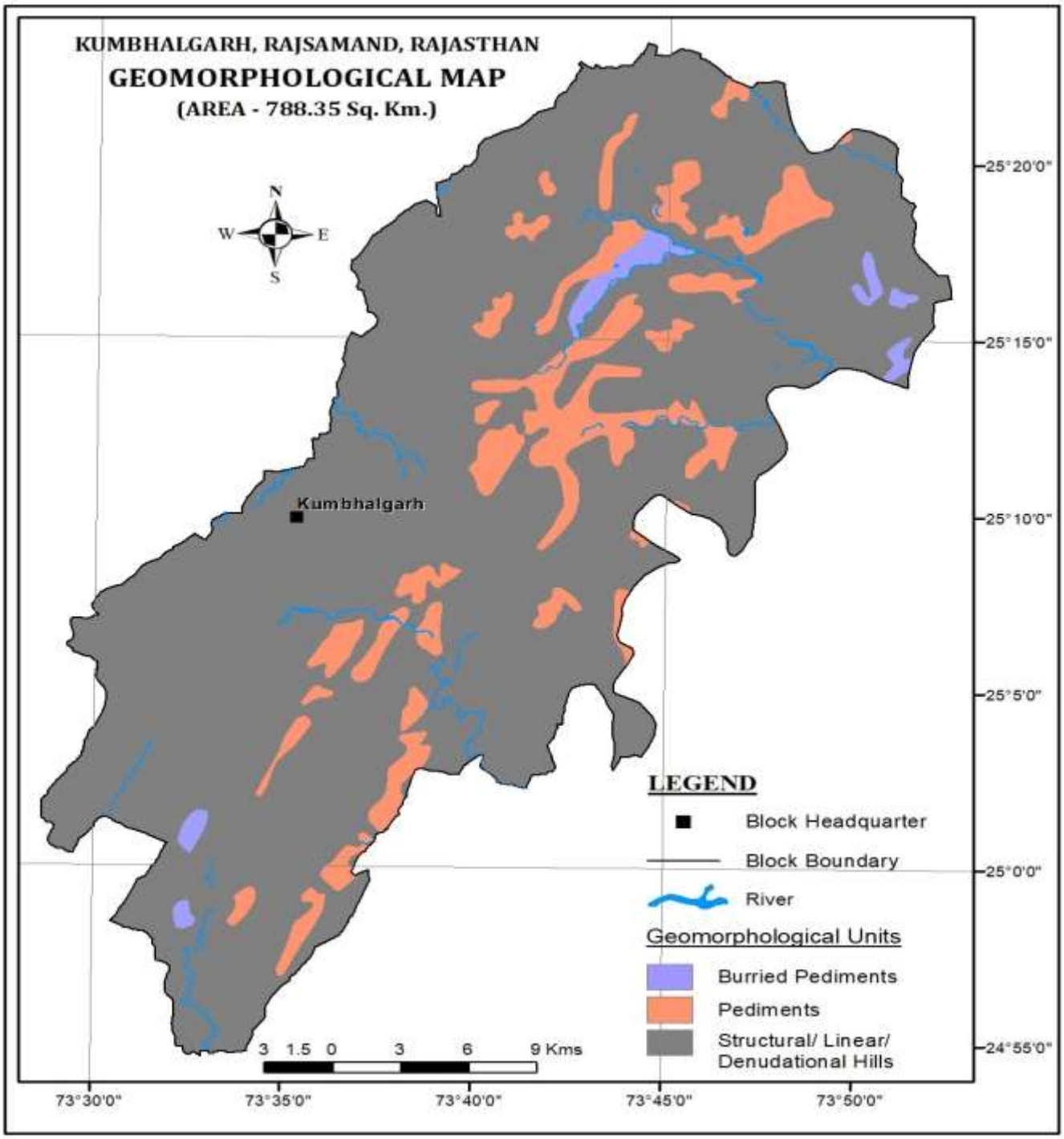


Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	647.10
	Mean Annual Rainfall (mm) (1991-2020)	706.5
	Highest Annual Rainfall (mm) (1991-2020)	1077 (2010)
	Lowest Annual Rainfall (mm) (1991-2020)	344 (2002)
	Standard Deviation (mm) (1991-2020)	234.1
	Coefficient of Variation (%) (1991-2020)	33.1

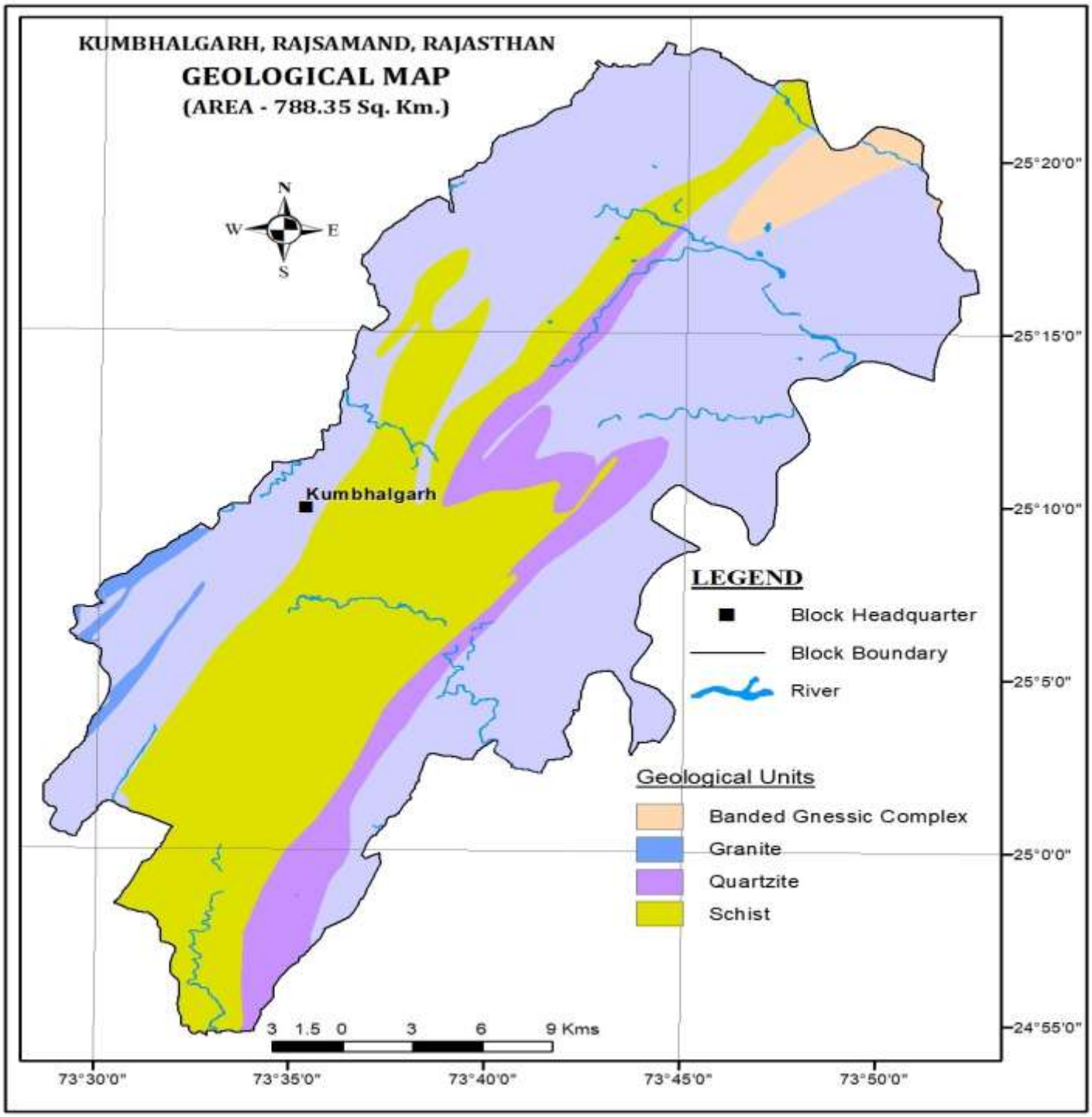


		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	15	50.0 %
	Mild (0 to -25%)	06	20.0 %
	Moderate (-25% to -50%)	07	23.33 %
	Severe (-50% to -75%)	02	6.66 %
	Extreme (-75% to -100%)	-	-

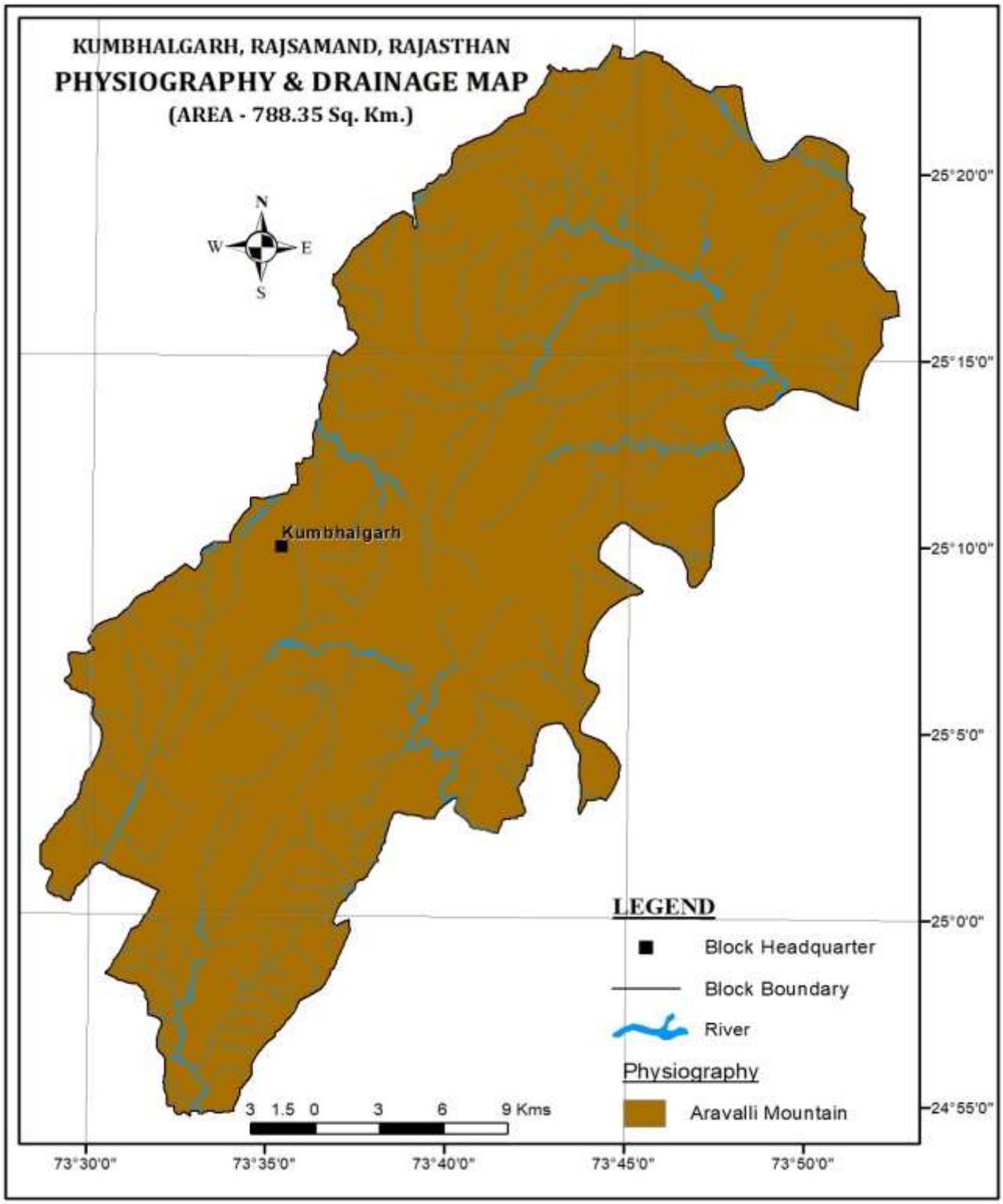
Geomorphology	• Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.



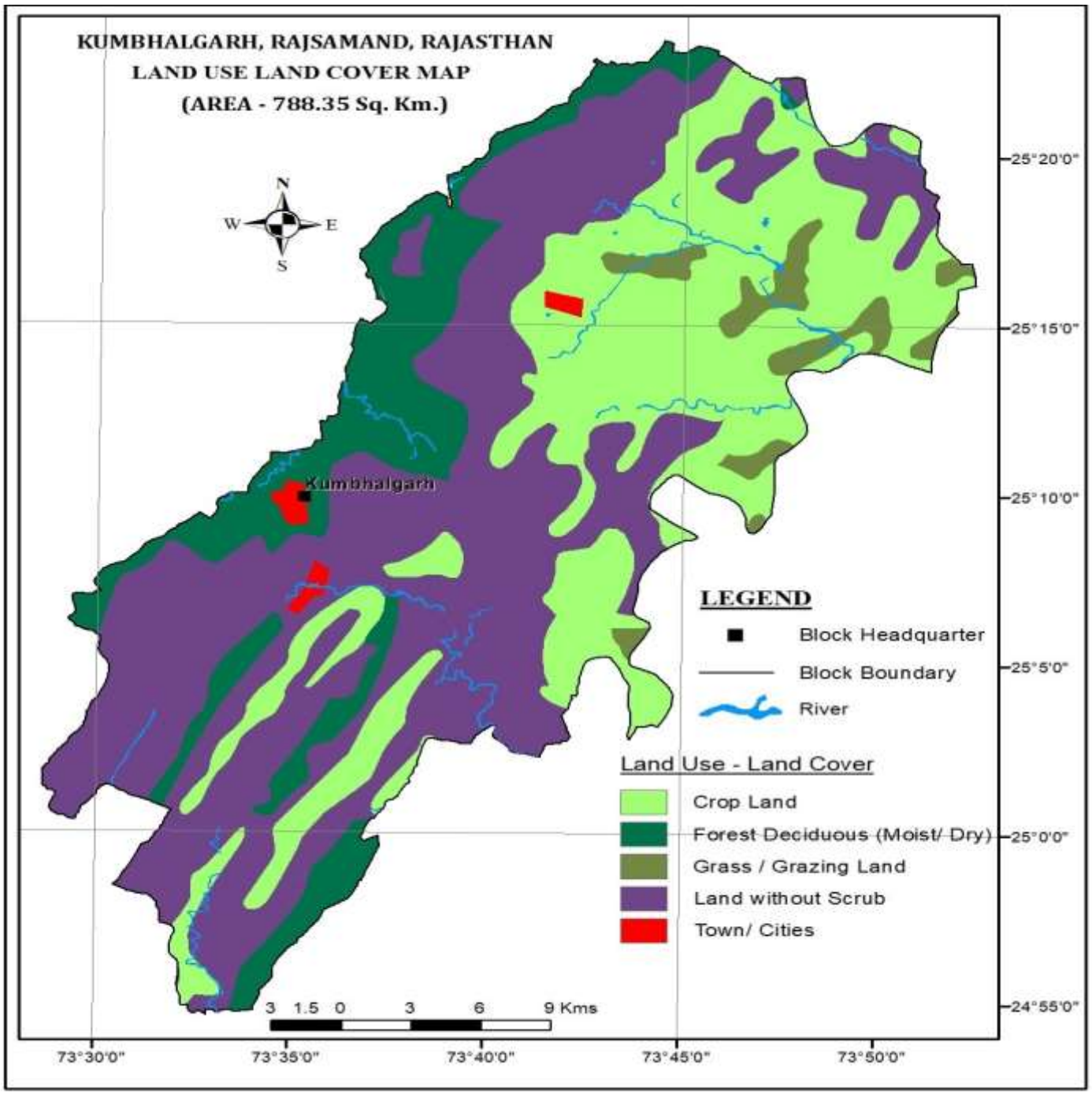
Geology	Geologically, the area is represented by Schists and Gneisses of the Bhilwara Gneissic Complex with few intrusions of the Berach Granite.



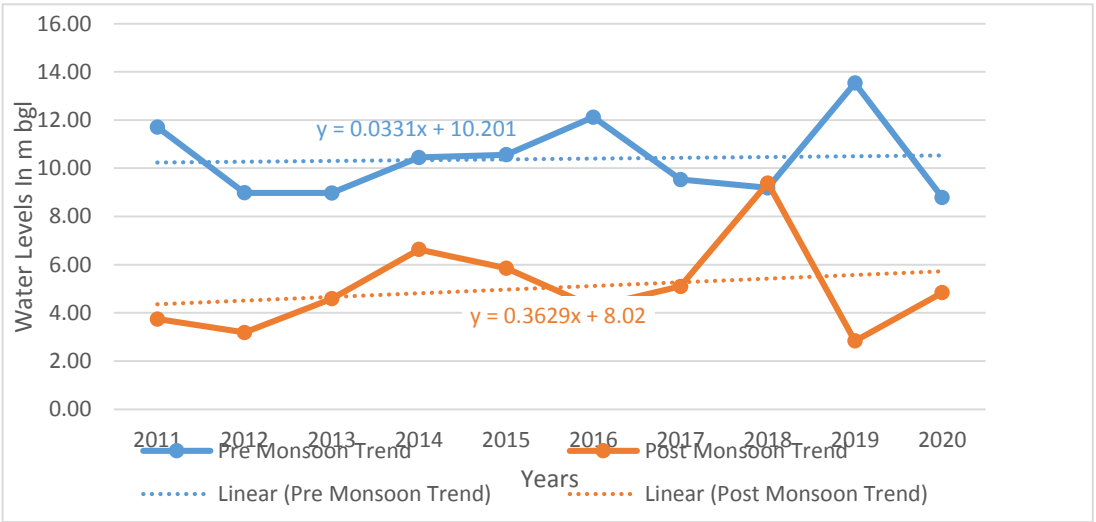
Physiography and Drainage	



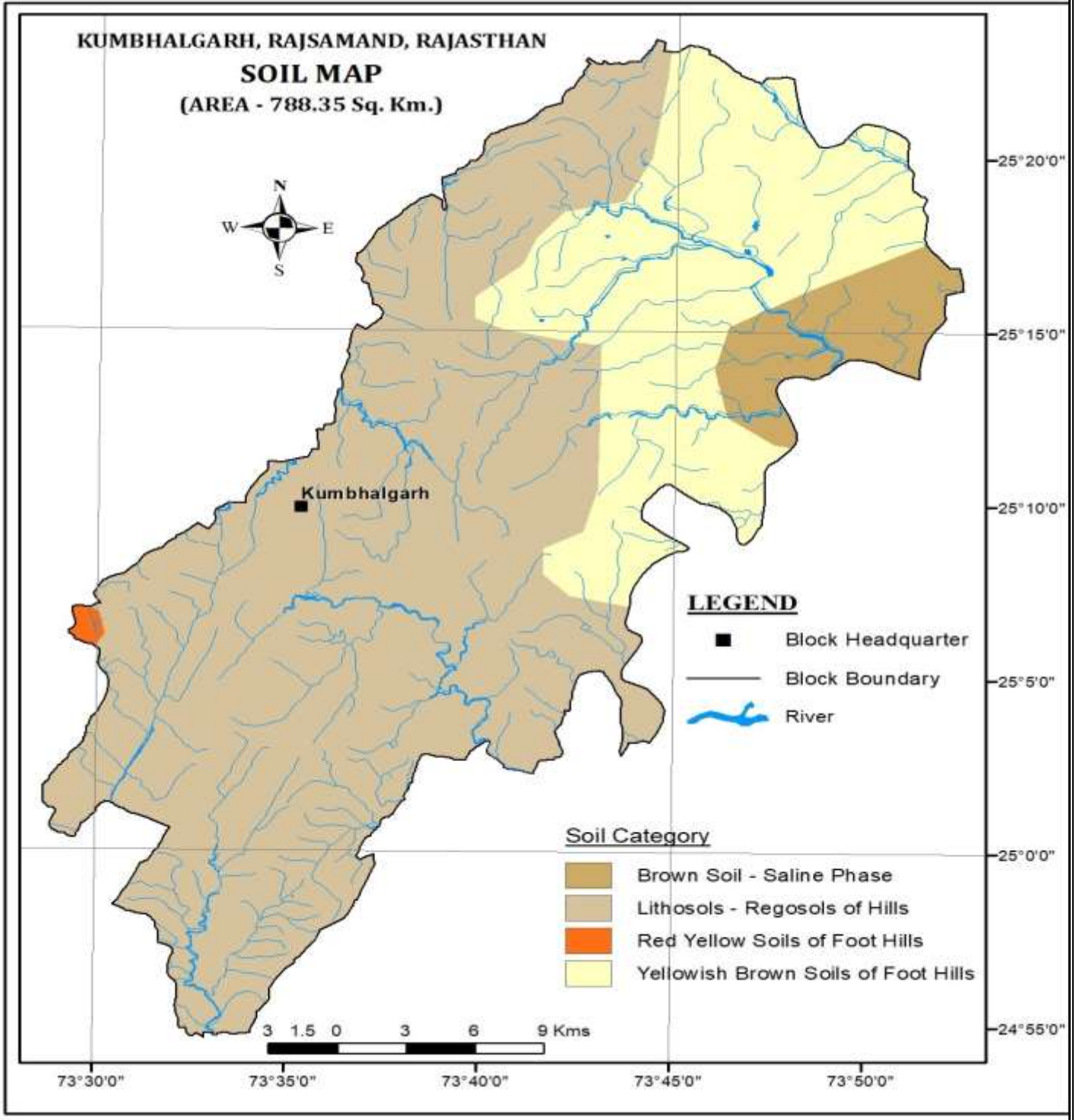
Land Use	Geographical Area (sq. km.)	788.35
	Forest Area (sq. km.)	50.78
	Net Sown Area (sq. km.)	83.49
	Area sown more than once (sq. km.)	35.33



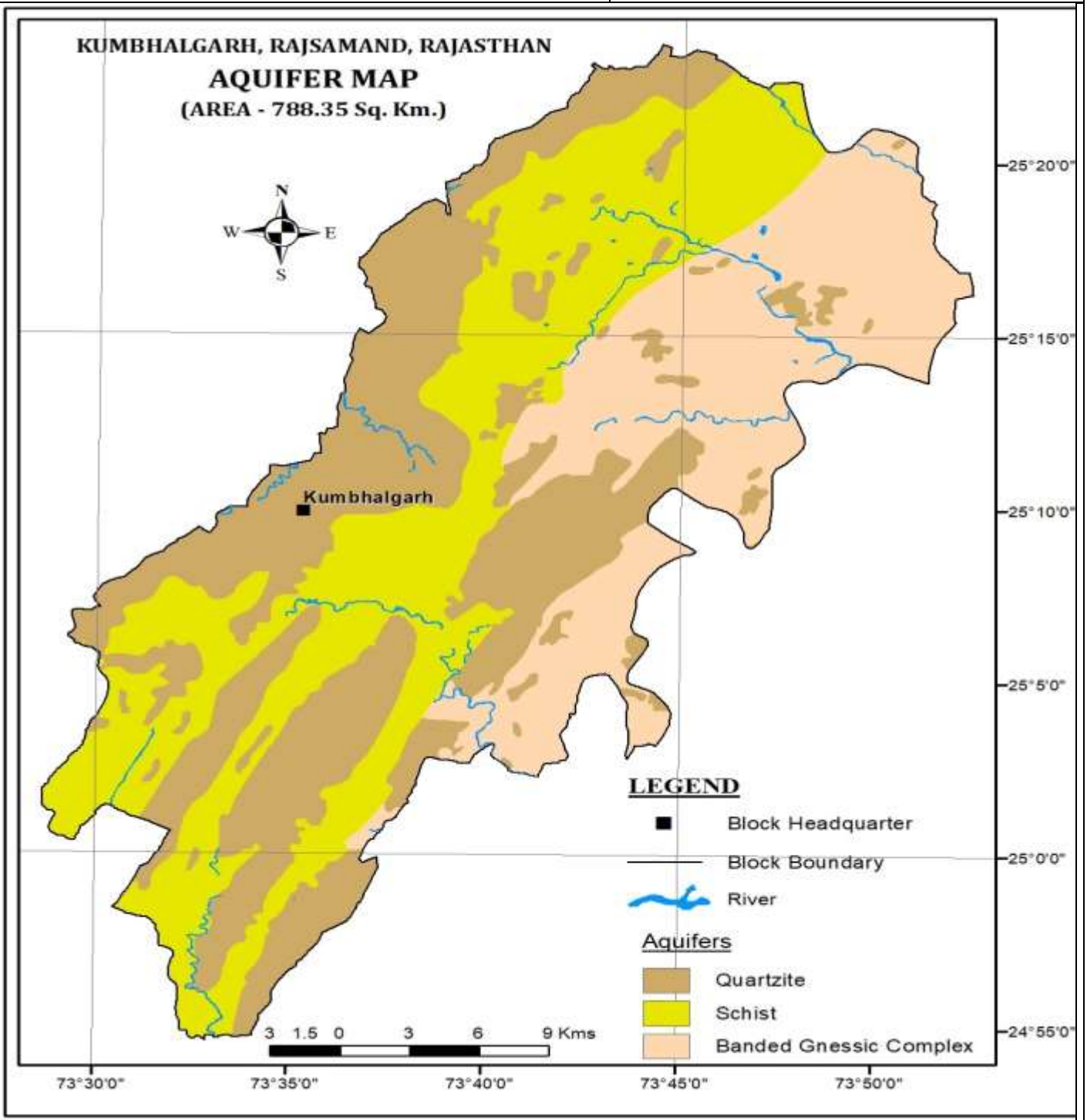
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			0.37
	Gross Irrigated Area by Ground Water (sq. km.)			33.74
	Gross Irrigated Area by Other Sources (sq. km.)			0.00
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Ra bi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	213.52	130.10	0.24
	Irrigated (sq. km.)	28.61	125.10	0.24
Hydrogeology				
Monitoring Stations	CGWB			05
	SGWD			32
	NAQUIM Key - Wells			05
Water Level Behaviour		**Pre - Monsoon (May - 2021)**		**Post - Monsoon (November - 2021)**
	Water Level (m bgl)	3.21 – 29.19		1.55 – 28.50
	Water Level Trend (2011-2020)	**Pre - Monsoon**		**Post - Monsoon**
	Average Trend (m/year)	-0.14 (Fall)		0.13 (Fall)
	Rise	- 0.78 (Gadbore)		- 0.26(Dowas)
	Fall	0.54 (Lambodi)		0.55(Mansingh)



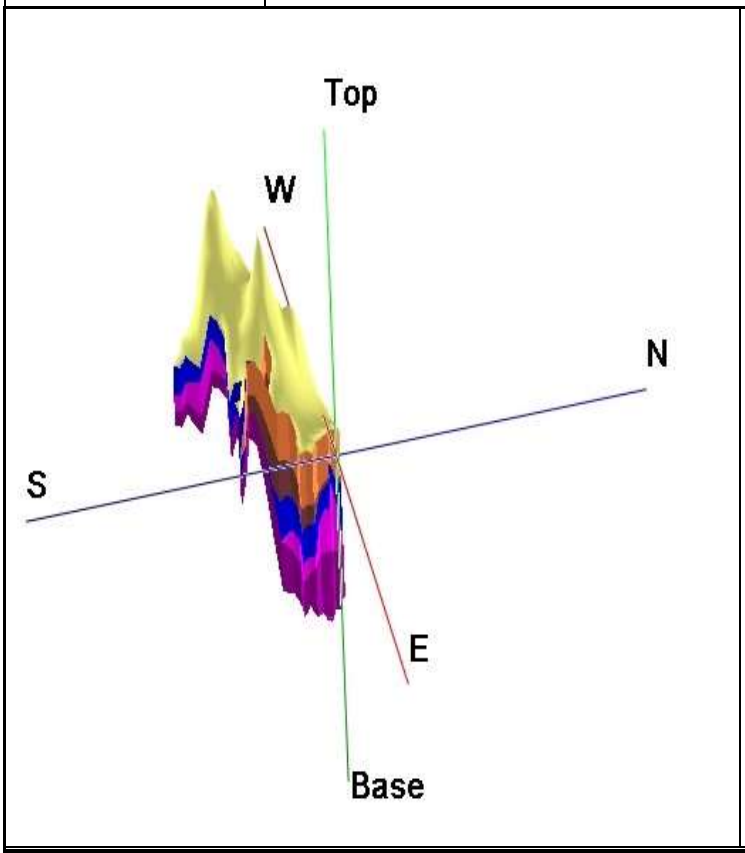
Soil Type	• Soil is sandy loam to silty clay loam, dark brown to yellowish brown colour of the foothills.

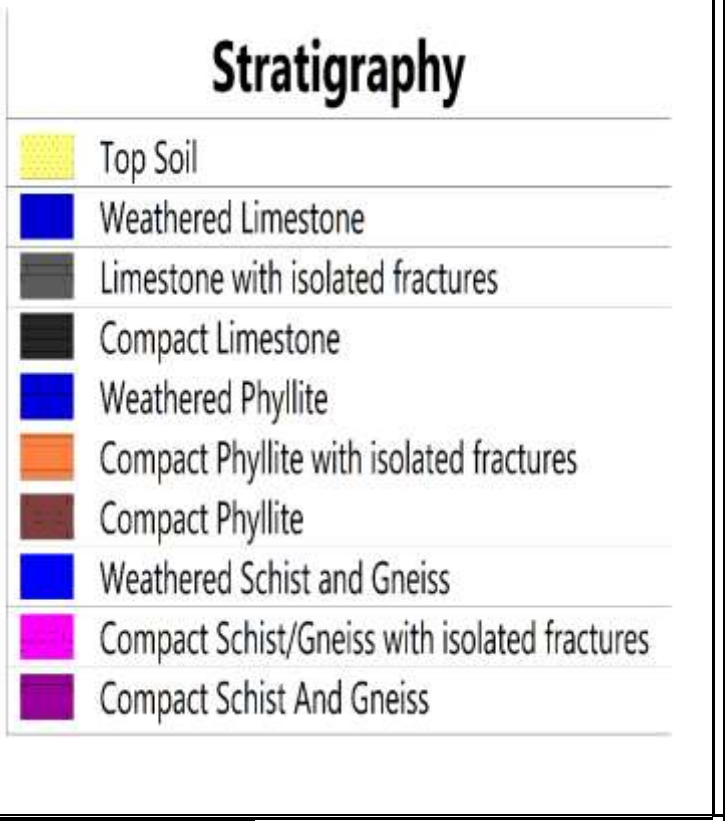


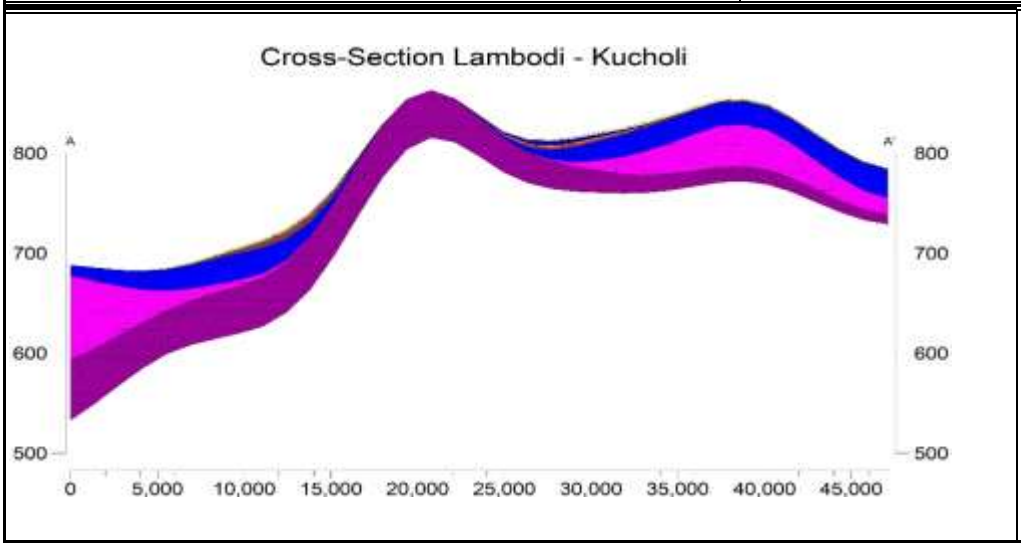
Status of GW Exploration	CGWB	GWD
	03 (EW)	-
Aquifer	Schist (Sc), Quartzite(Qz) and Gneiss (Gn).	



