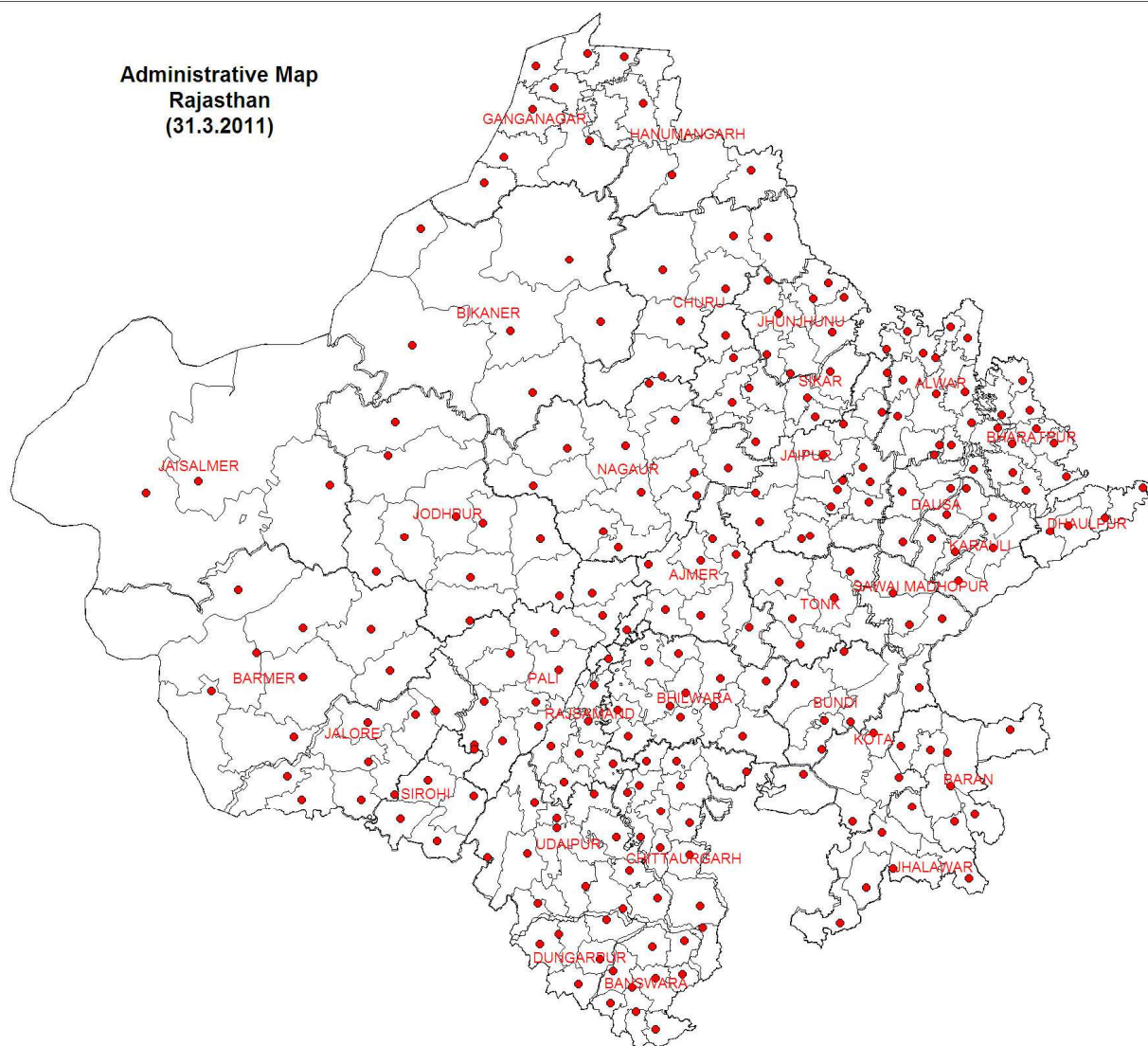


**Administrative Map
Rajasthan
(31.3.2011)**



Prepared by

Central Ground Water Board
Government of India
Western Region, Jaipur

**Ground Water Department
Government of Rajasthan
Jodhpur**

Jaipur
July' 2014

Dynamic Ground Water Resources of Rajasthan

As on 31st March 2011

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Dynamic Ground Water Resources of Rajasthan

As on 31st March 2011

1. Introduction

The Government of India vide D.O. No. 3/10/2011-GW dated 15/2/2012 from Joint Secretary Ministry of Water Resources desired that in each State, a Group on re-estimation of Ground Water Resource & Irrigation Potential from Ground Water should be constituted for furnishing the relevant information to the Planning Commission. With this view, the said Committee with respect to Rajasthan state was constituted vide letter No. F.6 (42) AR/Gr 3/2012 dated 29 June 2012 (Annexure I) of Deputy Secretary to Government vide order of Rajasthan Government Administrative Reforms (Group-3) Department with the following members

1. The Principal Secretary to Government, Ground Water Department & PHED Jaipur	Chairman
2. Secretary to Government, Energy	Member
3. Commissioner, Industries	Member
4. Commissioner, Agriculture	Member
5. Chief Engineer, SWRPD	Member
6. The Chief Engineer, Water Resources	Member
7. Chief Engineer (HQ), PHED	Member
8. Chief Engineer (Rural), PHED	Member
9. Chief Engineer, GWD	Member
10. General Manager, NABARD	Member
11. Regional Director, Central Ground Water Board, Western Region, Jaipur	Member-Secretary

The terms of reference of the Group were as follows:-

1. To re-estimate the ground water and irrigation potential in Rajasthan in accordance with the methodology recommended by the Ground Water Estimation Committee 1997.
2. To re-estimate the status of utilization of the annual replenishable ground water resources
3. The types and numbers of ground water abstraction structures feasible in the State.
4. To lay down the norms for application of water for different crops grown in different seasons in various parts of the State and assess the total water requirement.
5. To assess the present and ultimate requirements of ground water for Domestic and Industrial use.

6. To recommend the programme for investigation and development of ground water resource (keeping in view the perspective laid by Government of India for harnessing the entire water resources by 2025 AD).

Ground Water Resource Estimation for the State is carried out periodically. The Ground Water Resources of Rajasthan were last estimated as on 31.03.2009. In the present report, block-wise dynamic ground water resources as on 31.3.2011 have been assessed. Ground Water Resources have been estimated as per the Ground Water Estimation Committee-1997 guidelines.

A meeting of the committee was held on 5.4.2013 under chairmanship of the Principal Secretary (GWD & PHED), Rajasthan. The ground water resources assessment as on March 2013 was approved by the committee. The minutes of the meeting are given in Annexure II.

Administrative map of Rajasthan depicting the assessment units (Blocks) in each district (33) is represented in Plate - I

2. General Features of The State

2.1. Physiographic Features

2.1.1. Topography

The state has a fairly mature topography developed during the long period of denudation and erosion. The present physiography and landforms are greatly determined by the underlying geological formations and structures and are the product of the fluvial cycle of erosion in the past and the recent & continuing desert cycle of erosion. Physiography and Drainage are shown in Plate II.

Physiographically the state can be divided into four units:

- (a) Aravalli hill ranges
- (b) Eastern plains
- (c) Western Sandy Plain with Sand Dunes and
- (d) Vindhyan Scarpland and Deccan Lava Plateau

2.1.2. Aravalli Hill Ranges

The Aravalli ranges trending NE -SW are the oldest mountain chain in India. The elevation of these hill ranges varies from about 600 metres to over 900 metres above mean sea level (m amsl). They are composed of Bhilwara, Aravalli and Delhi Supergroup of rocks ranging in age from Archaean {2500 million year (my)} to Proterozoic (740 my). These ranges form a series of rugged hills with rounded surfaces. The quartzite stands out as

scarps. Near Ajmer, these separate out southwestwards into a number of parallel ridges. At Mount Abu, the clusters of granite peaks reach a maximum height of 1722 m amsl at Guru Sikhar.

2.1.3. The Eastern Plains

In the plains, east of the Aravalli ranges, the altitude varies from 150 m to 450m AMSL. The general trend of the slope varies from place to place. In Dungarpur and Banswara districts the trend is mainly from north to south, in Alwar district it is from south to north and in the remaining districts, forming the central and north eastern Rajasthan, it is from west to east. The south-eastern limit is marked by the Vindhyan plateau.

2.1.4. The Western Sandy Plains and Sand Dunes

The sandy plains in western Rajasthan, forming a part of Thar-Desert, are mainly occupied by alluvium and blown sands. These plains are further sub-divided into three units :

- i) Sandy Arid Plain (Marusthali)
- ii) Semi-arid Transitional Plain
- iii) Ghaggar Plain

The Sandy Arid Plain is a typical desert terrain. It includes the western most districts of Jaisalmer, Bikaner and parts of Barmer, Jodhpur, Nagaur, Churu and Ganganagar. The line dividing the Sandy Arid Plain and the Semi-arid Transitional Plain as well as Ghaggar Plain is based on climatic parameters and water resource availability.

The eastern boundary of the Semi-arid Transitional Plain is marked by the foot-hills and their extension on the western side of Aravalli ranges. Sand dunes are prominent and the terrain is punctuated with isolated hills of granites and rhyolites. The altitude varies from 30m to 300m amsl. The general slope is from northeast to southwest.

The Ghaggar Plain consists mainly of former flood plains of River Ghaggar and aeolian deposits. A network of canals cover the entire area. The southern and south-eastern part is occupied by medium to high dunes. Nineteen of these interdunal depressions are being utilised for storing the diverted Ghaggar flood waters. The central part of the Ghaggar Plain is drained by the regulated floodwaters of Ghaggar River.

2.1.5. Vindhyan Scarpland and Deccan Lava Plateau

The southeastern plains are locally characterised by plateau, scarpland and ravines. The Vindhyan scarp lands are seen all along the Great Boundary Fault from Chittorgarh to the

trijunction of Bharatpur, Dholpur and Sawai Madhopur districts. They have an average elevation of 300m to 580m amsl.

The Deccan Lava Plateau is mainly confined to parts of Kota, Baran, Jhalawar, Banswara and Chittorgarh districts. The elevation ranges from 300m to over 500m AMSL.

The ravines, locally impassable, are confined to the alluvium overlying the Vindhya in Dholpur, Sawai Madhopur, Jhalawar and Kota districts along the Chambal River and its tributaries.

2.2. Drainage

The Aravalli Hill Ranges form the main water divide in Rajasthan. Luni is the only river west of Aravallis. In the remaining area of western Rajasthan comprising about 60% of the geographical area of the state, the drainage is internal, and the streams are lost in the desert sands after flowing for a short distance from the point of origin. Luni itself essentially is an ephemeral stream with flood cycle of 16 years. Drainage in western Rajasthan is towards west and south - west.

In the east of Aravalli ranges, the main drainage is towards north - east. The Chambal Catchment occupies 21% (72,032 sq km) of the total geographical area of the state.

The other important catchments include Yamuna-Ganga in the north east, and Mahi and Sabarmati in the south west with flow towards south. The former three catchments support perennial rivers. In the northern and north-eastern parts of eastern Rajasthan, the Banganga, Barah, Sota, Sahibi and Kantli rivers are of inland nature. The drainage in the whole of Rajasthan is generally dendritic.

In the desert area, a few salt lakes and depressions exist, prominent among them being the Sambhar lake, Didwana lake, Bap, Pachpadra and Rann of Jaisalmer and Pokran.

2.3. Climate

Climatically, the year in Rajasthan can be divided into three major conventional seasons as follows :

- The Hot- Weather Season (March to end of June)
- Monsoon Season (End of June to September)
- The Cold- Weather Season (October to February)

The India Meteorological Department has further sub-divided the cold season into two divisions, i.e.

- The Season of retreating monsoon (October to December)
- The cold season (January to February)

These seasonal variations have been broadly based on temperature and rainfall conditions in different months.