Basic Aquifer Characteristics	Discharge of Wells (lps)	Dugwell	1.75 - 2.00
		Borewell	1.90 - 2.10
		Tubewell	
		DCB	1.60 - 1.70







Chemical Quality Of Groundwater (2020)	**Electrical Conductivity** in **µS/cm at 25°C**			410-3710	
	pH			7.32-9.05	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	41.66 %
			500 - 1000	Permissible for drinking	41.66 %
			> 1000	Undesirable	16.66 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	8.33 %
			150 – 300	Hard	58.33 %
			> 300	Very Hard	36.11 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		80.55 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		83.33 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		100 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**
		Salinity – Hazard (EC in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	27.77 %
			750 - 2250	Permissible	66.66 %
			2250 - 3000	Doubtful	2.77 %
			> 3000	Unsuitable	2.77 %
		SAR	< 10	Excellent	100 %
			10 - 18	Good	-
			18 - 26	Fair	-

			> 26	**Unsuitable**	-
		Na%	**< 20**	**Excellent**	8.33 %
			20 - 40	**Good**	25.0 %
			40 - 60	**Permissible**	50.0 %
			60 - 80	**Doubtful**	16.66 %
			> 80	**Unsuitable**	-

Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 17.48 mcm which is very close to the Annual Groundwater Resource Availability of 18.42 mcm, thus the district has only 0.93 mcm of groundwater for future development with the stage of groundwater development being 94.92 %. • Frequent droughts (20.0% mild, 23.33% moderate & 6.66% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Aquifer system. • Limited Sub Surface storage available for artificial groundwater recharge.	
Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)	536.56
	Total Annual Ground Water Recharge (mcm)	20.46
	Natural Discharge (mcm)	2.04
	Net Annual Ground Water Availability (mcm)	18.42
	Existing Gross Ground Water Draft for All uses (mcm)	17.48
	Net ground water availability for future irrigation Development (mcm)	0.93
	Stage of Ground Water Development %	94.92 %
	Category	Critical
Supply Side	**Water Supply (mcm)**	

Management	Potential zone area (sq. km.)	536.56
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	28.69
	Surplus Surface Water Availability (mcm)	2.48
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	13.74
	Water conserved in catchment area treatment (mcm)	0.44
	Water Conservation Structures	
	Mini Percolation Tanks	971
	Percolation Tank	158
	Pacca Check Dams	108
	Anicut	58
	Mini Storage Tanks	01
	Volume of Water expected to be conserved (mcm)	2.03
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	2.47
	Farm Ponds	
	Surplus available for farm pond (mcm)	0..01
	No. of Farm Ponds	6
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	8.43
	Water Saving by use of Sprinklers (mcm)	0.67
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	7.40

	Water Saving by Change in Cropping Pattern (mcm)	**0.740**
Expected Benefits	**Net Ground Water Availability (mcm) GWRE - 2020**	**17.94**
	Additional GW resources available after Supply side interventions (mcm)	**1.46**
	Net Ground Water Availability after Supply side intervention (mcm)	**19.88**
	Existing Ground Water Draft for All Purposes (mcm)	**17.48**
	GW draft after Supply Side Interventions (mcm)	**17.47**
	GW draft after Demand Side Interventions (mcm)	**16.06**
	Present stage of Ground Water Development (%)	**94.92 %**
	Projected Stage of Ground Water Development after Supply Side interventions (%)	**87.92 %**
	Projected Stage of Ground Water Development after Demand Side interventions (%)	**80.80%**

** sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

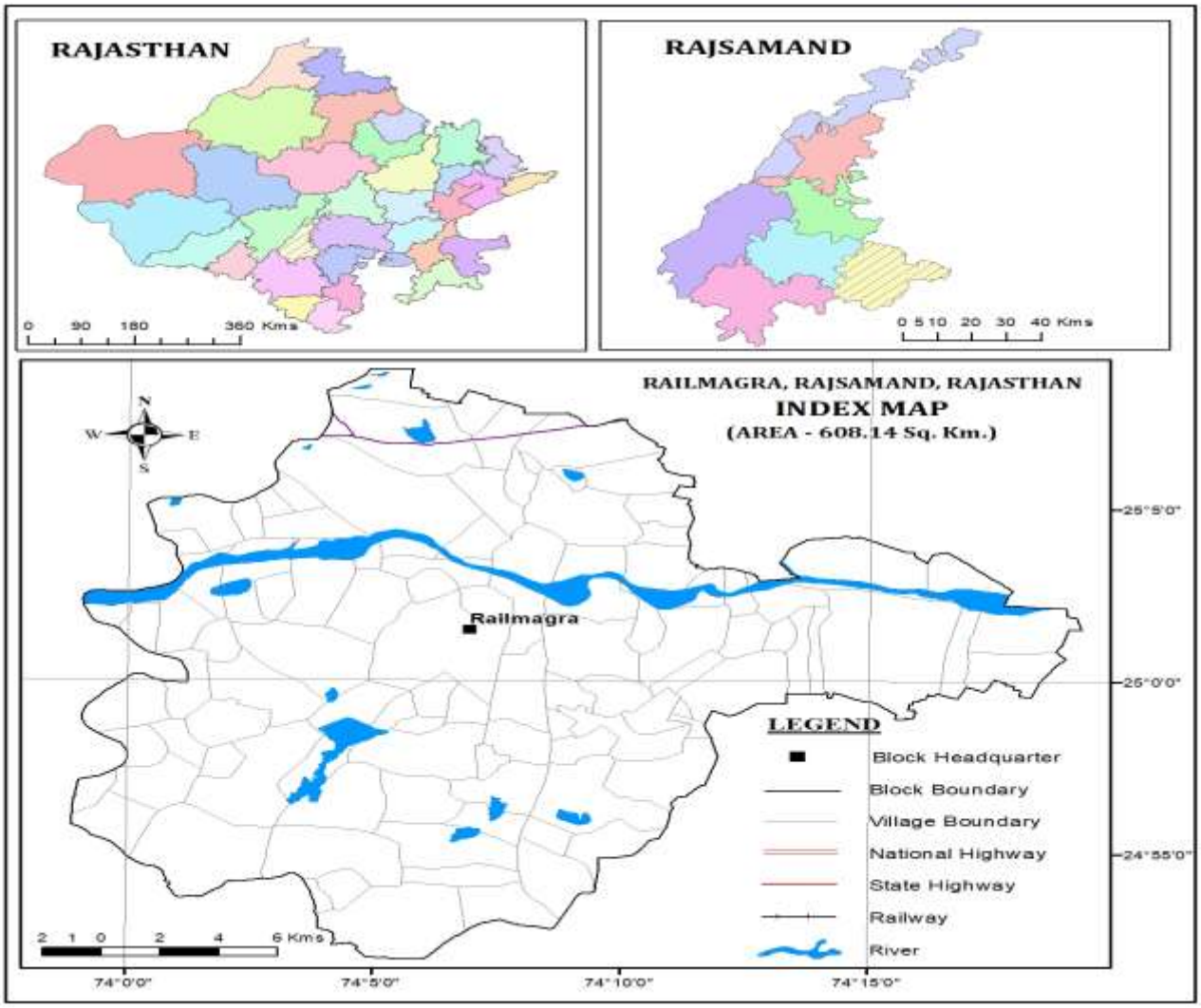
** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

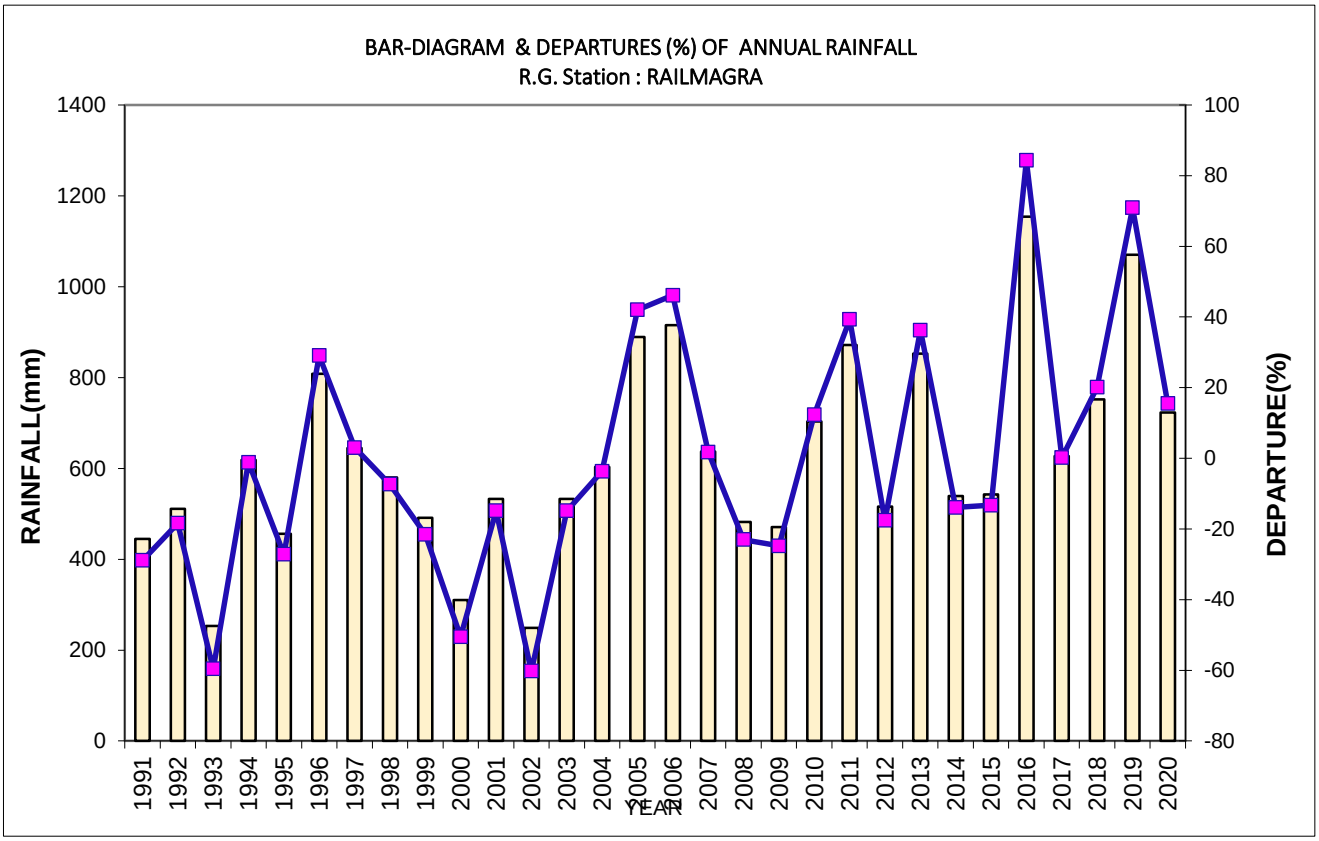
** mbgl - Meter below ground level.

14.6. RAILMAGRA BLOCK

Salient Information	Block Name	Railmagra
	Longitude	73° 58′ 53″ to 74° 19′ 18″ East
	Latitude	24° 51′ 55″ to 25° 08′ 58″ North
	Geographical Area (sq. km.)	608.14
	Hilly Area (sq. km.)	7.96
	Population (2011)	131800
	Highest Elevation (m amsl)	563
	Lowest Elevation (m amsl)	458

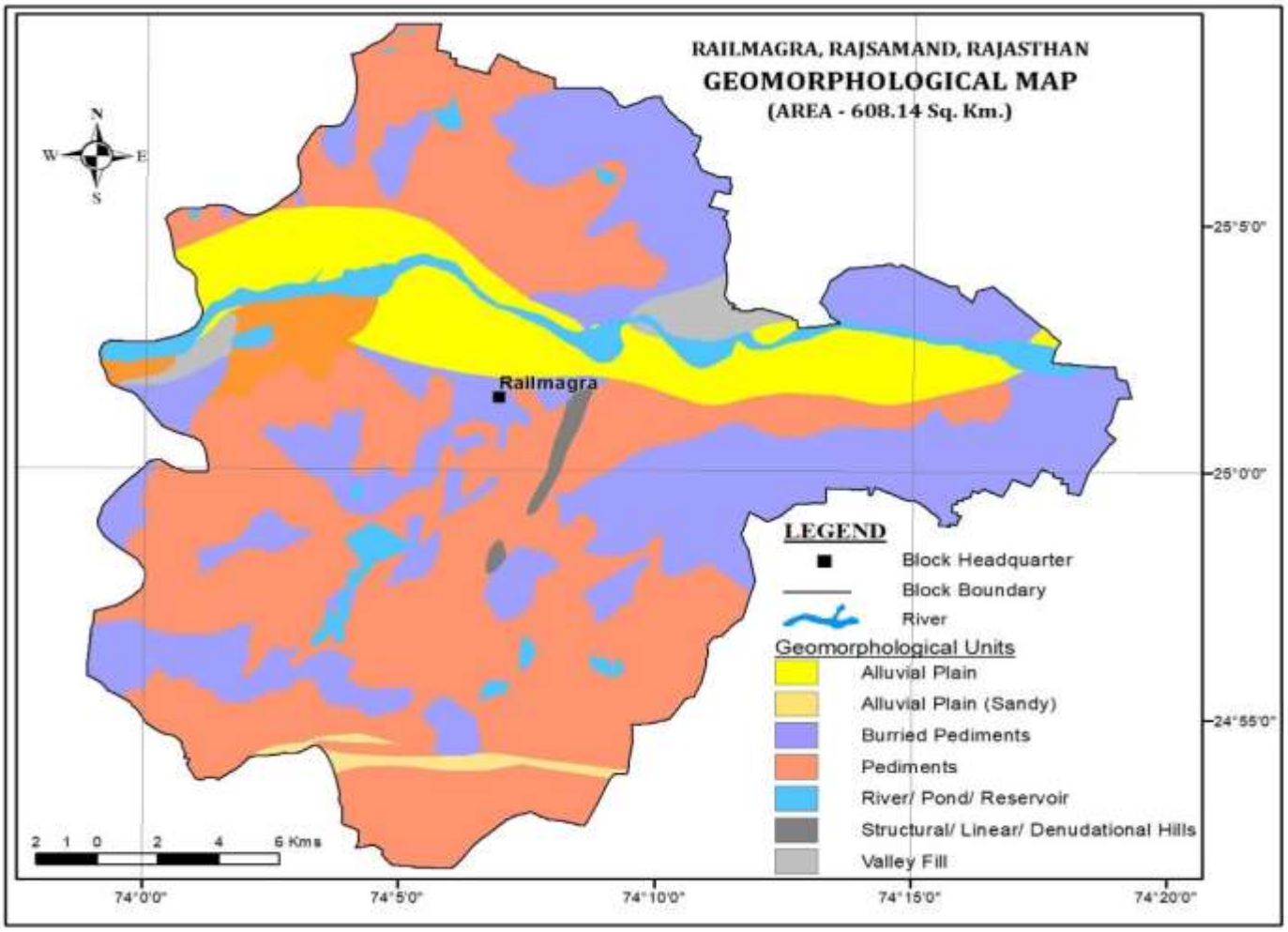


Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	587.20
	Mean Annual Rainfall (mm) (1991-2020)	626.1
	Highest Annual Rainfall (mm) (1991-2020)	1154 (2016)
	Lowest Annual Rainfall (mm) (1991-2020)	249 (2002)
	Standard Deviation (mm) (1991-2020)	217.4
	Coefficient of Variation (%) (1991-2020)	34.7

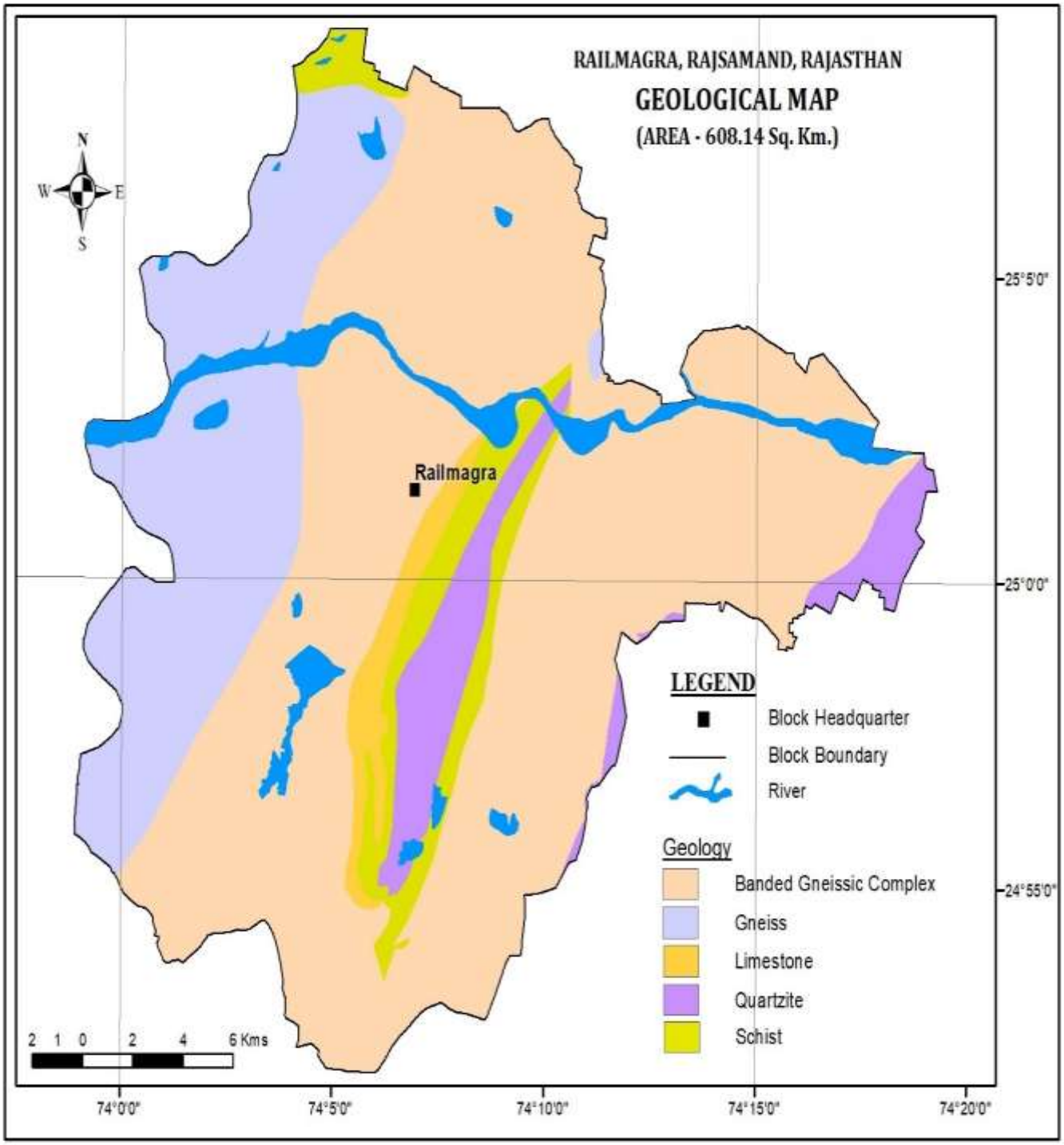


		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	14	46.66 %
	Mild (0 to -25%)	09	30.0 %
	Moderate (-25% to -50%)	06	20.0 %
	Severe (-50% to -75%)	01	3.33%
	Extreme (-75% to -100%)	-	-

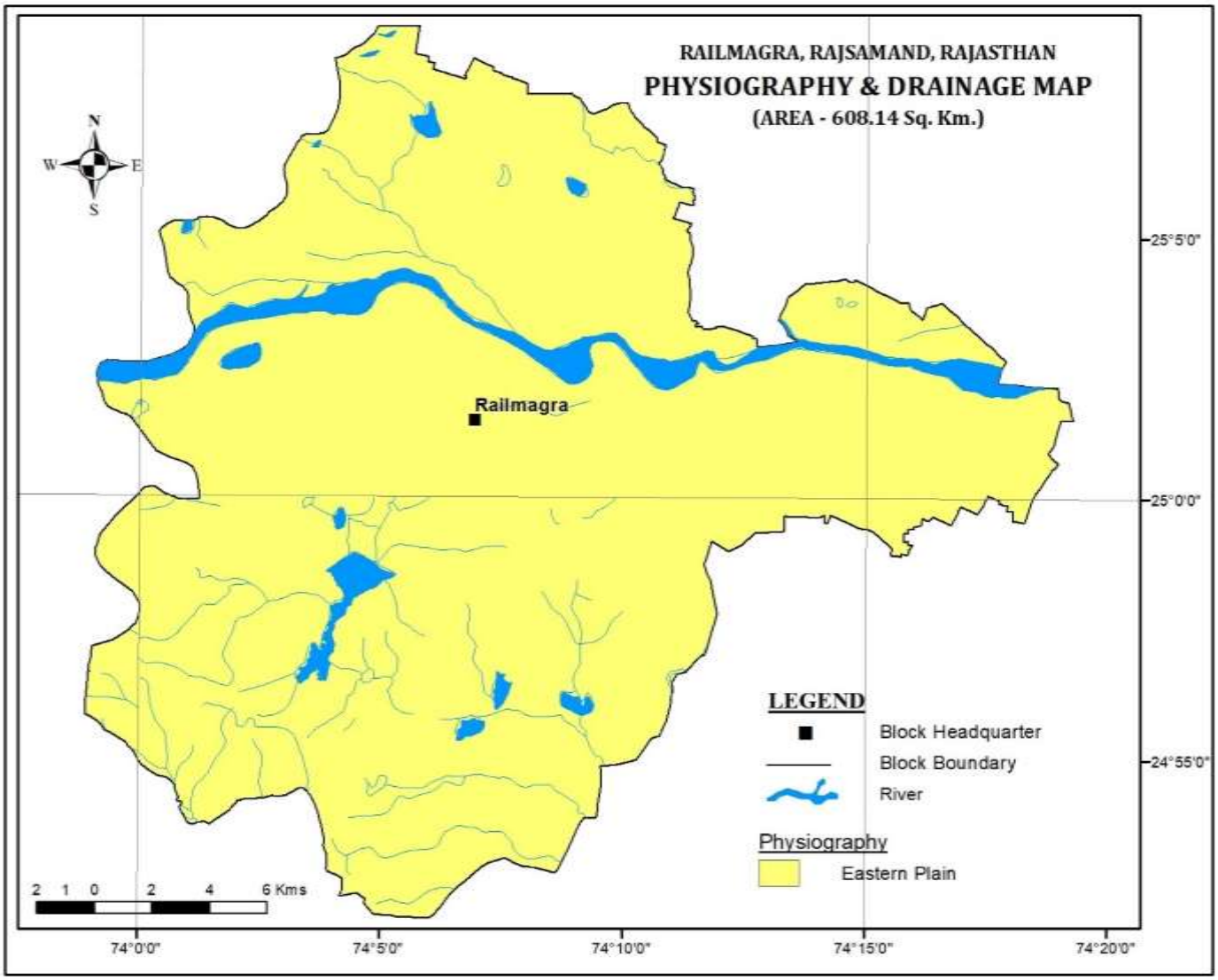
Geomorphology	• Pediplain, Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain, Ravines and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.



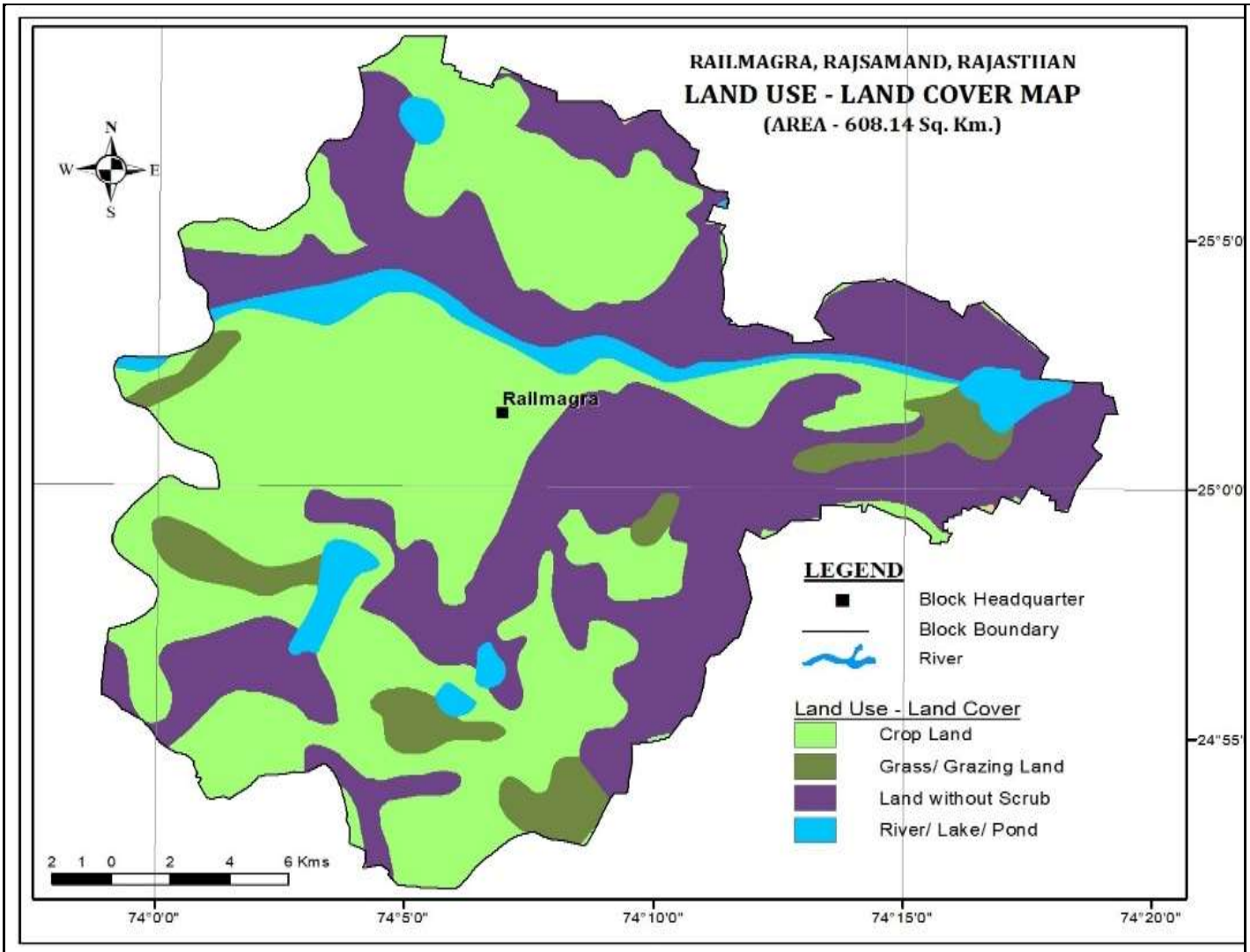
Geology	Geologically, the area is represented by Gneisses and Schist of the Bhilwara Gneissic Complex,.



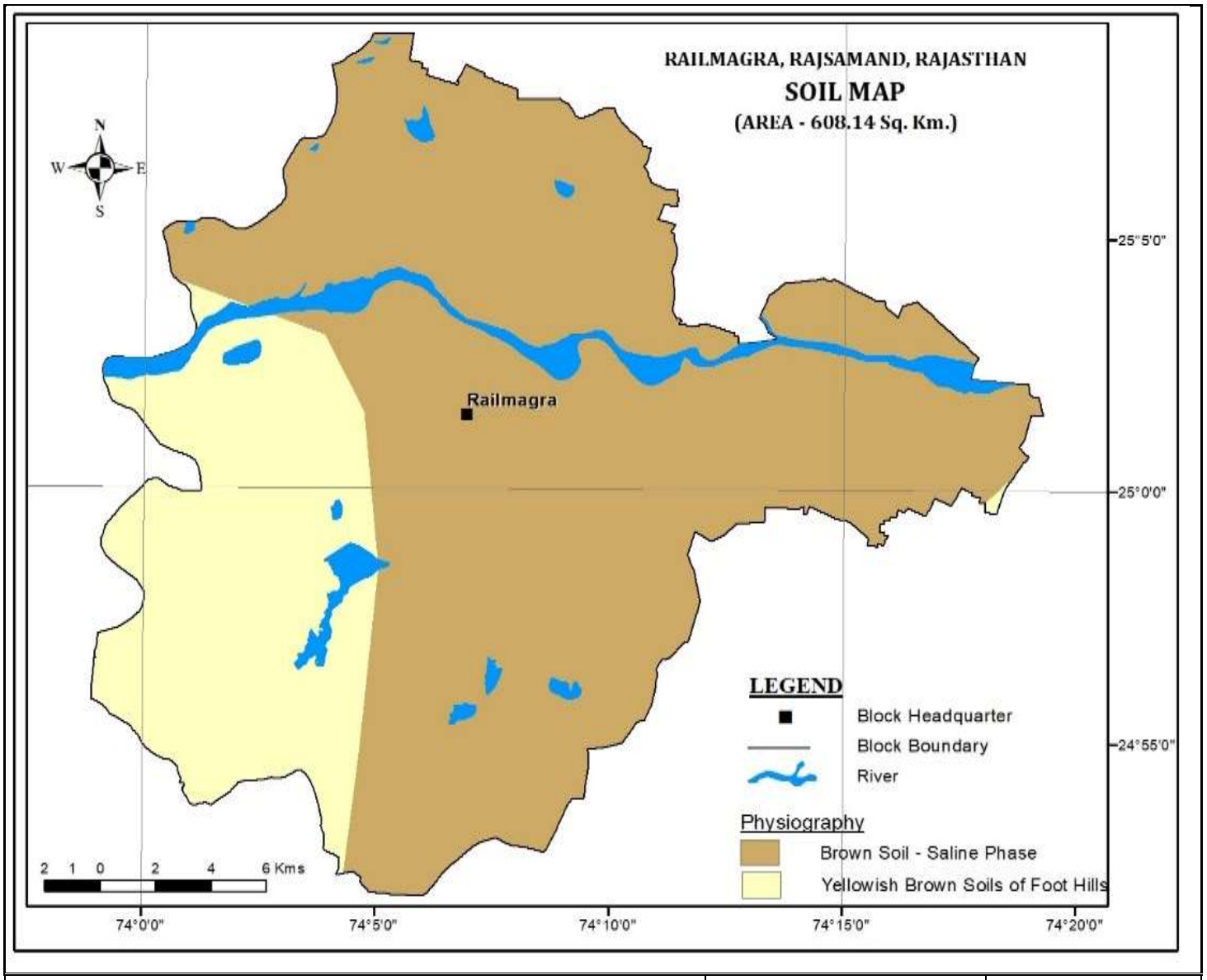
Physiography / Drainage



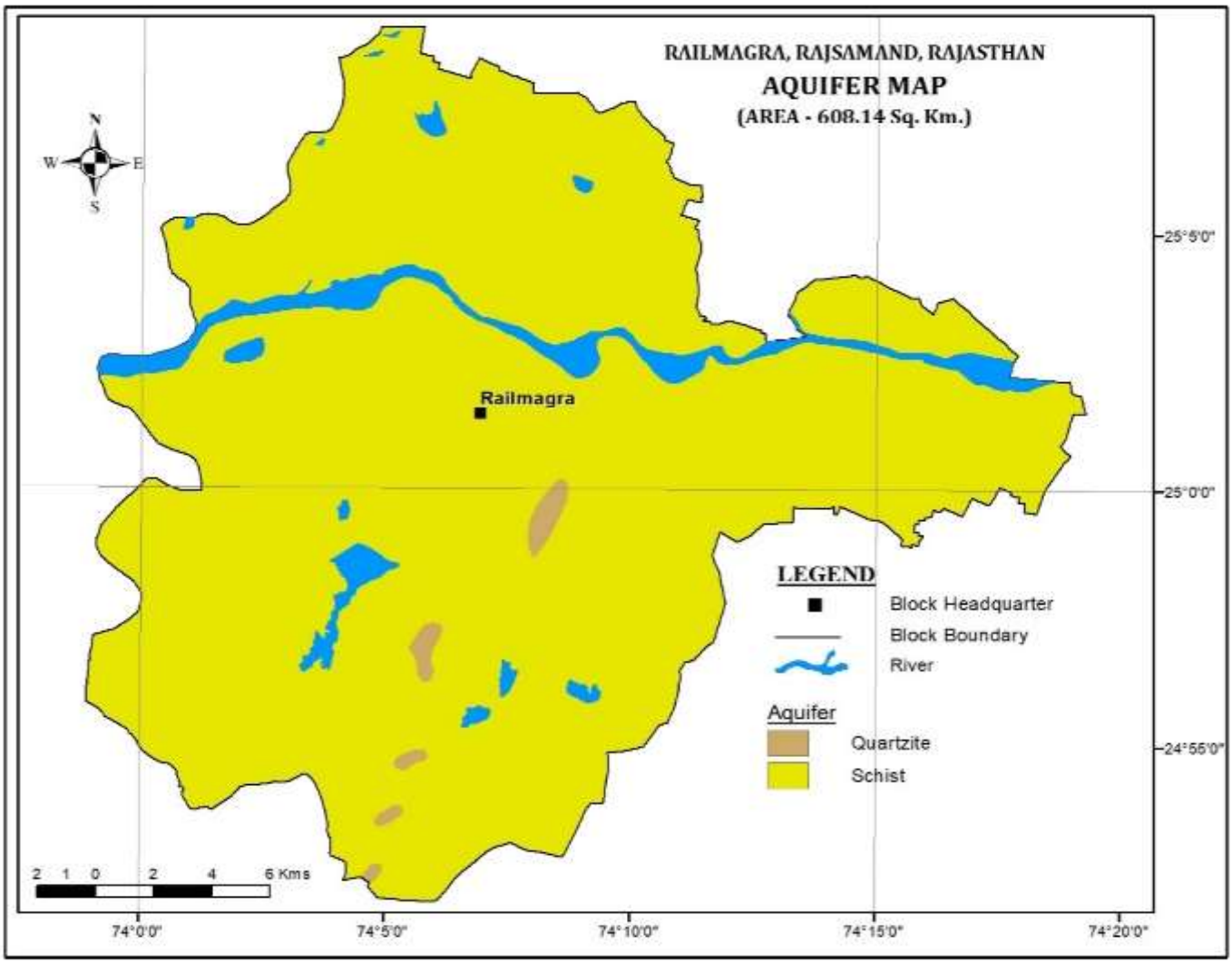
Land Use	Geographical Area (sq. km.)	608.14
	Forest Area (sq. km.)	0.00
	Net Sown Area (sq. km.)	264.98
	Area sown more than once (sq. km.)	114.52

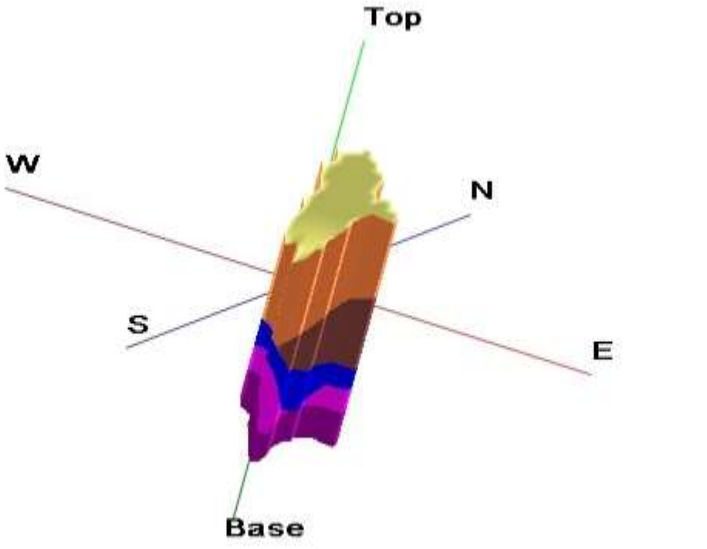


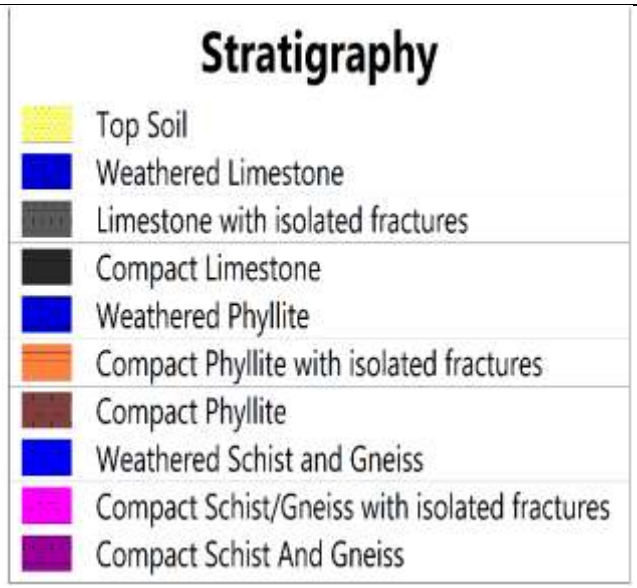
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)	1.55		
	Gross Irrigated Area by Ground Water (sq. km.)	130.91		
	Gross Irrigated Area by Other Sources (sq. km.)	0.00		
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Sugarcane, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	383.24	313.16	3.74
	Irrigated (sq. km.)	14.12	312.64	3.74

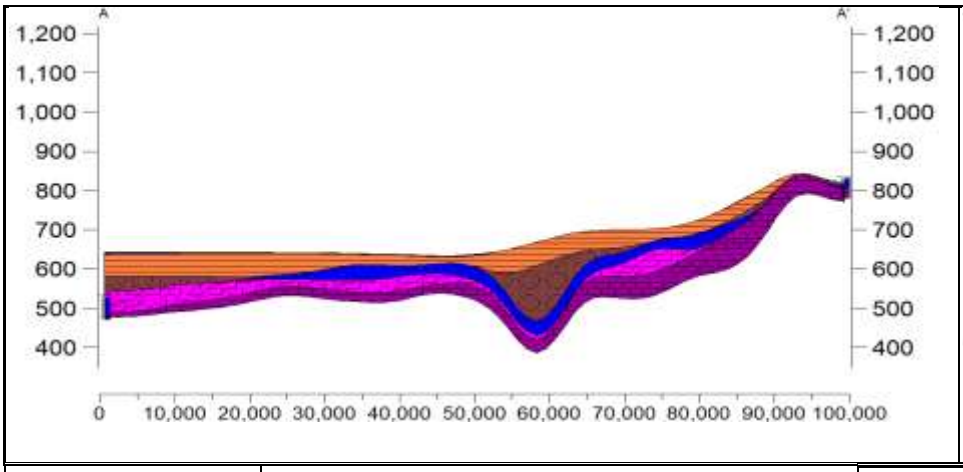


Status of GW Exploration	CGWB	GWD
	02 (EW)	09 (EW)
Aquifer	Quartzite (Qz) and Schist (Sc)	


RAILMAGRA, RAJSAMAND, RAJASTHAN
AQUIFER MAP
(AREA - 608.14 Sq. Km.)
N
W
E
S
Railmagra
25°5'0"
25°0'0"
24°55'0"
LEGEND
Block Headquarter
Block Boundary
River
Aquifer
Quartzite
Schist
2 1 0 2 4 6 Kms
74°0'0"
74°5'0"
74°10'0"
74°15'0"
74°20'0"


Top
W
N
S
E
Base


Stratigraphy
Top Soil
Weathered Limestone
Limestone with isolated fractures
Compact Limestone
Weathered Phyllite
Compact Phyllite with isolated fractures
Compact Phyllite
Weathered Schist and Gneiss
Compact Schist/Gneiss with isolated fractures
Compact Schist And Gneiss



Basic Aquifer Characteristics	Discharge of Wells (lps)			Dugwell	1.80 - 2.00
				Borewell	2.00 - 2.20
				Tubewell	
Chemical Quality Of Groundwater (2020-21)	**Electrical Conductivity** in **µS/cm at 25°C**			640-13260	
	pH			7.18-9.15	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	6.89 %
			500 - 1000	Permissible for drinking	24.13 %
			> 1000	Undesirable	68.96 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	3.57 %
			150 – 300	Hard	28.57 %
			> 300	Very Hard	67.85%
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		41.37 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		75.86 %

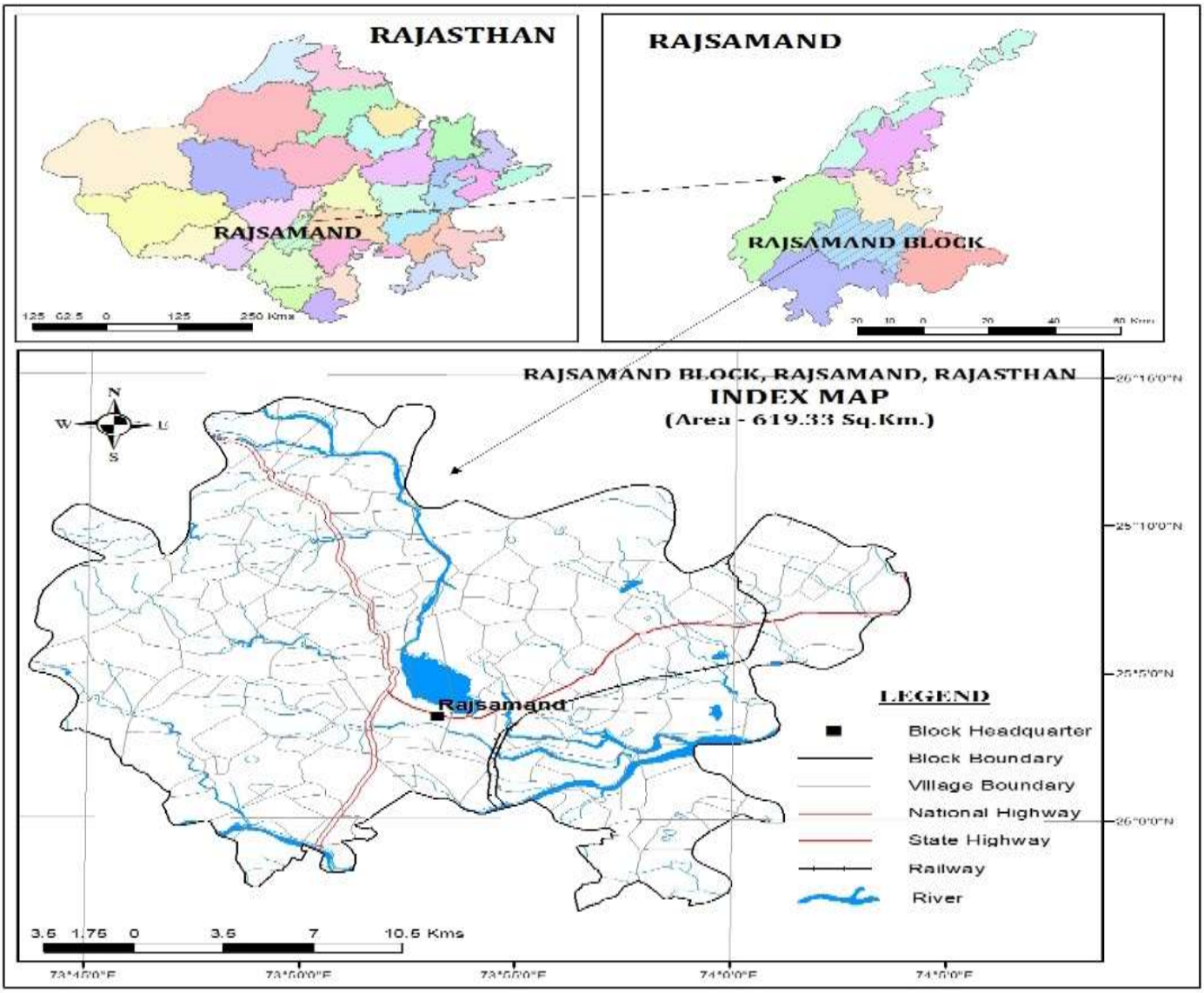
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		20.0 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**
		Salinity – Hazard (EC in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	3.57 %
			750 - 2250	Permissible	42.85 %
			2250 - 3000	Doubtful	17.85 %
			> 3000	Unsuitable	35.71%
		SAR	< 10	Excellent	75.0 %
			10 - 18	Good	25.0%
			18 - 26	Fair	-
			> 26	Unsuitable	-
		Na%	< 20	Excellent	-
			20 - 40	Good	3.57 %
			40 - 60	Permissible	28.57 %
			60 - 80	Doubtful	64.28 %
			> 80	Unsuitable	3.57 %
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 22.04 mcm which is more than the Annual Groundwater Resource Availability of 14.97 mcm, thus the district is deficit of 7.03 mcm of groundwater with the stage of groundwater development being 146.90 %. • Frequent droughts (30.0% mild, 20.0% moderate droughts and 3.33 % more severe drought) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Aquifer system. • Limited Sub Surface storage available for artificial groundwater recharge.				

Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)	600.18
	Total Annual Ground Water Recharge (mcm)	16.64
	Natural Discharge (mcm)	1.66
	Net Annual Ground Water Availability (mcm)	14.97
	Existing Gross Ground Water Draft for All uses (mcm)	22.00
	Net ground water availability for future irrigation Development (mcm)	0.00
	Stage of Ground Water Development %	146.87 %
	Category	Over Exploited
Supply Side Management	**Water Supply (mcm)**	
	Potential zone area (sq. km.)	600.18
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	32.96
	Surplus Surface Water Availability (mcm)	1.85
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	11.64
	Water conserved in catchment area treatment (mcm)	0.34
	Water Conservation Structures	
	Mini Percolation Tanks	716
	Percolation Tank	123
	Pacca Check Dams	61
	Anicut	40
	Mini Storage Tanks	02
	Volume of Water expected to be conserved (mcm)	1.46

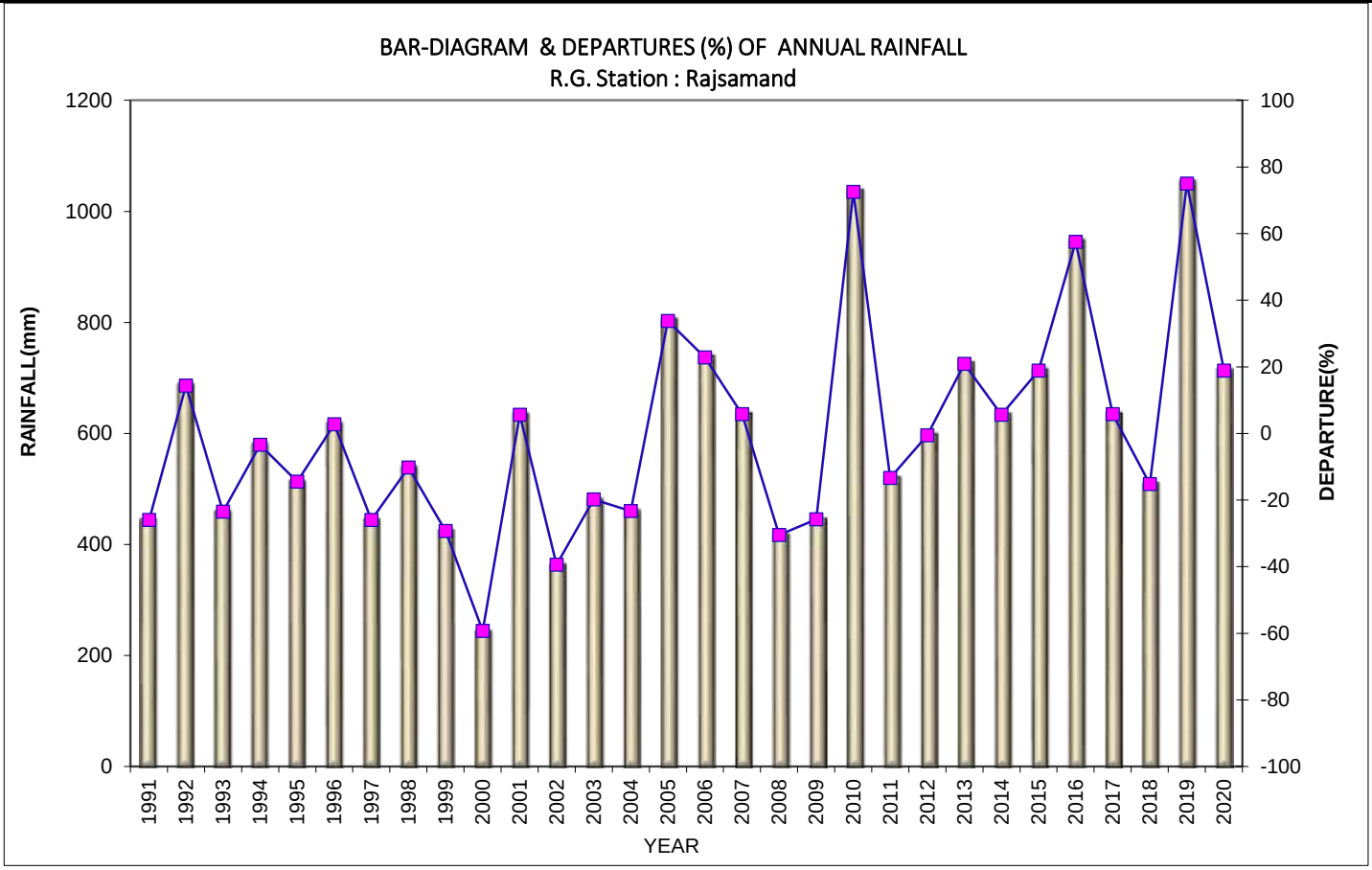
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	**1.8**
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.04
	No. of Farm Ponds	37
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	32.72
	Water Saving by use of Sprinklers (mcm)	2.61
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	2085.25
	Water Saving by Change in Cropping Pattern (mcm)	2.085
Expected Benefits	Net Ground Water Availability (mcm) GWRE - 2020	14.97
	Additional GW resources available after Supply side interventions (mcm)	1.08
	Net Ground Water Availability after Supply side intervention (mcm)	16.05
	Existing Ground Water Draft for All Purposes (mcm)	22.04
	GW draft after Supply Side Interventions (mcm)	22.0
	GW draft after Demand Side Interventions (mcm)	17.26
	Present stage of Ground Water Development (%)	146.90 %
	Projected Stage of Ground Water Development after Supply Side interventions (%)	136.80 %
	Projected Stage of Ground Water Development after Demand Side interventions (%)	107.50 %

14.7. RAJSAMAND BLOCK

Salient Information	Block Name	Rajsamand
	Longitude	73° 43′ 34″ to 74° 04′ 05″ East
	Latitude	24° 56′ 53″ to 25° 14′ 12″ North
	Geographical Area (sq. km.)	619.33
	Hilly Area (sq. km.)	66.13
	Population (2011)	235140
	Highest Elevation (m amsl)	967.1
	Lowest Elevation (m amsl)	505.2

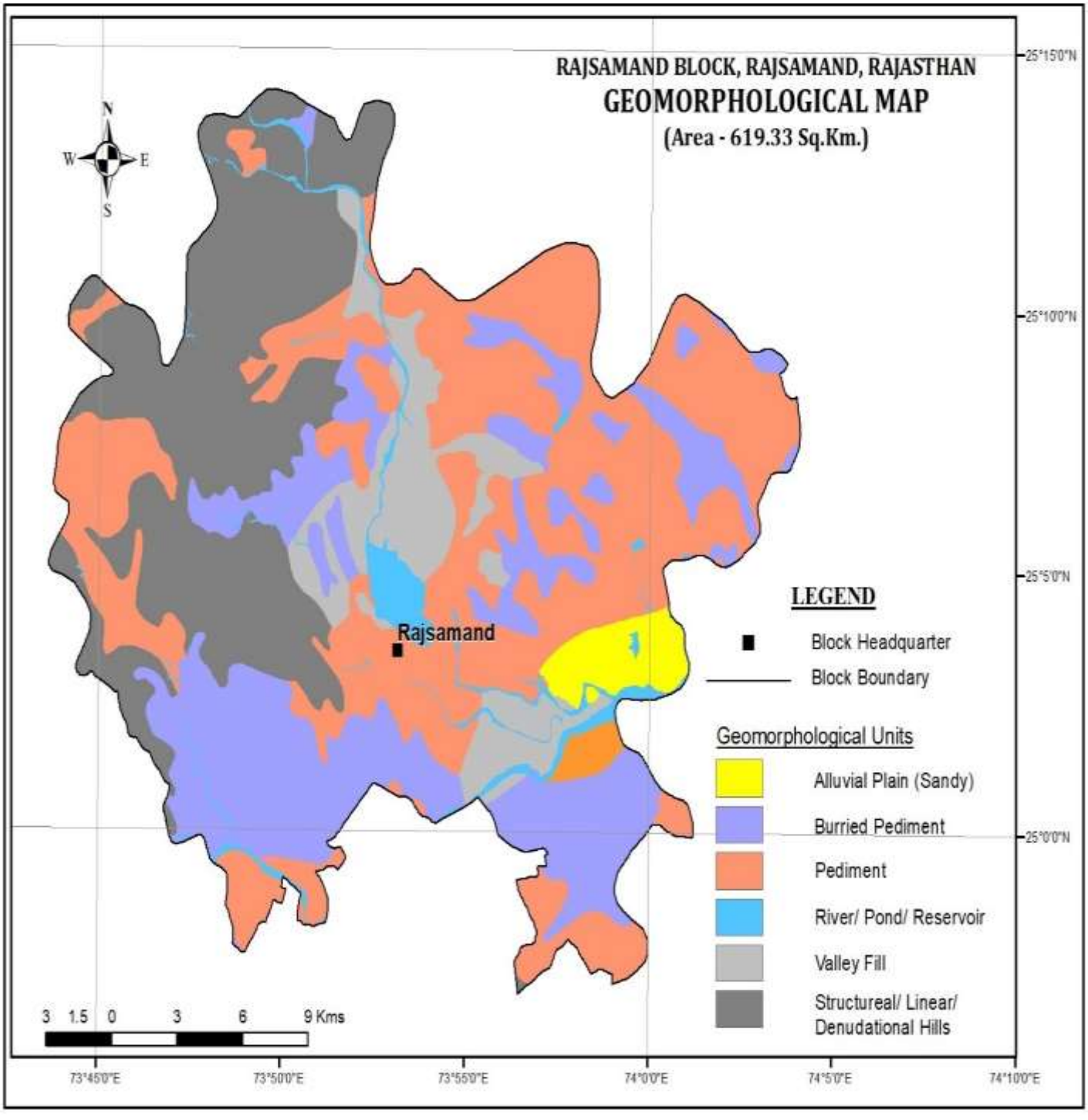


Rainfall Analysis	Normal Rainfall (mm) (1901-1970)	621.1
	Mean Annual Rainfall (mm) (1991-2020)	602.4
	Highest Annual Rainfall (mm) (1991-2020)	1054 (2019)
	Lowest Annual Rainfall (mm) (1991-2020)	245 (2000)
	Standard Deviation (mm) (1991-2020)	188.61
	Coefficient of Variation (%) (1991-2020)	311.3

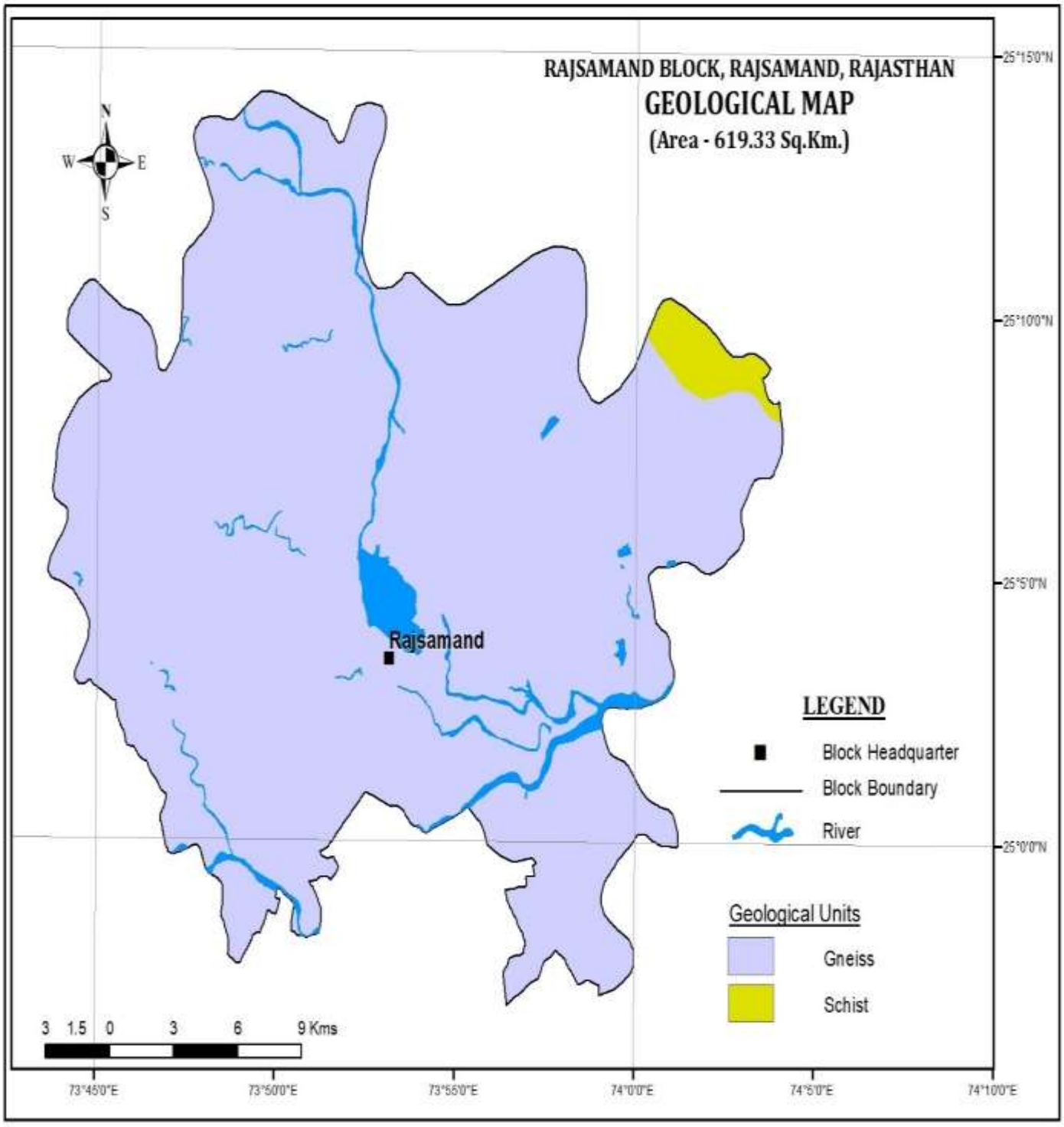


		No. of Years of Drought	Frequency %
Drought Analysis (1991-2020)	No Drought	14	46.66 %
	Mild (0 to -25%)	09	30.0 %
	Moderate (-25% to -50%)	06	20.0 %
	Severe (-50% to -75%)	01	3.33 %
	Extreme (-75% to -100%)	-	-

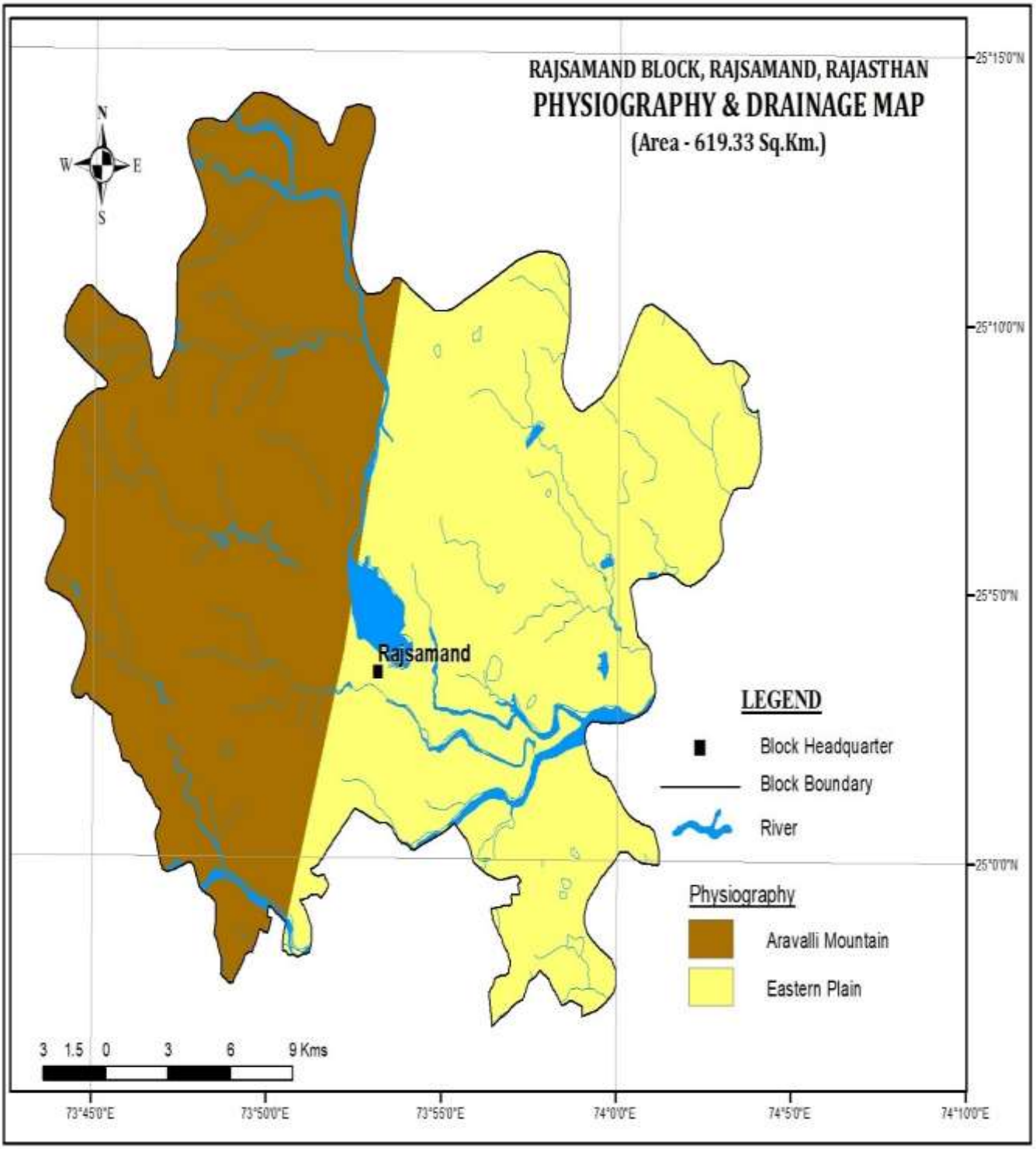
Geomorphology	• Pediments and Burried Pediments of Denudational Origin. • Alluvial Plain and Valley Fills of Fluvial Origin. • Plateaus, Structural Hill, Linear to Arcuate Ridge of varying lithology with joints, fractures and lineaments associated with folding, faulting etc.



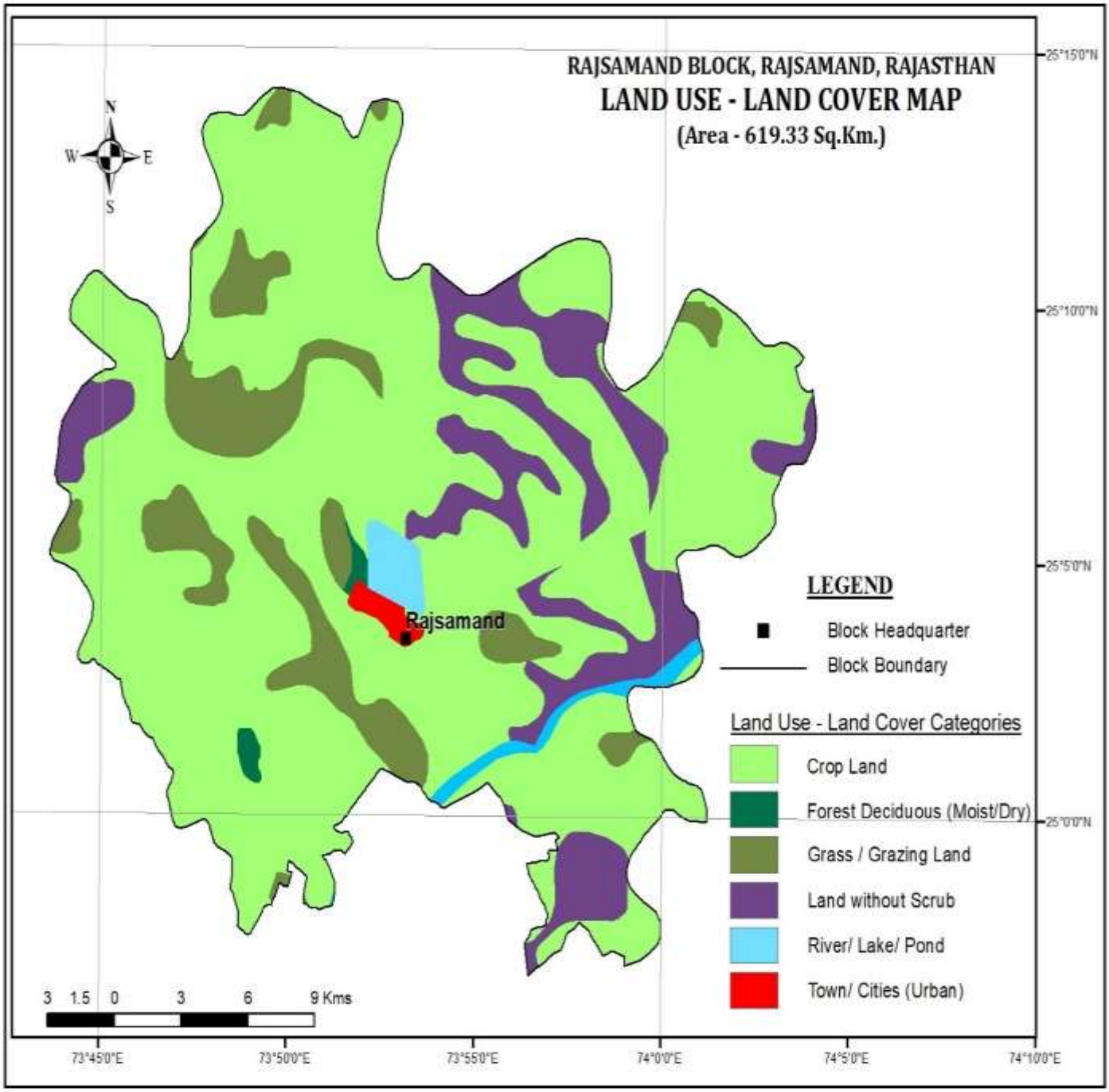
Geology	Geologically, the area is represented by Schists and Gneisses of Bhilwara GneissicComplex.



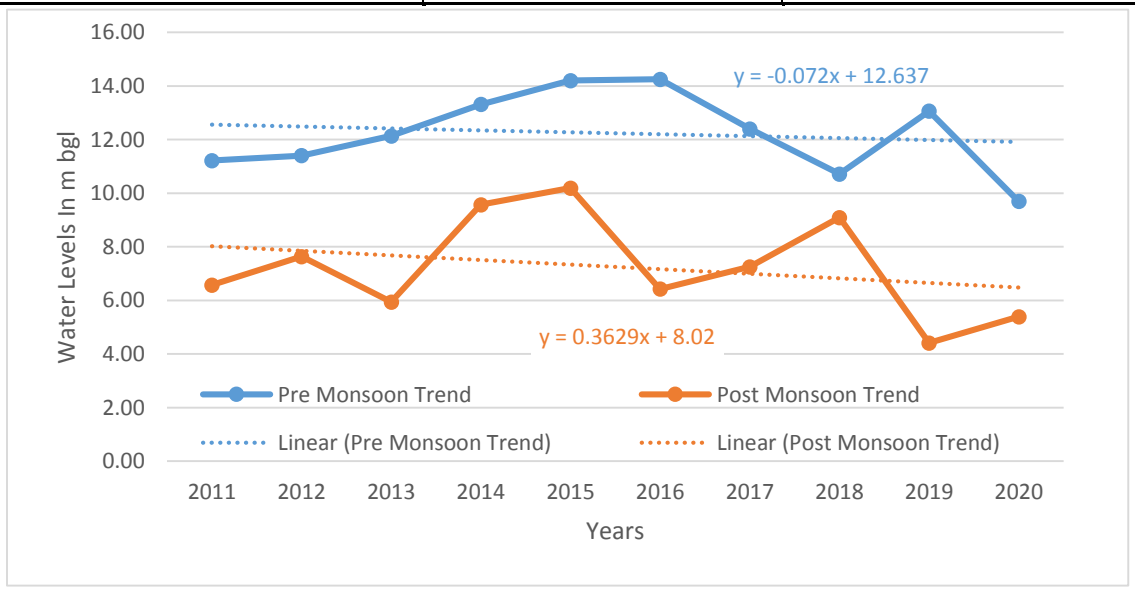
Physiography / Drainage



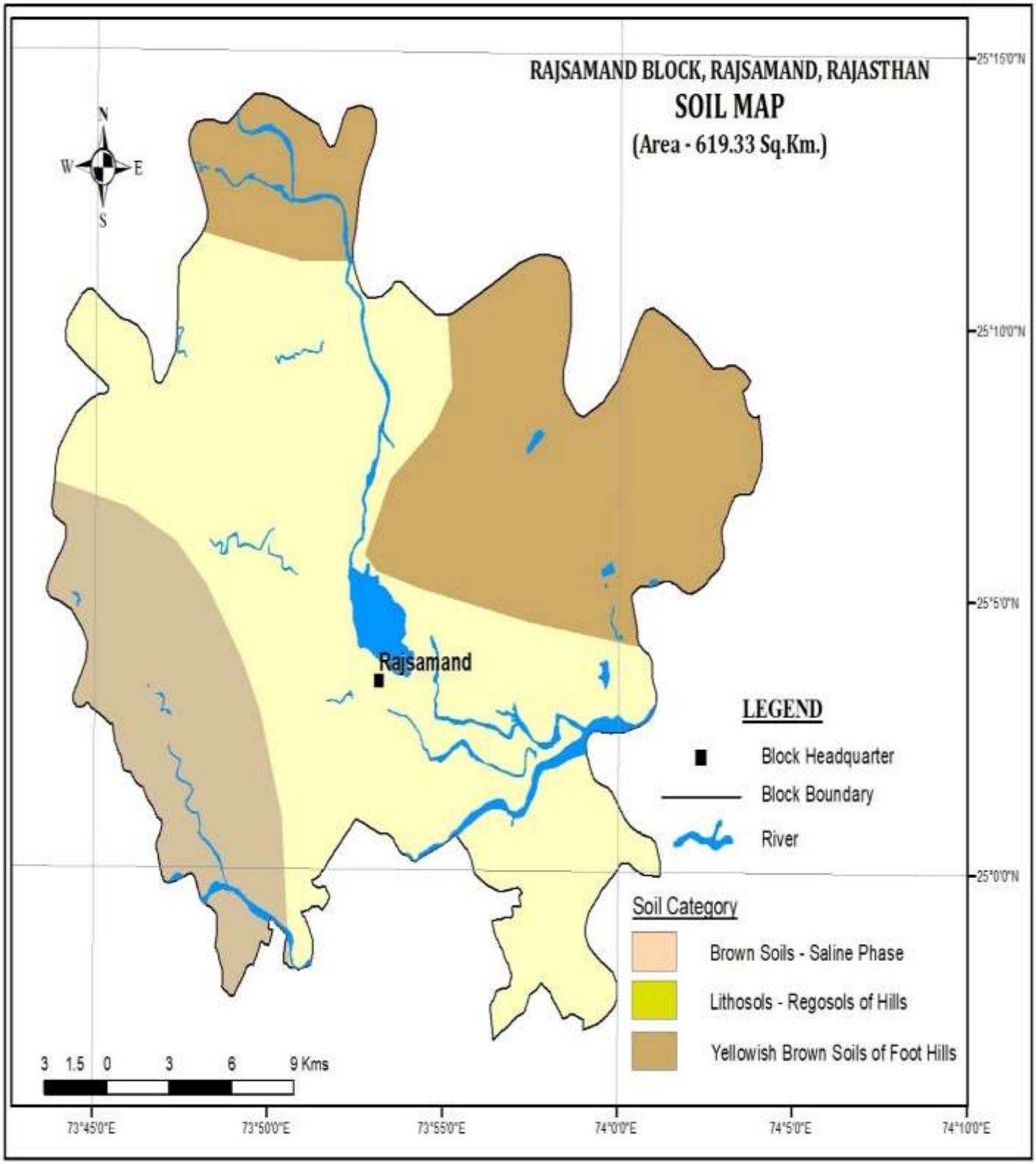
Land Use	Geographical Area (sq. km.)	619.33
	Forest Area (sq. km.)	4.30
	Net Sown Area (sq. km.)	163.02
	Area sown more than once (sq. km.)	111.63



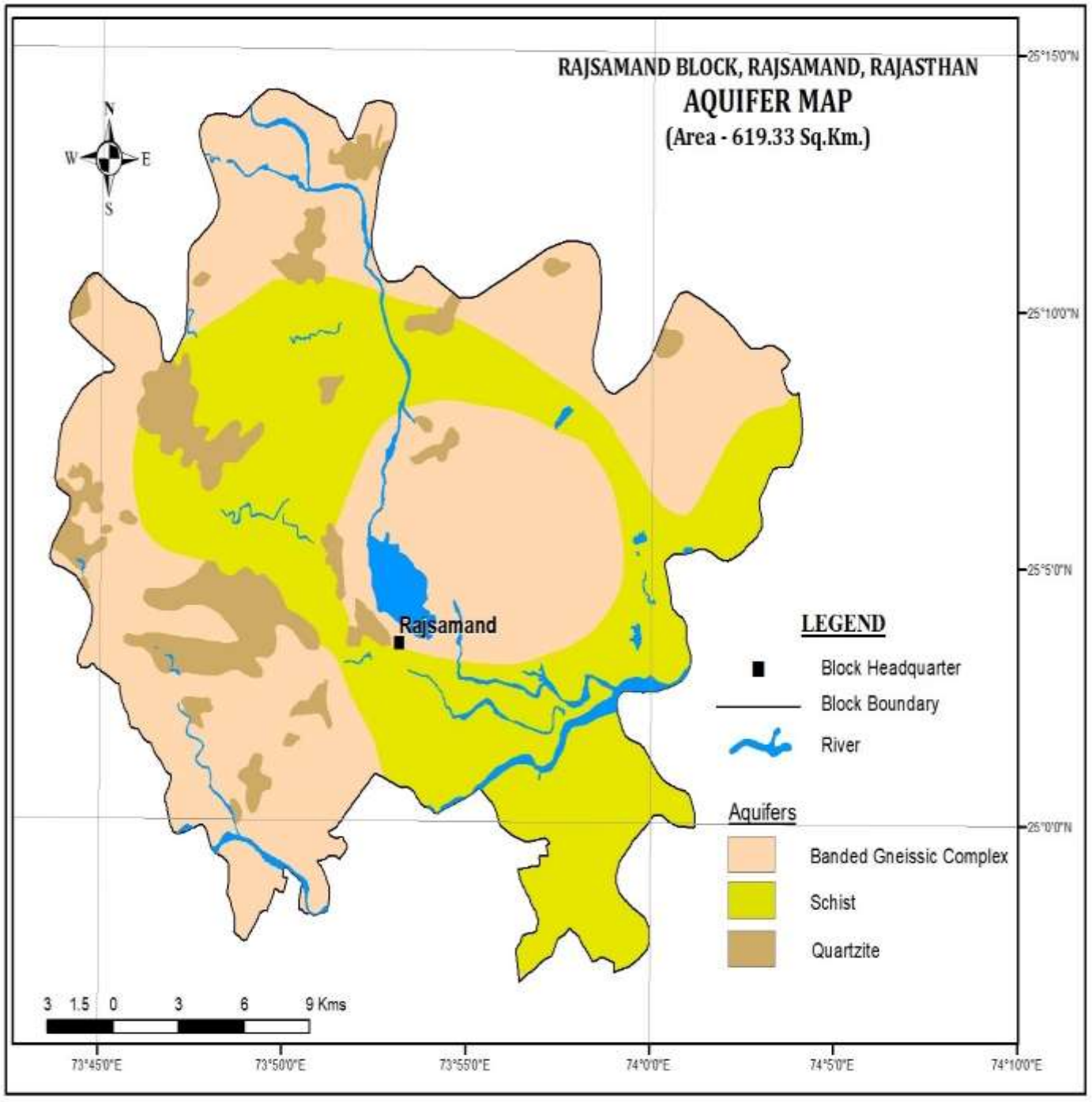
Irrigation	Gross Irrigated Area by Surface Water (sq. km.)			6.83
	Gross Irrigated Area by Ground Water (sq. km.)			73.37
	Gross Irrigated Area by Other Sources (sq. km.)			0.00
Agriculture	Rain-Fed Crop	Jowar, Bajra, Moong, Groundnut, Maize, Soybean, Cluster Beans, Cotton, Rice.		
	Irrigated Crop	Wheat, Barley, Gram, Mustard, Pulses, Green Peas.		
		Kharif	**Rabi**	**Zaid Rabi**
	Gross Sown Area (sq. km.)	283.24	188.40	0.22
	Irrigated (sq. km.)	12.62	188.10	0.22
Hydrogeology				
Monitoring Stations	CGWB			02
	SGWD			34
	NAQUIM Key - Wells			05
Water Level Behavior		**Pre - Monsoon (May - 2021)**		**Post - Monsoon (November - 2021)**
	Water Level (m bgl)	0.30 – 19.90		0.10 – 17.88
	Water Level Trend (2011-2020)	**Pre - Monsoon**		**Post - Monsoon**
	Average Trend (m/year)	- 0.01(Rise)		- 0.20 (Rise)
	Rise	- 1.35 (Rajsamand)		- 1.31 (Phiyawari)
	Fall	2.18(Pharara)		0.88 (Atma)



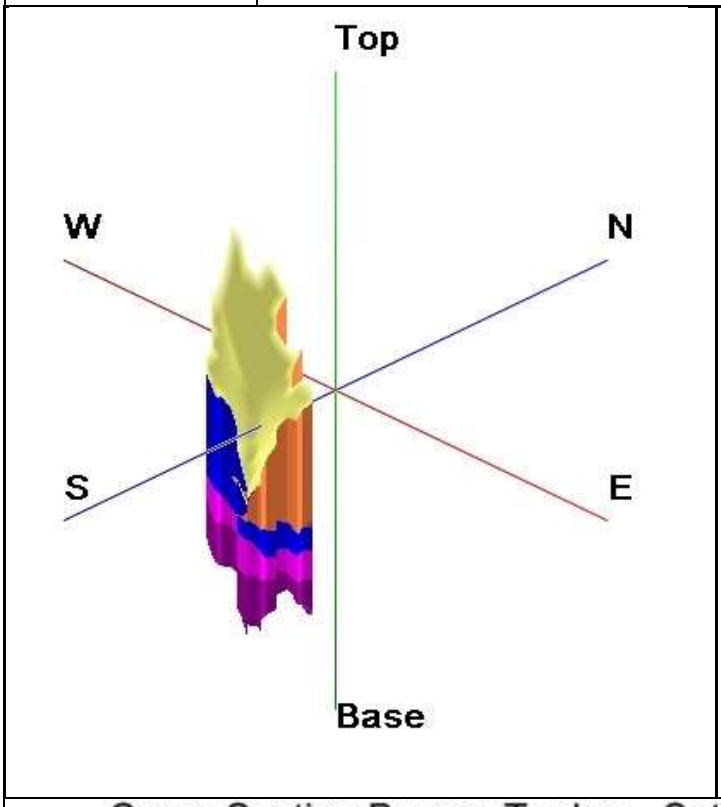
Soil Type	• Soil is sandy loam to silty clay loam, red to yellowish brown colored of the foot hills.