2.3.1. Rainfall

Rainfall is the major source of ground water recharge in the state. The long-term normal rainfall in the State ranges from 158 mm to 895.3 mm as shown in Plate III. The state receives 90 % rainfall from southwest monsoon from June to September. The winter rainfall is meagre. The average annual rainfall and departures from normal rainfall have been worked out in Figure-1 below:

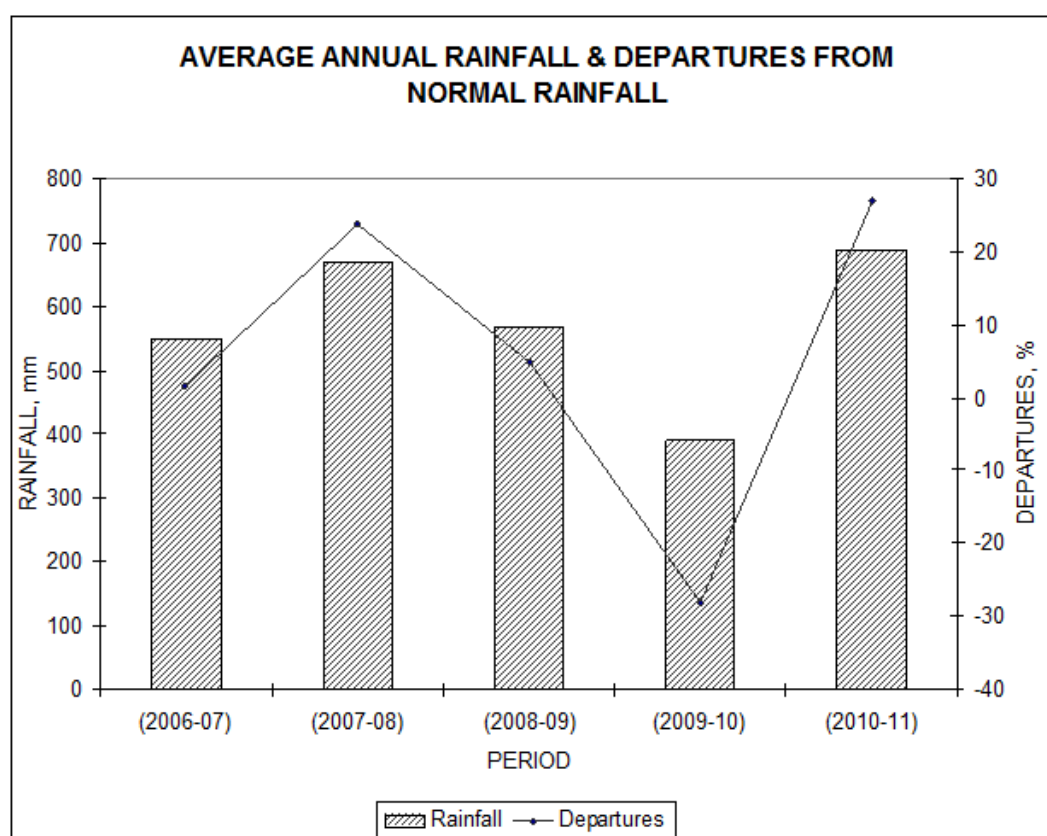


Figure 1: Average Annual Rainfall and Departure from Normal Rainfall

The average annual rainfall of the state during the period 2010-11 was 687.40 mm. The percentage departures of average annual rainfall from normal (1901-70) have been computed for the last five years and tabulated in **Table 1**. It is observed that the average annual rainfall in the state, during the year 2006-07 and 2008-09 was almost normal with departure of 1.6% and 4.8% respectively. The average annual rainfall in the state during the 2009-10 was 28.4% below normal. However, average annual rainfall of the state during the year 2010-11 was above normal and nearly coincided with that of 2007-08.

A perusal of Table 1 reveals that 26 districts of the state received more than normal annual rainfall during the year 2010-11. It is observed that five districts of Rajasthan have received good rainfall with positive departures being more than 100%. Out of these districts, four are situated in western part of Rajasthan with highest departure of 150.1% in Jaisalmer. The remaining one district falls in northern part of state. There are 292 Rain gauge stations in the state. The annual rainfall data (June to May) of five years 2006-07 to 2010-11 have been analysed to calculate average rainfall of each district in the respective years (Figure 1) Baran received poor rainfall with highest negative departure being 31.6%.

2.3.2. Temperature

The hot weather season commences in the month of March and continues through April to June. In the month of May the diurnal range of temperature increases more and the days become hotter. During June, the mean maximum temperature reaches as high as 48°C.

January is the coldest month. The normal minimum temperature for the month of January range from 2°C in the north to 7.8°C in the south west in the western Rajasthan. At Mount Abu (1195 m AMSL), temperature dips to freezing point during the month of December /January. In eastern Rajasthan the range of normal minimum temperature (January) in and around the Aravalli hill ranges is 7°C to 8°C which increases towards the east and attains a high of more than 10°C in the districts of Kota and Bundi.

Table 1: Average Annual Rainfall And Departure from Normal Rainfall

S. No.	District	Rainfall						Departure from normal				
		Normal	Annual	Annual	Annual	Annual	Annual	(06-07)	(07-08)	(08-09)	(09-10)	(10-11)
		(1901-70)	(2006-07)	(2007-08)	(2008-09)	(2009-10)	(2010-11)	%	%	%	%	%
1	Ajmer	437	479.8	444.8	435.5	257.4	693.16	9.8	1.8	-0.3	-41.1	58.6
2	Alwar	626	726.2	579.8	854.3	524.7	783.59	16	-7.4	36.5	-16.2	25.2
3	Banswara	870	785.6	808.2	557.3	723.8	622.13	-9.7	-7.1	-35.6	-16.8	-28.5
4	Baran	895.3	1043.5	1270.7	949.5	701.6	612.19	16.6	41.9	6.1	-21.6	-31.6
5	Barmer	260	185.4	659.9	278.9	153.8	554.38	-28.7	153.8	7.3	-40.8	113.2
6	Bharatpur	675.1	694.3	381.5	771.3	573.8	820.70	2.8	-43.5	14.2	-15.0	21.6
7	Bhilwara	603.3	564.1	834	564.5	375.4	709.75	-6.5	38.2	-6.4	-37.8	17.6
8	Bikaner	249.8	266.1	246	294.1	173.6	433.50	6.5	-1.5	17.7	-30.5	73.5
9	Bundi	715.8	592.7	656.5	626.9	428.2	649.37	-17.2	-8.3	-12.4	-40.2	-9.3
10	Chittorgarh	772.3	764.9	1256.7	797.2	640.7	794.21	-1	62.7	3.2	-17.0	2.8
11	Churu	337.9	324.5	318.7	466.8	216.5	688.67	-4	-5.7	38.1	-35.9	103.8
12	Dausa	625.7	638.8	488.3	808.4	433	757.60	2.1	-22	29.2	-30.8	21.1
13	Dhaulpur	717.5	633.2	479.3	1007.8	489.6	738.83	-11.7	-33.2	40.5	-31.8	3.0
14	Dungarpur	610.4	520.7	1420.3	460.3	721.4	599.25	-14.7	132.7	-24.6	18.2	-1.8
15	Ganganagar	171.6	132.1	282.2	287.2	212.3	370.44	-23	64.5	67.4	23.7	115.9
16	Hanumangarh	237.5	263.6	308.9	339.4	199.6	438.29	11	30.1	42.9	-16.0	84.5
17	Jaipur	526.8	603	419.1	625.6	314.1	826.45	14.5	-20.4	18.8	-40.4	56.9
18	Jaisalmer	158.6	164.4	300.9	206.3	99	396.67	3.7	89.7	30.1	-37.6	150.1
19	Jalore	400.6	430.7	871.9	353.5	167	834.97	7.5	117.6	-11.8	-58.3	108.4
20	Jhalawar	884.8	704.5	1323.1	685.6	657.4	625.78	-20.4	49.5	-22.5	-25.7	-29.3

S. No.	District	Rainfall						Departure from normal				
		Normal	Annual	Annual	Annual	Annual	Annual	(06-07)	(07-08)	(08-09)	(09-10)	(10-11)
		(1901-70)	(2006-07)	(2007-08)	(2008-09)	(2009-10)	(2010-11)	%	%	%	%	%
21	Jhunjhunu	459.5	579	462	543.7	262.6	831.57	26	0.5	18.3	-42.9	81.0
22	Jodhpur	296.7	260.1	298.6	329	143.1	481.29	-12.3	0.6	10.9	-51.8	62.2
23	Karauli	616.2	614.7	466.6	986.3	535.2	768.92	-0.2	-24.3	60.1	-13.1	24.8
24	Kota	808.7	626.5	952.5	780.4	578.3	595.65	-22.5	17.8	-3.5	-28.5	-26.3
25	Nagaur	363.1	379.1	315.5	427.8	161.9	554.34	4.4	-13.1	17.8	-55.4	52.7
26	Pali	484.5	417.4	667.3	348	260	652.78	-13.8	37.7	-28.2	-46.3	34.7
27	Rajsamand	556.1	718.9	818	393.8	408.4	842.29	29.3	47.1	-29.2	-26.6	51.5
28	Sawai Madhopur	655.8	825.7	492.1	740.9	478.6	666.29	25.9	-25	13	-27.0	1.6
29	Sikar	459.8	463.9	387.5	508.1	226.6	868.71	0.9	-15.7	10.5	-50.7	88.9
30	Sirohi	606.3	832.5	1533.9	498.4	437.6	942.15	37.3	153	-17.8	-27.8	55.4
31	Tonk	598.2	543.4	416.5	599.2	308.3	790.74	-9.2	-30.4	0.2	-48.5	32.2
32	Udaipur	632.7	804.9	1274.7	622.4	593	895.89	27.2	101.5	-1.6	-6.3	41.6
RAJASTHAN		541.1	549.5	669.9	567.1	389.3	687.40	1.6	23.8	4.8	-28.1	27.0

2.4. Geology

Diverse rock types ranging from the oldest Archaean rocks to sub- Recent alluvium and wind blown sand are exposed in Rajasthan. In a major portion of the State, particularly in western Rajasthan, the oldest rocks are concealed below a thick cover of alluvium and wind blown sands. A generalised stratigraphic succession of various formations and rock types is given in **Table-2**.

2.4.1. Archaeans

The Archaeans in Rajasthan are represented by Bhilwara Supergroup and comprise Banded Gneissic Complex representing the oldest meta-sedimentary sequence along-with Berach Granite.

2.4.2. Proterozoics

Aravallis: Aravalli Supergroup unconformably overlies the Archaeans and consists of phyllites, greywackes, quartzites and dolomites intruded by granites and mafic rocks.

Delhis: These are exposed over a large part of central and north eastern Rajasthan and consist dominantly of quartzites, biotite-schist, calc-schist and marble.

Vindhya: Vindhya unconformably overlies Delhis and have been deposited in two separate basins on either side of the Aravallis. In the eastern part these comprise unmetamorphosed, relatively undisturbed, sandstones, limestones and shales. Great Boundary Fault separates them from Aravallis and Archeans.

Intrusives and Extrusives: Nepheline syenites are exposed around Kishangarh and are post-Delhi in age. Erinpura Granite is the principal intrusive into the Delhis and is exposed around Ajmer and Mount Abu. Malani Suite of igneous rocks consisting of rhyolites and pyroclastic material are exposed around Jodhpur and are post-Delhi in age.

2.4.3. Palaeozoics

In the western part of the state, Marwar Super Group of Lower Palaeozoic age consists of three groups namely Jodhpur group (mainly sandstone & shale), Bilara Group (mainly limestone and dolomite) and Nagaur Group (sandstone, siltstone and gypsum). Overlying the Marwar Super Group is the Badhura Formation of Permo-Carboniferous age comprising sandstones and boulders.

Table 2: Geological Succession

GEOLOGICAL TIME UNIT		LITHOSTRATIGRAPHIC TIME UNIT		LITHOLOGY
ERA	PERIOD	SUPERGROUP / GROUP		
RECENT				Alluvium and blown sand
CAINOZOIC (TERTIARY)	Eocene	Mandai/ Akli/ Kapurdih/ Jogira/ Banda/ Khuiala / Palana		Sandstone, bentonitic clay & fuller’s earth
DECCAN TRAPS				Basalt
MESOZOIC	Cretaceous	Abur / Fatehgarh		Sandstone, limestone, clay and lignite
	Jurassic	Parihar/ Bhadesar/ Baisakhi/ Jaisalmer/ Lathi		Limetstone, sandstone & shale
PALAEOZOIC	Permo- Carboniferous		Badhura	Sandstone & boulders
		Marwar	Nagaur/ Bilara/ Jodhpur	Sandstone, gypsum, siltstone, limestone, dolomite & shale
UPPER PROTEROZOIC		Vindhyan	Bhander/ Rewa/ Kaimur/ Semri	Sandstone, shale, limestone, conglomerate & basic flows
		Acid,Basic and Ultrabasic Intrusives and Extrusives Malani Volcanics / Plutonics Kishangarh Syenite		
LOWER PROTEROZOIC		Delhi	Ajabgarh/ Alwar/ Sirohi/ Punagarh/ Raialo	Quartzite, schist, gneiss, marble, shale, slate, phyllite & basic flows
		Granite, Basic & Ultrabasic Intrusives		
		Aravalli	Jharol/ Bari/ Udaipur/ Debari	Quartzite, schist, phyllite, conglomerate, greywacke, metavolcanics & marble
		Granite & Basic Intrusives		
ARCHAEAN		Bhilwara	Ranthambore/ Rajpura-Dariba /Hindoli	Phyllite, slates, schist, gneiss, granite gneiss & migmatites

2.4.4. Mesozoics

Mesozoics are exposed mainly in Jaisalmer and Barmer districts. These comprise of sandstones and limestone.

2.4.5. Deccan Traps

Deccan Traps occupy a part of southeastern segment of the state covering parts of Banswara, Baran, Jhalawar and Chittorgarh districts. These overlie pre-Aravallis, Aravallis and Vindhyan. These are basaltic to doleritic in composition and are uniform over a large area.

2.4.6. Tertiaries

Sandstones, bentonitic clay and Fuller's earth are the main litho-units and are exposed in Barmer, Bikaner and Jaisalmer districts.

2.4.7. Recent

This group of formations consists of alluvium, blown sands, kankar and evaporites, which are widely spread in the state.