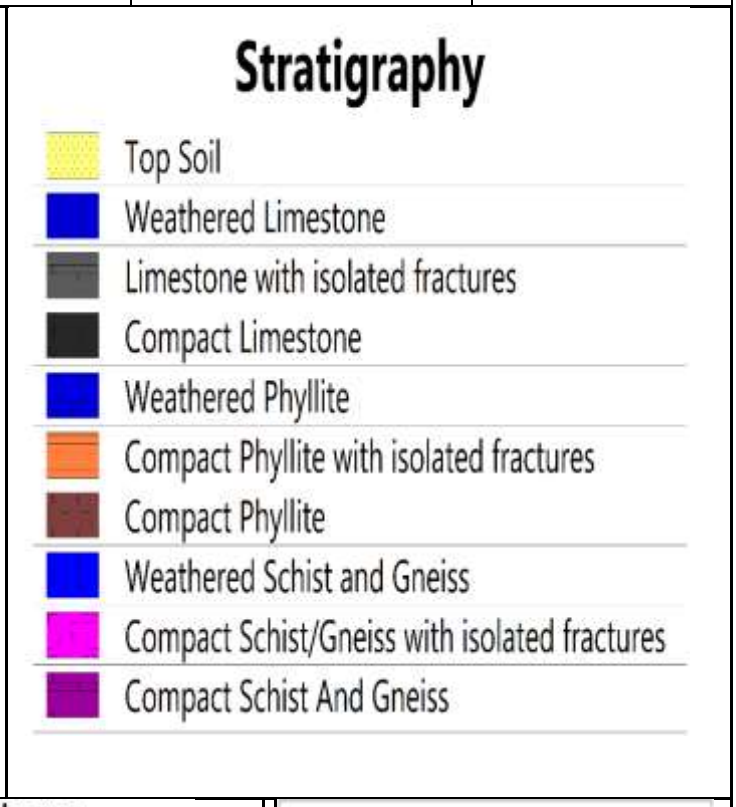


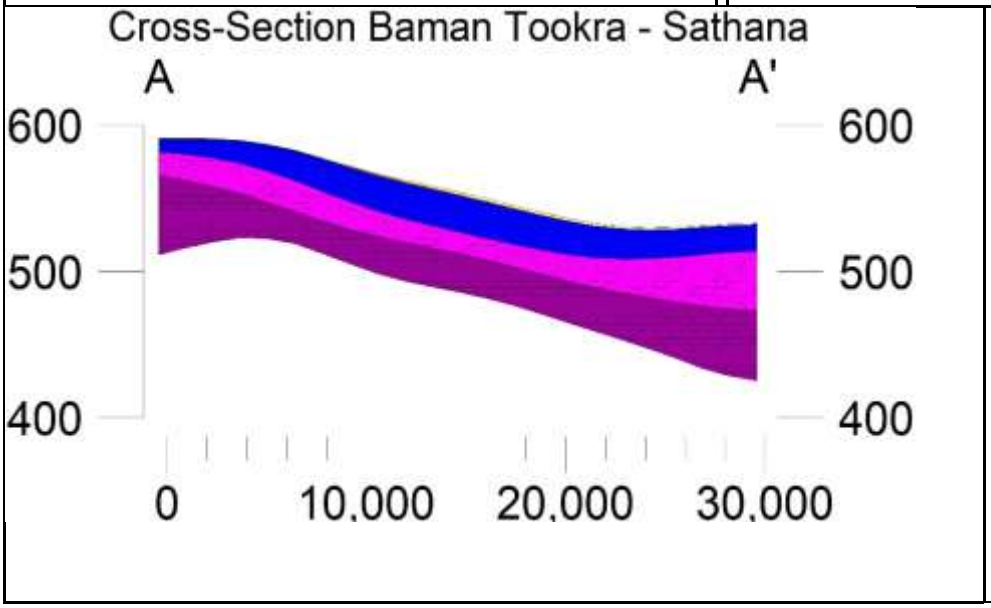
Status of GW Exploration	CGWB	GWD
	02 (EW)	11 (EW)
Aquifer	Schist (Sc) and Gneiss (Gn).	



Basic Aquifer Characteristics	Discharge of Wells (lps)	Dugwell	1.70 - 1.90
		Borewell	1.90 - 2.10
		Tubewell	
		DCB	1.60 - 1.70







Chemical Quality Of Groundwater (2020)	**Electrical Conductivity** in **µS/cm at 25°C**			580 - 4680	
	pH			7.22 – 9.90	
	Suitability for Drinking	**TDS**	**Range (mg/l)**	**Class**	**% Samples**
			< 500	Desirable for drinking	6.06 %
			500 - 1000	Permissible for drinking	30.30 %
			> 1000	Undesirable	63.69 %
		Hardness	**Range (mg/l)**	**Class**	**% Samples**
			0 – 75	Soft	-
			75 – 150	Moderately Hard	3.03 %
			150 – 300	Hard	27.27 %
			> 300	Very Hard	69.69 %
		NO_3 (mg/L)	(≤ 45 mg/l) Permissible Limit		54.54 %
		F (mg/L)	(≤ 1.5 mg/l) Permissible Limit		90.90 %
		U (µg/L)	(≤ 30 µg/l) Permissible Limit		60.0 %
	Suitability for Irrigation	**Parameter**	**Range**	**Groundwater Class (Irrigation Uses)**	**Percent of Samples**
		Salinity – Hazard (EC in **µS/cm at 25°C)**	< 250	Excellent	-
			250 - 750	Good	6.06 %
			750 - 2250	Permissible	45.45 %
			2250 - 3000	Doubtful	18.18 %
			> 3000	Unsuitable	30.30 %
		SAR	< 10	Excellent	81.81 %
			10 - 18	Good	15.15 %
			18 - 26	Fair	3.03 %

			> 26	**Unsuitable**	-
			< 20	**Excellent**	-
			20 - 40	**Good**	30.30 %
			40 - 60	**Permissible**	51.51 %
			60 - 80	**Doubtful**	27.27 %
			> 80	**Unsuitable**	9.09 %
Groundwater Issues	• Over-Exploitation – Resource Availability - At present the Ground water Draft is 25.47 mcm which is more than the Annual Groundwater Resource Availability of 18.89 mcm, thus the district is deficit of 6.58 mcm of groundwater with the stage ofgroundwater development being 134.79 %. • Frequent droughts (30.0% mild, 20.0% moderate & 3.33% severe droughts) which is ultimately responsible for less ground water recharge and non-availability of surface & ground water for irrigation. • Poor Sustainability of the Aquifer system. • Limited Sub Surface Storage available for artificial groundwater recharge.				
Groundwater Resource & Extraction (GWRE-2020)	Ground Water Recharge Worthy Area (sq. km.)		600.18		
	Total Annual Ground Water Recharge (mcm)		20.99		
	Natural Discharge (mcm)		2.09		
	Net Annual Ground Water Availability (mcm)		18.89		
	Existing Gross Ground Water Draft for All uses (mcm)		25.47		
	Net ground water availability for future irrigation Development (mcm)		0.00		
	Stage of Ground Water Development %		134.80 %		
	Category		Over Exploited		
Supply Side	**Water Supply (mcm)**				

Management	Potential zone area (sq. km.)	534.38
	Volume of Sub Surface Storage Space available for Artificial Recharge (mcm)	65.42
	Surplus Surface Water Availability (mcm)	2.02
	Catchment Area Treatment	
	Area recommended for catchment area treatment (sq. km.)	8.73
	Water conserved in catchment area treatment (mcm)	0.27
	Water Conservation Structures	
	Mini Percolation Tanks	722
	Percolation Tank	153
	Pacca Check Dams	74
	Anicut	43
	Mini Storage Tanks	03
	Volume of Water expected to be conserved (mcm)	1.61
	Total Volume of water conserved in catchment area and Water Conservation Structures (mcm)	1.88
	Farm Ponds	
	Surplus available for farm pond (mcm)	0.14
	No. of Farm Ponds	117
Demand Side Management	**Micro irrigation techniques (Use of Sprinklers)**	
	Irrigation Area proposed for Irrigation through Sprinkler (sq.km.)	18.34
	Water Saving by use of Sprinklers (mcm)	1.46
	Cropping Pattern change	
	Cropping Area (sq.km.) proposed for change in crop from wheat to gram.	21.55

Water Saving by Change in Cropping Pattern (mcm)	**2.155**
Net Ground Water Availability (mcm) GWRE - 2020	**18.89**
Additional GW resources available after Supply side interventions (mcm)	**1.08**
Net Ground Water Availability after Supply side intervention (mcm)	**19.97**
Existing Ground Water Draft for All Purposes (mcm)	**25.47**
GW draft after Supply Side Interventions (mcm)	**25.33**
GW draft after Demand Side Interventions (mcm)	**21.26**
Present stage of Ground Water Development (%)	**134.79 %**
Projected Stage of Ground Water Development after Supply Side interventions (%)	**126.83 %**
Projected Stage of Ground Water Development after Demand Side interventions (%)	**108.70 %**

** Sq. km. - Square Kilometer.

** lps - Liter per second.

** lpm - Liter per minute.

** lpm/m - Liter per minute per meter.

** mcm - Million cubic meter.

** mbgl - Meter below ground level.

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16. ANNEXURE A: Wells drilled by CGWB and SGWD in Rajsamand District.

District	Block	Village	Long	Lat	Elevation	Depth	Agency	Type of Well
Rajsamand	AMET	AIDANA	73.8547	25.2511	620.7	60.00	GWD	EW
Rajsamand	AMET	AMET	73.9667	25.3833	613	202.90	CGWB	EW
Rajsamand	AMET	ASAN	73.9167	25.3667	765	200.00	CGWB	EW
Rajsamand	AMET	BAMAN TOONKDA	73.8417	25.2000	598	172.50	CGWB	EW
Rajsamand	AMET	BHIKAWAS	73.8694	25.3042	622.7	151.00	CGWB	EW
Rajsamand	AMET	GHOSUNDI	73.9653	25.2722	565.7	200.00	CGWB	EW
Rajsamand	AMET	JAITPURA	73.9392	25.1839	564	78.00	GWD	EW
Rajsamand	AMET	LAMBODI(EXPLORATORY WELL)	73.8000	25.3167	694	199.80	CGWB	EW
Rajsamand	AMET	OLNA KA KHERA	74.0347	25.2319	546	56.00	GWD	EW
Rajsamand	AMET	SARDARGARH	73.9939	25.2422	554.3	114.00	GWD	EW
Rajsamand	AMET	SIYANA	73.8747	25.2003	588.7	50.00	GWD	EW
Rajsamand	AMET	TIKAR	73.8833	25.3833	673	199.80	CGWB	EW
Rajsamand	BHIM	BAGGER	73.9047	25.5867	633.3	50.00	GWD	EW
Rajsamand	BHIM	BARAR	74.0075	25.6544	634.3	110.00	GWD	EW
Rajsamand	BHIM	BHIM	74.0750	25.7317	587	45.00	GWD	EW
Rajsamand	BHIM	CHAPPLI	73.6811	25.4633	342.7	74.30	GWD	EW
Rajsamand	BHIM	DEWAIR	73.8125	25.4272	744.3	50.00	GWD	EW
Rajsamand	BHIM	HEMANTON-KI-GAUR	73.9272	25.6411	658	114.00	GWD	EW
Rajsamand	BHIM	JAITGARH	74.3611	25.8292	456.3	200.00	CGWB	EW
Rajsamand	BHIM	JASSA KHERA	74.0842	25.8356	540	50.00	GWD	EW
Rajsamand	BHIM	LAGET KHERA	74.3122	25.9450	545	50.00	GWD	EW
Rajsamand	BHIM	SAROTH	74.2422	25.9219	527.9	56.00	GWD	EW
Rajsamand	DEOGARH	DEOGARH	73.9000	25.5364	626.7	120.00	GWD	EW
Rajsamand	DEOGARH	DEOGARH-1	73.9167	25.5667	630	62.60	CGWB	EW

Rajsamand	DEOGARH	DEOGARH-II	73.9167	25.5667	630	180.00	CGWB	EW
Rajsamand	DEOGARH	ISHARMAND (LASANI)	74.0250	25.5925	590	120.00	GWD	EW
Rajsamand	DEOGARH	KALALON KI ANTI	73.9697	25.5947	614	50.00	GWD	EW
Rajsamand	DEOGARH	KALESARIYA	74.0867	25.5139	562	120.00	GWD	EW
Rajsamand	DEOGARH	KAMBLA	73.8714	25.5758	643.7	123.85	CGWB	EW
Rajsamand	DEOGARH	KAMERI	73.9353	25.3658	631	96.00	GWD	EW
Rajsamand	DEOGARH	KUWATHAL	73.9200	25.4044	633.3	50.00	GWD	EW
Rajsamand	DEOGARH	MIYALA	73.9603	25.6206	621.8	120.00	GWD	EW
Rajsamand	DEOGARH	SALIYA-KA-KHERA	73.9697	25.4928	627.4	50.00	GWD	EW
Rajsamand	DEOGARH	SOLANKIYO KA GURHA	73.1500	25.4431	229.7	73.20	GWD	EW
Rajsamand	DEOGARH	TAL	74.0628	25.6250	580	80.00	GWD	EW
Rajsamand	KHAMNOR	DELWARA	73.7525	24.7817	639	50.00	GWD	EW
Rajsamand	KHAMNOR	GUNJOL	73.8317	24.9531	560.7	115.00	GWD	EW
Rajsamand	KHAMNOR	JHAR SADRI	73.2108	24.4331	384.3	70.00	GWD	EW
Rajsamand	KHAMNOR	KESULI	73.7433	24.8417	651	130.00	GWD	EW
Rajsamand	KHAMNOR	KHAMNOR	73.7250	24.9272	596	50.00	GWD	EW
Rajsamand	KHAMNOR	KOSHIWARA	73.6903	24.9769	688.4	50.00	GWD	EW
Rajsamand	KHAMNOR	MAJA-NANTHOD	73.8106	24.8244	563	150.00	CGWB	EW
Rajsamand	KHAMNOR	MANDIANA	73.9133	24.9089	546	47.00	GWD	EW
Rajsamand	KHAMNOR	MOGANA	73.9406	24.8772	525.3	109.00	GWD	EW
Rajsamand	KHAMNOR	MOLELA	73.7414	24.9392	594	161.00	GWD	EW
Rajsamand	KHAMNOR	NATHDWARA	73.8242	24.9408	566	41.00	GWD	EW
Rajsamand	KHAMNOR	PAKHAND	73.9647	24.9456	540.8	44.00	GWD	EW
Rajsamand	KHAMNOR	RABCHA	73.7925	24.8908	606	100.00	GWD	EW
Rajsamand	KHAMNOR	SANGROON	73.6775	24.8925	674	70.00	GWD	EW
Rajsamand	KHAMNOR	SISHODA	73.7000	25.0181	673.7	50.00	GWD	EW
Rajsamand	KHAMNOR	UNWAS	73.7167	24.3750	400	91.00	GWD	EW
Rajsamand	KHAMNOR	UTHNOL	73.8856	24.9019	547.1	50.00	GWD	EW
Rajsamand	KHAMNOR	WAJUNDA	73.8367	24.8414	557.7	73.00	GWD	EW
Rajsamand	KUMBHALGARH	AMARTIYA	73.7797	25.2775	662.7	50.00	GWD	EW

Rajsamand	KUMBHALGARH	DHANEEN	73.7928	25.2408	629	96.00	GWD	EW
Rajsamand	KUMBHALGARH	DHOLA	73.6833	25.1667	972	111.40	CGWB	EW
Rajsamand	KUMBHALGARH	DHORAN	73.6275	25.0544	819	72.00	GWD	EW
Rajsamand	KUMBHALGARH	DOWAS	73.5603	25.0489	940.2	120.00	GWD	EW
Rajsamand	KUMBHALGARH	GADBOR	73.7000	25.2500	722	203.00	CGWB	EW
Rajsamand	KUMBHALGARH	GADBORE	73.6797	25.2547	826.3	60.00	GWD	EW
Rajsamand	KUMBHALGARH	GHATA(GAJPURA)	73.7025	25.1181	739.3	50.00	GWD	EW
Rajsamand	KUMBHALGARH	KUCHOOLI	73.5461	24.9614	768.2	50.00	GWD	EW
Rajsamand	KUMBHALGARH	MAJHERA	73.6272	25.1314	830.6	50.00	GWD	EW
Rajsamand	KUMBHALGARH	MEWARIYA	73.7425	25.2269	695.7	72.00	GWD	EW
Rajsamand	KUMBHALGARH	RICHHER	73.6667	25.1667	847	198.00	CGWB	EW
Rajsamand	RAILMAGRA	BEDA KA KHEDA	74.1244	24.9689	496.3	132.85	CGWB	EW
Rajsamand	RAILMAGRA	BETHUMBI	74.1728	25.0475	486	120.00	GWD	EW
Rajsamand	RAILMAGRA	DHANERIA	74.1125	24.8931	478.7	50.00	GWD	EW
Rajsamand	RAILMAGRA	GILUND	74.2681	25.0064	473.1	130.00	GWD	EW
Rajsamand	RAILMAGRA	JEWA KHERA	74.0264	25.0417	509	59.40	CGWB	EW
Rajsamand	RAILMAGRA	KURAJ	74.0997	25.0706	496.4	50.00	GWD	EW
Rajsamand	RAILMAGRA	PACHAMTA	74.1922	25.0203	480.8	57.00	GWD	EW
Rajsamand	RAILMAGRA	PEEPLI-AHIRAN	73.9800	25.0456	513.3	71.50	GWD	EW
Rajsamand	RAILMAGRA	RAILMAGRA	74.1161	25.0114	493.4	114.00	GWD	EW
Rajsamand	RAILMAGRA	RAJPURA	74.1325	24.9772	496	50.00	GWD	EW
Rajsamand	RAILMAGRA	SADRI	74.0672	25.0086	510.8	60.00	GWD	EW
Rajsamand	RAJSAMAND	AMLOI	73.9583	25.0114	527	50.00	GWD	EW
Rajsamand	RAJSAMAND	BHANA	73.8961	25.0958	562	120.00	GWD	EW
Rajsamand	RAJSAMAND	JODHPURA	74.0256	25.1572	541.2	120.00	GWD	EW
Rajsamand	RAJSAMAND	KELWA	73.8400	25.1544	601.3	50.00	GWD	EW
Rajsamand	RAJSAMAND	KHAKARMALA	73.8714	25.3950	683.7	123.85	CGWB	EW
Rajsamand	RAJSAMAND	KHATAMLA	73.9150	25.1478	570.3	71.50	GWD	EW
Rajsamand	RAJSAMAND	KUWARIA	74.0175	25.1008	517	50.00	GWD	EW
Rajsamand	RAJSAMAND	PEEPARDA	73.8625	25.0181	550.3	84.00	GWD	EW

Rajsamand	RAJSAMAND	PHARARA	73.8253	25.0250	582.3	108.00	GWD	EW
Rajsamand	RAJSAMAND	RAJSAMAND	73.8750	25.0633	546	50.00	GWD	EW
Rajsamand	RAJSAMAND	SAKRODA	73.7878	25.0636	615.6	108.00	GWD	EW
Rajsamand	RAJSAMAND	SASERAO	74.0389	24.9556	514.6	129.80	CGWB	EW
Rajsamand	RAJSAMAND	SATHANA	73.9794	24.9650	534.7	120.00	GWD	EW

17. ANNEXURE B: Annual Rainfall Data (mm) at different Rain Gauge Stations, Rajsamand District

YEAR	Amet	Dep(%)	Bhim	Dep (%)	Deogarh	Dep (%)	Khamnor	Dep (%)	Kumbalgarh	Dep (%)	Railmagra	Dep (%)	Rajsamand	Dep (%)	Average	Dep(%)
1990	613.0	10.8	836.0	45.9	794.0	31.4	692.0	11.9	1184.0	67.6	667	6.54	785	30.31	795.9	30.0
1991	390.0	-29.5	517.0	-9.8	545.0	-9.8	552.0	-10.8	621.0	-12.1	445	-28.92	446	-25.96	502.3	-17.9
1992	566.0	2.3	734.0	28.1	751.0	24.3	673.0	8.8	1044.0	47.8	511	-18.38	689	14.38	709.7	16.0
1993	369.0	-33.3	402.0	-29.8	375.0	-37.9	456.0	-26.3	353.0	-50.0	253	-59.59	461	-23.47	381.3	-37.7
1994	684.0	23.6	668.0	16.6	1015.0	68.0	749.0	21.1	926.0	31.1	619	-1.13	582	-3.39	749.0	22.4
1995	630.0	13.8	503.0	-12.2	592.0	-2.0	423.0	-31.6	1000.0	41.5	456	-27.16	515	-14.51	588.4	-3.9
1996	421.0	-23.9	623.0	8.8	588.0	-2.7	601.0	-2.9	413.0	-41.5	808	29.06	619	2.76	581.9	-4.9
1997	570.0	3.0	756.0	32.0	797.0	31.9	487.0	-21.3	786.0	11.2	645	3.02	446	-25.96	641.0	4.7
1998	692.0	25.0	457.0	-20.2	478.0	-20.9	474.0	-23.4	655.0	-7.3	580	-7.36	541	-10.19	553.9	-9.5
1999	365.0	-34.0	522.0	-8.9	483.0	-20.1	443.0	-28.4	459.0	-35.0	491	-21.57	426	-29.28	455.6	-25.6
2000	279.0	-49.6	294.0	-48.7	247.0	-59.1	321.0	-48.1	455.0	-35.6	310	-50.48	245	-59.33	307.3	-49.8
2001	689.0	24.5	771.0	34.6	263.0	-56.5	815.0	31.7	620.0	-12.2	533	-14.87	636	5.58	618.1	1.0
2002	264.0	-52.3	286.0	-50.1	259.0	-57.1	339.0	-45.2	344.0	-51.3	249	-60.23	365	-39.41	300.9	-50.8
2003	429.0	-22.5	416.0	-27.4	499.0	-17.4	403.0	-34.9	732.0	3.6	533	-14.87	483	-19.82	499.3	-18.4
2004	436.0	-21.2	463.0	-19.2	530.0	-12.3	441.0	-28.7	373.0	-47.2	603	-3.68	462	-23.31	472.6	-22.8
2005	574.0	3.7	656.0	14.5	680.0	12.6	1004.0	62.3	822.0	16.3	889	42.00	806	33.80	775.9	26.8
2006	792.0	43.1	623.0	8.8	788.0	30.4	774.0	25.1	926.0	31.1	915	46.15	740	22.84	794.0	29.7
2007	700.0	26.5	451.0	-21.3	509.0	-15.8	591.0	-4.5	788.0	11.5	637	1.75	637	5.74	616.1	0.7
2008	492.0	-11.1	378.0	-34.0	493.0	-18.4	345.0	-44.2	502.0	-28.9	482	-23.01	419	-30.44	444.4	-27.4
2009	336.0	-39.3	377.0	-34.2	321.0	-46.9	595.0	-3.8	401.0	-43.2	471	-24.77	447	-25.80	421.1	-31.2
2010	650.0	17.5	702.0	22.5	752.0	24.5	955.0	54.4	1077.0	52.4	703	12.29	1039	72.48	839.7	37.2
2011	669.0	20.9	746.0	30.2	765.0	26.6	783.0	26.6	909.0	28.7	872	39.28	522	-13.35	752.3	22.9
2012	552.0	-0.3	735.0	28.3	686.0	13.5	548.0	-11.4	930.0	31.6	516	-17.58	599	-0.56	652.3	6.6
2013	600.0	8.4	595.0	3.9	764.0	26.5	636.0	2.8	745.0	5.4	853	36.25	728	20.85	703.0	14.9
2014	601.0	8.6	477.0	-16.7	539.0	-10.8	560.0	-9.5	684.0	-3.2	539	-13.91	636	5.58	576.6	-5.8

2015	565.0	2.1	568.0	-0.8	729.0	20.7	598.0	-3.3	666.0	-5.7	543	-13.27	716	18.86	626.4	2.4
2016	640.0	15.6	573.0	0.0	695.0	15.0	989.0	59.9	1034.0	46.3	1154	84.33	949	57.54	862.0	40.8
2017	653.0	18.0	821.0	43.3	871.0	44.2	994.0	60.7	854.0	20.9	627	0.15	637	5.74	779.6	27.4
2018	480.0	-13.3	605.0	5.6	597.0	-1.2	452.0	-26.9	411.0	-41.8	752	20.12	511	-15.17	544.0	-11.1
2019	764.0	38.1	839.0	46.5	948.0	56.9	750.0	21.2	998.0	41.3	1070	70.91	1054	74.97	917.6	49.9
2020	750.0	35.5	628.0	9.6	566.0	-6.3	808.0	30.6	668.0	-5.5	723	15.48	716	18.86	694.1	13.4
Mean(mm)	**553.4**		**572.9**		**604.2**		**618.6**		**706.5**		**626.1**		**602.4**		**612.0**	
STDEV(mm)	**146.9**		**153.1**		**197.8**		**203.3**		**234.1**		**217.4**		**188.61**		**191.6**	
C.V.(%)	**26.5**		**26.7**		**32.7**		**32.9**		**33.1**		**34.7**		**31.3**		**31.2**	

18. ANNEXURE C: List of wells considered for Pre & Post - Monsoon period Water Levels for year 2021.

S.No.	District	Block	Village	Agency	Latitude	Longitude	WL_pre_21	WL_post_21
1	Rajsamand	Amet	Agalgaon	GWD	25.33442	73.83889	8.60	8.12
2	Rajsamand	Amet	Aidana	GWD	25.28678	73.95003	19.80	18.52
3	Rajsamand	Amet	Aidana	GWD	25.32289	73.91803	29.70	21.75
4	Rajsamand	Amet	Amet	GWD	25.36642	73.97236	11.25	6.60
5	Rajsamand	Amet	Beekawas	GWD	25.32942	73.93953	15.70	11.75
6	Rajsamand	Amet	Dhelana	GWD	25.37819	73.94458	15.02	15.20
7	Rajsamand	Amet	Didwana	GWD	25.52175	74.02994	11.15	8.32
8	Rajsamand	Amet	Dingrol	GWD	25.30492	74.03311	17.45	14.26
9	Rajsamand	Amet	Galwa	GWD	25.24044	74.064	11.72	9.00
10	Rajsamand	Amet	Gosundi	GWD	25.41464	74.0405	16.05	14.35
11	Rajsamand	Amet	Gowal	GWD	25.50072	73.90611	25.80	22.52
12	Rajsamand	Amet	Jawanji Ka Khera	GWD	25.56389	73.69128	14.35	12.35
13	Rajsamand	Amet	Jetpura	GWD	25.22683	73.96781	18.30	16.04
14	Rajsamand	Amet	Jhor	GWD	25.21756	74.188	17.10	12.80
15	Rajsamand	Amet	Makarda	GWD	25.33417	74.11567	8.25	4.67
16	Rajsamand	Amet	Murda	GWD	25.27911	74.14864	16.88	11.60

17	Rajsamand	Amet	Nanana	GWD	25.40411	73.95822	8.28	5.20
18	Rajsamand	Amet	Olna Ka Khera	GWD	25.24611	74.03842	20.44	15.45
19	Rajsamand	Amet	Rachhetikakhera	GWD	25.46169	74.04008	19.82	11.50
20	Rajsamand	Amet	Sakroda	GWD	25.26806	74.06797	11.25	4.09
21	Rajsamand	Amet	Sardargarh	GWD	25.28194	74.07325	17.10	11.32
22	Rajsamand	Amet	Sardargarh	GWD	25.27617	74.11214	20.75	12.55
23	Rajsamand	Amet	Siyana	GWD	25.22483	73.90278	19.00	14.15
24	Rajsamand	Amet	Teekar	GWD	25.44022	73.93353	8.80	5.52
25	Rajsamand	Bhim	Ajeetgarh	GWD	26.50833	74.48333	7.94	7.15
26	Rajsamand	Bhim	Asan	GWD	25.70714	74.11264	8.40	3.45
27	Rajsamand	Bhim	Bagar	GWD	25.63092	73.91186	11.97	3.10
28	Rajsamand	Bhim	Barar	GWD	25.76486	74.03256	9.90	3.30
29	Rajsamand	Bhim	Barar	GWD	25.71253	74.14014	7.40	4.95
30	Rajsamand	Bhim	Barjal	GWD	25.56522	73.90806	17.40	4.42
31	Rajsamand	Bhim	Barjal	GWD	25.52722	73.92417	17.75	10.00
32	Rajsamand	Bhim	Bhaghana	GWD	25.54214	73.93494	16.00	7.90
33	Rajsamand	Bhim	Bhartwa	GWD	26.04808	74.27914	10.26	6.70
34	Rajsamand	Bhim	Bheelkheda	GWD	25.88736	74.14883	16.35	9.50
35	Rajsamand	Bhim	Bhim	GWD	25.83539	74.19075	6.95	2.02
36	Rajsamand	Bhim	Bhim	GWD	25.74242	74.18653	6.60	2.77
37	Rajsamand	Bhim	Chhapli	GWD	25.55533	73.93011	5.80	3.14
38	Rajsamand	Bhim	Devraj nagar	GWD	26.10833	74.05	15.60	8.08
39	Rajsamand	Bhim	Dewair	GWD	25.56772	73.87478	8.20	8.55
40	Rajsamand	Bhim	Dhoti	GWD	26.45	74.18333	12.07	6.35
41	Rajsamand	Bhim	Hamento Ki Gaur	GWD	25.76597	74.01953	8.75	5.21
42	Rajsamand	Bhim	Jassa Khera	GWD	25.85267	74.10539	7.78	2.82
43	Rajsamand	Bhim	Jujpura	GWD	26.00264	74.34961	12.93	7.00
44	Rajsamand	Bhim	Kheri Ka Khera	GWD	25.98544	74.46114	16.95	10.60

45	Rajsamand	Bhim	Kookra	GWD	25.86578	74.205	8.70	6.24
46	Rajsamand	Bhim	Kukar Kheda	GWD	25.70328	74.13478	6.99	4.35
47	Rajsamand	Bhim	Laget Khera	GWD	26.10167	74.43747	14.80	6.15
48	Rajsamand	Bhim	Moba Ka Talab	GWD	25.95033	74.14044	3.29	1.40
49	Rajsamand	Bhim	Naloi Lalpura	GWD	25.84839	74.31644	12.00	9.50
50	Rajsamand	Bhim	Padmela	GWD	25.77386	74.13311	11.35	5.66
51	Rajsamand	Bhim	Pipreloo	GWD	25.53575	73.89858	20.11	12.25
52	Rajsamand	Bhim	Rajor	GWD	26.07194	74.52019	8.80	4.80
53	Rajsamand	Bhim	Rajwa	GWD	25.98031	74.34153	14.60	8.82
54	Rajsamand	Bhim	Shyopura As	GWD	25.96203	74.35633	5.65	3.75
55	Rajsamand	Bhim	Teekarwas Kalan	GWD	25.64064	73.99878	11.40	2.60
56	Rajsamand	Bhim	Teetri	GWD	26.36639	74.48889	14.79	9.95
57	Rajsamand	Bhim	Togi	GWD	25.93814	74.12014	7.04	2.57
58	Rajsamand	Deogarh	Anjna	GWD	25.52994	74.08989	19.00	8.18
59	Rajsamand	Deogarh	Anoppura	GWD	25.49775	74.12639	9.78	2.70
60	Rajsamand	Deogarh	Anoppura	GWD	26.05	74.82222	7.30	2.93
61	Rajsamand	Deogarh	Arjungarh	GWD	25.79803	74.12556	12.95	6.70
62	Rajsamand	Deogarh	Biyana	GWD	25.48667	73.97747	5.20	3.70
63	Rajsamand	Deogarh	Deogarh	GWD	25.66797	74.04211	8.60	7.20
64	Rajsamand	Deogarh	Jakra	GWD	25.65175	74.08567	16.33	9.95
65	Rajsamand	Deogarh	Kakrod	GWD	25.70625	74.13119	6.27	5.75
66	Rajsamand	Deogarh	Kalagun (96543)	GWD	26.23056	74.07778	12.14	1.08
67	Rajsamand	Deogarh	Kalalo Ki Anti	GWD	25.69414	73.97244	15.10	7.35
68	Rajsamand	Deogarh	Kalesariya	GWD	25.63733	74.09836	7.73	6.65
69	Rajsamand	Deogarh	Kameri	GWD	25.49378	73.98614	15.90	7.65
70	Rajsamand	Deogarh	Khakharda	GWD	25.91389	74.33056	7.20	3.85
71	Rajsamand	Deogarh	Kuathal	GWD	25.42311	73.93456	11.60	11.70
72	Rajsamand	Deogarh	Kuathal	GWD	25.48764	73.97975	10.85	7.70
73	Rajsamand	Deogarh	Kundwa	GWD	25.48942	74.07486	12.45	8.20
74	Rajsamand	Deogarh	Lasani	GWD	25.58386	74.03672	14.00	3.70

75	Rajsamand	Deogarh	Madariya	GWD	25.53597	74.07614	16.56	10.20
76	Rajsamand	Deogarh	Madariya	GWD	25.52472	74.12389	25.08	19.45
77	Rajsamand	Deogarh	Malkot	GWD	25.63847	74.20356	16.64	10.84
78	Rajsamand	Deogarh	Miyala	GWD	25.65278	74.04619	19.50	14.25
79	Rajsamand	Deogarh	Nardas Ka Gura	GWD	25.51603	73.94003	16.75	12.90
80	Rajsamand	Deogarh	Pardi	GWD	25.51025	74.12617	7.05	7.92
81	Rajsamand	Deogarh	Sohangarh	GWD	25.70669	74.152	8.20	7.77
82	Rajsamand	Deogarh	Solankio Ka Gura	GWD	25.58578	74.01372	11.80	9.60
83	Rajsamand	Deogarh	Solankio Ka Gura	GWD	25.57872	74.03694	11.20	8.80
84	Rajsamand	Deogarh	Tal	GWD	25.73047	74.12658	4.00	0.98
85	Rajsamand	Deogarh	Tapalon Ka Khera	GWD	25.88611	74.46389	5.30	4.60
86	Rajsamand	Deogarh	Vijay Pura	GWD	25.64103	74.00478	21.85	9.95
87	Rajsamand	Deogarh	Vijay Pura	GWD	25.63194	73.99417	15.30	9.75
88	Rajsamand	Khamnor	Balicha	GWD	25.01994	73.74031	14.73	12.59
89	Rajsamand	Khamnor	Bamanhera	GWD	25.01064	73.99697	17.30	11.30
90	Rajsamand	Khamnor	Barabhanuja	GWD	25.06489	73.78886	8.95	4.52
91	Rajsamand	Khamnor	Bhainsa Kamed (97251)	GWD	25.78889	74.35556	7.35	10.05
92	Rajsamand	Khamnor	Cheekelwas	GWD	25.16464	73.83831	1.09	0.75
93	Rajsamand	Khamnor	Chokri Ki Bhagal	GWD	25.09203	73.72806	1.80	1.67
94	Rajsamand	Khamnor	Delwara	GWD	24.80203	73.75086	11.95	6.19
95	Rajsamand	Khamnor	Dhanyla	GWD	25.63056	74.46944	13.87	6.60
96	Rajsamand	Khamnor	Gaongura	GWD	25.02031	73.75183	4.38	8.25
97	Rajsamand	Khamnor	Godach	GWD	24.92378	73.69514	11.10	6.90
98	Rajsamand	Khamnor	Gunjol	GWD	25.72222	74.64167	31.98	11.13
99	Rajsamand	Khamnor	Jarsadri	GWD	24.9925	73.84389	16.10	11.10
100	Rajsamand	Khamnor	Kesuli	GWD	24.99419	73.874	11.02	5.37
101	Rajsamand	Khamnor	Kesuli	GWD	24.9175	73.79694	13.05	6.90
102	Rajsamand	Khamnor	Khamnor	GWD	25.06533	73.72269	8.45	2.10
103	Rajsamand	Khamnor	Kooncholi	GWD	25.0205	73.90858	11.50	5.70
104	Rajsamand	Khamnor	Koshiwara	GWD	25.05997	73.71064	17.80	4.80

105	Rajsamand	Khamnor	Kothariya	GWD	25.01483	73.97053	7.20	0.10
106	Rajsamand	Khamnor	Kumariya Kheda	GWD	25.01419	74.05875	9.15	8.35
107	Rajsamand	Khamnor	Kunthwa	GWD	25.0875	73.89111	5.66	3.60
108	Rajsamand	Khamnor	Machind	GWD	25.01783	73.64608	5.72	3.89
109	Rajsamand	Khamnor	Mandiyana	GWD	25.01042	74.01619	18.40	11.40
110	Rajsamand	Khamnor	Mogana	GWD	24.99322	73.94208	16.48	14.60
111	Rajsamand	Khamnor	Molela	GWD	25.02086	73.8035	17.85	11.20
112	Rajsamand	Khamnor	Namana	GWD	25.04325	73.95044	6.75	2.45
113	Rajsamand	Khamnor	Nathdwara	GWD	25.04339	73.904	11.50	8.50
114	Rajsamand	Khamnor	Nathdwara	GWD	25.02883	73.84447	11.87	7.90
115	Rajsamand	Khamnor	Negdiya	GWD	24.95397	73.89417	4.00	1.68
116	Rajsamand	Khamnor	Negdiya	GWD	24.87583	73.88139	15.25	8.25
117	Rajsamand	Khamnor	Pakhand	GWD	25.04294	74.05517	20.20	13.55
118	Rajsamand	Khamnor	Rabcha	GWD	24.93792	73.88486	3.83	1.30
119	Rajsamand	Khamnor	Rabcha	GWD	24.96706	73.90667	8.83	1.80
120	Rajsamand	Khamnor	Sagroon	GWD	25.04025	73.70589	9.35	3.60
121	Rajsamand	Khamnor	Sagroon	GWD	24.94822	73.72928	9.06	8.70
122	Rajsamand	Khamnor	Sayaka Khera	GWD	25.15144	73.83731	16.12	6.24
123	Rajsamand	Khamnor	Sema	GWD	25.07258	73.76569	13.49	12.40
124	Rajsamand	Khamnor	Semal	GWD	24.89547	73.70111	5.30	4.54
125	Rajsamand	Khamnor	Shishoda Kalan	GWD	25.03656	73.79622	3.85	2.20
126	Rajsamand	Khamnor	Ulpuramagra Pachhla	GWD	25.57778	74.44167	13.70	10.24
127	Rajsamand	Khamnor	Usan	GWD	24.82406	73.76017	15.40	10.20
128	Rajsamand	Khamnor	Uthnol	GWD	24.94808	74.01056	20.30	15.25
129	Rajsamand	Khamnor	Vagol	GWD	24.95781	73.79406	9.80	5.15
130	Rajsamand	Khamnor	Vagol	GWD	24.96556	73.78944	11.89	10.54
131	Rajsamand	Khamnor	Wajunda	GWD	24.92531	73.91817	18.60	8.85
132	Rajsamand	Kumbhalgarh	Amartiya	GWD	25.40517	73.92742	4.96	2.70
133	Rajsamand	Kumbhalgarh	Aret Ki Bhagal	GWD	25.25536	73.61036	5.45	4.40
134	Rajsamand	Kumbhalgarh	Dhaneen	GWD	25.35661	73.90106	17.80	14.70

135	Rajsamand	Kumbhalgarh	Dhoran	GWD	25.12306	73.73867	7.60	10.72
136	Rajsamand	Kumbhalgarh	Dowas	GWD	25.18956	73.63156	5.50	3.50
137	Rajsamand	Kumbhalgarh	Gadbore	GWD	25.27417	73.74758	9.98	9.30
138	Rajsamand	Kumbhalgarh	Gadbore	GWD	25.36994	73.82561	16.65	10.95
139	Rajsamand	Kumbhalgarh	Gajpur	GWD	25.24722	74.21111	29.19	28.50
140	Rajsamand	Kumbhalgarh	Ghata	GWD	25.183	73.75056	21.37	20.70
141	Rajsamand	Kumbhalgarh	Jambo Ka Talab	GWD	25.38089	73.79889	8.25	7.35
142	Rajsamand	Kumbhalgarh	Janawad	GWD	25.41319	73.86389	11.40	7.85
143	Rajsamand	Kumbhalgarh	Jheelwara	GWD	25.33164	73.68203	5.27	5.00
144	Rajsamand	Kumbhalgarh	Jheelwara	GWD	25.32333	73.75222	11.70	11.94
145	Rajsamand	Kumbhalgarh	Jhuta Guda	GWD	25.37711	73.88586	12.00	10.60
146	Rajsamand	Kumbhalgarh	Kanooja	GWD	25.74722	74.15833	9.20	13.12
147	Rajsamand	Kumbhalgarh	Kelwara	GWD	25.21156	73.62406	6.18	9.60
148	Rajsamand	Kumbhalgarh	Kharnota	GWD	25.37908	73.92583	9.95	9.65
149	Rajsamand	Kumbhalgarh	Kooncholi	GWD	25.0385	73.64678	11.90	7.32
150	Rajsamand	Kumbhalgarh	Lakm Ka Guda	GWD	24.946	73.63525	12.77	13.34
151	Rajsamand	Kumbhalgarh	Lambodi	GWD	25.32594	73.91039	10.45	10.15
152	Rajsamand	Kumbhalgarh	Lambodi	GWD	25.34639	73.85333	15.45	15.70
153	Rajsamand	Kumbhalgarh	Majera	GWD	25.27133	73.69775	13.95	15.36
154	Rajsamand	Kumbhalgarh	Manat Ka Guda	GWD	25.25492	73.7175	10.40	10.40
155	Rajsamand	Kumbhalgarh	Manat Ka Guda	GWD	25.26833	73.73056	21.70	21.30
156	Rajsamand	Kumbhalgarh	Mansingh Ka Guda	GWD	25.30608	73.82453	10.09	8.25
157	Rajsamand	Kumbhalgarh	Mewariya	GWD	25.31353	73.78186	21.40	16.65
158	Rajsamand	Kumbhalgarh	Morcha	GWD	25.12733	73.64503	3.80	3.40
159	Rajsamand	Kumbhalgarh	Peepla	GWD	25.00594	73.68311	5.81	5.07
160	Rajsamand	Kumbhalgarh	Reechher	GWD	25.24422	73.72631	11.00	8.25
161	Rajsamand	Kumbhalgarh	Sameecha	GWD	25.06022	73.65717	13.60	12.45
162	Rajsamand	Kumbhalgarh	Sawantri	GWD	25.39889	73.75356	8.20	7.98
163	Rajsamand	Kumbhalgarh	Umarwas	GWD	25.40311	73.75317	3.21	4.25
164	Rajsamand	Railmagra	Ardkiya	GWD	25.15064	74.06522	13.43	7.99

165	Rajsamand	Railmagra	Banediya	GWD	24.97994	74.03272	19.73	10.90
166	Rajsamand	Railmagra	Bethumbi	GWD	25.08531	74.24789	10.85	10.00
167	Rajsamand	Railmagra	**Chhdanga Kheri**	GWD	25.74444	74.20833	12.48	9.30
168	Rajsamand	Railmagra	Damodarpura	GWD	25.09919	74.35553	12.50	10.49
169	Rajsamand	Railmagra	Dhaneriya	GWD	24.95775	74.14553	14.20	11.58
170	Rajsamand	Railmagra	Gawardi	GWD	24.93725	74.21497	12.00	9.34
171	Rajsamand	Railmagra	Gawardi	GWD	25.94972	74.14806	12.06	12.35
172	Rajsamand	Railmagra	Gilund	GWD	25.09342	74.35533	12.40	12.30
173	Rajsamand	Railmagra	Gogathala	GWD	25.115	74.16978	9.55	10.45
174	Rajsamand	Railmagra	**Gogathala**	GWD	25.15833	74.23056	5.95	4.96
175	Rajsamand	Railmagra	Jeetawas	GWD	25.14261	74.26169	10.86	7.53
176	Rajsamand	Railmagra	Khandel	GWD	25.23403	74.14658	31.40	21.73
177	Rajsamand	Railmagra	Kotri	GWD	25.01881	74.22278	8.56	5.90
178	Rajsamand	Railmagra	Kotri	GWD	25.04639	74.18417	6.15	4.90
179	Rajsamand	Railmagra	Kuraj	GWD	25.14106	74.11169	6.39	4.00
180	Rajsamand	Railmagra	Ladapacha	GWD	25.07483	74.18792	24.30	22.04
181	Rajsamand	Railmagra	Ladapacha	GWD	25.94667	74.22111	25.50	21.70
182	Rajsamand	Railmagra	**Madara**	GWD	25.15	74.36389	2.56	2.49
183	Rajsamand	Railmagra	Mali Khera	GWD	25.05347	74.24553	21.50	17.80
184	Rajsamand	Railmagra	Menduriya	GWD	25.04883	74.21992	17.00	4.90
185	Rajsamand	Railmagra	Meniya	GWD	25.03947	74.08958	14.58	8.25
186	Rajsamand	Railmagra	Morra	GWD	25.06169	74.1295	11.31	11.94
187	Rajsamand	Railmagra	Pachhmata	GWD	25.10867	74.22678	10.35	7.50
188	Rajsamand	Railmagra	Peepli Aheeran	GWD	25.09803	74.08178	8.70	9.90
189	Rajsamand	Railmagra	Prempura	GWD	25.29444	74.16111	6.70	2.54
190	Rajsamand	Railmagra	Railmagara	GWD	25.11144	74.15025	5.23	5.70
191	Rajsamand	Railmagra	Sadri	GWD	25.07858	74.20772	27.00	12.25
192	Rajsamand	Railmagra	**Sakarawas**	GWD	25.15556	74.25278	3.20	2.68
193	Rajsamand	Railmagra	Sindesar Kalan	GWD	25.15875	74.22981	8.00	8.12

194	Rajsamand	Rajsamand	Akodiya Khera	GWD	25.40833	74.04167	9.65	9.00
195	Rajsamand	Rajsamand	Atma	GWD	25.26333	73.87019	19.05	15.98
196	Rajsamand	Rajsamand	Bagota	GWD	25.26389	74.43611	14.73	11.47
197	Rajsamand	Rajsamand	Bhana	GWD	25.12122	74.02228	7.04	3.23
198	Rajsamand	Rajsamand	Bhana	GWD	25.19333	74.04861	7.78	4.74
199	Rajsamand	Rajsamand	Bhatoli	GWD	25.14133	73.94597	7.45	6.79
200	Rajsamand	Rajsamand	Bhawa	GWD	25.22028	74.04278	10.30	4.48
201	Rajsamand	Rajsamand	Binol (97014)	GWD	25.40278	74.64444	13.10	12.05
202	Rajsamand	Rajsamand	Dhanwal	GWD	25.13658	73.92022	11.60	6.34
203	Rajsamand	Rajsamand	Dhoinda	GWD	25.18039	73.98033	4.11	2.15
204	Rajsamand	Rajsamand	Dhoinda	GWD	25.08	74.03056	0.30	0.10
205	Rajsamand	Rajsamand	Jodhpura	GWD	25.21075	74.15286	19.90	17.88
206	Rajsamand	Rajsamand	Kelwa	GWD	25.19692	73.97781	4.25	2.10
207	Rajsamand	Rajsamand	Khatamala	GWD	25.2995	74.00228	15.90	11.18
208	Rajsamand	Rajsamand	Khatamala	GWD	25.27458	74.02028	8.35	1.95
209	Rajsamand	Rajsamand	Kunwariya	GWD	25.24708	73.04928	7.25	4.20
210	Rajsamand	Rajsamand	Kunwariya	GWD	25.20656	74.06136	8.15	6.50
211	Rajsamand	Rajsamand	Mahasat.Ki Madri	GWD	25.186	74.07889	6.55	2.10
212	Rajsamand	Rajsamand	Mandwara	GWD	25.21697	73.94861	17.00	13.80
213	Rajsamand	Rajsamand	Miyari Madri	GWD	25.20669	73.83683	10.76	10.40
214	Rajsamand	Rajsamand	Mohi	GWD	25.10397	73.98456	8.15	6.38
215	Rajsamand	Rajsamand	Nathuwas	GWD	25.16378	74.15617	19.45	13.39
216	Rajsamand	Rajsamand	Padasali	GWD	25.21711	73.90539	12.58	12.40
217	Rajsamand	Rajsamand	Pasaoond	GWD	25.26658	73.95856	5.37	2.28
218	Rajsamand	Rajsamand	Peeparda	GWD	25.05444	73.91111	13.90	8.95
219	Rajsamand	Rajsamand	Pharara	GWD	25.07222	74.42222	10.75	3.04
220	Rajsamand	Rajsamand	Phiyawari	GWD	25.16019	74.14389	16.90	8.24
221	Rajsamand	Rajsamand	Poothol	GWD	25.19975	73.81297	5.62	1.39
222	Rajsamand	Rajsamand	Rajnagar	GWD	25.20033	73.98178	4.13	2.07

223	Rajsamand	Rajsamand	Rajnagar	GWD	25.16536	73.977	4.08	2.95
224	Rajsamand	Rajsamand	Rajyawas	GWD	25.10317	74.00928	4.45	1.97
225	Rajsamand	Rajsamand	Sakroda	GWD	25.07717	73.88397	8.42	2.61
226	Rajsamand	Rajsamand	Sapol	GWD	25.2285	73.86958	9.69	9.05
227	Rajsamand	Rajsamand	Sathaana	GWD	24.97397	74.08514	16.34	11.20
228	RAJSAMAND	Bhim	BAGHANA	CGWB	25.5	73.8386	18.26	10.81
229	RAJSAMAND	Bhim	BALI1	CGWB	25.8333	74.0833	4.2	5.5
230	RAJSAMAND	Bhim	BARAR	CGWB	25.6667	74.0167	9.7	3.2
231	RAJSAMAND	Bhim	Bhim	CGWB	25.7433	74.0792	4.2	1.6
232	RAJSAMAND	Kumbhalgarh	Bhop Ji Ki Bhagal	CGWB	25.2583	73.7208	15.3	2.7
233	RAJSAMAND	Amet	CHATTARPUR	CGWB	25.2414	73.9561	15.88	12.54
234	RAJSAMAND	Bhim	DEWAIR	CGWB	25.4208	73.8222	14.8	6.6
235	RAJSAMAND	Kumbhalgarh	DOWAS	CGWB	25.0386	73.5667	5.07	3.37
236	RAJSAMAND	Railmagra	GAVARDI	CGWB	24.9039	74.1	19.95	15.57
237	RAJSAMAND	Bhim	GHATA	CGWB	25.7833	74.1833	8.35	11.3
239	RAJSAMAND	Amet	GUGLI	CGWB	25.2333	73.8833	16.07	15.22
240	RAJSAMAND	Kumbhalgarh	JHILWARA	CGWB	25.2272	73.6708	13.99	12.39
241	RAJSAMAND	Kumbhalgarh	KANCHOLI	CGWB	24.96	73.55	7.05	6.15
242	RAJSAMAND	Kumbhalgarh	MANSINGH KAGURA	CGWB	25.2381	73.7889	10.51	9.16
243	RAJSAMAND	Rajsamand	MOKAMPURA	CGWB	25.1308	73.85	4.69	4.87
244	RAJSAMAND	Amet	NADIAWALA	CGWB	25.2028	73.8631	21.89	11.72
245	RAJSAMAND	Railmagra	ODA1	CGWB	25.0333	74.0039	4.48	1.03
246	RAJSAMAND	Khamnor	ODAN	CGWB	24.9	73.8167	4.79	2.61
247	RAJSAMAND	Rajsamand	RAJSAMAND	CGWB	25.0667	73.8833	1.27	4.97
248	RAJSAMAND	Bhim	Sheron Ka Bala	CGWB	25.85	74.1333	8.64	5.79
249	RAJSAMAND	Bhim	THIKARWAS	CGWB	25.6	73.98	11.96	7.66
250	Rajsamand	Kumbalgarh	Kitela	key well	25.33689	73.7775	7	8.2
251	Rajsamand	Railmagra	Kuraj	key well	25.08	74.10028	9.3	10
252	Rajsamand	Khamnor	Kotharia	key well	24.96139	73.85778	8.9	8.6
253	Rajsamand	Khamnor	khamnor	key well	24.90583	73.72028	1.7	0.8

254	Rajsamand	Khamnor	Baleecha	key well	24.88167	73.68889	16.1	14.55
255	Rajsamand	Khamnor	Godach	key well	24.79306	73.66194	10.7	6.15
256	Rajsamand	Khamnor	Machhind	key well	24.92444	73.60583	3.4	2.45
257	Rajsamand	Kumbalgarh	Kelwara	key well	25.12	73.59861	4.9	1.55
258	Rajsamand	Rajsamand	Mohi	key well	25.04167	73.94889	11.1	4.4
259	Rajsamand	Khamnor	Uthnol	key well	25.90833	73.88111	10.2	7.2
260	Rajsamand	Rajsamand	Sathana	key well	24.97194	73.96972	2.3	6.2
261	Rajsamand	Railmagra	Sansera	key well	24.95333	74.05556	17.2	16.9
262	Rajsamand	Railmagra	Pacchmata	key well	25.02222	74.19361	11.8	11
263	Rajsamand	Railmagra	Railmagra	key well	25.03694	74.10972	12.8	11
264	Rajsamand	Railmagra	Khandel	key well	25.0475	74.09917	11.7	11.8
265	Rajsamand	Rajsamand	Kunwariya	key well	25.11778	74.025	9.9	9
266	Rajsamand	Rajsamand	Piparda	key well	25.01556	73.85667	8.7	4.95
267	Rajsamand	Rajsamand	Dhanwal	key well	25.02889	73.78222	9.2	6.65
268	Rajsamand	Khamnor	Cheekalwas	key well	25.02306	73.73111	9.9	9.4
269	Rajsamand	Kumbalgarh	Sameecha	key well	25.03667	73.62167	7.7	7.65
270	Rajsamand	Kumbalgarh	Bargaon	key well	25.10722	73.6475	3.9	3.55
271	Rajsamand	Kumbalgarh	Bhawani ki Baghal	key well	25.11778	73.70472	16.7	15.9
272	Rajsamand	Deogarh	Deogarh	key well	25.52889	73.92111	15	12.1
273	Rajsamand	Deogarh	Kalalo ki Anti	key well	25.56111	73.96333	7.3	5.95
274	Rajsamand	Deogarh	Tal	key well	25.62778	74.0575	4.9	2.65
275	Rajsamand	Deogarh	Sohangarh	key well	25.62917	74.08944	11.2	9.2
276	Rajsamand	Deogarh	Jhankara	key well	25.53944	74.06472	11.7	7
277	Rajsamand	Deogarh	Kundwa	key well	25.45417	74.00778	12	8.8
278	Rajsamand	Deogarh	Kuanthal	key well	25.40861	73.92278	10.9	3.6
279	Rajsamand	Amet	Khakarmal	key well	25.38611	73.90056	14.3	5.65
280	Rajsamand	Deogarh	Beeyana	key well	25.3875	73.90556	13	2.7
281	Rajsamand	Amet	Olnakhera	key well	25.23528	74.03528	20	18.7
282	Rajsamand	Amet	Asan	key well	25.31	73.91083	14.6	16.6
283	Rajsamand	Deogarh	Kamala	key well	25.57611	73.85611	4.7	3.65

284	Rajsamand	Bhim	Baggar	key well	25.60194	73.90139	4.1	3.35
285	Rajsamand	Deogarh	Miyala	key well	25.6125	73.9575	15.3	9.5

19. ANNEXURE D: List of Wells considered for Water Level Trend Analysis (2011-2020).

District	Block	Village	Agency	Long	Lat	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Trend
Rajsamand	Amet	Aidana	GWD	73.95003	25.286778	8	10.05	11.25	13.05	14.69	13.6	12.6	15.3	14.1	12.8	0.541576
Rajsamand	Amet	Aidana	GWD	73.91803	25.322889	11.85	11.08	21.13	19.87	35.45	21.65	26.9	24.15	19.2	20.15	1.018176
Rajsamand	Amet	Amet	GWD	73.97236	25.366417	4.55	4	8.75	8	11.4	9.5	7.7	13.33	4.4	3	0.054242
Rajsamand	Amet	Beekawas	GWD	73.93953	25.329417	2.4	5.37	10.53	13.34	15.5	14.3	10.9	15.35	8.6	11.62	0.792265
Rajsamand	Amet	Dhelana	GWD	73.94458	25.378194	1.62	5	0.73	10	13.8	13.2	14.1	14.6	0.3	8.32	0.444265
Rajsamand	Amet	Didwana	GWD	74.02994	25.52175	3.5	4.38	7.13	6.4	7.46	4	7.5	9.3	0.8	2.5	-0.08726
Rajsamand	Amet	Dingrol	GWD	74.03311	25.304917	1.9	2.5	4.47	9	11.5	11.15	13.6	17.3	9.65	14.55	1.463636
Rajsamand	Amet	Galwa	GWD	74.064	25.240444	7	8.4	9.78	10.68	11.55	11.6	9.6	10.47	8.3	8.03	0.053515
Rajsamand	Amet	Googli	GWD	73.91631	25.373028	2.66	5.04	9.53	8.5	12.5	15	13.6	13.45	11.25	10.98	1.004191
Rajsamand	Amet	Gosundi	GWD	74.0405	25.414639	4.1	3.63	7.15	10.15	14.5	13.1	17.5	15.4	9	8.16	0.824424
Rajsamand	Amet	Gowal	GWD	73.90611	25.500722	7.3	7.9	8.13	9.4	14.5	17.2	18.4	21.6	6.6	11.93	0.785576
Rajsamand	Amet	Jetpura	GWD	73.96781	25.226833	3.62	6.25	9.33	13.6	17.86	15.1	17.3	19.1	10.9	14.52	1.138424
Rajsamand	Amet	Jhor	GWD	74.188	25.217556	9.4	13.73	10.23	16.68	18.4	13	16.9	11.6	5.28	9.2	-0.35661
Rajsamand	Amet	Makarda	GWD	74.11567	25.334167	6	4.57	6.23	5.87	12.85	8.25	9.2	8	3.45	6.25	0.052424
Rajsamand	Amet	Murda	GWD	74.14864	25.279111	8	9	10.15	9	10	11.4	9.2	3.5	1.05	3.55	-0.76939
Rajsamand	Amet	Nanana	GWD	73.95822	25.404111	2.44	2.34	2.72	3.89	3.51	2.5	3.5	6.25	1.9	3.94	0.156909
Rajsamand	Amet	Olna Ka Khera	GWD	74.03842	25.246111	20.2	18.18	17.28	21.1	20.97	18.35	Dry	18.55	12.77	15.02	-0.562
Rajsamand	Amet	Rachhetikakhera	GWD	74.04008	25.461694	6.63	5.32	11.81*	8.35	15	9.5	14.3	14.55	3.75	6.93	0.198265
Rajsamand	Amet	Sakroda	GWD	74.06797	25.268056	7.05	2.15	6.08	13.5	13	10.65	10.6	12.15	0.5	0.86	-0.29067
Rajsamand	Amet	Sardargarh	GWD	74.07325	25.281944	3.1	1.94	3.21*	5	8.74	7.3	5.7	8.4	7.03	6.8	0.539897
Rajsamand	Amet	Sardargarh	GWD	74.11214	25.276167	8.65	6.75	8.25	11.35	14.4	12.9	13.1	13.69	6.96	9.7	0.253758
Rajsamand	Amet	Siyana	GWD	73.90278	25.224833	8.5	13.5	10.77	**14**	17	16	19.4	15.7	11.85	12	0.362424

Rajsamand	Amet	Teekar	GWD	73.93353	25.440222	2.5	2.56	4.78	5.84	5.35	4.2	4.1	9.35	2	6.25	0.280667
Rajsamand	Bhim	Asan	GWD	74.11264	25.707139	3.33	1.97	3.04*	4.12	3.82	5.2	5.2	5.6	3.1	3.28	0.134279
Rajsamand	Bhim	Bagar	GWD	73.91186	25.630917	7.1	2.42	2.84	6.62	4.86	5.5	6.6	7.7	1.1	2.4	-0.16158
Rajsamand	Bhim	Barar	GWD	74.03256	25.764861	7.5	3.52	6.19	7.02	7.4	9.5	7.5	8.97	1.7	2.7	-0.23333
Rajsamand	Bhim	Barar	GWD	74.14014	25.712528	7.29	6.1	7.15	7.68	7.88	7.5	8.9	-	4.45	5.2	-0.18729
Rajsamand	Bhim	Barjal	GWD	73.90806	25.565222	1.84	1.65	2.04	7.88	3.54	4.1	2.8	7.2	1.75	4.34	0.208
Rajsamand	Bhim	Bhaghana	GWD	73.93494	25.542139	4	0.66	3.29*	8.8	5	4.3	8.2	7.65	0.5	5.91	0.177412
Rajsamand	Bhim	Bhartwa	GWD	74.27914	26.048083	9.65	1.5	3.25	2.6	7.39	5.7	6.2	2.77	0.9	5.1	-0.23297
Rajsamand	Bhim	Bheelkheda	GWD	74.14883	25.887361	8.63	6.25	5.9	10.41	11.06	11.3	8.8	8.13	4.4	6.25	-0.16855
Rajsamand	Bhim	Bhim	GWD	74.19075	25.835389	1.36	1.08	4.19	7.2	5.55	4.1	2.7	3	0.1	0.05	-0.2397
Rajsamand	Bhim	Chhapli	GWD	73.93011	25.555333	1.06	1.05	1.60*	2.92	2.08	1	4.8	2.4	1.9	1.73	0.119235
Rajsamand	Bhim	Dewair	GWD	73.87478	25.567722	2.55	2.25	5.34*	8.36	5.85	3	5.5	9.05	0.95	6.64	0.244868
Rajsamand	Bhim	Dewair	GWD	73.96333	25.512306	7.83	7.6	9.18	13.16	9.8	7.9	8.8	14.78	6.83	12.94	0.32497
Rajsamand	Bhim	Hamento Ki Gaur	GWD	74.01953	25.765972	2.76	0.8	2.27	7.82	2.85	0.9	1.5	5.95	0.55	2.45	-0.04273
Rajsamand	Bhim	Jassa Khera	GWD	74.10539	25.852667	3.74	3.01	4.25	4.32	5.2	4.4	5.3	3.82	3.3	1.9	-0.08812
Rajsamand	Bhim	Jujpura	GWD	74.34961	26.002639	2.43	1.07	4.30*	2.87	10.76	4.6	4.1	2.65	0.55	4.3	0.036088
Rajsamand	Bhim	Kheri Ka Khera	GWD	74.46114	25.985444	8.32	2.3	6.40*	2.53	10.58	6.1	7.4	6.25	3.35	9.69	0.196279
Rajsamand	Bhim	Kookra	GWD	74.205	25.865778	5.12	2.02	NM	6.2	6	4	4.8	4.2	1.4	3.5	-0.16418
Rajsamand	Bhim	Kukar Kheda	GWD	74.13478	25.703278	2.93	0.42	3.15*	3.45	6.5	4.8	5.1	4.48	0.3	0.25	-0.09922
Rajsamand	Bhim	Laget Khera	GWD	74.43747	26.101667	1.25	0.92	2.18	1.33	5.38	3.7	5.2	2.54	0.45	3.55	0.176606
Rajsamand	Bhim	Moba Ka Talab	GWD	74.14044	25.950333	1.38	0.7	2.28*	1.03	1.63	1.7	3.2	1.55	1.5	1.25	0.072897
Rajsamand	Bhim	Naloi Lalpura	GWD	74.31644	25.848389	11.07	1.7	5.60*	5.5	8.5	4.5	6.2	10.4	1.5	2.65	-0.37046
Rajsamand	Bhim	Padmela	GWD	74.13311	25.773861	5.85	3.53	7.59*	8.83	6.97	6.45	7.1	10.75	2.15	5.45	0.020309
Rajsamand	Bhim	Pipreloo	GWD	73.89858	25.53575	4.28	3.13	4.90*	7.08	5.05	5.8	6.2	10.65	2.1	6.97	0.263926
Rajsamand	Bhim	Rajor	GWD	74.52019	26.071944	1.16	1.45	2.27	0.99	2.83	4.5	6.1	1.2	2.2	1.8	0.137333
Rajsamand	Bhim	Rajwa	GWD	74.34153	25.980306	5.32	2.88	3.17	3.16	7.85	6.4	7.1	4.6	2.55	5.84	0.120545
Rajsamand	Bhim	Shyopura As	GWD	74.35633	25.962028	2.6	2.98	2.25	3.47	5.5	5.9	6.6	2.27	2.22	2.25	0.008606
Rajsamand	Bhim	Teekarwas Kalan	GWD	73.99878	25.640639	3.22	1.42	4.33*	5.6	4.15	4.3	5.3	8.64	0.7	4.85	0.204279
Rajsamand	Bhim	Togi	GWD	74.12014	25.938139	4.5	1.78	3.22	4.45	4.49	6.2	5.2	4.2	0.95	1.37	-0.15224

Rajsamand	Deogarh	Anjna	GWD	74.08989	25.529944	1.97	1.62	3.10*	6.07	5.34	6.5	6.4	9.8	0.75	9.55	0.573176
Rajsamand	Deogarh	Anoppura	GWD	74.12639	25.49775	3.78	3.6	4.7	6.56	7.62	7.2	6.9	6.63	0.9	6.8	0.112303
Rajsamand	Deogarh	Arjungarh	GWD	74.12556	25.798028	10.94	2.5	4.20*	11	13.86	10.2	12.1	13.5	1.45	2.5	-0.39396
Rajsamand	Deogarh	Bagatpura	GWD	74.04786	25.515972	6.14	4.95	5.1	10.68	15	10.2	11.9	16.1	2.6	Collapse	0.540167
Rajsamand	Deogarh	Biyana	GWD	73.97747	25.486667	1.08	1.82	3.77	2.88	2	1.9	2.1	6.05	1.3	2.53	0.111333
Rajsamand	Deogarh	Deogarh	GWD	74.04211	25.667972	6.98	4.7	7.89*	**7.47**	6.5	5.3	6.2	8.2	3.6	5.9	-0.07876
Rajsamand	Deogarh	Jakra	GWD	74.08567	25.65175	3.2	3.97	7.77	8.5	14	11.25	12.5	10.08	1.05	7.35	0.228545
Rajsamand	Deogarh	Kakrod	GWD	74.13119	25.70625	3.75	1.44	2.55	7	9.15	6.3	7.2	5.5	0.64	5.5	0.137273
Rajsamand	Deogarh	Kalalo Ki Anti	GWD	73.97244	25.694139	12	6.5	7.2	10	11.5	12.6	10.2	11.62	3.75	10.4	-0.0597
Rajsamand	Deogarh	Kalesariya	GWD	74.09836	25.637333	1.82	2.97	3.13	7	10	9.9	9.2	11.1	0.8	1.8	0.187758
Rajsamand	Deogarh	Kameri	GWD	73.98614	25.493778	2.97	4	7.94*	6.88	14.4	6.4	7.8	8.1	2.7	5.03	0.081544
Rajsamand	Deogarh	Kuathal	GWD	73.93456	25.423111	1.47	3.5	3.15	4.33	5.08	2.1	2.7	11	5.72	6.1	0.536909
Rajsamand	Deogarh	Kuathal	GWD	73.97975	25.487639	1.83	1.84	3.38*	2.86	4.12	3.4	2	8.1	1.87	3.55	0.241294
Rajsamand	Deogarh	Kundwa	GWD	74.07486	25.489417	0.9	2.64	8.79*	6.44	11.1	5.5	6.3	11.35	0.6	4.05	0.249118
Rajsamand	Deogarh	Lasani	GWD	74.03672	25.583861	5.02	3.14	5.75*	6.93	5.6	10	11.2	6.15	2.2	7.99	0.236647
Rajsamand	Deogarh	Madariya	GWD	74.07614	25.535972	4.54	1.62	2.47	3.18	5.33	6	4.3	19.1	1.5	7.2	0.668364
Rajsamand	Deogarh	Malkot	GWD	74.20356	25.638472	8.5	3.12	7.65	12.86	15.41	13.6	5.2	11.86	0.75	10.8	0.002242
Rajsamand	Deogarh	Miyala	GWD	74.04619	25.652778	6.72	3.28	4.23	11.5	9	3.8	7.6	10.08	2.05	6.85	0.029758
Rajsamand	Deogarh	Nardas Ka Gura	GWD	73.94003	25.516028	2.77	2.51	3.27	6.25	5.17	2.65	4.5	10.9	1.95	10.57	0.585818
Rajsamand	Deogarh	Pardi	GWD	74.12617	25.51025	1.54	1.95	2.48	2.84	5.3	4.6	5.1	6.05	0.5	2.01	0.109152
Rajsamand	Deogarh	Sawadri	GWD	74.03542	25.5435	8.5	6.75	9.38	9.8	9.92	10.5	9.6	12.85	2.05	10.39	0.008727
Rajsamand	Deogarh	Sohangarh	GWD	74.152	25.706694	5.5	4.5	4.65	9.79	11.92	8.75	8.9	7.15	1.67	2.75	-0.2297
Rajsamand	Deogarh	Solankio Ka Gura	GWD	74.01372	25.585778	2.38	2.15	2.24	4.1	4.9	4.8	5.2	9.5	1.65	6.43	0.439091
Rajsamand	Deogarh	Solankio Ka Gura	GWD	74.03694	25.578722	4.72	4.25	5.27	9.05	8.36	5.9	6.1	-	2.65	6.06	-0.05103
Rajsamand	Deogarh	Tal	GWD	74.12658	25.730472	2.52	1.46	2.18	3.07	4.65	4.9	5.3	4.45	0.4	1.4	0.004788
Rajsamand	Deogarh	Vijay Pura	GWD	74.00478	25.641028	16.5	8	2.10*	13.65	14.5	10.3	12.8	11.6	1	2.95	-1.12779
Rajsamand	Khamnor	Balicha	GWD	73.74031	25.019944	13.85	15.32	5.00*	16.57*	17.32	15	5.9	14.88	10	11.29	-0.51431
Rajsamand	Khamnor	Bamanhera	GWD	73.99697	25.010639	10	12.23	6.5	11.5	15	8.02	11.8	8.9	6	6.24	-0.43352
Rajsamand	Khamnor	Barabhanuja	GWD	73.78886	25.064889	5.62	6.02	6	13.45	10.64	5.84	7.7	11.5	2.45	3.45	-0.23679
Rajsamand	Khamnor	Cheekelwas	GWD	73.83831	25.164639	0.74	0.01	0.57	0.24	0.48	0.02	0.09	1.4	0.02	0.15	-0.01212