2.5. Hydrogeology

The principal source of recharge to ground water in Rajasthan is rainfall. In canal irrigated areas, a part of canal water through seepage from conveyance system and part of water utilised for irrigation and returning to ground water contribute to storage. For broadly grouping geological formations from ground water occurrence & movement considerations, the various litho units have been classified into two groups on the basis of their degree of consolidation and related parameters. These are represented in Plate IV and described as below:

- I. Porous formations
 - (a) Unconsolidated formations
 - (b) Semi- consolidated formations
- II. Fissured formations
 - (a) Consolidated sedimentary rocks
 - (b) Igneous and metamorphic rocks
 - (c) Volcanic rocks
 - (d) Carbonate rocks

2.5.1. Porous Formations

The Quaternary sediments comprising younger as well as older alluvium are the most important unconsolidated formations due to their wide-spread occurrence. The sediments are composed of clay, silt, sand, gravel and mixture of concretions etc. Sand, gravel and admixture of these form the potential aquifers in northern, eastern, north-eastern, western and south-western parts of the state. The maximum-drilled thickness of alluvium is 543.51 metre below ground level (m bgl) at Anupgarh in Ganganagar district.

The semi-consolidated formations belonging to Palaeozoic, Mesozoic and Cainozoic Groups are composed of siltstone, claystone, sandstone, shale, conglomerate and limestone. Sandstones and limestones form the main aquifers in Jaisalmer, Jodhpur, Barmer and Bikaner districts. Sandstones of Lathi formation are the most potential aquifers in the districts of Jaisalmer, Jodhpur and Barmer.

2.5.2. Fissured Formations

Fissured formations, as hydrogeological unit, occupy 32% area of the state and can be broadly classified into four units.

Consolidated sedimentary rocks, excluding carbonate rocks, include sandstones and shales. In eastern and south-eastern part of the state these belong to Vindhyan Supergroup whereas in western Rajasthan these belong to the Marwar Supergroup.

Igneous and metamorphic rocks of lower Proterozoic age comprise slate, quartzite, phyllite, schist, gneiss and various crystallines of Bhilwara Supergroup. These are mostly found in the districts of Banswara, Dungarpur, Udaipur, Chittorgarh, Bhilwara, Tonk, Jaipur, Alwar and Jhunjhunu in eastern Rajasthan and Nagaur, Churu, Barmer, Jaisalmer, Pali, Jalore, Sirohi and Jodhpur districts in western Rajasthan.

Volcanic rocks include Deccan Trap Lava Flows and occur in parts of Barmer, Jhalawar, Chittorgarh and Banswara districts. These are basaltic to doleritic in composition. Occurrence and movement of ground water in these formations is controlled by the presence of vesicles, extent of weathering, jointing and fracture pattern.

Carbonate rocks include limestone, marble and dolomite of Proterozoic and Upper Palaeozoic to Mesozoic age and occupy parts of Kota, Bundi, Jaipur, Sawai Madhopur and Alwar districts on the eastern side of Aravallis and parts of Nagaur, Bikaner, Jaisalmer and Jodhpur districts in western Rajasthan

2.5.3. Ground Water Level

The depth to water varies widely throughout the State; shallow water levels have been noticed in canal command area of Ganganagar, Banswara, Kota and Bundi districts whereas deeper water levels have been observed in the western districts, particularly Jaisalmer, Bikaner, Barmer and Jodhpur. Depth to water level map during pre-monsoon (May 2010) has been prepared and depicted as **Plate V**.

To the east of Aravallis the depth to water is comparatively shallower than that in the west. It generally varies between less than 10 meters and 40 meters in the eastern part,

whereas in the western part, it ranges between 30 meters and 80 meters. The water table slopes towards east and south-east on the eastern side, whereas it slopes towards west and north-west in west of Aravallis. However, local variations are common both in the direction and movement of ground water. Over-exploitation and excess use of ground water have led to substantial decline in water levels, which may ultimately result in drying up of aquifers in many areas of the State.

2.5.4. Ground Water Quality

In general, the chemical quality of ground water is fresh in the eastern part except in a few pockets of Bharatpur district particularly in Sear, Nagar, Kumher and Deeg blocks where the ground water is brackish to saline. The chemical quality in major part of western Rajasthan is generally saline. However, potable ground water is found in the areas covered by sandstone and limestone of Marwar Super group, Lathi formations in Jaisalmer and Barmer districts, the Tertiaries in parts of Bikaner, Nagaur, Churu, Barmer and Jaisalmer districts and localized pockets in Quaternaries. High fluoride hazard is found in pockets in almost all the districts with varying intensity. Problems of high nitrate and other constituents beyond permissible limits of drinking and irrigation also exist in some arid districts. Increased use of fertilizers, poor sewerage system in urban agglomerates and industrial pollution has further caused deterioration in the quality of ground water.

3. Ground Water Resources Estimation Methodology

The previous ground water resources assessment of the State used to be done on the basis of recommendations of Ground Water Estimation Committee—1984 (GEC'84). The GEC'84 methodology was subsequently modified in the light of enhanced database and new findings of experimental studies in the field of hydrogeology. The present methodology used for resources assessment is known as Ground Water Resource Estimation Methodology—1997 (GEC'97). In GEC'97, two approaches are recommended- water level fluctuation method is based on the concept of storage change due to difference between various input and output components. Input refers to recharge from rainfall and other sources and subsurface inflow into the assessment unit. Output refers to ground water draft, ground water evapotranspiration, base flow to streams and subsurface outflow from the unit. Since the data on subsurface inflow/ outflow are not readily available, it is advantageous to adopt the unit for ground water assessment as basin/ sub-basin/ watershed, as the inflow/ outflow across these boundaries may be taken as negligible.

Ground water resources assessment unit is in general watershed particularly in hard rock areas. In case of alluvial areas, administrative block can also be the assessment unit. In each assessment unit, hilly areas having slope more than 20% are deleted from the total area to get the area suitable for recharge. Further, areas where the quality of ground water is beyond the usable limits should be identified and handled separately. The remaining area, after deleting the hilly area and separating the area with poor ground water quality, is to be delineated into command and non-command areas. Ground water assessment in command and non-command areas is done separately for monsoon and non-monsoon seasons.

3.1. Ground Water Recharge

Monsoon season

The resource during monsoon season is estimated as the sum total of the change in storage and gross draft. The change in storage is computed by multiplying water level fluctuation between pre and post monsoon periods with the area of assessment and specific yield. Monsoon recharge can be expressed as-

$$R = h \times S_y \times A + D_G$$

Where,

h = rise in water level in the monsoon season

A = area for computation of recharge

S_y = specific yield

D_G = gross ground water draft

The monsoon ground water recharge has two components – rainfall recharge and recharge from other sources. Mathematically it can be represented as –

$$R(\text{Normal}) = R_{rf}(\text{Normal}) + R_c + R_{sw} + R_t + R_{gw} + R_{wc}$$

Where,

R_{rf} is the normal monsoon rainfall recharge.

The other sources of ground water recharge during monsoon season include R_c , R_{sw} , R_t , R_{gw} , R_{wc} which are recharge from rainfall, seepage from canals, surface water irrigation, tanks and ponds, ground water irrigation, water conservation structures respectively.

The rainfall recharge during monsoon season computed by Water Level Fluctuation (WLF) method is compared with recharge figures from Rainfall Infiltration Factor (RIF) method. In case the difference between the sets of data is more than 20%, then RIF figure is considered, otherwise monsoon recharge from WLF is adopted. While adopting the rainfall recharge figures, weightage is to be given to WLF method over ad-hoc norms method of RIF.

Hence, wherever the difference between RIF & WLF is more than 20%, data have to be scrutinized and corrected accordingly.

Non-Monsoon Season

During non-monsoon season, rainfall recharge is computed by using Rainfall Infiltration Factor (RIF) method. Recharge from other sources is then added to get total non-monsoon recharge. In case of areas receiving less than 10% of the annual rainfall during non-monsoon season, the rainfall recharge is ignored.

Total Annual Ground Water Recharge

The total annual ground water recharge of the area is the sum total of monsoon and non-monsoon recharge. An allowance is kept for natural discharge in the non-monsoon season by deducting 5% of total annual ground water recharge, if WLF method is employed to compute rainfall recharge during monsoon season and **10%** of total annual ground water recharge if RIF method is employed. The balance ground water available accounts for existing ground water withdrawal for various uses and potential for future development. This quantity is termed as Net Ground Water Availability.

$$\begin{array}{c} \text{Net Ground Water} \\ \text{Availability} \end{array} \quad \left| = \right| \quad \begin{array}{c} \text{Annual Ground Water} \\ \text{Recharge} \end{array} \quad \left| - \right| \quad \begin{array}{c} \text{Natural Discharge during non-} \\ \text{monsoon season} \end{array}$$

Norms for Estimation of Recharge

GEC'97 methodology has recommended norms for various parameters being used in ground water recharge estimation. These norms vary depending upon water bearing formations and agro climatic conditions. While norms for specific yield and recharge from rainfall values are to be adopted within the guidelines of GEC'97, in case of other parameters like seepage from canals, return flow from irrigation, recharge from tanks and ponds, water conservation structures, results of specific case studies may replace the ad-hoc norms.

3.2. Ground Water Draft

The gross yearly ground water draft is to be calculated for Irrigation, Domestic and Industrial uses. The gross ground water draft would include the ground water extraction from all existing ground water structures during monsoon as well as during non-monsoon period. While the number of ground water structures should preferably be based on latest well census, the average unit draft from different types of structures should be based on specific studies or adhoc norms recommended by GEC 97.

3.3. Stage of Ground Water Development & Categorization of Units

The Stage of Ground Water Development is defined by:

$$\text{Stage of Ground Water Development (\%)} = \frac{\text{Existing Gross Ground Water Draft for All uses}}{\text{Net Annual Ground Water Availability}} \times 100$$

Categorization of Areas for Ground Water Development

The units of assessment are categorized for ground water development based on two criteria –a) Stage of Ground Water Development, and b) Long Term Trend of pre and post monsoon water levels. Four categories are -- **Safe** areas, which have ground water potential for development; **Semi-Critical** areas where cautious ground water development is recommended; **Critical** areas and **Over-Exploited** areas where there should be intensive monitoring and evaluation and future ground water development be linked with water conservation measures.

Table-3: The Criteria For Categorization Of Assessment Units

S.No.	Stage of Ground Water Development	Significant Long Term Decline		Categorization
		Pre-monsoon	Post-monsoon	
1	<= 70%	No	No	SAFE
		Yes/No	No/Yes	To be reassessed
		Yes	Yes	To be reassessed
2	>70% and <= 90%	No	No	SAFE
		Yes/No	No/Yes	SEMI-CRITICAL
		Yes	Yes	To be reassessed
3	>90% and <=100%	No	No	To be reassessed
		Yes/No	No/Yes	SEMI-CRITICAL
		Yes	Yes	CRITICAL
4	> 100%	No	No	To be reassessed
		Yes/No	No/Yes	OVER-EXPLOITED
		Yes	Yes	OVER-EXPLOITED

Note:

1. To be re-assessed' means that data is to be checked for the purpose of categorization.
2. The long-term ground water level data should preferably be for the period of 10 years.
3. The significant rate of water level decline may be taken between 10 and 20cm per year depending upon the local hydrogeological conditions.

3.4. Future allocation of Ground Water Resources

Future allocation of ground water resources for utilization is to be computed as given below:

Case I, when $GWav \geq Dgi + Alld$

In such cases Allocation for future domestic requirement = $Alld$

Case II, when $GWav < Dgi + Alld$

In such cases Allocation for future domestic requirement = $(GWav - Dgi)$ or Dgd , whichever is more.

Where,

$GWav$ = Net Annual Ground Water Availability

Dgi = Existing Ground Water draft for Irrigation

Dgd = Existing Ground Water draft for Domestic use

Dg = Existing Ground water draft for all uses

$Alld$ = Computed value of allocation for domestic use

(Based on projected population, fractional load and per capita requirement)

The results of ground water resource assessment shall be reconciled with the findings of the preliminary assessment (point 3, above) before *finalizing the Categorization of the assessment units*.

3.5. Poor Quality Ground Water

Computation of ground water recharge in poor quality ground water is to be done on the same lines as described above. However, in saline areas, there may be practical difficulty due to non-availability of data, as there will usually be no observation wells in such areas. Recharge assessment in such cases may be done based on rainfall infiltration factor method.

3.6. Additional Potential recharge

In shallow water table areas, particularly in discharge areas, rejected recharge would be considerable and water level fluctuations are subdued resulting in underestimation of recharge. In areas where ground water level is less than 5m below ground level or in waterlogged areas, ground water resources have to be estimated upto 5m bgl only based on the following equation—

Potential Ground Water Recharge = $(5-D) \times A \times Sp.$ Yield

Where,

D = Depth to water table below ground surface in pre-monsoon season in shallow aquifers

A = Area of shallow water table zone.