Rajsamand	Khamnor	Chokri Ki Bhagal	GWD	73.72806	25.092028	0.63	0.65	0.98	2.42	3.46	0.6	2.5	2.5	0.83	0.65	0.038909
Rajsamand	Khamnor	Delwara	GWD	73.75086	24.802028	7.14	5.88	6.1	7.5	9.2	8.28	9.1	20.3	3.9	7.11	0.368182
Rajsamand	Khamnor	Gaongura	GWD	73.75183	25.020306	1.2	2.07	3.17	4.76	5.5	1.85	2.3	5.55	1.88	1.72	0.025576
Rajsamand	Khamnor	Godach	GWD	73.69514	24.923778	7.22	8.12	7.01	9.2	10	8.88	9.1	11.15	6.1	6.6	-0.00267
Rajsamand	Khamnor	Jarsadri	GWD	73.84389	24.9925	9.74	9.09	8.17	10.35	12.15	10.4	10.6	11.03	7.34	8.05	-0.08582
Rajsamand	Khamnor	Kesuli	GWD	73.874	24.994194	5.25	4.85	5.78	6.88	7.45	7.22	8.6	8.6	2.45	3.69	-0.07158
Rajsamand	Khamnor	Khamnor	GWD	73.72269	25.065333	4.04	5.6	6.25	9.73	10.5	8.92	9.1	4.4	0.1	0.17	-0.52152
Rajsamand	Khamnor	Kooncholi	GWD	73.90858	25.0205	5.5	6	7.13	10.5	11.52	9.78	10.2	11.1	9.72	5.15	0.24303
Rajsamand	Khamnor	Koshiwara	GWD	73.71064	25.059972	11.58	14	12.07	20.16	19.42	17.8	18.2	-	8.85	12.64	-0.12915
Rajsamand	Khamnor	Kothariya	GWD	73.97053	25.014833	0.4	2.5	3.27	3.5	4	3.22	3.9	5.1	1	0.5	-0.00018
Rajsamand	Khamnor	Kumariya Kheda	GWD	74.05875	25.014194	5	6.5	6.55	7	7.78	6.63	7.3	7.45	7.05	6.7	0.141818
Rajsamand	Khamnor	Kunthwa	GWD	73.89111	25.0875	2.75	2.67	3.37	3.92	7.56	2.94	3.6	6.95	1.72	1.99	-0.00709
Rajsamand	Khamnor	Machind	GWD	73.64608	25.017833	4	3.76	5.25	5.35	5.45	4.75	5.5	7.05	2.7	3.32	-0.02903
Rajsamand	Khamnor	Mandiyana	GWD	74.01619	25.010417	2.12	4.5	1.15	8	11.5	10	12.1	19.35	7.85	11.1	1.248909
Rajsamand	Khamnor	Mogana	GWD	73.94208	24.993222	2.42	4.04	4	11	14	4.38	5.3	12.1	8.6	12.93	0.850242
Rajsamand	Khamnor	Molela	GWD	73.8035	25.020861	9.34	11.38	9.1	20	26.15	25.18	18.6	15.6	2.82	4.42	-0.46588
Rajsamand	Khamnor	Namana	GWD	73.95044	25.04325	0.46	2.42	2.63	0.95	2.89	1.07	1.2	2.77	2.83	1.4	0.066424
Rajsamand	Khamnor	Nathdwara	GWD	73.904	25.043389	5.22	8.44	5.7	7.14	8	6.74	8.1	10.5	8.7	6.32	0.226303
Rajsamand	Khamnor	Negdiya	GWD	73.89417	24.953972	2	2.1	3.15	1.99	3.11	2.19	4.6	2.85	1.35	1.85	-0.00721
Rajsamand	Khamnor	Pakhand	GWD	74.05517	25.042944	4.55	7.5	9	8.5	13.5	5.28	5.8	13.9	5.6	8.12	0.163697
Rajsamand	Khamnor	Rabcha	GWD	73.88486	24.937917	1.85	4	4.7	4.35	4.5	2.82	4.5	4.3	0.4	0.35	-0.25412
Rajsamand	Khamnor	Sagroon	GWD	73.70589	25.04025	6.9	8.38	6	15.13	15.37	2.68	7.1	14.4	1.5	1.7	-0.54388
Rajsamand	Khamnor	Sagroon	GWD	73.72928	24.948222	8.06	12	11.05	**18.25**	29.43	11.76	12.9	11.85	5.2	6.35	-0.56188
Rajsamand	Khamnor	Sayaka Khera	GWD	73.83731	25.151444	7.75	3.6	4.19	4.72	4.95	5.38	6.8	10.5	5.35	4.6	0.134061
Rajsamand	Khamnor	Sema	GWD	73.76569	25.072583	9.5	12.5	6.00*	19	19.4	18	19.1	20.3	8.4	10.3	0.020294
Rajsamand	Khamnor	Semal	GWD	73.70111	24.895472	5.58	5.75	6.2	5.35	7	6.25	7.2	10.65	4.59	5.21	0.094545
Rajsamand	Khamnor	Shishoda Kalan	GWD	73.79622	25.036556	0.74	0.4	3.70*	3.15	1.85	1.5	2.1	4.3	0.48	0.35	0.044926
Rajsamand	Khamnor	Usan	GWD	73.76017	24.824056	7.8	9.7	5.3	6.85	8.62	8	8.8	17	3.25	7.93	0.119697
Rajsamand	Khamnor	Uthnol	GWD	73.91164	24.949056	6.35	12.4	14.59	18	23.85	16.25	18.2	24.66	14.64	17.4	0.960485
Rajsamand	Khamnor	Uthnol	GWD	74.01056	24.948083	6.29	13.2	8.19	17.51	17.4	15.51	17	18.35	10.55	14.94	0.646545

Rajsamand	Khamnor	Vagol	GWD	73.79406	24.957806	4.62	8.2	7.5	11	11.28	5.65	7.2	10.23	4.7	4.28	-0.18752
Rajsamand	Khamnor	Wajunda	GWD	73.91817	24.925306	16.26	15.23	13.13	16.37	17.5	17.18	18.1	17.5	12	14.17	-0.08909
Rajsamand	Kumbhalgarh	Amartiya	GWD	73.92742	25.405167	1.26	1.8	3.92*	2.82	3.5	1.98	3.2	4.55	0.3	1.85	0.035529
Rajsamand	Kumbhalgarh	Amratiya	GWD	73.81489	25.293667	2.26	5.98	6.56	6.44	7	9.32	8.3	-	4.5	5.9	0.190294
Rajsamand	Kumbhalgarh	Aret Ki Bhagal	GWD	73.61036	25.255361	2.6	2.02	2.78	**2.74**	2.96	2.74	2.6	3.91	2.72	2.61	0.060606
Rajsamand	Kumbhalgarh	Dhaneen	GWD	73.90106	25.356611	10.04	10.6	11.28	14.4	16.45	12.12	15.1	17.45	8.04	13.2	0.237212
Rajsamand	Kumbhalgarh	Dhoran	GWD	73.73867	25.123056	3.95	3.96	5.79	5.6	2.68	4.22	5.3	7.7	1.55	4.25	-0.02412
Rajsamand	Kumbhalgarh	Dowas	GWD	73.63156	25.189556	1.52	0.02	2.18	4.72	4.68	1.92	1	3.73	0.02	0	-0.1203
Rajsamand	Kumbhalgarh	Gadbore	GWD	73.74758	25.274167	1.82	0.54	2.56*	5.05	3.3	2.16	4.8	8.21	0.82	4.3	0.305853
Rajsamand	Kumbhalgarh	Gadbore	GWD	73.82561	25.369944	3.68	1.88	3.56 *	8.34	6.2	4.14	5.7	10.25	1.35	5.54	0.18625
Rajsamand	Kumbhalgarh	Ghata	GWD	73.75056	25.183	11.48	8.06	6.38	15.4	15.42	12.12	13.1	20	6.56	14.6	0.457455
Rajsamand	Kumbhalgarh	Jambo Ka Talab	GWD	73.79889	25.380889	3.48	2.74	6.98*	5.37	5.44	3.88	6.5	7.23	1.6	1.98	-0.03132
Rajsamand	Kumbhalgarh	Janawad	GWD	73.86389	25.413194	3.48	4.5	5.55	7.5	9	6.12	5.9	13.02	2.15	5.9	0.212121
Rajsamand	Kumbhalgarh	Jheelwara	GWD	73.68203	25.331639	2.17	2.35	0.73*	4.58	2.7	2.62	3.2	5.28	2.3	2.62	0.068985
Rajsamand	Kumbhalgarh	Jhuta Guda	GWD	73.88586	25.377111	4.22	2.54	7.73*	8.12	8	7.28	6.2	9.5	1.3	5.02	0.069824
Rajsamand	Kumbhalgarh	Kelwara	GWD	73.62406	25.211556	3.15	0.95	2.47	1.42	3.25	1.92	3.6	15.7	2.43	2.33	0.450545
Rajsamand	Kumbhalgarh	Kharnota	GWD	73.92583	25.379083	1.23	2.15	4.15	3.27	5	4.84	3.7	7.16	0.1	3.29	0.123455
Rajsamand	Kumbhalgarh	Kooncholi	GWD	73.64678	25.0385	3.25	2.24	3.8	6.36	6	4.72	5.2	8.03	4.2	3.55	0.198848
Rajsamand	Kumbhalgarh	Lakm Ka Guda	GWD	73.63525	24.946	6.9	4.08	4.1	10.02	4.96	5	5.9	15.25	2.97	3.47	0.02903
Rajsamand	Kumbhalgarh	Lambodi	GWD	73.91039	25.325944	6.44	4.98	8.17*	6.34	8.62	8.25	6.8	10.27	1.3	4.92	-0.12744
Rajsamand	Kumbhalgarh	Majera	GWD	73.69775	25.271333	5.48	4.94	7.70*	7	10	7.12	10.3	13.9	5.15	7.76	0.388485
Rajsamand	Kumbhalgarh	Manat Ka Guda	GWD	73.7175	25.254917	5.06	2.67	6.75*	8.55	4.32	3.08	3.8	10.48	3.28	4.6	0.076588
Rajsamand	Kumbhalgarh	Mansingh Ka Guda	GWD	73.82453	25.306083	1.1	1.4	2.58*	2.71	5	2.22	2.7	6.39	3.55	5.9	0.464456
Rajsamand	Kumbhalgarh	Mewariya	GWD	73.78186	25.313528	8.98	5.13	9.48*	15	11.62	7.12	9.8	19.65	5.2	11.5	0.324912
Rajsamand	Kumbhalgarh	Morcha	GWD	73.64503	25.127333	0.34	0.32	3.78*	4.2	1.9	1.02	2.1	6.25	0.4	0.22	0.094265
Rajsamand	Kumbhalgarh	Peepla	GWD	73.68311	25.005944	1.74	1.8	3.15	4.82	6	4.12	5.1	7.4	1.85	1.72	0.123515
Rajsamand	Kumbhalgarh	Reechher	GWD	73.72631	25.244222	1.55	3	3.71	8.03	3.49	2.54	3.3	8.18	3.63	6.2	0.324061
Rajsamand	Kumbhalgarh	Sameecha	GWD	73.65717	25.060222	2.46	3.27	5.65*	11.5	5.54	3.12	4.8	8.4	3.88	8.44	0.324324
Rajsamand	Kumbhalgarh	Sawantri	GWD	73.75356	25.398889	4.6	3.53	4.27	5.75	6.75	4.94	5.2	7.5	2.8	3.35	-0.02224
Rajsamand	Kumbhalgarh	Umarwas	GWD	73.75317	25.403111	1.05	1.04	1.22	1.02	1.2	1.02	1.8	4.64	0.8	1	0.103818

Rajsamand	Railmagra	Ardkiya	GWD	74.06522	25.150639	4.32	6.1	5.14	5.11	9	7.24	7.9	9.8	1.67	2.7	-0.09503
Rajsamand	Railmagra	Banediya	GWD	74.03272	24.979944	14.75	8.14	10.6	**13.5**	15	7.5	12.6	11.25	1.6	9.94	-0.58194
Rajsamand	Railmagra	Bethumbi	GWD	74.24789	25.085306	7.28	8	9.78	12.4	15	8.25	6.8	10.25	3.4	3.8	-0.51345
Rajsamand	Railmagra	Damodarpura	GWD	74.35553	25.099194	18.5	17.5	4.10*	19.4	24	8.71	9.6	13.35	9.15	8.26	-1.32301
Rajsamand	Railmagra	Dhaneriya	GWD	74.14553	24.95775	12.92	9.5	5.2	8	10.5	9.78	10.2	9.38	1.52	2.55	-0.74188
Rajsamand	Railmagra	Gawardi	GWD	74.21497	24.93725	16.38	14	6.00*	4.17	9	5.02	5.8	8.4	8.9	11.45	-0.5515
Rajsamand	Railmagra	Gilund	GWD	74.35533	25.093417	6.4	5	5.1	6.7	13	6	12.8	7.88	2.7	3.78	-0.08776
Rajsamand	Railmagra	Gogathala	GWD	74.16978	25.115	7.67	8	6.75	10.58	12.43	7.98	8.7	11.6	7.55	7.33	0.048182
Rajsamand	Railmagra	Jeetawas	GWD	74.26169	25.142611	10.1	12.93	10.53	10.77	10.95	10	6.8	7.75	2.27	3.01	-1.00115
Rajsamand	Railmagra	Khandel	GWD	74.14658	25.234028	12.55	20	23.52	21.28	24	11.08	12.2	16.07	5.77	9.02	-1.26539
Rajsamand	Railmagra	Kotri	GWD	74.22278	25.018806	11.09	5.32	4.78	7.5	9.5	4.68	6.2	6.85	3.2	3.27	-0.50661
Rajsamand	Railmagra	Kuraj	GWD	74.11169	25.141056	4.22	6.5	3.8	7.83	7.5	3.46	5.2	4.5	3.35	6	-0.08764
Rajsamand	Railmagra	Ladapacha	GWD	74.18792	25.074833	11.67	13	5.05*	15	10.5	5.42	6.9	7.8	7.03	7.01	-0.80047
Rajsamand	Railmagra	Mali Khera	GWD	74.24553	25.053472	7.99	15.53	15.3	16	17.5	13.3	13.9	18.07	4.68	14.45	-0.08764
Rajsamand	Railmagra	Menduriya	GWD	74.21992	25.048833	6.36	8.84	9.1	4.55	6	3.32	5.8	10.64	2.18	3.15	-0.40448
Rajsamand	Railmagra	Meniya	GWD	74.08958	25.039472	12.83	9.5	8.25	10	10.98	10.5	12.9	13.65	10.08	7.65	-0.04448
Rajsamand	Railmagra	Pachhmata	GWD	74.22678	25.108667	9.77	9.8	10.25	11	13	7.56	10.1	8.25	Dry	6.7	-0.34219
Rajsamand	Railmagra	Peepli Aheeran	GWD	74.08178	25.098028	10.88	10.7	11.4	11.28	11.66	6.96	6.5	8.7	6.3	5.5	-0.67733
Rajsamand	Railmagra	Railmagara	GWD	74.15025	25.111444	3.02	3.28	4.2	3.59	4.5	0.75	1.1	2.4	1.02	1.8	-0.28497
Rajsamand	Railmagra	Sadri	GWD	74.20772	25.078583	22.4	23	7.90*	14	19	16.5	11.3	23.66	5.36	9.27	-1.41765
Rajsamand	Railmagra	Sindesar Kalan	GWD	74.22981	25.15875	12.6	13	6.02*	18	19	8.72	10.1	8.4	4.05	5.52	-1.1486
Rajsamand	Rajsamand	Atma	GWD	73.87019	25.263333	6.75	8.2	5.7	14	15.5	8.25	9.1	18.4	14.35	13.53	0.882545
Rajsamand	Rajsamand	Bhana	GWD	74.02228	25.121222	9.79	12.5	5.90*	12	12.15	8.96	9.8	6.2	1.7	4.4	-0.96588
Rajsamand	Rajsamand	Bhatoli	GWD	73.94597	25.141333	6.28	7	6.4	6.9	8.5	7.16	8.1	7.66	7.23	7.2	0.111818
Rajsamand	Rajsamand	Bhawa	GWD	74.04278	25.220278	7.94	9.56	7	9.1	12.5	4.72	4.2	3.4	2.17	3.08	-0.82394
Rajsamand	Rajsamand	Dhanwal	GWD	73.92022	25.136583	5.5	5.46	7.2	10	11.5	10.2	13.4	11.8	4.8	3.5	0.056242
Rajsamand	Rajsamand	Dhoinda	GWD	73.98033	25.180389	8	12.5	5.16*	9.5	11	6	4.2	4.32	2.2	2.7	-1.01029
Rajsamand	Rajsamand	Jodhpura	GWD	74.15286	25.21075	17.74	19.08	8.60*	21.72	20	16.66	17.6	19.6	10.4	14.11	-0.65053
Rajsamand	Rajsamand	Kelwa	GWD	73.97781	25.196917	2	1.73	2.57	2.5	4	3.61	3.25	4.27	0.9	0.75	-0.04061
Rajsamand	Rajsamand	Khatamala	GWD	74.00228	25.2995	8	9.7	6.7	16.36	17.4	4.76	5.6	17.04	7.3	9.74	0.034182

Rajsamand	Rajsamand	Khatamala	GWD	74.02028	25.274583	1.61	2.7	4.23*	8.9	7.78	3.76	4.9	-	1.65	2.15	-0.13221
Rajsamand	Rajsamand	Kunwariya	GWD	73.04928	25.247083	9.02	13.55	16.12	13.59	Dry	6.22	7.8	7.9	3.39	1.8	-1.19901
Rajsamand	Rajsamand	Mahasat.Ki Madri	GWD	74.07889	25.186	7.6	6.38	5.7	14	12.82	1.92	3.2	4.1	1	1.27	-0.88442
Rajsamand	Rajsamand	Mandwara	GWD	73.94861	25.216972	4.5	4.87	7.70*	7.44	11.4	8.56	9.3	10.2	7	9.65	0.492941
Rajsamand	Rajsamand	Miyari Madri	GWD	73.83683	25.206694	1.08	1.12	2.75	6.04	10.15	8.44	9.6	10.12	4.8	7.15	0.764909
Rajsamand	Rajsamand	Mohi	GWD	73.98456	25.103972	10.75	11.3	6.17	10.65	12.5	9.58	8.5	7.7	6.3	5.55	-0.50618
Rajsamand	Rajsamand	Nathuwas	GWD	74.15617	25.163778	7.25	9.5	6.7	14.7	14.4	15.12	14.1	13.25	4.1	7.34	-0.03224
Rajsamand	Rajsamand	Padasali	GWD	73.90539	25.217111	**4.05**	4.95	7	**6.12**	9.36	5.45	6.8	10.11	7.9	10.8	0.576242
Rajsamand	Rajsamand	Pasaoond	GWD	73.95856	25.266583	3.98	2.04	6.40*	4.13	3.28	3.75	4.1	5.3	0.75	1.75	-0.1216
Rajsamand	Rajsamand	Peeparda	GWD	73.91111	25.054444	9.75	9.04	7.75	16	10.45	4.02	6.6	12.13	3.13	5.8	-0.54333
Rajsamand	Rajsamand	Phiyawari	GWD	74.14389	25.160194	9.95	20.5	4.40*	18.1	17.32	9.75	10.6	12.2	2.54	5	-1.31166
Rajsamand	Rajsamand	Poothol	GWD	73.81297	25.19975	2.07	2	3.75	4.36	8	5	6.6	6.5	2.05	1.84	0.095455
Rajsamand	Rajsamand	Rajnagar	GWD	73.98178	25.200333	4.83	3.52	6.87*	6.78	4.85	2.55	3.7	4.24	1.92	1.95	-0.30797
Rajsamand	Rajsamand	Rajyawas	GWD	74.00928	25.103167	1	2	1.52	1.96	5.06	2.28	4.6	3.15	1.4	1.35	0.074182
Rajsamand	Rajsamand	Sakroda	GWD	73.88397	25.077167	2.55	2.91	4.13	5.66	6	3.53	7.15	12.25	4.85	5.86	0.52103
Rajsamand	Rajsamand	Sapol	GWD	73.86958	25.2285	5.72	4.43	7.79*	7.65	10.55	7.26	9.2	10.04	3.25	4.99	0.011118
Rajsamand	Rajsamand	Sathaana	GWD	74.08514	24.973972	8	9.5	4.2	8.2	10	5.23	7.2	8.1	5.35	9.7	-0.01224
RAJSAMAND	Bhim	BAGHANA	CGWB	73.8386	25.5	2.46	1.47	2.97	7.66	5.56	2.61	0.83	10.16	2.16	13.76	0.721455
RAJSAMAND	Bhim	BALI1	CGWB	74.0833	25.8333	0	3.32	4.2	4.04	2.85	3.5	0.8	7.3	3.5	3.5	0.237515
RAJSAMAND	Bhim	BARAR	CGWB	74.0167	25.6667	6.5	2.39	3.89	5.28	4	12.1	2.1	6.7	3.2	2.95	-0.08285
RAJSAMAND	Amet	CHATTARPUR	CGWB	73.9561	25.2414	9.76	6.05	6.23	6.3	5.48	12.26	14.08	20.28	9.38	11.08	0.821576
RAJSAMAND	Bhim	DEWAIR	CGWB	73.8222	25.4208	2.9	4.31	2.3	2.8	1.98	0.36	0.79	7.5	5.2	4.15	0.217152
RAJSAMAND	Kumbhalgarh	DOWAS	CGWB	73.5667	25.0386	1.97	5.24	2.21	9.87	2.97	0.29	0.66	5.27	2.17	1.22	-0.26212
RAJSAMAND	Railmagra	GAVARDI	CGWB	74.1	24.9039	6.3	14.72	7.41	8.1	11.75	9.85	7.8	9.97	9.55	13.9	0.255818
RAJSAMAND	Bhim	GHATA	CGWB	74.1833	25.7833	0	0	6.03	0	6.2	5.85	3.36	5.65	5.6	4.3	0.519576
RAJSAMAND	Amet	GUGLI	CGWB	73.8833	25.2333	3.15	12.67	8.62	2.89	12.75	8.81	12.87	3.67	14.07	11.67	0.531697
RAJSAMAND	Kumbhalgarh	JHILWARA	CGWB	73.6708	25.2272	8.58	5.3	9.17	12.44	6.64	2.08	4.79	11.59	5.19	8.29	-0.11388
RAJSAMAND	Kumbhalgarh	KANCHOLI	CGWB	73.55	24.96	2.4	2.62	5.12	3.95	4.13	1.25	3.85	6.05	2.75	3.3	0.063515
RAJSAMAND	Kumbhalgarh	KELWARA	CGWB	73.6133	25.1	3.44	0.98	3.52	2.79	3.81	1.71	1.96	7.79	3.69	3.54	0.222
RAJSAMAND	Khamnor	KHAMNOR1	CGWB	73.7333	24.9167	5.55	8.79	8.98	8.85	10.5	7	9.28	8.2	4.15	5.5	-0.23661

RAJSAMAND	Railmagra	KHANDEL1	CGWB	74.0833	25.1167	8.44	0	7.29	14.64	8.94	2.13	4.61	0	5.49	4.39	-0.43255
RAJSAMAND	Kumbhalgarh	MANSINGH KAGURA	CGWB	73.7889	25.2381	1.81	2.34	4.22	2.61	4.51	3.13	1.96	9.66	4.91	7.26	0.55097
RAJSAMAND	Rajsamand	MOKAMPURA	CGWB	73.85	25.1308	3.44	3.19	4.97	2.71	3.69	3.53	2.49	10.74	5.09	2.89	0.220485
RAJSAMAND	Amet	NADIAWALA	CGWB	73.8631	25.2028	6.49	9.09	12.35	16.69	13.57	12.79	9.11	14.59	10.44	11.14	0.236242
RAJSAMAND	Railmagra	ODA1	CGWB	74.0039	25.0333	0.7	1.8	0.7	1.33	2.33	1.58	1.58	4.13	3.03	1.18	0.182303
RAJSAMAND	Khamnor	ODAN	CGWB	73.8167	24.9	2.39	2.76	2.58	2.59	3.49	3.39	2.65	3.59	3.69	2.79	0.092364
RAJSAMAND	Rajsamand	RAJSAMAND	CGWB	73.8833	25.0667	15.02	14.65	6.57	8.92	5.07	3.61	1.51	4.87	5.97	5.07	-1.10606
RAJSAMAND	Bhim	Sheron Ka Bala	CGWB	74.1333	25.85	2.02	2.26	2.09	2.09	3.44	1.76	0.96	3.59	0.72	2.84	-0.00588
RAJSAMAND	Bhim	THIKARWAS	CGWB	73.98	25.6	2.91	1.71	2.6	2.86	4.11	1.66	0.96	9.86	2.76	5.26	0.343333

District	Block	Village	Agency	Long	Lat	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Trend
Rajsamand	Amet	Aidana	GWD	73.95003	25.28678	18.33	16.25	15.42	14.51	13.99	15.88	15.10	20.00	19.50	19.90	0.384485
Rajsamand	Amet	Amet	GWD	73.97236	25.36642	19.68	18.60	21.95	20.50	20.10	15.36	13.90	18.60	19.40	13.94	-0.52939
Rajsamand	Amet	Beekawas	GWD	73.93953	25.32942	15.93	8.50	13.04	16.20	15.82	15.98	15.10	DRY	16.10	15.47	0.358221
Rajsamand	Amet	Dhelana	GWD	73.94458	25.37819	13.52	10.92	6.57	13.10	14.34	15.46	15.60	24.10	DRY	13.85	0.885016
Rajsamand	Amet	Didwana	GWD	74.02994	25.52175	9.50	11.20	12.04	10.43	10.16	12.94	10.60	13.00	19.25	10.65	0.453273
Rajsamand	Amet	Dingrol	GWD	74.03311	25.30492	11.50	8.01	10.00	13.43	15.00	16.11	dry	DRY	17.40	15.83	0.852778
Rajsamand	Amet	Galwa	GWD	74.064	25.24044	11.70	11.42	12.04	11.96	12.35	13.65	10.10	9.60	13.47	11.85	-0.00473
Rajsamand	Amet	Googli	GWD	73.91631	25.37303	10.42	7.02	14.39	13.15	11.54	Dry	16.00	Dry	DRY	DRY	1.029571
Rajsamand	Amet	Gosundi	GWD	74.0405	25.41464	21.73	13.92	15.89	15.84	18.99	21.24	18.90	DRY	18.40	21.92	0.382059
Rajsamand	Amet	Gowal	GWD	73.90611	25.50072	21.33	18.15	16.82	21.00	18.90	23.60	20.10	25.90	24.80	24.50	0.742303
Rajsamand	Amet	Jetpura	GWD	73.96781	25.22683	13.90	15.78	16.67	16.65	18.52	19.35	19.60	19.10	DRY	17.90	0.506952
Rajsamand	Amet	Jhor	GWD	74.188	25.21756	16.86	16.70	17.98	17.36	17.86	Dry	17.20	17.60	17.35	16.09	-0.03282
Rajsamand	Amet	Makarda	GWD	74.11567	25.33417	11.15	9.97	8.29	10.69	11.29	12.53	10.60	9.20	10.12	8.95	-0.08018
Rajsamand	Amet	Murda	GWD	74.14864	25.27911	13.20	11.86	12.30	10.14	11.99	12.28	10.70	11.30	12.52	11.71	-0.07164
Rajsamand	Amet	Nanana	GWD	73.95822	25.40411	8.86	3.92	3.85	4.29	5.77	6.62	4.80	10.80	9.02	3.95	0.173576
Rajsamand	Amet	Olna Ka Khera	GWD	74.03842	25.24611	21.63	21.23	21.35	21.40	21.51	21.41	20.90	DRY	21.60	19.07	-0.15346
Rajsamand	Amet	Rachhetikakhera	GWD	74.04008	25.46169	16.46	14.13	11.70	14.66	16.94	19.14	17.80	20.10	15.75	11.52	0.124242
Rajsamand	Amet	Sakroda	GWD	74.06797	25.26806	11.29	7.89	9.73	10.65	12.23	13.09	12.90	15.80	12.60	12.95	0.520424

Rajsamand	Amet	Sardargarh	GWD	74.07325	25.28194	16.23	6.98	4.96	9.10	7.78	13.85	9.80	8.60	15.85	6.20	-0.01097
Rajsamand	Amet	Sardargarh	GWD	74.11214	25.27617	21.20	13.79	12.29	14.85	14.96	29.32	16.80	16.10	29.30	12.42	0.41703
Rajsamand	Amet	Siyana	GWD	73.90278	25.22483	17.24	18.85	17.47	**19.50**	20.03	19.87	19.90	16.70	18.35	16.54	-0.07642
Rajsamand	Amet	Teekar	GWD	73.93353	25.44022	9.66	5.78	7.28	10.82	7.88	7.44	9.50	8.60	11.64	7.95	0.168667
Rajsamand	Bhim	Asan	GWD	74.11264	25.70714	9.50	6.18	4.16	7.76	8.14	8.50	6.60	8.10	9.35	2.70	-0.13594
Rajsamand	Bhim	Bagar	GWD	73.91186	25.63092	Dry	16.26	8.50	11.26	12.28	13.24	11.60	10.30	14.65	6.10	-0.41317
Rajsamand	Bhim	Barar	GWD	74.03256	25.76486	10.84	12.44	10.76	Dry	Dry	Dry	dry	DRY	DRY	10.10	-0.1512
Rajsamand	Bhim	Barar	GWD	74.14014	25.71253	9.22	9.72	8.88	10.00	10.86	11.42	10.20	11.30	Not Open	8.00	0.028516
Rajsamand	Bhim	Barjal	GWD	73.90806	25.56522	10.08	7.98	6.36	8.48	16.94	17.30	16.10	15.20	15.68	6.70	0.550909
Rajsamand	Bhim	Bhaghana	GWD	73.93494	25.54214	15.56	11.68	9.74	12.62	13.13	14.12	11.70	10.10	16.10	7.98	-0.22576
Rajsamand	Bhim	Bhartwa	GWD	74.27914	26.04808	13.12	11.80	5.38	8.34	6.34	11.42	15.60	15.70	6.41	5.80	-0.15242
Rajsamand	Bhim	Bheelkheda	GWD	74.14883	25.88736	13.00	13.60	11.58	17.44	14.50	16.78	17.30	16.80	14.60	10.84	0.094061
Rajsamand	Bhim	Bhim	GWD	74.19075	25.83539	8.58	6.26	6.78	13.45	13.14	16.72	8.90	9.60	14.16	5.30	0.180667
Rajsamand	Bhim	Chhapli	GWD	73.93011	25.55533	3.65	1.93	2.04	2.38	6.00	3.94	5.30	5.10	8.95	1.87	0.334061
Rajsamand	Bhim	Dewair	GWD	73.87478	25.56772	11.04	9.12	10.28	11.20	10.69	11.25	6.90	DRY	DRY	8.89	-0.23424
Rajsamand	Bhim	Dewair	GWD	73.96333	25.51231	21.42	16.57	17.12	19.32	19.16	15.98	16.10	15.70	22.50	16.89	-0.11636
Rajsamand	Bhim	Hamento Ki Gaur	GWD	74.01953	25.76597	6.38	6.50	4.46	8.88	11.50	8.33	7.30	7.90	15.29	4.15	0.307576
Rajsamand	Bhim	Jassa Khera	GWD	74.10539	25.85267	6.36	7.73	7.28	8.96	7.94	11.32	8.70	8.20	8.10	7.05	0.09697
Rajsamand	Bhim	Jujpura	GWD	74.34961	26.00264	10.68	9.39	9.00	12.76	4.86	12.82	10.90	12.00	12.90	9.00	0.162606
Rajsamand	Bhim	Kheri Ka Khera	GWD	74.46114	25.98544	14.38	15.68	9.50	14.10	7.37	17.52	16.20	18.00	14.50	10.80	0.111939
Rajsamand	Bhim	Kookra	GWD	74.205	25.86578	6.85	7.00	5.45	Dry	Dry	10.85	9.60	7.60	12.20	6.00	0.291667
Rajsamand	Bhim	Kukar Kheda	GWD	74.13478	25.70328	9.87	7.75	5.54	9.58	11.18	13.78	11.80	9.90	13.80	7.62	0.322182
Rajsamand	Bhim	Laget Khera	GWD	74.43747	26.10167	4.46	4.95	4.52	6.34	12.26	16.98	13.80	13.00	6.45	4.33	0.477758
Rajsamand	Bhim	Moba Ka Talab	GWD	74.14044	25.95033	5.54	4.40	3.46	4.21	2.18	2.65	7.20	10.00	3.70	2.80	0.076242
Rajsamand	Bhim	Naloi Lalpura	GWD	74.31644	25.84839	15.94	14.43	6.76	12.04	12.18	18.98	15.90	16.10	9.90	8.20	-0.21994
Rajsamand	Bhim	Padmela	GWD	74.13311	25.77386	10.87	11.40	10.67	12.27	14.11	13.59	13.90	14.00	15.40	9.74	0.235455
Rajsamand	Bhim	Pipreloo	GWD	73.89858	25.53575	17.25	7.98	9.05	8.57	10.48	13.94	9.10	12.00	18.80	11.65	0.273576
Rajsamand	Bhim	Rajor	GWD	74.52019	26.07194	7.22	5.78	5.20	14.11	2.06	Dry	14.10	DRY	8.55	4.50	0.086544
Rajsamand	Bhim	Rajwa	GWD	74.34153	25.98031	11.30	10.03	6.56	11.92	6.87	14.18	13.90	14.00	14.10	13.50	0.598424
Rajsamand	Bhim	Shyopura As	GWD	74.35633	25.96203	6.02	4.58	3.28	6.52	5.37	11.54	13.50	13.00	2.53	3.20	0.218061