4. Computation Of Ground Water Resources

4.1. Norms Adopted

i) Specific yield

Specific yield values for alluvial formation in the range of 0.06 - 0.15 have been considered depending on degree of compaction. Specific yield for semi-consolidated sedimentary formations, i.e., Lathi sandstone and Tertiary sandstone have been taken in the range of 0.06-0.07 and 0.04-0.06 respectively. Specific yield values for various consolidated and other formations considered for computations are given in Table- 4.

ii) Rainfall Infiltration Factor (RIF)

RIF for alluvial areas has been taken from 0.06 to 0.18 depending on rainfall distribution. Such values for Semi-consolidated Lathi basin area have been considered ranging from 0.03 to 0.07 % while for Tertiary formation, values ranging from it is 0.03 to 0.05% have been adopted.

iii) Seepage from Tanks and ponds

Seepage factor of **2% to 9%** of Live storage in Hard rock areas and **15%** of Live storage in Alluvial formation areas have been taken for estimations. Alternatively, value of 1.4 mm/day of water spread has been taken.

iv) Seepage from canal

Seepage factor of **1.5 to 15 and 3 to 15** ham/day of wetted area have been considered for lined and unlined canals respectively.

v) Return Flow from Surface Water Irrigation

Seepage factor of 10% to 30% of water applied have been taken depending on type of crops and depth to water table.

vi) Return Flow from Ground Water Irrigation

Seepage factor of 5% to 25% of water applied have been taken depending on type of crops and depth to water table.

vii) Natural discharge

Natural discharge of the magnitude of 5% and 10% of gross recharge were taken for Water Level Fluctuation and Rainfall Infiltration Factor Method respectively,

viii) Ground Water Draft

Groundwater draft has been estimated differently for groundwater abstraction structures mainly dug well, Dug well with pump, Dug cum bore well and tube well considering unit draft and average period of operation. Details of norms adopted for draft calculations in various formations have been furnished in Table 4.

Table- 4: Norms Adopted

Formation	Symbol	Sp. Yield	R.I.F.	Yield (lpd)			
				DW	DW with pump	DCB/Cavity well	TW
Alluvium	A	0.06 -- 0.15	0.06 --0.18	20000 - 70000	50000 -2,50000	1,00000 - 1,50000	60000 - 3,00000
Older Alluvium	Ao	0.05-- 0.12	0.06 --0.18	25000 - 45000	50000 - 1,20000	50000 - 1,50000	60000 - 1,60000
Baisakhi Shale	BSKH	0.04	0.05	-	-	-	-
Basalt	B	0.01 -- 0.0175	0.02 --0.08	30000 - 60000	40000 - 80000	-	45000 - 1,00000
Bhadesar Series	Bd	0.04	0.025	-	-	-	20000 - 30000
Granite	G/Gr	0.01 -- 0.02	0.03 --0.08	20000 - 45000	30000 - 90000	25000	40000 - 1,50000
Gneisses	Gn	0.01 --0.025	0.02 --0.07	20000 - 50000	25000 - 65000	-	50000 - 80000
Lathi	L	0.06 --0.07	0.03 --0.07	-	25000	260,000	1,00000 - 2,70000
Lime Stone	Lst	0.015 --0.07	0.03 --0.10	30000 - 70000	40000- 2,50000	70000 - 1,50000	70000 - 3,00000
Parewar Form.	P	0.04	0.05	-	-	-	1,73000 - 4,76000
Phyllite/ Schist	Ph/Sc	0.0115 --0.0225	0.02 --0.08	20000 - 60000	30000 - 1,20000	-	35000 - 1,25000
Quartzite	Q	0.01 --0.02	0.06 --0.08	25000 - 50000	45000 - 75000	-	1,00000 - 1,50000
Rhyolite	R	0.015 --0.02	0.05 --0.07	25000	50000	40000 - 65000	50000 - 65000
Schist	Sc	0.015 --0.02	0.03 --0.08	25000 - 50000	35000 - 70000	-	50000 - 70000
Quartzite/Slate	Q/Sl	0.02	0.07	25000	75000	-	90000
Shale	Sh	0.01 --0.015	0.03 --0.07	25000 - 30000	35000 - 50000	-	45000 - 90000
Sand Stone	Ss	0.01 --0.04	0.06 --0.15	20000 - 40000	50000 - 1,25000	55000 - 1,00000	60000 - 2,16000
Tertiary Sand Stone	T	0.04 --0.06	0.03 --0.05	-	-	-	1,20000 - 2,70000
Ultra basics	Ub	0.0125	0.03	35000	45000	-	50000

	Seepage Factor
Seepage from Tanks & Ponds	
Hard Rock Formation	2% to 9% of Live Storage
Alluvium Formations	15% or 1.20 to 1.40 mm/day of water spread area
Seepage from Canals	
Lined canals	1.5 to 15 ham of wetted area
Unlined canals	3 to 15 ham of wetted area
Return Flow from Surface Water Irrigation	10% to 30% of water applied
Return Flow from Ground Water Irrigation	5% to 25% of water applied
Natural Discharge	
Water level fluctuation value accepted.	5% of gross recharge
Rainfall infiltration factor value accepted.	10% of gross recharge

4.2. Ground Water Resources Assessment:

Ground Water Assessment in the State of Rajasthan has been carried out in association with Ground Water Department, Rajasthan as on March 2011 based on guidelines of Ground Water Estimation Committee (GEC), 1997. Block (Panchayat Samiti) has been considered as assessment unit. The blocks have been further divided into formation potential zones. There are a total of **243** blocks and **899** formation potential zones in **33** districts of the State. The Block wise/Assessment unit wise ground water resources, Ground Water Draft, Stage of Development and the category of the units is given in Annexure III and the district wise summary is given in Table 5.

Water level trends for the last **10 - 15** years (1996-2010) and water level fluctuations for the last 5 years (2006-2010) were considered for groundwater recharge estimation while groundwater draft was assessed as on **March 2011**. Groundwater requirement for domestic & industrial purposes were projected for the year **2025 AD**.

As per the estimates, Rajasthan has Net Ground Water availability of the tune of **10828.97 MCM**. Block wise range of net ground water availability is depicted in Plate VI. The existing gross ground water draft for all purposes is of the magnitude of **14843.00 MCM**. Block wise range of Ground Water Draft is depicted in Plate VII. The overall stage of groundwater development in the State is **137.07%**.

Allocation for domestic & industrial purposes is **2049.9412 MCM** and the net availability for irrigation requirement is **654.1833 MCM**.

The assessment units (Blocks) have been categorised based on level of ground water and long-term trend of ground water levels. Major part of the state falls in Over Exploited category. Out of **33** districts, **26** are Over Exploited, **2** critical, **2** Semi Critical and **3** are Safe (Table 6).

At block level also, majority of the blocks fall in Over Exploited category. Out of **243** blocks for which computations have been done, **172** fall in Over Exploited Category, **24** in Critical, **20** in Semi Critical and **25** in Safe Category. Taranagar block of Churu & Khajuwala of Bikaner districts have not been assessed due to saline ground water .

List of blocks falling in different category and their stage of ground water development is given in Table 7 and depicted in Plate IX

S. No.	Category	No. of Blocks	S. No.	Category	No. of Blocks
1	Safe	25	3	Critical	24
2	Semi-critical	20	4	Over Exploited	172
5	Saline	2			

4.3. Areas having Ground Water Development Prospects

Estimates reveal the fact that scope for future groundwater resource development in the state of Rajasthan is very less. As per present groundwater resource estimates out of a total **243** blocks in the state **172** blocks are categorised as Over-exploited, **24** blocks as Critical, **20** blocks as Semi Critical. Remaining 25 blocks, which have been, categorized as Safe, do have constraints for groundwater development due to deep water levels, its poor quality or falling in canal command. Taranagar block in Churu district has not been assessed due to poor quality in the entire block.

However, in canal command areas, conjunctive use of groundwater & canal water is the need of the hour so as to avoid land degradation by water logging hazards and soil salinity/alkalinity.

Scope for development of saline/high fluoride ground water especially in the western Thar Desert exists with due care for desalination/ de-fluoridation technology however, such areas need to be further explored and investigated prior to formulation of any project in this regard.

Since a large number of blocks have come under the over exploited category, there is an urgent need for enforcement of groundwater regulation, control and management strategies in Over-exploited areas. Action to impose and implement restrictions on installation of new wells in Notified areas need be initiated. Implementation of feasible schemes on rainwater harvesting and artificial recharge structures in Over-exploited areas need to be taken up at war footing.

4.4. Spatial Variation of Groundwater Resources

Rajasthan State witnesses wide spectrum of hydrogeological conditions and availability of groundwater resources as well. Groundwater recharge in Thar desert area of Western Rajasthan is mostly less owing to arid climatic conditions (low rains & high evaporation) and ground water development is also relatively less due to constraints of deep groundwater levels & inferior quality of water as well as availability of canal water in parts. Due to availability of canal water & high rains in Banswara, it falls under Safe category.

Further, due to poor quality of groundwater and availability of canal water in Ganganagar and Hanumangarh districts, these have been categorised them under Safe category, Churu district under Semi-critical and Bikaner & Jaisalmer districts under Critical category. Hard rock areas of Aravalli hills are vulnerable to water crisis during spell of drought due to their limited scope for dynamic recharge to groundwater. Groundwater development in alluvial plain areas especially on either side of Aravalli Hill Ranges is on higher side and most of the blocks fall under Over Exploited category.

4.5. Comparison with the earlier Groundwater Resource Estimates

Efforts have been made to compare groundwater estimates as on 31.03.2009 and as on 31.03.2011 (estimated as per GEC 1997 methodology) for knowing changees in groundwater resources and are given below:

Particulars	2009	2011
Net Annual Ground Water Availability	1079185 ham	1082897ham
Gross Ground Water Draft	1451924 ham	14843.00ham
Stage of GW Development	134.54 %	137.07%
Category of Blocks		
Safe	31	25
Semi-Critical	16	20
Critical	25	24
Over-Exploited	166	172
Saline	1	2
Total of Blocks	239	243

The estimates reveal Net Annual Groundwater availability of the magnitude of **1079185** in 2009 and **1082897** ham in 2011 respectively. There was significant increase in Gross Groundwater Draft during these two years from **1451924 ham in 2009 and 1479054 ham** in 2011 which resulted in the increase of the stage of groundwater development from **134.54% to 137.07%**. This phenomenon is reflected in the increase in number of **Over-exploited** blocks from **166 in 2009 to 172 in 2011** (Table 8).

4.6. Groundwater Recharge in Poor Ground Water Quality Zone

Rajasthan being arid and the largest State of India has significant volume of saline groundwater especially in its western parts in **122** potential zones covering about **9800706** Ham falling in **16** districts of state. Availability of poor groundwater in the State has been assessed as **194341ham** while the gross draft is **553120** ham leaving balance of **173429 ham** of water for future use for salt tolerant crops/ industries (Table 9).

4.7. Additional annual potential recharge

No additional potential recharge under specific conditions of water logging / Shallow water table area in any district of Rajasthan has been noticed.

Table-5: Ground Water Resources Of Rajasthan State as On 31st March, 2011

Sl. No.	Assessment Unit/District	Area	Potential Area	Total Annual Replenishable Water Recharge	Natural Discharge during Non - Monsoon season	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for irrigation	Existing Gross Ground Water Draft for domestic and industrial water supply	Existing Gross Ground Water Draft for All Uses	Net Groundwater Availability for future Irrigation Development	Groundwater Allocation for Domestic & Industrial Development	Stage of G.W. Development.	Category
		Sq. km	Sq. km	MCM	MCM	MCM	MCM	MCM	MCM	MCM	MCM	%	
1	AJMER	8481.00	7466.76	355.11	33.05	322.06	415.47	46.91	462.38	0.00	46.91	143.57	OE
2	ALWAR	8720.46	6825.21	795.51	63.82	731.70	1215.52	95.66	1311.18	3.99	92.04	179.20	OE
3	BANSWARA	4536.08	3979.96	257.62	26.96	230.66	92.31	19.61	111.92	114.10	24.24	48.52	SAFE
4	BARAN	6955.31	6892.21	519.67	48.04	471.63	525.96	39.38	565.34	47.35	34.96	119.87	OE
5	BARMER	28387.00	12734.65	272.53	25.24	247.29	239.01	67.66	306.66	23.49	66.15	124.01	OE
6	BHARATPUR	5044.10	3412.52	492.50	43.14	449.36	458.39	63.78	522.18	5.22	67.81	116.21	OE
7	BHILWARA	10455.00	9354.85	464.32	44.76	419.55	501.98	39.80	541.78	2.49	28.97	129.13	OE
8	BIKANER	30381.75	13602.51	252.65	12.63	240.01	258.67	83.74	342.41	47.75	87.74	142.66	OE
9	BUNDI	5500.00	4240.18	422.65	59.70	362.95	336.69	27.11	363.80	25.02	37.90	100.23	OE
10	CHITTORGARH	7880.06	6095.00	352.76	34.17	318.60	432.27	13.79	446.06	0.00	13.43	140.01	OE
11	CHURU	13792.95	5191.74	141.01	7.05	133.95	94.45	24.08	118.54	30.96	57.80	88.49	SEMICRITICAL
12	DAUSA	3420.17	3085.62	263.73	26.20	237.53	378.86	24.87	403.74	0.00	29.06	169.97	OE
13	DHOLPUR	3009.05	2486.14	283.12	23.82	259.31	307.06	25.26	332.33	16.52	25.12	128.16	OE
14	DUNGARPUR	3770.00	2634.13	141.03	12.91	128.12	83.96	8.82	92.78	19.23	24.92	72.41	SEMICRITICAL
15	GANGANAGAR	11603.65	1545.64	407.98	40.80	367.19	156.17	5.45	161.63	13.63	197.38	44.02	SAFE
16	HANUMANGARH	9579.54	1278.50	226.49	22.65	203.84	157.16	7.05	164.21	11.07	35.61	80.56	SAFE
17	JAIPUR	11061.44	9994.67	712.38	66.85	645.53	1081.11	256.86	1337.97	9.89	253.18	207.27	OE
18	JAISALMER	38401.00	12090.04	67.92	6.33	61.59	93.56	28.93	122.49	24.62	23.42	198.89	OE
19	JALORE	10640.00	8228.10	462.85	40.86	422.00	779.52	40.90	820.42	9.69	41.91	194.41	OE
20	JHALAWAR	6219.00	6106.16	441.71	29.48	412.23	476.01	15.83	491.83	1.46	19.23	119.31	OE
21	JHUNJHUNU	5928.00	5273.69	263.51	23.50	240.01	456.04	85.71	541.75	3.30	92.90	225.72	OE

Sl. No.	Assessment Unit/District	Area	Potential Area	Total Annual Replenishable Water Recharge	Natural Discharge during Non - Monsoon season	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for irrigation	Existing Gross Ground Water Draft for domestic and industrial water supply	Existing Gross Ground Water Draft for All Uses	Net Groundwater Availability for future Irrigation Development	Groundwater Allocation for Domestic & Industrial Development	Stage of G.W. Development.	Category
		Sq. km	Sq. km	MCM	MCM	MCM	MCM	MCM	MCM	MCM	MCM	%	
22	JODHPUR	22250.00	18867.92	429.52	42.39	387.13	731.63	104.45	835.78	48.21	98.50	215.89	OE
23	KARAUJI	5038.60	3902.42	373.14	36.17	336.97	411.77	50.64	462.41	12.39	53.37	137.23	OE
24	KOTA	5203.94	5123.17	566.89	53.59	513.30	420.97	48.91	469.88	78.56	58.92	91.54	CRITICAL
25	NAGPUR	17718.25	16378.50	580.75	56.49	524.26	811.86	178.93	990.79	42.78	187.95	188.99	OE
26	PALI	12357.00	7362.54	328.59	32.29	296.31	314.36	27.47	341.84	11.41	27.90	115.37	OE
27	PRATAPGARH	4359.80	2950.39	155.21	14.36	140.86	168.84	5.97	174.81	3.99	10.20	124.10	OE
28	RAJSAMAND	4635.46	3540.09	118.72	11.87	106.85	102.70	15.25	117.95	1.11	12.28	110.39	OE
29	SAWAI MADHOPUR	5020.65	7263.46	321.48	30.37	291.11	370.52	58.42	428.94	2.09	71.20	147.35	OE
30	SIKAR	7880.85	4325.63	396.36	35.94	360.42	374.08	79.47	453.55	9.41	81.83	125.84	OE
31	SIROHI	5136.00	4075.70	303.38	28.54	274.85	299.52	11.08	310.61	11.51	14.58	113.01	OE
32	TONK	7200.00	6524.72	483.53	44.59	438.95	357.45	76.35	433.80	18.47	92.47	98.83	CRITICAL
33	UDAIPUR	11760.60	7770.92	286.85	33.94	252.90	229.31	31.95	261.25	4.47	40.06	103.30	OE
STATE TOTAL		342326.71	220603.74	11941.45	1112.49	10828.97	13133.18	1709.81	14842.99	654.18	2049.94	137.07	OE

Table - 6 Category Of Blocks As On 31.03.2011

S.No.	DISTRICT	NO. OF BLOCKS	CATEGORY OF BLOCKS			
			SAFE	SEMI CRITICAL	CRITICAL	OVER EXPLOITED
1	AJMER	8	0	0	0	8
2	ALWAR	14	0	0	0	14
3	BANSWARA	8	7	1	0	0
4	BARAN	7	1	1	0	5
5	BARMER	8	1	0	2	5
6	BHARATPUR	9	0	0	4	5
7	BHILWARA	11	0	0	0	11
8	BIKANER	6	1	1	0	3
9	BUNDI	4	0	1	0	3
10	CHITTORGARH	11	0	0	0	11
11	CHURU*	6	1	2	0	2
12	DAUSA	5	0	0	0	5
13	DHOLPUR	4	0	0	1	3
14	DUNGARPUR	5	1	4	0	0
15	GANGANAGAR	8	8	0	0	0
16	HANUMANGARH	3	3	0	0	0
17	JAIPUR	13	0	1	0	12
18	JAISALMER	3	0	0	1	2
19	JALORE	8	0	0	0	8
20	JHALAWAR	6	0	0	1	5
21	JHUNJHUNU	8	0	0	0	8
22	JODHPUR	10	1	1	0	8
23	KARALI	5	0	0	2	3
24	KOTA	5	0	3	0	2
25	NAGPUR	11	0	0	2	9
26	PALI	10	0	1	2	7
27	PRATAPGARH	5	1	0	1	3
28	RAJSAMAND	7	0	0	0	7
29	SAWAIMADHOPUR	5	0	0	0	5
30	SIKAR	8	0	1	0	7
31	SIROHI	5	0	0	2	3
32	TONK	6	0	2	1	3
33	UDAIPUR	11	0	1	5	5
	TOTAL	243	25	20	24	172

* Tara Nagar block of Churu district and Khajuwala blok of Bikaner district has not been assessed due to saline ground water.

Table - 7: List Of Blocks Falling In Different Categories As On 31.03.2011

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
Ajmer	8	-	-		1. Arain/115.27
					2. Bhinai/111.32
					3. Jawaja/143.03
					4. Pisangan/207.94
					5. Silora/130.65
					6. Srinagar/145.88
					7 Kekri 153.00
					8 Masuda/113.62
Alwar	14	-	-		1. Behror/270.40
					2. Bansur/167.08
					3. Kathumar/310.68
					4. Kishangarh/203.42
					5. Kotkasim/168.68
					6. Laxmangarh/197.48
					7. Mandawar/192.67
					8. Neemrana/172.88
					9. Rajgarh/153.12
					10. Ramgarh/171.44
					11. Reni/220.49
					12. Tijara/151.84
					13. Umrain/173.06
					14 Thana ghazi100.39
Banswara	8	1. Anandpuri /59.15			
		2. Bagidora / 57.59			

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
		3. Ghatol / 34.14			
		4. Chhotisarwan /52.	1. Kushalgarh/72.01		
		5. Sajjangarh / 51.59			
		6. Talwara / 50.16			
		7. Garhi / 39.354			
Baran	7	Shahbad/53.96	1. Kishanganj/81.88		1. Atru/156.66
					2. Baran/177.39
					3 Anta 116.66
					4 Chhipa barod 156.46
					5 Chhabra119.65
Barmer	8	1. Barmer/44.60	-	1.Sindhri/95.44	1. Baetu/2242.02
				2.Chohtan/98.66	2. Balotra/179.69
					3. Dhorimanna/149.17
					4. Siwana/ 139.09
					5. Sheo/188.90
Bharatpur	9			1.Bayana/98.14	1. Nadbai / 179.16
				2.Deeg/99.10	2. Sewar/ 146.18
				3.Kama/97.28	3. Weir/ 139.08
				4.Nagar/97.02	4. Roopwas/ 109.08
					5. Kumher/ 109.94
Bhilwara	11	-	-		1. Asind / 161.70
					2. Banera/ 110.47
					3. Hurda/ 115.77
					4. Jahajpur/132.65
					5. Mandal/ 116.08

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					6. Mandalgarh/ 126.34
					7. Raipur/ 159.82
					8. Suwana/ 118.62
					9. Kotri /121.53
					10. Sahada/ 133.87
					11. Shahpura/119.45
Bikaner	6	1.Lunkaransar/43.63	1. Kolayat/73.66		1. Bikaner/ 183.78
					2. Nokha/ 131.78
					3 Dungargarh 131.24
Bundi	4		1. Kesorai Patan/82.08		1. Hindoli/ 119.32
					2.Nainwa/114.28
					3.Talera/100.76
Chittorgarh	11	-			1. Begun/ 145.20
					2. Bhadesar/ 163.67
					3. Bhopalsagar/ 121.48
					4. Chittorgarh/ 143.18
					5. Dungla/ 105.89
					6. Gangrar/ 127.04
					7 Kapasan/ 173.80
					8. Nimbahera/ 145.39
					9 Rashmi/ 138.32
					10.Bari Sadri/159.06
					11 .Bhainsrorgarh/121.48
Churu	6	1. Sardarshahar/38.16	1.Churu/85.82		1.Rajgarh/ 451.03
			2.Ratangarh /71.26		2. Sujangarh/118.74
Dausa	5	-	-		1. Bandikui /193.30

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					2. Dausa/ 140.72
					3. Lalsot/ 196.50
					4. Mahua/ 142.23
					5. Sikrai/ 171.13
Dholpur	4		-	1. Bari/ 90.74	1.Dholpu/r185.33
					2. Rajakhhera/ 130.01
					3.Baseri/104.34
Dungarpur	5	1. Aspur/51.38	1. Bichhiwara/ 82.53		-
		-	2. Dungarpur/ 85.98		
			3.Sagwara/76.48		
			4.Simalwara/76.46		
Ganganagar	8	1. Anupgarh/7.92	-		-
		2. Ganganagar/ 61.53	-		
		3. Karanpur/60	-		
		4. Padampur/ 60.55	-		
		5. Raisingh nagar/43.35	-		
		6. Sadulshahar/ 34.55	-		
		7.Gharsana/20.64			
		8. Suratgarh/ 69.38	-		
Hanumangarh	3	1. Bhadra/76.60	-		-
		2 Hanumangarh/ 80.61	-		
		3. Nohar/86.84	-		
Jaipur	13		1.Phagi/85.60		1. Amer/244.80
					2. Bairath/137.62
					3. Bassi/241.21

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					4. Chaksu/156.07
					5. Govindgarh/ 268.30
					6. Jamwa Ramgarh/ 148.41
					7.Jhotwara/ 433.04
					8.Kotputli/201.18
					9.Sambher/ 268.20
					10.Sanganer/ 251.94
					11Shahpura/252.34
					12.Dudu/118.57
Jaisalmer	3		-	1. Sam/90.05	1. Jaisalmer/261.63
					2. Sankra/288.11
Jalore	8	-	-		1.Ahore/125.27
					2.Bhinmal/215.87
					3.Jalore/134.36
					4. Jaswantpura/129.39
					5. Raniwara/208.45
					6 Chitalwana/103.35
					7. Sanchore/209.25
					8. Sayla/366.76
Jhalawar	6	-		1. Khanpur/94.17	1.Manohar Thana/139.97
					2.Pirawa/121.39
					3.Bakani/128.95
					4.Dag/120.63
					5.J.Patan/121.68
Jhunjhunu	8		-		1.Buhana/183.96
					2.Chirawa/307.26

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					3.Jhunjhunu/246.93
					4.Khetri/156.99
					5.Nawalgarh/292.14
					6.Surajgarh/262.16
					7.Udaipurwati/240.26
					8.Alsisar/106.34
Jodhpur	10	1. Bap/43.51	1. Luni/73.03		1.Balesar/218.13
					2.Bhopalgarh/256.31
					3..Bilara/275.34
					4. Mandore/168.54
					5. Osian/374.87
					6.Baori/426.26
					7.Shergarh/156.46
					8.Phalodi/149.18
Karauli	5			1. Nadauti/80.04	1.Hindaun/2193.84
				2.Karauli/96.19	2. Sapotra/108.43
					3.Todabhim/ 214.23
Kota	5		1.Itawa/82.06		
			2.Ladpura/70.72		1. Khairabad/ 128.50
			3.Sultanpur/81.09		
					2. Sangod/ 137.98
Nagaur	11			1.Nagaur/ 92.66	1. Degana/ 174.68
				2.Ladnu/96.89	2. Didwana/ 170.16
					3. Kuchaman/ 273.82
					4. Merta/ 326.19
					5. Mundwa/ 321.69

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					6.Parbatsar/ 182.24
					7. Riyan/ 116.32
					8.Makrana/120.91
					9.Jayal/114.24
Pali	10		1.Pali./75.54	1.Rohat/97.67	1. Jaitaran/ 131.14
				2.Sumerpur/95.00	2. Marwar Jn./ 139.54
					3. Rani/ 115.10
					4. Sojat/ 117.00
					5.Raipur/122.77
					6.Bali/105.06
					7.Desuri/112.20
Pratapgarh	5	1.Peepalkhoont/66.59		1.Dharyawad/97.78	1.Pratapgarh/147.22
					2 Chhoti Sadri/139.12
					3.Arnod/139.08
Rajsamand	7	-	-		1 Amet/ 114.81
					2 Bhim/ 125.56
					3 Deogarh/ 102.74
					4 Khamnor/ 103.76
					5 Kumbhalgarh/ 100.03
					6.Railmagra/114.63
					7.Rajsamand/123.07
Sawai Madhopur	5				1.Gangapur/ 170.92
					2.Sawai Madhopur/ 135.43
					3.Bamanwas/113.34
					4.Khandar/104.48

District	No. of Blocks	Safe/ Stage of Development in %	Semi-Critical/ Stage of Development in %	Critical / Stage of Development in %	Over-Exploited/ Stage of Development in %
					5.Bonli/108.20
Sikar	8		1. Fatehpur/ 70.14		1.Danta Ramgarh/ 178.48
					2.Dhod/ 161.64
					3. Khandella/159.68
					4. Lachhmangarh/ 101.01
					5.Neem Ka Thana/ 135.85
					6. Piprali/204.52
					7.Sri Madhopur/ 198.45
Sirohi	5	-	-	1.Abu Road/99.27	1. Reodar/ 138.50
				2.Pindwara/98.11	2. Sheoganj/ 117.46
					3. Sirohi/102.28
Tonk	6		1.Todaraisingh/87.73	1.Deoli/95.87	1.Malpura/110.02
			2.Tonk/85.30		
					2.Newai/109.85
					3.Uniara/107.36
Udaipur	11	-	1.Kotra/82.87	1.Lasadiya/90.82	1. Badgaon/ 104.63
				2.Jhadol/96.89	2. Bhinder/ 132.15
				3.Kherwara/94.75	3. Girwa/ 103.78
				4.Salumber/94.13	4.Gogunda/ 100.86
				5.Sarada/93.18	5. Mavli/ 125.91
Total	243	25	20	24	172

Note: Out of total 243 Blocks, 2 Blocks, i.e., Taranagar Block (Churu Dist) and Khajuwala Block (Bikaner Dist.) are completely saline and not assessed.