Rajsamand	Bhim	Teekarwas Kalan	GWD	73.99878	25.64064	11.96	12.50	7.20	9.47	10.08	10.45	11.50	9.70	12.15	7.35	-0.15139
Rajsamand	Bhim	Togi	GWD	74.12014	25.93814	6.42	6.78	6.58	9.15	6.56	8.04	7.10	7.00	8.14	5.75	0.005576
Rajsamand	Deogarh	Anjna	GWD	74.08989	25.52994	10.90	8.26	7.53	12.17	16.16	18.72	20.30	22.00	18.00	14.90	1.233212
Rajsamand	Deogarh	Anoppura	GWD	74.12639	25.49775	7.46	7.15	8.06	6.90	7.25	9.14	8.20	10.00	9.05	6.99	0.148848
Rajsamand	Deogarh	Arjungarh	GWD	74.12556	25.79803	11.00	13.20	8.26	12.28	10.42	14.88	15.30	14.00	15.24	11.46	0.367515
Rajsamand	Deogarh	Bagatpura	GWD	74.04786	25.51597	14.78	10.86	9.60	13.02	12.84	16.66	13.20	11.00	23.65	Collapse	0.779
Rajsamand	Deogarh	Biyana	GWD	73.97747	25.48667	4.65	3.92	4.25	5.66	4.32	4.98	4.10	5.00	12.00	3.37	0.271333
Rajsamand	Deogarh	Deogarh	GWD	74.04211	25.66797	12.05	9.42	9.10	**8.92**	8.48	9.84	9.70	9.90	9.60	7.80	-0.17752
Rajsamand	Deogarh	Jakra	GWD	74.08567	25.65175	7.25	11.50	14.39	15.97	15.45	16.33	15.20	15.00	17.05	9.11	0.346727
Rajsamand	Deogarh	Kakrod	GWD	74.13119	25.70625	8.18	6.61	3.97	12.06	9.35	12.44	10.80	9.20	14.70	4.22	0.281515
Rajsamand	Deogarh	Kalalo Ki Anti	GWD	73.97244	25.69414	17.25	15.94	8.28	12.98	15.00	15.94	10.80	11.00	17.00	15.15	-0.02109
Rajsamand	Deogarh	Kalesariya	GWD	74.09836	25.63733	9.35	8.00	3.86	8.50	7.33	12.00	11.60	11.00	13.35	4.05	0.238909
Rajsamand	Deogarh	Kameri	GWD	73.98614	25.49378	9.20	8.90	13.65	14.15	15.18	15.74	14.80	13.00	17.13	9.00	0.333758
Rajsamand	Deogarh	Kuathal	GWD	73.93456	25.42311	9.70	5.55	4.85	6.82	7.36	9.45	8.30	9.00	DRY	7.30	0.144984
Rajsamand	Deogarh	Kuathal	GWD	73.97975	25.48764	7.18	5.32	5.25	5.53	5.46	8.64	6.50	4.60	12.30	6.28	0.264242
Rajsamand	Deogarh	Kundwa	GWD	74.07486	25.48942	8.88	6.68	11.42	9.37	11.12	13.82	11.20	12.00	13.55	4.80	0.136121
Rajsamand	Deogarh	Lasani	GWD	74.03672	25.58386	11.28	15.02	10.46	17.66	19.70	19.12	17.10	16.60	19.00	8.10	0.167758
Rajsamand	Deogarh	Madariya	GWD	74.07614	25.53597	10.50	10.94	6.50	11.00	5.28	12.86	11.60	11.00	15.00	5.55	0.095455
Rajsamand	Deogarh	Malkot	GWD	74.20356	25.63847	12.25	13.55	9.45	15.86	13.96	17.72	15.80	13.60	18.10	8.85	0.15503
Rajsamand	Deogarh	Miyala	GWD	74.04619	25.65278	8.34	8.76	6.80	11.00	14.00	12.76	9.10	9.00	19.00	7.60	0.418667
Rajsamand	Deogarh	Nardas Ka Gura	GWD	73.94003	25.51603	15.23	9.33	10.61	12.28	11.03	13.87	11.80	10.00	15.20	11.87	0.055758
Rajsamand	Deogarh	Pardi	GWD	74.12617	25.51025	5.05	5.68	6.32	7.00	5.12	8.16	6.10	6.00	9.10	5.60	0.167455
Rajsamand	Deogarh	Sawadri	GWD	74.03542	25.5435	17.23	13.85	12.85	14.36	14.14	15.48	13.60	14.00	16.80	13.95	-0.02461
Rajsamand	Deogarh	Sohangarh	GWD	74.152	25.70669	8.49	11.07	6.90	12.18	9.32	12.61	13.10	15.00	12.80	11.21	0.503879
Rajsamand	Deogarh	Solankio Ka Gura	GWD	74.01372	25.58578	8.22	6.68	7.82	7.57	7.66	9.18	8.10	10.10	11.80	7.70	0.276788
Rajsamand	Deogarh	Solankio Ka Gura	GWD	74.03694	25.57872	10.94	10.37	10.70	11.09	11.35	12.76	10.80	11.30	Not Open	10.03	0.000177
Rajsamand	Deogarh	Tal	GWD	74.12658	25.73047	4.22	5.66	4.64	6.00	5.10	8.16	8.30	8.90	8.05	3.10	0.229758
Rajsamand	Deogarh	Vijay Pura	GWD	74.00478	25.64103	24.08	21.98	22.47	24.10	24.40	24.68	21.90	19.00	21.70	20.42	-0.35497
Rajsamand	Khamnor	Balicha	GWD	73.74031	25.01994	17.69	18.17	17.70	8.47	18.12	20.00	17.10	17.00	18.37	15.70	0.04703
Rajsamand	Khamnor	Bamanhera	GWD	73.99697	25.01064	13.79	15.25	16.53	15.34	16.40	18.06	11.60	14.00	19.75	12.40	-0.01952

Rajsamand	Khamnor	Barabhanuja	GWD	73.78886	25.06489	10.36	11.16	11.92	14.40	13.58	20.98	13.30	13.00	18.10	10.07	0.336182
Rajsamand	Khamnor	Cheekelwas	GWD	73.83831	25.16464	5.30	1.86	1.08	0.90	2.56	1.55	0.10	1.00	1.58	0.45	-0.29952
Rajsamand	Khamnor	Chokri Ki Bhagal	GWD	73.72806	25.09203	1.79	1.63	1.52	2.65	4.52	4.36	4.00	4.00	4.60	1.50	0.208909
Rajsamand	Khamnor	Delwara	GWD	73.75086	24.80203	11.08	10.80	11.22	10.75	11.26	16.50	13.80	11.50	18.14	12.00	0.457273
Rajsamand	Khamnor	Gaongura	GWD	73.75183	25.02031	4.72	4.95	4.65	7.06	7.85	7.26	7.45	8.00	8.48	4.00	0.215515
Rajsamand	Khamnor	Godach	GWD	73.69514	24.92378	9.61	9.40	12.10	11.00	12.10	11.00	10.30	10.00	14.19	11.30	0.212364
Rajsamand	Khamnor	Jarsadri	GWD	73.84389	24.9925	12.99	13.92	14.35	14.00	14.15	15.57	14.20	13.90	15.17	12.95	0.049455
Rajsamand	Khamnor	Kesuli	GWD	73.874	24.99419	10.32	10.84	11.54	10.82	11.62	12.70	12.50	13.00	11.70	8.28	0.006545
Rajsamand	Khamnor	Khamnor	GWD	73.72269	25.06533	11.28	10.74	11.86	11.60	11.32	12.32	9.35	11.00	11.45	10.00	-0.10061
Rajsamand	Khamnor	Kooncholi	GWD	73.90858	25.0205	14.50	11.90	13.25	19.50	17.38	20.50	19.80	13.00	23.00	11.61	0.330061
Rajsamand	Khamnor	Koshiwara	GWD	73.71064	25.05997	22.00	16.54	18.72	21.99	22.10	23.28	23.10	20.40	Roots	15.20	-0.1559
Rajsamand	Khamnor	Kothariya	GWD	73.97053	25.01483	2.07	6.00	5.50	9.80	9.00	6.64	4.35	8.00	10.40	9.30	0.543394
Rajsamand	Khamnor	Kumariya Kheda	GWD	74.05875	25.01419	7.47	7.50	7.63	9.01	8.37	9.33	8.00	8.00	9.99	9.40	0.209576
Rajsamand	Khamnor	Kunthwa	GWD	73.89111	25.0875	8.65	4.72	5.17	7.49	6.58	9.30	7.35	7.00	9.49	5.07	0.076485
Rajsamand	Khamnor	Machind	GWD	73.64608	25.01783	6.26	8.30	8.15	8.00	8.00	10.25	9.40	10.00	10.70	6.40	0.204606
Rajsamand	Khamnor	Mandiyana	GWD	74.01619	25.01042	5.91	7.50	15.04	17.40	15.16	23.00	17.10	15.00	28.00	17.60	1.548182
Rajsamand	Khamnor	Mogana	GWD	73.94208	24.99322	7.32	8.84	11.14	14.06	18.00	15.58	12.20	15.00	16.44	15.65	0.845273
Rajsamand	Khamnor	Molela	GWD	73.8035	25.02086	24.69	24.24	33.85	34.88	27.74	27.98	29.00	28.00	34.50	26.40	0.245818
Rajsamand	Khamnor	Namana	GWD	73.95044	25.04325	3.00	2.99	2.59	3.67	2.79	4.08	6.10	5.00	6.91	2.08	0.241152
Rajsamand	Khamnor	Nathdwara	GWD	73.904	25.04339	10.55	11.56	11.35	13.30	11.86	13.32	12.20	12.00	14.30	10.50	0.122061
Rajsamand	Khamnor	Nathdwara	GWD	73.84447	25.02883	Roots	12.27	12.76	19.06	12.52	16.38	11.80	5.60	15.50	10.42	-0.447
Rajsamand	Khamnor	Negdiya	GWD	73.89417	24.95397	5.81	5.78	6.60	4.55	4.14	7.41	5.60	4.00	10.85	4.00	0.076485
Rajsamand	Khamnor	Pakhand	GWD	74.05517	25.04294	14.82	15.00	18.50	19.30	21.60	21.18	13.40	15.00	21.20	12.60	-0.07394
Rajsamand	Khamnor	Rabcha	GWD	73.88486	24.93792	7.91	9.87	8.44	7.97	8.28	10.50	6.80	7.00	7.66	4.70	-0.3203
Rajsamand	Khamnor	Rabcha	GWD	73.90667	24.96706	11.28	11.56	11.65	11.11	11.40	11.37	10.40	10.10	10.33	8.60	-0.25842
Rajsamand	Khamnor	Sagroon	GWD	73.70589	25.04025	10.14	15.35	17.93	17.38	17.80	Dry	Dry	Dry	10.22	11.30	-0.39752
Rajsamand	Khamnor	Sagroon	GWD	73.72928	24.94822	12.58	14.15	20.43	**21.20**	25.14	35.98	29.20	23.30	19.30	10.48	0.402061
Rajsamand	Khamnor	Sayaka Khera	GWD	73.83731	25.15144	14.20	14.00	15.50	20.26	11.44	17.58	13.30	14.00	16.93	15.20	0.044061
Rajsamand	Khamnor	Sema	GWD	73.76569	25.07258	12.29	14.00	17.85	19.50	21.00	22.02	20.90	22.00	21.95	12.77	0.520848
Rajsamand	Khamnor	Semal	GWD	73.70111	24.89547	10.32	11.78	10.78	7.62	7.46	12.22	9.50	9.00	11.36	8.10	-0.12982

Rajsamand	Khamnor	Shishoda Kalan	GWD	73.79622	25.03656	6.12	6.08	4.98	7.05	5.65	6.68	7.80	6.00	9.66	5.22	0.153576
Rajsamand	Khamnor	Usan	GWD	73.76017	24.82406	14.61	14.20	17.36	15.95	15.98	14.04	13.80	14.00	21.10	16.70	0.254061
Rajsamand	Khamnor	Uthnol	GWD	73.91164	24.94906	10.49	17.00	22.50	24.70	23.70	Dry	22.45	Dry	Dry	24.80	1.189604
Rajsamand	Khamnor	Uthnol	GWD	74.01056	24.94808	10.63	16.45	18.91	18.37	18.21	19.20	18.10	18.10	19.45	19.13	0.567455
Rajsamand	Khamnor	Vagol	GWD	73.79406	24.95781	15.10	10.78	12.36	14.20	15.35	15.55	12.70	13.00	16.00	9.69	-0.0803
Rajsamand	Khamnor	Wajunda	GWD	73.91817	24.92531	18.24	18.83	18.52	18.35	18.82	19.32	18.60	18.50	19.40	18.32	0.035515
Rajsamand	Kumbhalgarh	Amartiya	GWD	73.92742	25.40517	5.70	4.66	5.02	6.88	5.16	6.38	7.10	7.00	7.02	3.30	0.040606
Rajsamand	Kumbhalgarh	Aret Ki Bhagal	GWD	73.61036	25.25536	5.42	5.23	5.96	**6.14**	7.40	9.68	5.15	5.00	11.08	6.50	0.273818
Rajsamand	Kumbhalgarh	Dhaneen	GWD	73.90106	25.35661	15.15	15.24	16.25	17.64	17.42	19.16	17.95	16.60	18.83	14.55	0.146364
Rajsamand	Kumbhalgarh	Dhoran	GWD	73.73867	25.12306	6.18	7.82	7.83	7.56	8.02	9.44	6.55	7.00	Dry	6.00	-0.07603
Rajsamand	Kumbhalgarh	Dowas	GWD	73.63156	25.18956	7.07	7.50	6.50	8.56	6.46	5.48	2.40	6.00	6.99	4.40	-0.30036
Rajsamand	Kumbhalgarh	Gadbore	GWD	73.74758	25.27417	13.22	7.28	6.77	9.00	9.00	9.42	6.80	6.00	12.55	6.29	-0.21521
Rajsamand	Kumbhalgarh	Gadbore	GWD	73.82561	25.36994	30.24	17.76	11.62	40.22	34.64	39.13	10.20	6.60	39.95	10.80	-0.7897
Rajsamand	Kumbhalgarh	Ghata	GWD	73.75056	25.183	18.93	19.62	19.52	21.19	15.35	20.72	19.80	16.20	23.40	19.40	0.092667
Rajsamand	Kumbhalgarh	Jambo Ka Talab	GWD	73.79889	25.38089	16.62	8.58	7.84	7.40	7.67	8.86	8.65	10.00	21.18	6.62	0.084485
Rajsamand	Kumbhalgarh	Janawad	GWD	73.86389	25.41319	10.10	9.00	9.66	14.20	10.62	16.00	11.30	13.00	18.50	7.71	0.353758
Rajsamand	Kumbhalgarh	Jheelwara	GWD	73.68203	25.33164	8.94	5.88	5.33	6.15	7.26	6.22	4.80	4.00	9.88	5.60	-0.08364
Rajsamand	Kumbhalgarh	Jhuta Guda	GWD	73.88586	25.37711	12.80	11.04	10.94	11.67	13.40	13.88	13.30	12.00	Dry	11.30	0.041387
Rajsamand	Kumbhalgarh	Kelwara	GWD	73.62406	25.21156	5.37	5.28	5.41	7.26	6.12	8.38	7.30	10.00	Dry	7.50	0.408226
Rajsamand	Kumbhalgarh	Kharnota	GWD	73.92583	25.37908	9.47	6.32	8.67	10.55	7.76	10.84	6.85	6.00	13.13	4.82	-0.09424
Rajsamand	Kumbhalgarh	Kooncholi	GWD	73.64678	25.0385	7.64	6.88	6.50	10.36	9.00	13.58	8.55	10.00	11.40	7.05	0.260485
Rajsamand	Kumbhalgarh	Lakm Ka Guda	GWD	73.63525	24.946	14.23	15.52	13.90	16.67	13.98	19.96	11.20	13.00	18.85	15.25	0.106424
Rajsamand	Kumbhalgarh	Lambodi	GWD	73.91039	25.32594	17.38	9.26	11.74	10.59	8.42	21.44	18.80	19.00	20.20	10.60	0.542485
Rajsamand	Kumbhalgarh	Majera	GWD	73.69775	25.27133	18.50	17.00	19.50	13.14	13.75	15.66	14.30	16.00	16.65	9.50	-0.57915
Rajsamand	Kumbhalgarh	Manat Ka Guda	GWD	73.7175	25.25492	11.96	11.52	8.96	10.45	11.23	11.75	9.60	13.00	15.95	7.94	0.078788
Rajsamand	Kumbhalgarh	Mansingh Ka Guda	GWD	73.82453	25.30608	4.73	4.84	5.70	5.90	5.52	9.12	6.60	7.00	8.90	6.00	0.315455
Rajsamand	Kumbhalgarh	Mewariya	GWD	73.78186	25.31353	22.99	18.88	20.00	23.00	23.30	23.75	16.20	18.00	22.53	18.39	-0.27758
Rajsamand	Kumbhalgarh	Morcha	GWD	73.64503	25.12733	8.80	3.62	6.24	9.20	7.12	7.58	7.10	7.00	9.40	3.80	-0.03988
Rajsamand	Kumbhalgarh	Peepla	GWD	73.68311	25.00594	8.92	8.32	6.50	7.59	7.28	8.28	8.30	10.00	12.25	7.00	0.18703
Rajsamand	Kumbhalgarh	Reechher	GWD	73.72631	25.24422	7.70	8.08	7.22	9.07	11.32	9.28	7.70	10.00	10.20	8.70	0.191455

Rajsamand	Kumbhalgarh	Sameecha	GWD	73.65717	25.06022	7.70	7.36	8.70	12.80	14.10	11.16	9.40	10.00	13.95	9.10	0.315697
Rajsamand	Kumbhalgarh	Sawantri	GWD	73.75356	25.39889	8.00	8.07	8.38	8.42	7.82	8.92	8.05	11.00	9.38	7.55	0.110364
Rajsamand	Kumbhalgarh	Umarwas	GWD	73.75317	25.40311	7.02	3.32	3.05	2.02	2.64	4.14	3.75	2.00	7.59	3.00	-0.02939
Rajsamand	Railmagra	Ardkiya	GWD	74.06522	25.15064	12.52	7.14	12.12	11.06	9.92	14.12	8.65	9.00	14.10	8.80	-0.02055
Rajsamand	Railmagra	Banediya	GWD	74.03272	24.97994	18.55	15.96	17.00	**16.02**	19.00	20.88	13.40	12.90	19.00	11.54	-0.41388
Rajsamand	Railmagra	Bethumbi	GWD	74.24789	25.08531	15.00	13.25	15.91	16.50	17.00	Dry	Dry	15.60	19.75	8.79	-0.11031
Rajsamand	Railmagra	Damodarpura	GWD	74.35553	25.09919	30.20	28.95	26.75	29.34	25.55	26.88	13.95	21.90	23.90	11.48	-1.65406
Rajsamand	Railmagra	Dhaneriya	GWD	74.14553	24.95775	17.92	14.68	14.87	9.25	12.00	18.74	14.90	14.50	15.99	6.50	-0.43497
Rajsamand	Railmagra	Gawardi	GWD	74.21497	24.93725	20.95	22.10	22.45	9.02	10.90	21.14	11.90	11.00	19.28	16.20	-0.61127
Rajsamand	Railmagra	Gilund	GWD	74.35533	25.09342	20.80	16.24	17.55	15.80	12.72	22.72	14.65	19.00	18.30	11.22	-0.35152
Rajsamand	Railmagra	Gogathala	GWD	74.16978	25.115	11.75	10.70	12.85	13.95	13.45	14.06	12.65	10.90	11.20	10.92	-0.10309
Rajsamand	Railmagra	Jeetawas	GWD	74.26169	25.14261	13.43	14.00	14.20	12.30	8.68	11.62	7.00	12.20	14.40	13.65	-0.11018
Rajsamand	Railmagra	Khandel	GWD	74.14658	25.23403	23.50	21.00	26.00	34.20	26.52	27.54	12.30	25.00	25.70	21.80	-0.31564
Rajsamand	Railmagra	Kotri	GWD	74.22278	25.01881	19.37	17.00	15.75	10.30	10.32	17.98	9.30	12.70	11.35	7.45	-0.95406
Rajsamand	Railmagra	Kuraj	GWD	74.11169	25.14106	7.34	8.95	8.20	8.60	8.24	10.78	7.90	10.00	7.70	5.60	-0.09073
Rajsamand	Railmagra	Ladapacha	GWD	74.18792	25.07483	24.50	26.00	26.15	23.50	21.90	15.76	14.85	-	23.43	11.20	-1.30024
Rajsamand	Railmagra	Mali Khera	GWD	74.24553	25.05347	20.50	17.12	17.78	21.80	18.12	17.74	14.60	27.90	28.85	17.45	0.504727
Rajsamand	Railmagra	Menduriya	GWD	74.21992	25.04883	17.28	17.50	23.72	20.80	12.50	19.22	17.40	17.50	18.30	8.50	-0.65455
Rajsamand	Railmagra	Meniya	GWD	74.08958	25.03947	Dry	15.96	10.65	13.53	7.20	12.92	18.30	17.00	12.82	9.84	0.001167
Rajsamand	Railmagra	Pachhmata	GWD	74.22678	25.10867	18.94	16.25	19.50	15.00	18.20	19.42	11.30	19.20	Dry	8.60	-0.75713
Rajsamand	Railmagra	Peepli Aheeran	GWD	74.08178	25.09803	16.03	10.82	12.26	11.82	13.05	14.06	10.50	10.20	10.87	8.38	-0.49545
Rajsamand	Railmagra	Railmagara	GWD	74.15025	25.11144	15.50	6.48	8.50	9.10	9.22	12.92	6.10	6.00	8.64	2.69	-0.71497
Rajsamand	Railmagra	Sadri	GWD	74.20772	25.07858	28.00	27.50	28.50	28.00	27.66	26.15	27.90	29.00	29.15	21.35	-0.28855
Rajsamand	Railmagra	Sindesar Kalan	GWD	74.22981	25.15875	25.17	24.68	24.35	23.95	23.94	24.85	14.35	14.20	25.56	7.70	-1.39218
Rajsamand	Rajsamand	Atma	GWD	73.87019	25.26333	12.71	13.50	15.00	18.50	18.00	18.78	16.95	15.00	Dry	18.69	0.507226
Rajsamand	Rajsamand	Bhana	GWD	74.02228	25.12122	13.50	13.18	9.78	12.75	14.00	12.66	10.60	10.00	9.65	6.84	-0.55358
Rajsamand	Rajsamand	Bhatoli	GWD	73.94597	25.14133	7.48	7.17	9.46	9.65	9.54	10.07	9.50	11.00	11.93	7.85	0.269273
Rajsamand	Rajsamand	Bhawa	GWD	74.04278	25.22028	11.70	10.76	9.93	9.74	11.05	9.48	6.95	6.50	14.30	9.33	-0.14327
Rajsamand	Rajsamand	Dhanwal	GWD	73.92022	25.13658	7.03	8.54	14.04	16.00	14.46	15.38	16.50	18.00	16.43	14.98	0.90303
Rajsamand	Rajsamand	Dhoinda	GWD	73.98033	25.18039	13.18	15.00	15.55	13.80	14.75	13.98	7.70	10.00	6.95	4.10	-1.12055

Rajsamand	Rajsamand	Jodhpura	GWD	74.15286	25.21075	21.52	20.03	21.32	21.50	Dry	21.68	20.10	18.00	21.20	19.72	-0.16841
Rajsamand	Rajsamand	Kelwa	GWD	73.97781	25.19692	5.30	4.03	4.23	3.39	2.87	6.25	3.75	8.00	7.45	4.60	0.248182
Rajsamand	Rajsamand	Khatamala	GWD	74.00228	25.2995	17.46	17.05	17.52	17.30	17.56	18.05	16.90	13.00	Dry	16.30	-0.258
Rajsamand	Rajsamand	Khatamala	GWD	74.02028	25.27458	6.10	8.38	11.50	11.66	14.62	6.18	10.80	12.00	Not Open	5.74	-0.0201
Rajsamand	Rajsamand	Kunwariya	GWD	73.04928	25.24708	Dry	14.47	Dry	Dry	16.08	16.60	11.20	11.00	14.15	5.50	-0.91832
Rajsamand	Rajsamand	Mahasat.Ki Madri	GWD	74.07889	25.186	14.38	14.77	9.63	15.00	15.75	15.78	6.90	7.00	14.70	4.10	-0.79048
Rajsamand	Rajsamand	Mandwara	GWD	73.94861	25.21697	5.60	8.00	10.90	15.00	14.12	17.28	13.90	11.00	17.05	14.75	0.885212
Rajsamand	Rajsamand	Miyari Madri	GWD	73.83683	25.20669	2.80	4.75	5.38	10.26	9.82	12.45	10.45	10.00	12.03	9.59	0.838606
Rajsamand	Rajsamand	Mohi	GWD	73.98456	25.10397	14.48	11.46	12.58	14.32	15.32	13.54	11.35	10.00	10.05	7.85	-0.56442
Rajsamand	Rajsamand	Nathuwas	GWD	74.15617	25.16378	12.44	10.46	13.35	19.90	18.50	15.78	14.80	12.00	19.53	18.90	0.58703
Rajsamand	Rajsamand	Padasali	GWD	73.90539	25.21711	**8.10**	8.68	9.46	**8.75**	8.72	11.28	9.90	12.00	11.82	10.89	0.398788
Rajsamand	Rajsamand	Pasaoond	GWD	73.95856	25.26658	8.72	9.00	13.50	13.87	12.28	8.26	7.30	10.80	13.50	4.54	-0.26273
Rajsamand	Rajsamand	Peeparda	GWD	73.91111	25.05444	14.01	15.30	17.96	17.70	18.94	18.46	11.90	11.00	18.78	11.62	-0.302
Rajsamand	Rajsamand	Pharara	GWD	73.83906	25.09656	9.93	17.85	21.33	27.52	47.85	49.40	37.90	6.90	damage	damage	2.185476
Rajsamand	Rajsamand	Phiyawari	GWD	74.14389	25.16019	20.82	21.50	18.22	22.44	19.18	17.68	18.50	17.00	23.34	12.70	-0.48255
Rajsamand	Rajsamand	Poothol	GWD	73.81297	25.19975	4.76	6.00	6.50	10.50	7.39	11.78	7.10	8.00	13.48	5.30	0.35703
Rajsamand	Rajsamand	Rajnagar	GWD	73.98178	25.20033	7.65	10.32	8.23	9.91	10.72	9.38	4.60	7.00	6.67	3.10	-0.54497
Rajsamand	Rajsamand	Rajnagar	GWD	73.977	25.16536	tilted	15.03	9.62	9.91	under repair	9.59	6.27	5.30	6.01	5.10	-1.05059
Rajsamand	Rajsamand	Rajyawas	GWD	74.00928	25.10317	5.00	5.50	6.25	7.30	6.98	8.12	8.00	10.00	9.40	4.81	0.288364
Rajsamand	Rajsamand	Sakroda	GWD	73.88397	25.07717	9.84	5.87	7.37	9.80	4.61	10.39	13.95	16.00	13.74	13.06	0.881515
Rajsamand	Rajsamand	Sapol	GWD	73.86958	25.2285	8.89	10.75	11.13	15.50	10.82	15.12	11.60	13.00	14.95	10.22	0.262545
Rajsamand	Rajsamand	Sathaana	GWD	74.08514	24.97397	14.64	16.12	15.50	15.80	17.00	17.70	12.65	13.00	18.20	16.10	0.039091
RAJSAMAND	Bhim	BAGHANA	CGWB	73.8386	25.5	18.56	14.58	11.31	11.56	13.96	13.66	13.86	11.01	11.41	11.66	-0.47994
RAJSAMAND	Bhim	BARAR	CGWB	74.0167	25.6667	19.7	10.02	11.92	10.84	14.18	11.55	11.8	16.84	19.3	19.5	0.533394
RAJSAMAND	Amet	CHATTARPUR	CGWB	73.9561	25.2414	21.78	17.6	10.61	10.82	13.33	13.08	16.48	17.71	14.7	14.83	-0.18558
RAJSAMAND	Bhim	DEWAIR	CGWB	73.8222	25.4208	16.2	11.21	10.4	7.92	11.1	9.2	9.3	10.97	8	8.1	-0.54715
RAJSAMAND	Kumbhalgarh	DOWAS	CGWB	73.5667	25.0386	9.54	3.24	4.29	9.39	5.32	3.47	4.32	0.87	7.67	9.52	-0.02018
RAJSAMAND	Railmagra	GAVARDI	CGWB	74.1	24.9039	0	0	13.08	14.07	10.55	10.45	13.47	8.55	12.2	12.7	1.061515
RAJSAMAND	Bhim	GHATA	CGWB	74.1833	25.7833	14.42	14.65	8.24	14.8	15.6	6.9	12.4	14.16	7.38	13.6	-0.27012

RAJSAMAND	Amet	GUGLI	CGWB	73.8833	25.2333	22.67	11.67	19.78	14.76	13.97	12.07	16.37	20.13	23.02	22.77	0.515333
RAJSAMAND	Kumbhalgarh	JHILWARA	CGWB	73.6708	25.2272	14.01	12.86	12.91	0	12.09	16.84	16.62	12.42	14.59	15.04	0.445697
RAJSAMAND	Kumbhalgarh	KALWANA	CGWB	73.6	25.1	15.98	9.47	8.13	7.9	12.95	12.05	12.2	6.3	10.45	11.55	-0.18279
RAJSAMAND	Kumbhalgarh	KANCHOLI	CGWB	73.55	24.96	16.94	5.7	5.04	4.82	10.55	7.5	7.95	5.1	4.65	9.95	-0.38558
RAJSAMAND	Kumbhalgarh	KELWARA	CGWB	73.6133	25.1	9.57	5.09	6.09	4.99	7.29	5.49	5.9	5.42	6.24	7.49	-0.07933
RAJSAMAND	Khamnor	KHAMNOR1	CGWB	73.7333	24.9167	16.1	12.26	13.21	14.77	16.55	14.95	14.7	14.71	14.7	14.1	0.028909
RAJSAMAND	Kumbhalgarh	KITELA	CGWB	73.7806	25.3414	0	9.96	8.89	8.17	11.21	10.46	10.56	5.02	10.11	10.31	0.490364
RAJSAMAND	Kumbhalgarh	MANSINGH KAGURA	CGWB	73.7889	25.2381	11.11	5.13	5.96	6.33	7.96	8.01	8.71	5.89	6.06	6.26	-0.18364
RAJSAMAND	Rajsamand	MOKAMPURA	CGWB	73.85	25.1308	14.99	4.91	10.79	8.45	14.87	6.19	15.59	4.73	10.29	10.74	-0.11
RAJSAMAND	Amet	NADIAWALA	CGWB	73.8631	25.2028	0	12.74	12.85	15.67	21.19	19.89	19.34	16.05	18.54	19.54	1.467697
RAJSAMAND	Railmagra	ODA1	CGWB	74.0039	25.0333	3.72	2.25	16.5	4.58	4.53	2.63	3.98	2.29	6.38	5.23	-0.19545
RAJSAMAND	Khamnor	ODAN	CGWB	73.8167	24.9	9.72	6.07	4.29	8.31	6.99	8.89	6.34	3.51	4.54	5.49	-0.34358
RAJSAMAND	Rajsamand	RAJSAMAND	CGWB	73.8833	25.0667	21.17	13.73	15.93	0	11.87	10.27	18.48	4.26	4.05	4.27	-1.35982
RAJSAMAND	Bhim	Sheron Ki Bala	CGWB	74.1333	25.85	17.86	5.9	5.14	6.95	8.42	7.64	8.9	4.97	7.24	7.44	-0.48594
RAJSAMAND	Bhim	THIKARWAS	CGWB	73.98	25.6	21.3	9.6	8.31	5.05	9.96	9.54	9.68	8.42	10.96	11.26	-0.40497

20. ANNEXURE E: Pre Monsoon - Water Quality Parameters of Ground Water Samples Rajsamand District.

District	Block	Location	pH*	EC* µS/cm at 25°C	CO3	HCO3	Cl*	SO4	NO3*	F*	PO4	TH*	Ca*	Mg*	Na*	K*	TDS
					mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Rajsamand	Kumbhalgarh	Kitela	7.79	960	NIL	366	42	98	9.1	3.44	0.12	340	72	39	62	5	624
Rajsamand	Railmagra	Kuraj	7.83	2200	NIL	805	206	88	65.0	2.81	0.11	460	48	83	296	3.6	1430
Rajsamand	Khamnor	Kotharia	7.18	4720	NIL	476	1234	178	33.0	4.87	1.33	1460	240	209	409	11	3068
Rajsamand	Khamnor	Bagol	7.59	1770	NIL	573	241	62	9.1	0.05	0.29	520	96	68	162	11	1151
Rajsamand	Khamnor	khamnor	7.68	1370	NIL	378	71	259	7.3	0.04	0.19	530	52	97	70	5.3	891
Rajsamand	Khamnor	Baleecha	7.41	1670	NIL	420	213	144	45.0	0.83	0.01	480	88	63	161	5.4	1086
Rajsamand	Khamnor	Godach	7.49	1640	NIL	561	156	96	48.0	0.36	0.01	450	96	51	168	3.8	1066
Rajsamand	Khamnor	Machhind	7.5	770	NIL	268	64	58	2.1	0.36	0.01	270	60	29	50	5.6	501

Rajsamand	Kumbhalgarh	Kelwawa	7.53	900	NIL	390	64	40	1.8	0.04	0.02	250	72	17	92	4.8	585
Rajsamand	Rajsamand	Mohi	7.56	2020	NIL	427	362	132	11.0	0.53	BDL	430	80	56	259	16	1313
Rajsamand	Khamnor	Uthnol	7.72	2250	NIL	793	205	112	87.0	1.12	0.67	310	60	39	182	330	1463
Rajsamand	Rajsamand	Sathana	7.39	1510	NIL	561	142	88	0.8	0.75	0.02	330	52	49	184	20	982
Rajsamand	Railmagra	Sansera	7.69	2180	NIL	656	262	106	85.0	0.79	0.01	660	120	87	165	56	1417
Rajsamand	Railmagra	Pacchmata	7.18	4200	NIL	830	851	152	64.0	0.15	0.01	740	88	126	626	10	2730
Rajsamand	Railmagra	Railmagra	7.56	2380	NIL	671	326	118	60.0	2.55	0.01	340	56	49	391	3.3	1547
Rajsamand	Railmagra	Khandel	7.58	640	NIL	256	35	48	5.7	0.72	BDL	190	48	17	55	11	416
Rajsamand	Rajsamand	Kunwariya	7.55	4260	NIL	1008	695	126	229.0	2.82	0.77	1220	128	219	382	65	2769
Rajsamand	Rajsamand	Piparda	7.22	3780	NIL	525	723	396	28.0	1.25	2.25	860	176	102	455	35	2457
Rajsamand	Rajsamand	Dhanwal	7.45	2680	NIL	671	408	168	33.0	3.56	0.12	540	80	83	350	31	1742
Rajsamand	Khamnor	Cheekalwas	7.53	1520	NIL	464	141	142	34.0	0.74	0.01	400	96	39	161	8.46	988
Rajsamand	Kumbhalgarh	Sameecha	7.32	1930	NIL	476	262	136	73.0	0.69	0.04	380	96	34	262	16	1255
Rajsamand	Kumbhalgarh	Bargaon	7.48	1120	NIL	400	78	111	3.0	0.43	0.10	280	64	29	126	7.8	728
Rajsamand	Kumbhalgarh	Bhawani ki Baghal	7.44	1610	NIL	451	206	128	10.0	0.90	0.01	380	68	51	193	5.4	1047
Rajsamand	Deogarh	Deogarh	7.48	1310	NIL	262	128	218	33.0	1.83	BDL	340	76	36	143	4.5	852
Rajsamand	Deogarh	Kalalo ki Anti	7.45	2570	NIL	647	383	182	25.0	0.65	0.01	600	112	78	313	6.3	1671
Rajsamand	Deogarh	Tal	7.4	1980	NIL	464	298	158	23.0	1.41	3.69	350	76	39	258	64	1287
Rajsamand	Deogarh	Sohangarh	7.53	2720	NIL	671	267	242	222.0	0.51	0.48	700	128	92	297	16	1768
Rajsamand	Deogarh	Jhankara	7.65	990	NIL	476	35	43	6.1	1.20	0.01	250	48	32	110	5.5	644
Rajsamand	Deogarh	Kundwa	7.01	750	NIL	244	85	38	16.0	0.89	1.68	190	40	22	69	29	488
Rajsamand	Deogarh	Kuanthal	7.7	1610	NIL	634	92	118	35.0	0.85	BDL	210	36	29	271	5.4	1047
Rajsamand	Amet	Khakarmal	7.49	1100	NIL	329	85	140	12.0	1.73	BDL	210	52	19	156	3.8	715
Rajsamand	Deogarh	Beeyana	7.32	760	NIL	183	106	59	17.0	1.35	BDL	220	64	15	74	1.8	494
Rajsamand	Amet	Olnakhera	7.39	6770	NIL	805	1446	440	275.0	0.60	0.01	1860	344	243	697	11	4401
Rajsamand	Amet	Asan	7.49	3730	NIL	693	382	682	57.0	0.03	0.01	940	128	151	423	7.6	2425
Rajsamand	Deogarh	Kamala	7.67	760	NIL	268	28	112	1.3	0.73	0.01	240	64	19	64	1.8	494
Rajsamand	Bhim	Baggar	7.6	1300	NIL	451	135	72	15.0	0.63	0.73	290	40	46	152	25	845
Rajsamand	Deogarh	Miyala	7.56	2710	NIL	744	248	366	9.1	1.21	0.15	330	96	22	462	19	1762