Table 8: Comparison Of Categories Of Blocks As Computed On 31.03.2011 and 31.03.2009

S. No.	DISTRICT	NO OF BLOCKS		SAFE		SEMI CRITICAL		CRITICAL		OVER EXPLOITED	
		31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09
1	AJMER	8	8	0	0	0	0	0	0	8	8
2	ALWAR	14	14	0	0	0	0	0	0	14	14
3	BANSWARA	8	8	7	7	1	1	0	0	0	0
4	BARAN	7	7	1	3	1	1	0	1	5	2
5	BARMER	8	8	1	1	0	0	2	2	5	5
6	BHARATPUR	9	9	0	0	0	1	4	4	5	4
7	BHILWARA	11	11	0	0	0	0	0	0	11	11
8	BIKANER	6	5	1	2	1	0	0	0	3	3
9	BUNDI	4	4	0	0	1	0	0	1	3	3
10	CHITTORGARH	11	11	0	0	0	0	0	0	11	11
11	CHURU*	6	6	1	3	2	0	0	0	2	2
12	DAUSA	5	5	0	0	0	0	0	0	5	5
13	DHOLPUR	4	4	0	0	0	0	1	0	3	4
14	DUNGARPUR	5	5	1	1	4	4	0	0	0	0
15	GANGANAGAR	8	7	8	7	0	0	0	0	0	0
16	HANUMANGARH	3	3	3	3	0	0	0	0	0	0
17	JAIPUR	13	13	0	0	1	0	0	1	12	12
18	JAISALMER	3	3	0	1	0	0	1	0	2	2
19	JALORE	8	7	0	0	0	0	0	0	8	7
20	JHALAWAR	6	6	0	0	0	0	1	1	5	5
21	JHUNJHUNU	8	8	0	0	0	0	0	0	8	8
22	JODHPUR	10	9	1	1	1	0	0	1	8	7
23	KARAULI	5	5	0	0	0	0	2	1	3	4
24	KOTA	5	5	0	0	3	3	0	0	2	2
25	NAGAU	11	11	0	0	0	1	2	1	9	9
26	PALI	10	10	0	0	1	0	2	3	7	7
27	PRATAPGARH	5	5	1	1	0	0	1	1	3	3
28	RAJSAMAND	7	7	0	0	0	0	0	0	7	7
29	SAWAIMADHOPUR	5	5	0	0	0	0	0	1	5	4

S. No.	DISTRICT	NO OF BLOCKS		SAFE		SEMI CRITICAL		CRITICAL		OVER EXPLOITED	
		31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09	31.03.11	31.3.09
30	SIKAR	8	8	0	1	1	0	0	0	7	7
31	SIROHI	5	5	0	0	0	3	2	0	3	2
32	TONK	6	6	0	0	2	0	1	3	3	3
33	UDAIPUR	11	11	0	0	1	2	5	4	5	5
	TOTAL	243	239	25	31	20	16	24	25	172	166

Note: Out of total 243 Blocks, 2 Blocks, i.e., Taranagar Block (Churu Dist) and Khajuwala Block (Bikaner Dist.) are completely saline and not assessed.

Table 9: Ground Water Resources In Poor Ground Water Quality Areas Of Rajasthan As On 31.03.2011 (Ha.m)

Sl. No.	Assessment Unit/District	Area	Potential Area	Recharge from rainfall and other sources, if any during monsoon period	Recharge from rainfall and other sources, if any during non-monsoon period	Total Annual Ground Water Recharge	Provision for Natural Discharges	Net annual ground water availability	Existing Gross Ground Water Draft, if any	Net Ground Water Availability for future use
1	2	3	4	5	6	7	8	9	10	11
1	AJMER	848100	-	-	-	-	-	-	-	-
2	ALWAR	872046	37640	4215	429	4645	464	4180	2369	18.56
3	BANSWARA	453608	-	-	-	-	-	-	-	-
4	BARAN	695531	-	-	-	-	-	-	-	-
5	BARMER	2838700	1544109	28776	92	28867	2561	26306	1742.68	24763.92
6	BHARATPUR	504410	133900	14382	2745	17127	1523	15603	11276.94	4865.97
7	BHILWARA	1045500	-	-	-	-	-	-	-	-
8	BIKANER	3038175	1677924	29138	0	29138	1457	27681	0.00	27620.42
9	BUNDI	550000	-	-	-	-	-	-	-	-
10	CHITTORGARH	788006	-	-	-	-	-	-	-	-
11	CHURU	1379295	860121	18205	0	18205	910	17295	0.00	17295.19
12	DAUSA	342017	-	-	-	-	-	-	-	-
13	DHOLPUR	300905	-	-	-	-	-	-	-	-
14	DUNGARPUR	377000	-	-	-	-	-	-	-	-
15	GANGANAGAR	1160365	1780805	40778	62269	103047	9293	93753	9432.50	84252.58
16	HANUMANGARH	957954	830104	37796	37961	75757	7376	68380	19469.65	49076.97
17	JAIPUR	1106144	34006	2338	270	2608	261	2347	2396.00	0.00
18	JAISALMER	3840100	2631096	16307	12	16318	1295	15023	328.87	14603.40
19	JALORE	1064000	202343	7997	246	8140	814	7308	2147.40	5624.15
20	JHALAWAR	621900	-	-	-	-	-	-	-	-
21	JHUNJHUNU	592800	11978	411	79	489	49	440	196.87	301.18

Sl. No.	Assessment Unit/District	Area	Potential Area	Recharge from rainfall and other sources, if any during monsoon period	Recharge from rainfall and other sources, if any during non-monsoon period	Total Annual Ground Water Recharge	Provision for Natural Discharges	Net annual ground water availability	Existing Gross Ground Water Draft, if any	Net Ground Water Availability for future use
1	2	3	4	5	6	7	8	9	10	11
22	JODHPUR	2225000	338208	9595	307	9902	990	8912	1176.72	7790.08
23	KARALI	503860	-	-	-	-	-	-	-	-
24	KOTA	520394	-	-	-	-	-	-	-	-
25	NAGPUR	1771825	133975	4902	589	5491	549	4942	1325.13	3395.63
26	PALI	1235700	318885	12165	2165	13807	1356	12451	4248.28	8302.49
27	PRATAPGARH	435980	-	-	-	-	-	-	-	-
28	RAJSAMAND	463546	-	-	-	-	-	-	-	-
29	SAWAI MADHOPUR	502065	-	-	-	-	-	-	-	-
30	SIKAR	788085	9346	346	61	407	41	366	215.76	150.15
31	SIROHI	513600	-	-	-	-	-	-	-	-
32	TONK	720000	29500	1431	103	1534	153	1380	755.10	625.24
33	UDAIPUR	1176060	-	-	-	-	-	-	-	-
STATE TOTAL		34232671	10573944	228781	107325	336106	29094	307012	57080	249932

100 ham = 1 MCM

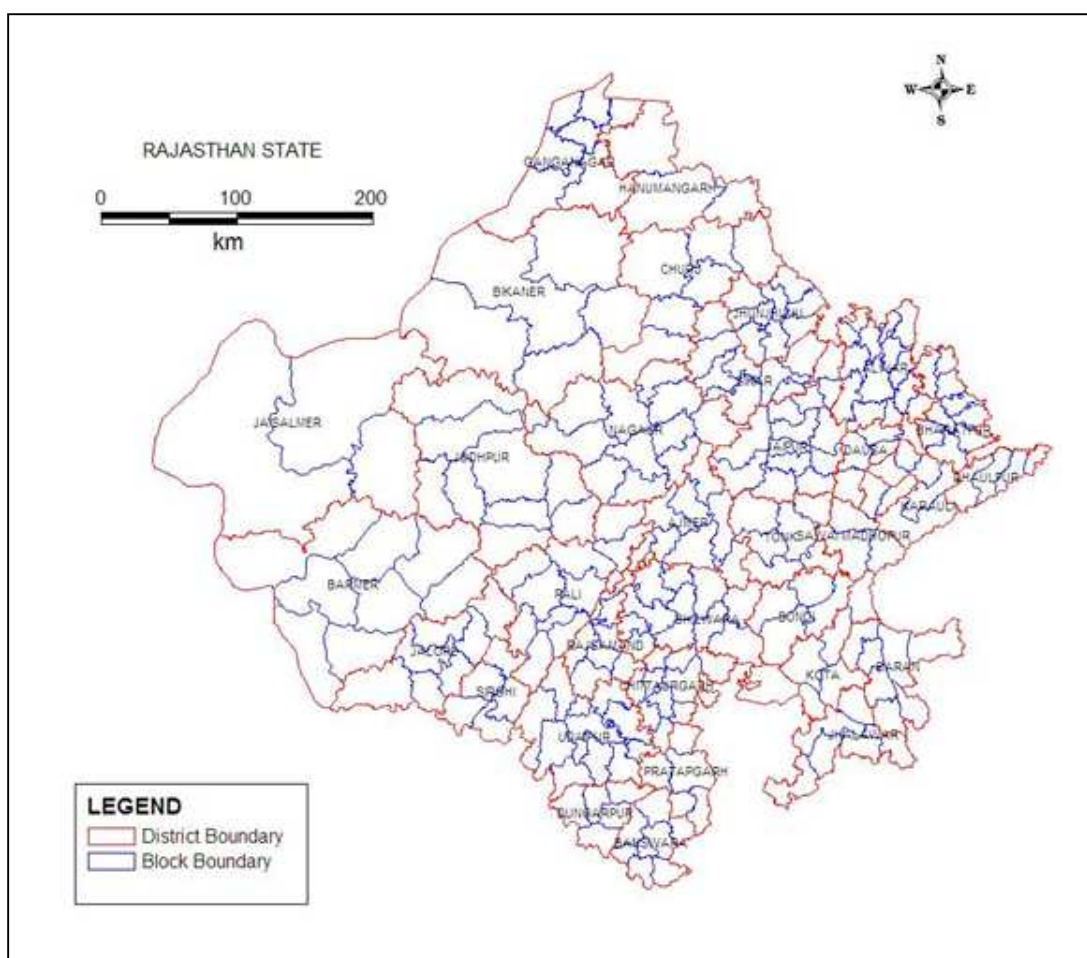


Plate I: Administrative Divisions Showing Assessment Units

Rajasthan

Physiography & Drainage

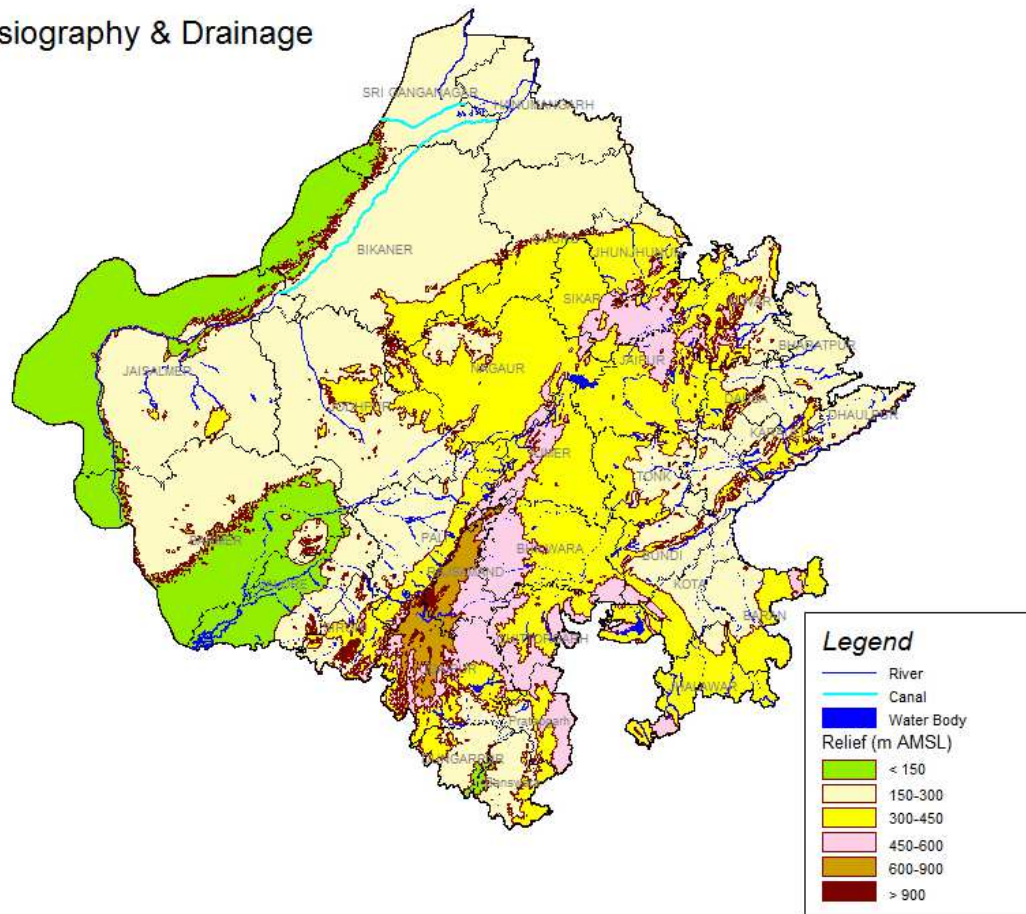


Plate II: Physiography and Drainage

Rajasthan

Normal Annual Rainfall (mm)

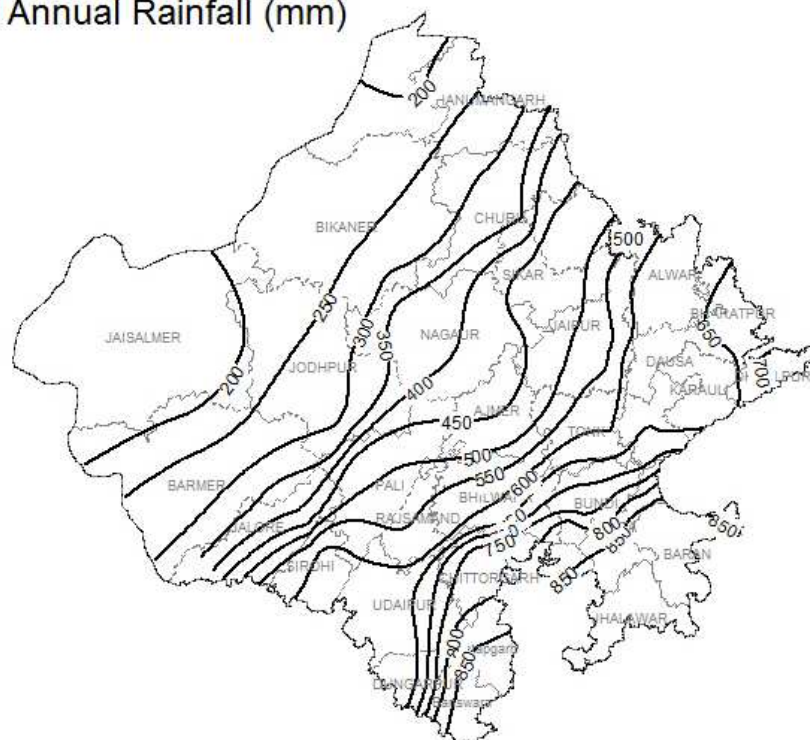


Plate III: Normal Annual Rainfall

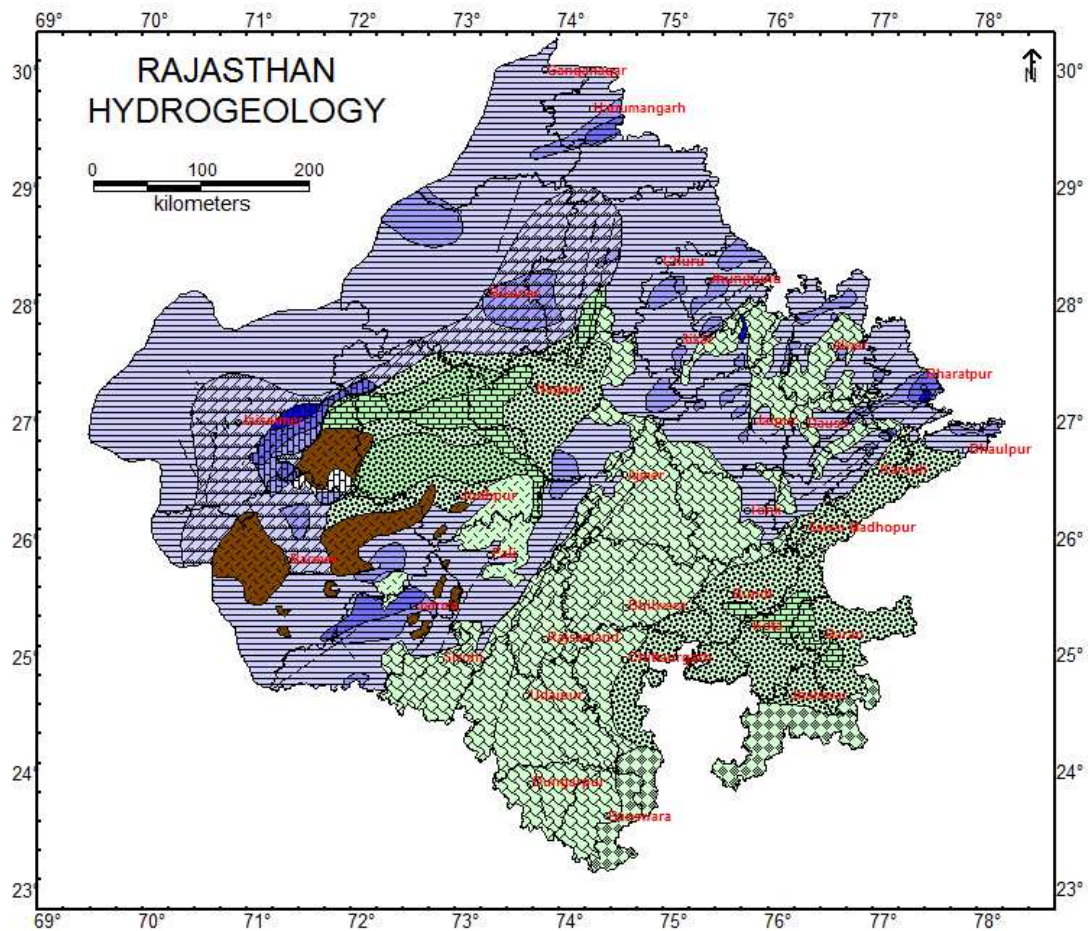


















Plate IV: Hydrogeology

Hydrogeology Legend

	Alluvium, sand, silt clay, unconfined to confined aquifers down to 330 mbgl
	Sandstone, shale & siltstone, unconfined to confined aquifers down to 390 mbgl
	Lathi Sandstone, unconfined to confined aquifers down to 440 mbgl
	Basalt with or without intrertrappean, unconfined to confined aquifers down to 150 mbgl restricted to fractures, vesicular zones and weathered mantle
	Sandstone and shale, unconfined to confined aquifers down to 375 mbgl
	Limestone & dolomite, unconfined to semiconfined aquifers down to 284 mbgl restricted to caverns, fractures and weathered mantle
	Granite & rhyolite, unconfined aquifers down to 80 mbgl restricted to weathered mantle and fractures
	Quartzite, slate, phyllite, schist & gneiss, unconfined to semiconfined aquifers down to 150 mbgl restricted to fractures and weathered mantle

Ground Water Potential (Yield in litres/Sec)

	1 - 10		10 - 25	Aquifers with primary intergranular porosity
	25 - 40		> 40	
	1 - 5		5 - 25	Aquifers with secondary intergranular porosity & fracture
	< 1			
	Lineament			Regions generally with limited ground water, compact formation with less intergranular porosity & fracture

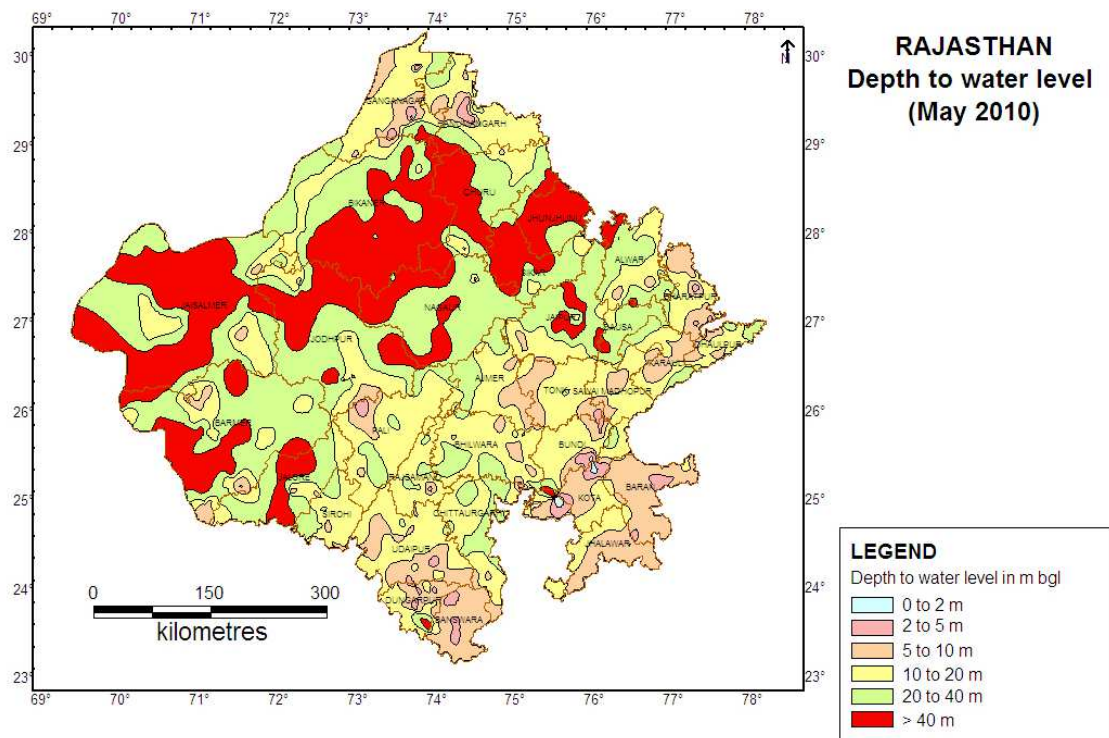


Plate V: Depth to Water Level (Pre-monsoon 2010)

Rajasthan
Annual Ground Water Recharge (MCM)

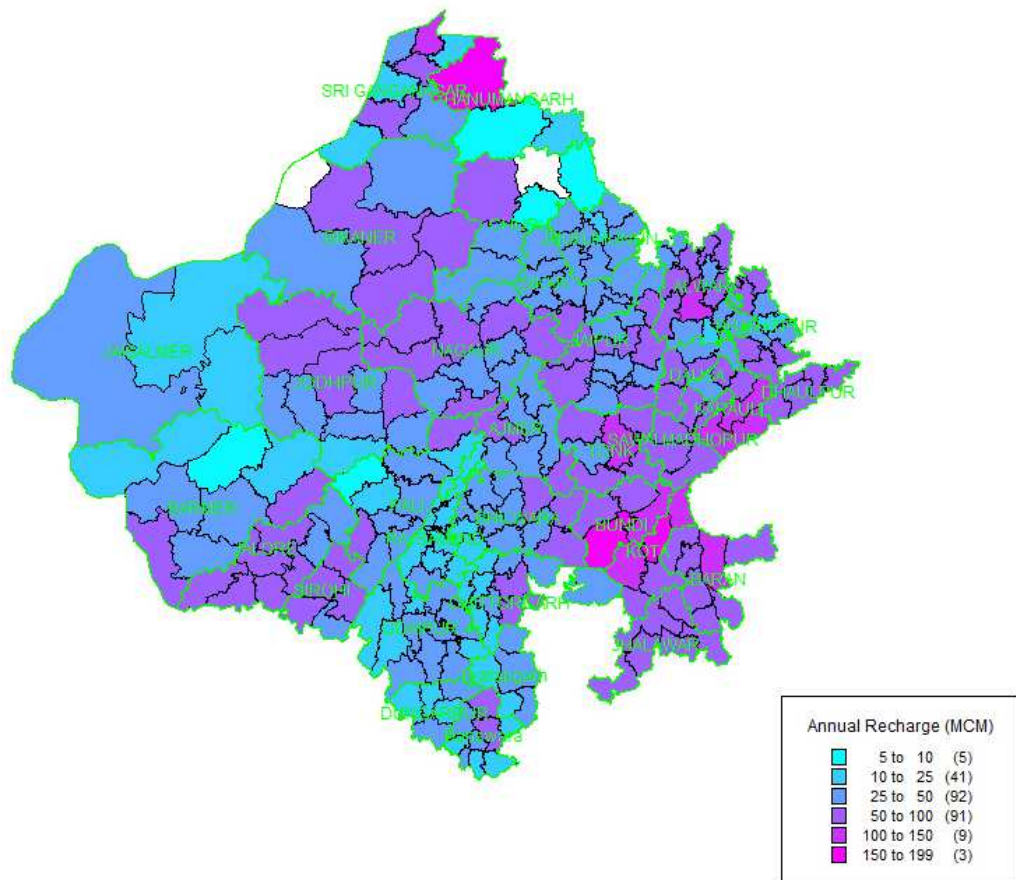


Plate VI: Annual Replenishable Ground Water Resources

Rajasthan Gross Annual Ground Water Draft (MCM)