Rajsamand	Bhim	BAGHANA	7.4	2495	NIL	452	468	192	11.0	0.56	0.01	900	256	63	161	12.0	1622
Rajsamand	Bhim	BALI1	7.57	1380	NIL	464	149	72	29.0	0.58	0.01	410	116	29	133	7.8	897
Rajsamand	Bhim	BARAR	7.26	1040	NIL	415	50	92	12.0	1.99	0.03	400	110	30	46	20.0	676
Rajsamand	Bhim	Bhim	7.4	4200	NIL	647	528	779	10.0	1.38	1.30	880	144	126	561	15.0	2730
Rajsamand	Kumbhalgarh	Bhop Ji Ki Bhagal	7.59	890	NIL	401	28	64	7.1	1.35	0.02	160	36	17	133	1.5	579
Rajsamand	Amet	CHATTARPUR	7.25	11900	NIL	769	2552	1620	10.0	0.52	0.04	1750	300	243	1955	7.2	7735
Rajsamand	Bhim	DEWAIR	7.68	1380	NIL	586	92	68	6.6	0.49	0.76	350	60	49	156	3.3	897
Rajsamand	Kumbhalgarh	DOWAS	7.53	1120	NIL	342	78	158	6.7	0.48	0.04	300	96	15	115	14.0	728
Rajsamand	Railmagra	GAVARDI	7.86	1200	NIL	439	71	130	0.5	1.55	0.02	220	44	27	175	3.1	780
Rajsamand	Kumbhalgarh	Gomti Chouraha	7.67	2060	NIL	647	234	142	10.0	4.10	0.01	510	70	81	274	3.3	1339
Rajsamand	Amet	GUGLI	7.54	1850	NIL	476	277	100	34.0	0.34	0.01	600	108	80	161	4.0	1203
Rajsamand	Kumbhalgarh	JHILWARA	7.59	1100	NIL	342	85	136	7.9	0.56	0.01	380	76	46	78	4.1	715
Rajsamand	Kumbhalgarh	KANCHOLI	7.56	1280	NIL	281	248	42	16.0	0.60	0.06	310	88	22	156	2.3	832
Rajsamand	Kumbhalgarh	MANSINGH KAGURA	7.49	1100	NIL	427	50	98	15.0	1.69	0.01	330	80	32	98	7.2	715
Rajsamand	Rajsamand	MOKAMPURA	7.4	2850	NIL	549	351	422	44.0	0.58	1.28	960	180	124	225	0.1	1853
Rajsamand	Amet	NADIAWALA	7.45	4000	NIL	427	929	298	34.0	1.17	0.02	1050	200	134	437	6.4	2600
Rajsamand	Railmagra	ODA1	7.59	2150	NIL	512	333	164	18.0	1.02	0.08	400	96	39	322	4.1	1398
Rajsamand	Khamnor	ODAN	7.61	1450	NIL	464	128	148	16.0	0.35	0.01	460	80	63	122	8.5	943
Rajsamand	Rajsamand	RAJSAMAND	7.66	2370	NIL	744	255	182	26.0	1.20	0.02	590	104	80	258	33.0	1541
Rajsamand	Bhim	Sheron Ka Bala	7.38	820	NIL	317	43	74	4.9	1.07	1.76	260	72	19	70	5.2	533
Rajsamand	Bhim	THIKARWAS	7.57	1370	NIL	378	92	230	4.5	1.10	0.02	260	40	39	195	8.1	891
Rajsamand	Amet	AIDANA	7.65	3240	0	391	440	596	81	0.46		1255	180	196	178	14	1880
Rajsamand	Amet	AMET	8.55	1630	48	195	362	19	80	0.87		350	30	67	213	9	926
Rajsamand	Amet	BEEKAWAS	8.90	2590	60	464	433	96	134	0.92		440	76	61	380	26	1498
Rajsamand	Amet	DHELANA	8.55	1110	60	244	128	48	31	0.70		315	48	47	109	10	603
Rajsamand	Amet	DIDWANA	8.25	890	24	85	227	2	34	0.33		235	60	21	95	6	512
Rajsamand	Amet	DINGROL	8.35	2140	36	244	461	48	144	0.55		665	100	101	182	14	1207
Rajsamand	Amet	GALWA	8.85	3280	60	439	745	115	11	1.58		355	36	64	580	27	1858
Rajsamand	Amet	GOOGLI	8.35	1920	36	232	411	106	25	0.28		390	40	71	265	7	1076

Rajsamand	Amet	GOSUNDI	8.45	1650	48	403	220	10	142	0.46		500	118	50	151	9	949
Rajsamand	Amet	GOWAL	8.60	2220	48	195	589	29	20	0.51		250	50	30	398	7	1269
Rajsamand	Amet	JETPURA	8.40	2180	72	220	454	115	50	0.42		675	90	109	180	26	1207
Rajsamand	Amet	JHOR	8.60	2140	84	464	319	29	88	0.76		590	86	91	210	26	1165
Rajsamand	Amet	MAKARDA	8.85	3720	24	122	865	375	136	1.32		900	144	131	429	29	2195
Rajsamand	Amet	MURDA	8.75	1190	36	330	135	58	12	0.68		245	40	35	155	14	649
Rajsamand	Amet	NANANA	8.90	1310	48	232	248	14	31	1.36		165	20	28	227	9	742
Rajsamand	Amet	OLNA KA KHERA	8.55	1060	48	256	156	19	9	0.47		150	10	30	179	8	588
Rajsamand	Amet	RACHHETI KAKEHRA	8.65	1020	36	195	177	24	19	0.51		215	30	34	136	7	561
Rajsamand	Amet	SAKRODA	8.75	2090	36	317	326	125	174	0.37		630	136	71	173	34	1234
Rajsamand	Amet	SARDAR GHRH	8.80	1610	96	342	177	58	80	0.57		310	28	58	229	9	907
Rajsamand	Amet	SIYANA	8.50	1270	24	159	269	67	33	0.20		300	32	54	157	7	722
Rajsamand	Amet	TEEKAR	8.05	860	0	146	177	38	35	0.92		220	32	34	93	13	496
Rajsamand	Bhim	ASAN	8.55	810	24	220	142	10	16	0.44		115	18	17	116	26	478
Rajsamand	Bhim	BAGAR	8.75	1140	48	293	142	29	34	1.32		185	54	12	165	29	659
Rajsamand	Bhim	BARAR	8.10	1550	0	195	284	96	153	0.46		540	120	58	108	14	930
Rajsamand	Bhim	BARJAL	8.60	1050	24	244	149	29	70	0.42		210	20	39	146	10	609
Rajsamand	Bhim	BHAGHANA	8.00	1950	0	85	489	77	183	0.37		610	152	56	161	30	1192
Rajsamand	Bhim	BHARTWA	8.65	1060	24	195	191	29	38	0.41		225	20	43	135	12	589
Rajsamand	Bhim	BHIM	7.80	3210	0	220	816	125	185	0.39		735	140	94	392	21	1882
Rajsamand	Bhim	CHHAPLI	8.60	820	24	146	135	38	24	0.30		205	30	32	95	11	461
Rajsamand	Bhim	DEWAIR	8.65	610	24	146	99	1	17	0.58		240	36	36	20	25	332
Rajsamand	Bhim	HAMENTO KI GUAR	8.80	650	30	171	71	19	19	0.48		125	14	22	89	12	361
Rajsamand	Bhim	JUJPURA	8.15	2280	0	122	596	134	80	0.42		400	100	36	325	34	1367
Rajsamand	Bhim	KOOKRA	8.20	1250	0	122	241	134	63	0.32		255	44	35	164	16	759
Rajsamand	Bhim	LAGET KHERA	8.10	11200	0	0	2730	0	14	0.89		0	0	0	0	0	7168
Rajsamand	Bhim	MOBA KA TALAB	8.60	860	24	171	142	19	38	0.39		130	18	21	135	8	491
Rajsamand	Bhim	PADMELA	8.80	560	24	73	99	29	12	0.68		175	34	22	50	4	312

Rajsamand	Bhim	PIPRDOO	8.05	880	0	85	135	125	57	0.41		275	32	47	76	4	518
Rajsamand	Bhim	RAJOR	8.15	2200	0	146	489	240	54	0.73		425	66	63	291	47	1324
Rajsamand	Bhim	RAJWA	8.45	1260	36	207	184	106	27	1.03		155	14	29	204	34	738
Rajsamand	Bhim	TEEKARWAS KALAN	8.55	620	36	110	71	38	21	1.08		105	16	16	95	9	357
Rajsamand	Bhim	TOGI	8.10	1330	0	159	277	125	27	0.19		390	92	39	116	14	769
Rajsamand	Bhim	BHEELKHEDA	8.50	1120	36	232	177	48	11	1.83		205	24	35	147	27	621
Rajsamand	Bhim	KHERI KA KHERA	8.80	1660	36	305	319	58	21	0.94		460	118	40	159	27	930
Rajsamand	Bhim	KUKER KHEDA	8.60	1080	36	220	170	38	22	0.78		215	20	40	147	7	591
Rajsamand	Bhim	NALOI LALPURA	8.85	990	24	183	177	38	14	1.52		270	54	33	95	18	545
Rajsamand	Bhim	SHYOPURA AS	8.90	1200	24	220	184	86	49	0.36		225	20	43	168	10	694
Rajsamand	Deogarh	DEVGARH	8.90	1500	24	256	277	67	53	0.62		230	28	39	224	17	857
Rajsamand	Deogarh	MIYALA	8.45	1150	36	232	184	29	45	0.28		215	32	33	161	11	648
Rajsamand	Deogarh	NARDAS KA GURA	8.70	1220	36	98	206	144	32	0.36		335	40	57	115	16	695
Rajsamand	Deogarh	SAWADRI	8.50	760	24	171	121	19	26	0.57		170	28	24	94	13	434
Rajsamand	Deogarh	VIJAYPURA	8.40	2800	12	122	773	134	67	0.61		375	68	50	439	47	1652
Rajsamand	Deogarh	ANJNA	8.75	520	24	171	50	1	21	1.29		120	20	17	63	5	287
Rajsamand	Deogarh	ANOPPURA	8.80	640	12	146	99	29	23	1.77		130	14	23	83	10	366
Rajsamand	Deogarh	ARJUN GARH	8.60	1760	12	171	404	67	96	1.62		290	40	46	263	19	1033
Rajsamand	Deogarh	BAGATPURA	8.20	1610	0	171	291	125	155	0.56		250	48	32	244	22	1001
Rajsamand	Deogarh	BIYANA	8.55	890	12	146	170	38	38	0.77		220	38	30	99	12	511
Rajsamand	Deogarh	JAKRA	8.25	2920	0	122	808	101	142	0.42		465	60	77	440	35	1725
Rajsamand	Deogarh	KAKROD	7.95	4270	0	391	915	240	348	0.59		850	142	120	560	56	2577
Rajsamand	Deogarh	KALALO KI ANTI	8.60	2220	24	122	518	173	77	0.48		680	50	135	192	14	1243
Rajsamand	Deogarh	KALESARIYA	8.75	1640	60	330	284	19	55	0.80		305	34	54	224	24	918
Rajsamand	Deogarh	KAMERI	8.00	1680	0	49	347	144	197	0.52		505	108	57	145	16	1040
Rajsamand	Deogarh	KUATHAL	8.95	1960	72	207	347	173	28	1.76		205	10	44	331	51	1160
Rajsamand	Deogarh	KUNDWA	8.75	1080	30	110	191	96	40	0.52		235	30	39	136	5	624
Rajsamand	Deogarh	LASANI	8.60	1180	21	104	227	77	82	0.48		240	40	34	146	26	705

Rajsamand	Deogarh	MADARIYA	8.80	1080	30	122	206	77	27	0.70		220	18	43	137	34	632
Rajsamand	Deogarh	MALKOT	8.60	1440	30	207	319	38	19	0.48		270	64	27	188	30	819
Rajsamand	Deogarh	PARDI	8.75	930	30	183	128	38	52	0.51		200	16	39	116	12	523
Rajsamand	Deogarh	SOHANGARH	8.00	3014	0	104	943	48	57	0.58		605	90	92	398	33	1713
Rajsamand	Deogarh	SOLANKIO KA GURA	8.95	750	42	207	35	67	22	2.76		170	20	29	91	4	414
Rajsamand	Deogarh	TAL	8.55	2890	30	268	745	115	20	1.48		520	66	86	409	34	1640
Rajsamand	Khamnor	BALICHA	8.75	1320	36	232	206	82	51	0.42		320	30	60	152	10	741
Rajsamand	Khamnor	DELWARA	8.60	1010	12	134	213	48	37	0.38		215	26	36	128	10	576
Rajsamand	Khamnor	GODAH	8.20	2040	0	110	425	269	58	0.48		770	138	103	111	10	1171
Rajsamand	Khamnor	KESULI	8.60	1310	24	159	291	38	51	0.40		350	36	63	133	16	732
Rajsamand	Khamnor	KHAMNOR	8.30	920	12	244	149	19	43	0.56		240	34	38	97	24	537
Rajsamand	Khamnor	NEGDIYA	8.50	2520	12	268	617	115	49	0.61		555	40	111	317	16	1411
Rajsamand	Khamnor	RABCHA	8.80	660	12	220	71	19	14	0.42		180	20	32	58	20	355
Rajsamand	Khamnor	SAGROON	8.60	1530	12	159	383	38	48	0.39		370	36	68	173	15	852
Rajsamand	Khamnor	SEMAL	9.00	900	60	232	106	10	17	0.37		285	10	63	77	6	465
Rajsamand	Khamnor	USAN	8.20	1600	0	207	298	106	120	0.41		400	34	77	177	20	935
Rajsamand	Khamnor	BAMANHERA	7.80	2880	0	476	645	58	82	0.36		660	90	106	342	32	1593
Rajsamand	Khamnor	BARABHANUJA	8.60	1850	36	134	433	19	151	0.33		360	56	54	256	13	1085
Rajsamand	Khamnor	CHEEKELWAS	8.90	1020	60	183	170	2	22	0.33		250	24	46	121	6	543
Rajsamand	Khamnor	CHOKRI KI BHAGAL	8.90	1230	60	244	170	58	13	0.83		270	22	52	156	7	661
Rajsamand	Khamnor	GAONGURA	8.70	1110	24	256	184	38	19	0.18		250	28	44	142	8	617
Rajsamand	Khamnor	KUNTHWA	8.55	700	24	159	92	29	7	0.14		205	36	28	61	5	362
Rajsamand	Khamnor	MACHIND	8.65	540	24	98	78	19	30	0.12		170	20	29	42	5	296
Rajsamand	Khamnor	MANDIYANA	8.75	660	12	171	71	19	51	0.46		140	20	22	86	4	371
Rajsamand	Khamnor	MOGANA	8.60	1900	24	146	489	106	16	0.61		390	36	73	258	9	1084
Rajsamand	Khamnor	MOLELA	8.60	1220	12	171	227	77	70	0.27		335	40	57	120	14	702
Rajsamand	Khamnor	PAKHAND	8.15	1500	0	305	269	29	121	0.34		415	50	71	147	16	855
Rajsamand	Khamnor	SAYAKA KHERA	8.40	1730	12	220	447	29	14	0.58		425	54	71	200	6	942

Rajsamand	Khamnor	SHISHODA KALAN	8.10	4680	0	134	1489	115	26	0.46		1275	178	202	475	33	2586
Rajsamand	Khamnor	SEMAL	8.40	2340	24	110	624	115	56	0.38		620	58	116	242	24	1314
Rajsamand	Khamnor	UTHNOL	9.25	1700	12	146	411	77	64	0.44		355	26	71	229	9	972
Rajsamand	Khamnor	KOONCHOLI	7.50	12000	0	0	3581	0	16	0.84		0	0	0	0	0	7680
Rajsamand	Khamnor	NATHDWARA	8.00	2770	0	683	496	96	20	0.71		670	126	86	317	24	1508
Rajsamand	Khamnor	VAGOL	8.65	1120	48	317	128	38	6	0.51		300	58	38	111	17	602
Rajsamand	Khamnor	KOTHARIYA	8.75	1750	48	195	298	86	161	0.46		330	26	64	244	14	1039
Rajsamand	Khamnor	KUMARIYA KHEDA	8.65	2120	36	220	475	48	123	0.63		330	30	62	328	17	1229
Rajsamand	Khamnor	NAMANA	8.60	1430	12	207	355	3	45	1.02		360	28	71	157	16	790
Rajsamand	Kumbhalgarh	ARET KIBHAGAL	8.05	410	0	146	50	1	15	0.25		175	32	23	9	6	209
Rajsamand	Kumbhalgarh	DHORAN	8.70	680	12	171	85	38	20	1.50		135	20	21	78	23	383
Rajsamand	Kumbhalgarh	DOWAS	8.70	650	12	220	64	1	38	0.29		150	8	32	72	11	348
Rajsamand	Kumbhalgarh	GADBORE	8.35	960	12	220	135	48	50	0.47		315	50	46	74	4	529
Rajsamand	Kumbhalgarh	JAMBO KA TALAB	8.20	870	0	403	35	29	29	0.62		235	34	36	83	16	463
Rajsamand	Kumbhalgarh	JHEELWARA	8.05	790	0	159	135	38	52	0.38		365	40	64	12	4	426
Rajsamand	Kumbhalgarh	JHUTA GUDA	8.50	960	24	256	121	38	27	0.46		255	66	22	98	8	532
Rajsamand	Kumbhalgarh	KELWARA	8.50	670	12	183	92	19	25	0.40		125	20	18	89	11	379
Rajsamand	Kumbhalgarh	KOONCHOLI	8.15	780	0	171	149	19	26	0.48		190	40	22	79	22	442
Rajsamand	Kumbhalgarh	LAKM KA GUDA	8.00	890	0	183	170	19	53	0.65		185	28	28	114	14	517
Rajsamand	Kumbhalgarh	MAJERA	8.65	890	12	220	163	3	26	0.65		160	20	27	130	8	498
Rajsamand	Kumbhalgarh	MANAT KA GUDA	8.65	530	12	159	85	2	13	0.66		225	26	39	15	11	283
Rajsamand	Kumbhalgarh	MORCHA	8.80	1080	24	244	163	29	40	1.25		210	20	39	144	12	592
Rajsamand	Kumbhalgarh	PEEPLA	8.05	1020	0	122	255	38	16	0.81		360	54	55	69	6	554
Rajsamand	Kumbhalgarh	SAMEECHA	8.50	640	12	159	106	10	15	0.32		165	26	24	72	4	349
Rajsamand	Kumbhalgarh	SAWANTRI	8.40	1740	12	183	369	67	144	0.72		555	124	60	139	14	1021
Rajsamand	Kumbhalgarh	UMARWAS	8.75	610	12	122	92	29	38	0.46		195	22	34	42	16	347
Rajsamand	Kumbhalgarh	AMARTIYA	8.45	3710	12	171	1092	96	83	4.15		970	200	114	382	47	2112
Rajsamand	Kumbhalgarh	DHANEEN	9.05	1020	24	183	191	29	31	0.92		255	40	38	114	6	564

Rajsamand	Kumbhalgarh	JANAWAD	8.20	540	0	49	135	19	33	1.76		170	28	24	42	13	319
Rajsamand	Kumbhalgarh	KHARNOTA	8.55	1380	12	305	269	19	33	0.89		295	32	52	167	26	763
Rajsamand	Kumbhalgarh	LAMBODI	8.60	700	12	183	113	10	16	1.24		205	24	35	67	8	377
Rajsamand	Kumbhalgarh	MANSINGH KA GUDA	8.60	680	12	98	128	29	27	1.43		210	14	43	58	4	363
Rajsamand	Kumbhalgarh	MEWARIYA	8.55	2350	24	342	440	67	200	0.86		360	36	66	365	18	1386
Rajsamand	Kumbhalgarh	REECHHER	8.70	760	24	122	135	19	26	0.59		230	22	43	63	8	400
Rajsamand	Railmagra	BANEDIYA	8.60	2260	24	195	447	96	268	0.48		420	30	84	320	14	1380
Rajsamand	Railmagra	BETHUMBI	8.50	6520	12	171	1929	327	43	1.07		760	80	136	1120	38	3771
Rajsamand	Railmagra	DAMODARPURA	8.40	6680	12	183	1929	259	200	0.46		820	56	165	1129	26	3868
Rajsamand	Railmagra	DHANERIYA	8.25	3680	96	378	908	58	27	0.52		560	24	122	571	34	2028
Rajsamand	Railmagra	GILUND	8.55	1350	12	195	269	86	20	0.96		255	32	43	177	25	762
Rajsamand	Railmagra	JEETAWAS	8.30	2610	12	146	581	115	269	0.71		610	70	106	312	19	1558
Rajsamand	Railmagra	LADAPACHA	8.05	2490	0	122	603	67	296	1.04		730	130	98	229	18	1502
Rajsamand	Railmagra	MALI KHERA	8.75	920	12	317	64	58	40	1.13		180	26	28	118	18	523
Rajsamand	Railmagra	MENDURIYA	8.65	3420	12	146	674	557	42	1.10		800	94	137	404	20	2014
Rajsamand	Railmagra	MENIYA	9.15	3360	216	299	567	115	195	3.72		440	20	95	562	24	1943
Rajsamand	Railmagra	MORRA	8.50	2810	12	134	752	48	207	0.44		500	76	75	398	34	1669
Rajsamand	Railmagra	PACHHMATA	9.00	1310	96	366	106	29	28	0.57		175	8	38	206	23	717
Rajsamand	Railmagra	RAILMAGARA	9.00	1160	24	268	170	58	26	3.80		105	10	19	215	7	663
Rajsamand	Railmagra	SINDESAR KALAN	8.70	3080	36	354	716	144	45	0.85		370	26	74	514	33	1766
Rajsamand	Railmagra	SADRI	8.30	5820	24	146	1333	797	37	1.50		1220	56	263	734	65	3382
Rajsamand	Railmagra	ARDKIYA	8.70	6400	12	49	2085	173	49	0.57		1730	142	334	660	36	3515
Rajsamand	Railmagra	GAWARDI	8.65	1610	12	268	291	96	57	0.92		260	42	38	231	29	930
Rajsamand	Railmagra	GOGATHALA	8.85	800	12	232	99	7	53	0.46		195	20	35	86	15	443
Rajsamand	Railmagra	KHANDEL	8.75	1850	36	378	291	96	74	1.14		310	24	61	264	23	1058
Rajsamand	Railmagra	KOTRI	8.55	5310	24	268	1234	634	48	1.00		840	120	131	810	47	3183
Rajsamand	Railmagra	KURAJ	8.80	1480	24	366	170	110	40	3.36		270	30	47	200	23	828
Rajsamand	Railmagra	PEEPLI AHEERAN	8.15	13260	0	0	4929	0	427	0.54		0	0	0	0	0	5355
Rajsamand	Rajsamand	KELWA	9.05	3210	48	744	418	202	157	0.40		490	28	102	497	33	1857

Rajsamand	Rajsamand	KHATAMALA	8.55	1570	12	256	255	106	82	0.99		400	10	91	167	24	875
Rajsamand	Rajsamand	PASAOOND	8.35	3980	12	220	674	672	153	1.28		1175	52	254	362	18	2307
Rajsamand	Rajsamand	POOTHOL	8.60	2180	12	281	433	154	76	0.57		445	60	72	274	34	1255
Rajsamand	Rajsamand	SATHAANA	8.80	1580	6	342	284	29	76	0.83		285	52	38	222	18	895
Rajsamand	Rajsamand	BHATOLI	9.05	3880	48	854	702	115	60	1.23		300	42	47	733	42	2218
Rajsamand	Rajsamand	DHOINDA	8.60	2880	60	500	553	86	76	0.36		700	80	122	328	30	1587
Rajsamand	Rajsamand	MOHI	8.80	3720	48	427	894	144	46	0.44		325	58	44	702	17	2166
Rajsamand	Rajsamand	PHIYAWARI	8.80	4680	60	427	1220	134	38	1.59		515	62	88	822	37	2674
Rajsamand	Rajsamand	RAJNAGAR	8.80	1810	24	244	418	67	14	0.42		450	72	66	200	17	1001
Rajsamand	Rajsamand	RAJYAWAS	8.65	4000	12	281	894	423	48	0.54		555	50	105	629	54	2353
Rajsamand	Rajsamand	ATMA	8.70	1250	12	256	206	67	52	0.58		360	60	51	111	25	712
Rajsamand	Rajsamand	DHANWAL	8.20	1440	0	232	319	38	38	0.72		330	50	50	162	29	802
Rajsamand	Rajsamand	JODHPURA	8.75	2310	48	610	355	48	50	0.65		760	88	131	177	13	1215
Rajsamand	Rajsamand	MANDWARA	8.85	1110	24	159	213	58	40	0.63		380	34	72	70	17	606
Rajsamand	Rajsamand	MIYARI MADRI	9.05	1060	24	134	213	38	44	0.46		270	24	51	119	9	589
Rajsamand	Rajsamand	NATHUWAS	9.55	1710	36	366	312	58	21	0.83		175	46	15	306	32	1008
Rajsamand	Rajsamand	PADASALI	8.85	1570	12	268	305	67	42	0.52		245	34	39	242	11	886
Rajsamand	Rajsamand	PEEPARDA	8.70	1930	24	378	383	48	32	0.83		480	92	61	211	25	1065
Rajsamand	Rajsamand	PHARARA	8.85	1680	12	183	447	19	40	0.41		235	32	38	265	29	973
Rajsamand	Rajsamand	SAKRODA	8.75	2280	36	293	539	29	58	1.24		295	30	54	365	36	1293
Rajsamand	Rajsamand	SAPOL	9.90	980	36	183	170	19	36	1.02		245	24	45	103	16	540
Rajsamand	Rajsamand	KUNWARIYA	8.70	3720	24	293	993	77	119	0.56		740	90	125	498	27	2100
Rajsamand	Rajsamand	BHANA	8.75	3660	48	439	837	134	117	0.46		510	40	100	593	32	2121
Rajsamand	Rajsamand	BHAWA	8.80	580	12	98	106	10	30	0.76		140	30	16	65	6	323
Rajsamand	Rajsamand	MAHASAT KI MADRI	8.70	680	12	85	135	29	38	0.62		205	36	28	59	5	385

21. ANNEXURE F: Pre Monsoon - Heavy Metal and Uranium Concentration in Ground Water Samples of Rajsamand District.

District	Block	Location	Long.	Lat.	Cu	Mn	Ni	Pb	Zn	Fe	U IN PPB
					mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
Rajsamand	Kumbalgarh	Kitela	73.7775	25.3368889	0.082	BDL	BDL	0.010	0.041	BDL	22.2
Rajsamand	Railmagra	Kuraj	74.100278	25.08	0.002	BDL	BDL	0.010	BDL	BDL	104.2
Rajsamand	Khamnor	Kotharia	73.857778	24.9613889	0.010	0.013	0.010	0.010	BDL	BDL	14.2
Rajsamand	Khamnor	Bagol	73.791944	24.9347222	0.015	0.027	BDL	0.010	BDL	BDL	16.9
Rajsamand	Khamnor	khamnor	73.720278	24.9058333	0.019	BDL	BDL	0.010	BDL	BDL	19.9
Rajsamand	Khamnor	Baleecha	73.688889	24.8816667	0.004	BDL	BDL	0.010	BDL	BDL	21.6
Rajsamand	Khamnor	Godach	73.661944	24.7930556	0.125	0.022	BDL	0.010	0.073	BDL	6.6
Rajsamand	Khamnor	Machhind	73.605833	24.9244444	0.088	0.013	BDL	0.010	0.050	BDL	5.2
Rajsamand	Kumbalgarh	Kelwawa	73.598611	25.12	0.267	0.025	BDL	0.010	0.150	0.147	5.2
Rajsamand	Rajsamand	Mohi	73.948889	25.0416667	0.117	BDL	BDL	0.010	0.063	0.065	26
Rajsamand	Khamnor	Uthnol	73.881111	25.9083333	0.006	BDL	BDL	0.010	BDL	BDL	42
Rajsamand	Rajsamand	Sathana	73.969722	24.9719444	0.006	0.019	BDL	0.010	BDL	BDL	20.9
Rajsamand	Railmagra	Sansera	74.055556	24.9533333	0.006	BDL	BDL	0.010	BDL	BDL	45
Rajsamand	Railmagra	Pacchmata	74.193611	25.0222222	0.010	BDL	BDL	0.010	BDL	BDL	84
Rajsamand	Railmagra	Railmagra	74.109722	25.0369444	0.008	BDL	BDL	0.010	BDL	BDL	39.6
Rajsamand	Railmagra	Khandel	74.099167	25.0475	0.074	BDL	BDL	0.010	0.031	0.070	8.5
Rajsamand	Rajsamand	Kunwariya	74.025	25.1177778	0.008	BDL	0.011	0.010	BDL	BDL	80.2
Rajsamand	Rajsamand	Piparda	73.856667	25.0155556	0.197	BDL	0.016	0.010	0.099	BDL	28.3
Rajsamand	Rajsamand	Dhanwal	73.782222	25.0288889	0.006	BDL	BDL	0.010	BDL	BDL	102
Rajsamand	Khamnor	Cheekalwas	73.731111	25.0230556	0.006	BDL	BDL	0.010	BDL	BDL	14.3
Rajsamand	Kumbalgarh	Sameecha	73.621667	25.0366667	0.011	0.026	0.016	0.010	BDL	BDL	23.2

Rajsamand	Kumbalgarh	Bargaon	73.6475	25.1072222	0.085	BDL	BDL	0.011	0.051	0.078	23.5
Rajsamand	Kumbalgarh	Bhawani ki Baghal	73.704722	25.1177778	0.041	BDL	0.014	0.010	0.029	BDL	29
Rajsamand	Deogarh	Deogarh	73.921111	25.5288889	0.051	BDL	0.014	0.010	0.029	BDL	28.5
Rajsamand	Deogarh	Kalalo ki Anti	73.963333	25.5611111	0.007	BDL	0.014	0.010	BDL	BDL	23.4
Rajsamand	Deogarh	Tal	74.0575	25.6277778	0.278	BDL	BDL	0.010	0.190	0.113	12.1
Rajsamand	Deogarh	Sohangarh	74.089444	25.6291667	0.005	BDL	0.011	0.010	BDL	BDL	5.4
Rajsamand	Deogarh	Jhankara	74.064722	25.5394444	0.005	0.014	BDL	0.011	BDL	0.062	3.1
Rajsamand	Deogarh	Kundwa	74.007778	25.4541667	0.098	0.119	BDL	0.011	0.070	3.900	3.2
Rajsamand	Deogarh	Kuanthal	73.922778	25.4086111	0.007	0.019	0.011	0.011	0.059	0.142	23.1
Rajsamand	Amet	Khakarmal	73.900556	25.3861111	0.066	0.240	BDL	0.011	0.039	0.262	8.9
Rajsamand	Deogarh	Beeyana	73.905556	25.3875	0.034	0.061	0.011	0.010	0.025	1.830	6.3
Rajsamand	Amet	Olnakhera	74.035278	25.2352778	0.049	0.161	0.020	0.105	8.090	1.775	0.2
Rajsamand	Amet	Asan	73.910833	25.31	0.009	0.014	0.010	0.010	0.173	0.096	28.9
Rajsamand	Deogarh	Kamala	73.856111	25.5761111	0.066	BDL	BDL	0.010	0.039	0.087	3.9
Rajsamand	Bhim	Baggar	73.901389	25.6019444	0.013	0.016	BDL	0.010	0.123	BDL	10.7
Rajsamand	Deogarh	Miyala	73.9575	25.6125	0.005	BDL	BDL	0.010	BDL	BDL	26.5
RAJSAMAND	Bhim	BAGHANA	73.8386	25.5000	0.007	0.041	0.010	0.010	BDL	0.067	
RAJSAMAND	Bhim	BALI1	74.0833	25.8333	0.005	0.011	0.011	0.010	BDL	0.107	
RAJSAMAND	Bhim	BARAR	74.0167	25.6667	0.007	0.260	0.011	0.010	0.056	BDL	
RAJSAMAND	Bhim	Bhim	74.0792	25.7433	0.006	BDL	BDL	0.010	BDL	BDL	
RAJSAMAND	Kumbhalgarh	Bhop Ji Ki Bhagal	73.7208	25.2583	0.010	BDL	BDL	0.010	0.310	0.286	
RAJSAMAND	Amet	CHATTARPUR	73.9561	25.2414	0.008	BDL	0.020	0.010	BDL	BDL	
RAJSAMAND	Bhim	DEWAIR	73.8222	25.4208	0.004	0.040	BDL	0.010	0.028	0.158	
RAJSAMAND	Kumbhalgarh	DOWAS	73.5667	25.0386	0.002	BDL	BDL	0.010	BDL	BDL	
RAJSAMAND	Railmagra	GAVARDI	74.1000	24.9039	0.004	BDL	BDL	0.010	BDL	BDL	
RAJSAMAND	Kumbhalgarh	Gomti Chouraha	73.7828	25.2783	0.002	BDL	BDL	0.010	BDL	BDL	
RAJSAMAND	Amet	GUGLI	73.8833	25.2333	0.075	BDL	BDL	0.010	0.050	BDL	
RAJSAMAND	Kumbhalgarh	JHILWARA	73.6708	25.2272	0.091	BDL	BDL	0.010	0.052	BDL	
RAJSAMAND	Kumbhalgarh	KANCHOLI	73.5500	24.9600	0.002	BDL	BDL	0.010	BDL	BDL	

RAJSAMAND	Kumbhalgarh	MANSINGH KAGURA	73.7889	25.2381	0.058	BDL	BDL	0.010	0.040	BDL	
RAJSAMAND	Rajsamand	MOKAMPURA	73.8500	25.1308	0.108	0.012	BDL	0.010	0.074	0.078	
RAJSAMAND	Amet	NADIAWALA	73.8631	25.2028	0.079	0.013	0.018	0.010	0.061	0.066	
RAJSAMAND	Railmagra	ODA1	74.0039	25.0333	0.004	BDL	BDL	BDL	BDL	BDL	
RAJSAMAND	Khamnor	ODAN	73.8167	24.9000	0.004	0.058	BDL	0.010	0.042	BDL	
RAJSAMAND	Rajsamand	RAJSAMAND	73.8833	25.0667	0.002	BDL	BDL	0.010	BDL	BDL	
RAJSAMAND	Bhim	Sheron Ka Bala	74.1333	25.8500	0.004	0.176	BDL	0.010	BDL	0.289	
RAJSAMAND	Bhim	THIKARWAS	73.9800	25.6000	0.004	0.023	BDL	0.010	0.024	0.075	