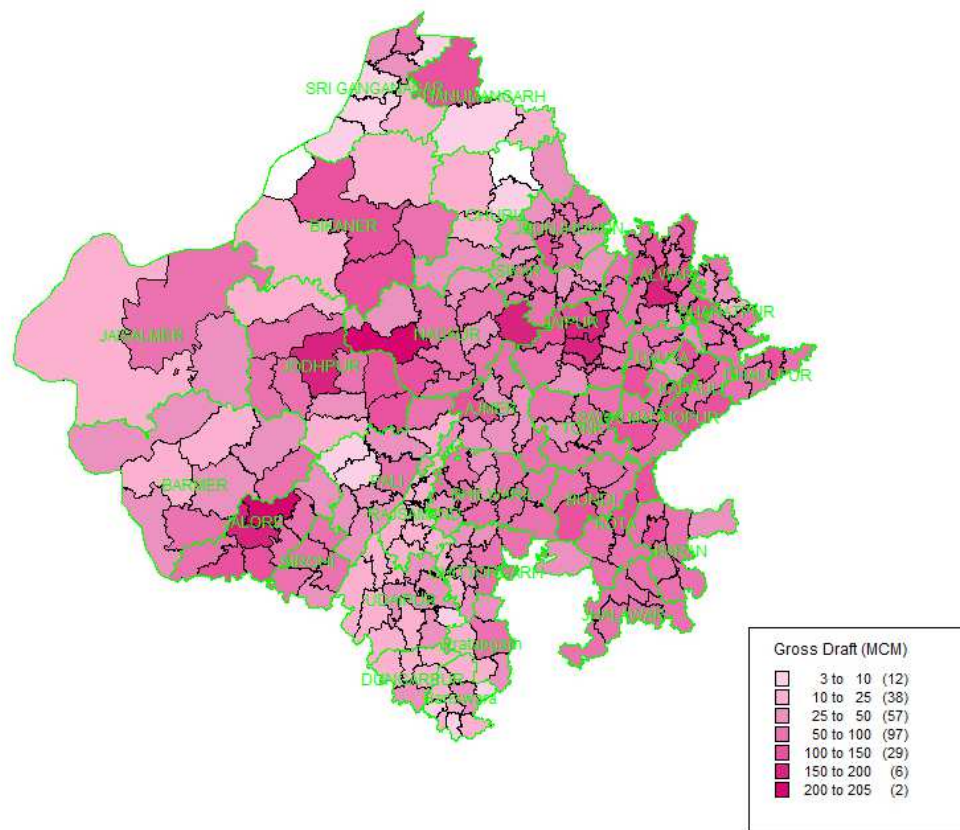


Plate VII: Ground Water Draft

Rajasthan Stage of Ground Water Development

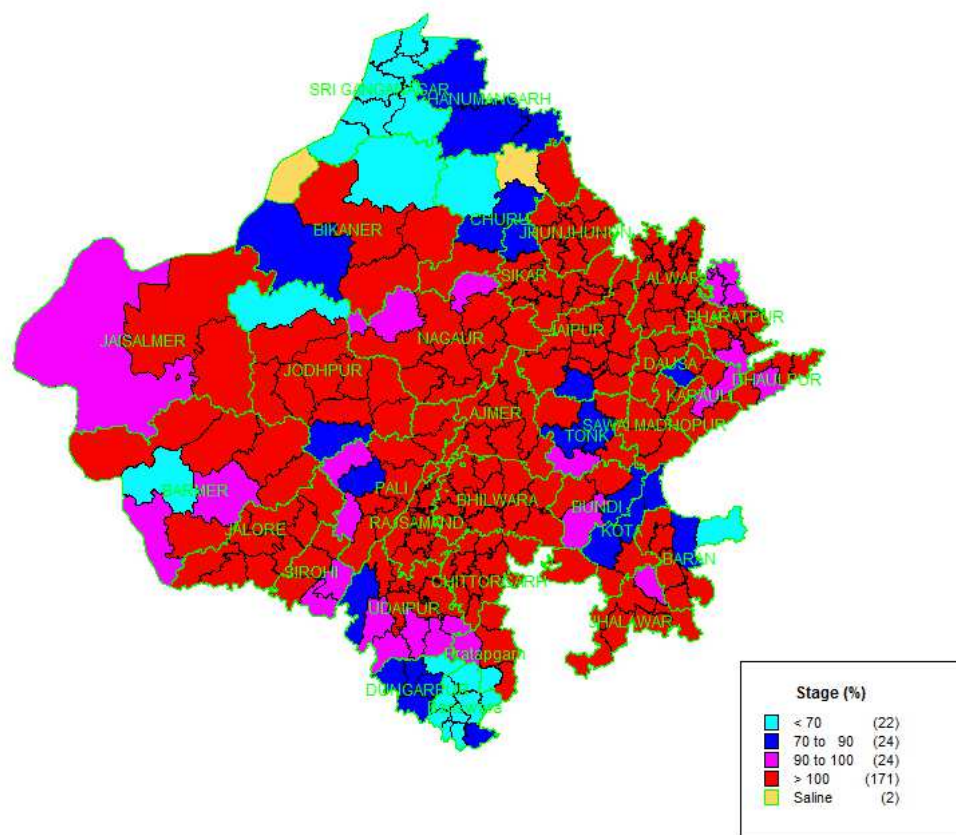


Plate VIII: Stage of Ground Water Development

Rajasthan Category of Ground Water Development

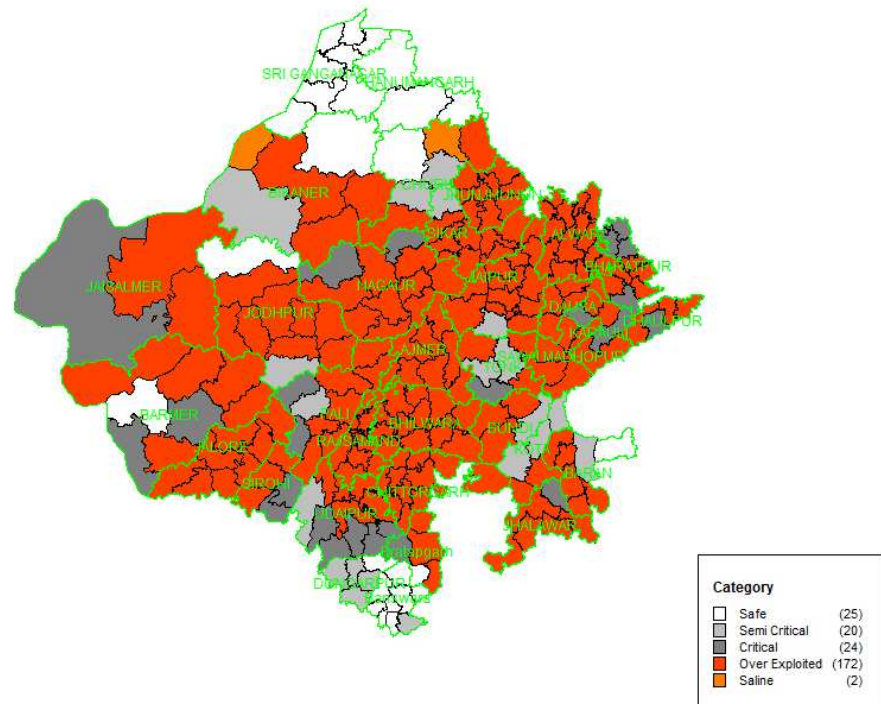


Plate IX: Category of Blocks

Annexure I

Order of Government of Rajasthan for Constitution of Committee

Government of Rajasthan
Administrative Reforms (Group.3) Department

No.F. 6 (46) AR/Gr.3/2012

Jaipur, dated 29-6-12

ORDER

The last assessment of state-wise annual replenishable ground water resources for the entire country was made as on 31.3.2009 based on the Methodology adopted by the Ground Water Resources Estimation Committee, 1997. Since then changes in ground water scenario in many parts of the country has been observed. The National Water Policy, 2002 has also recommended that the ground water resources of the country should be re-assessed periodically.

H.E. the Governor of Rajasthan is pleased to accord sanction for constitution of a State Level Committee on Ground Water Resources Assessment as on 31.3.2011 for the State as follows :-

1.	Principal Secretary to Govt., GWD&PHED	Chairman
2.	Secretary to Government, Energy	Member
3.	Commissioner, Industries	Member
4.	Commissioner, Agriculture	Member
5.	Chief Engineer, SWRPD	Member
6.	Chief Engineer, Water Resources	Member
7.	Chief Engineer(Hq.) PHED	Member
8.	Chief Engineer(Rural)PHED	Member
9.	Chief Engineer, GWD	Member
10.	General Manager, NABARD	Member
11.	Regional Director, CGWB, Western Region, Jaipur	Member -Secretary

Terms of Reference :- The broad terms of reference of the Committee would be as follows :-

- To estimate annual replenishable ground water resources of the State in accordance with the Ground Water Resources Estimation Methodology of CGWB.
- To estimate the status of utilization of the annual replenishable ground water resources.

Time frame : The Committee will submit its first report within six months.

The administrative department of this Committee will be Ground Water Department.

By Order,

Deputy Secretary to Government

29.6.12 Contd...2

Copy to the following through Administrative Department for information & necessary action :-

- 1.Addl.Chief Secretary, H.E. the Governor of Rajasthan,Jaipur.
- 2.Principal Secretary, Hon'ble Chief Minister,Rajasthan,Jaipur
- 3.P.S. to Minister, G.W.D.
- 4.P.S. to Chief Secretary
- 5.P.S. to Principal Secretary to Government,G.W.D.
- 6.P.S. to Secretary to Government, Energy
- 7.P.S. to Commissioner,Industries
- 8.P.S. to Commissioner, Agriculture
- 9.Chief Engineer, SWRPD, JLN Marg, Jaipur
- 10.Chief Engineer,Water Resources,Jaipur
- 11.Chief Engineer (Hq.) PHED, Jaipur
- 12.Chief Engineer(Rural)PHED, Jaipur
- 13.Chief Engineer, GWD , Jodhpur
- 14.General Manager, NABARD , Nehru Palace, Tonk Road, Jaipur
- 15.Regional Director, CGWB,Western Region,Jaipur
- 16.Dy.Secretary to Govt.,GWD,Govt.Secretariat,Jaipur alongwith spare copies of Order for deliver to all concerned.
- 17.Guard File.


O.S.D.

Minutes of the Meeting held on 05.04.2013

**MINUTES OF MEETING OF STATE LEVEL COMMITTEE (SLC) FOR APPROVAL OF
REPORT ON GROUND WATER ASSESSMENT OF STATE OF RAJASTHAN
HELD ON 05/04/2013**

The meeting of State Level Committee (SLC) for re-estimation of ground water resource of Total Groundwater Resources assessed jointly by the Ground Water Department, Govt. of Rajasthan and Central Ground Water Board, Western Region as on 31/03/2009 & Dynamic Groundwater resources as on 31/03/2011 was held under the Chairmanship of Dr. Purshottam Agrawal, Principal Secretary, PHED & GWD, Govt. of Rajasthan in the conference room No. 2 of the Secretariat at Jaipur on 05/04/2013 at 17:00 hrs.

The meeting was attended by following officers:-

- | | |
|----------------------------------------------------------------------------------------|------------------|
| 1. Sh. Naresh Pal Gangwar, Secretary, Energy, Govt. of Rajasthan, Jaipur | Member |
| 2. Sh. D.K. Nagori, Addl. Director, Representative of Commissioner Industries, Jaipur. | Member |
| 3. Sh. Suresh Gautam, Jt. Director, Representative of Commissioner Agriculture, Jaipur | Member |
| 4. Sh. Narendra Mertiya, Chief Engineer, SWRPD, Jaipur | Member |
| 5. Sh. Anil Bhargav, Chief Engineer, (HQ) PHED, Jaipur | Member |
| 6. Sh. Narendra Kumar Meena, Chief Engineer, GWD, Jodhpur | Member |
| 7. Sh. P.K. Parchure, Regional Director, CGWB, WR, Jaipur | Member Secretary |

Following officers were also present:-

1. Sh. K.L. Agarwal, Deputy Secretary II, WRD, Jaipur.
2. Sh. N.K. Vaishnav, Suptg. Hydrogeologist, GWD, Jodhpur
3. Sh. Yogesh Sharma, Suptg. Hydrogeologist, GWD, Jaipur
4. Sh. R.S. Vyas, Senior Hydrogeologist, GWD, Jodhpur
5. Sh. B.K. Maheshwari, Senior Hydrogeologist, GWD, Jaipur
- ✓ 6. Sh. Waseem Ahmed, Senior Hydrogeologist, CGWB, WR, Jaipur

The Chairman welcomed the members of the committee and directed the Member Secretary to present the salient points of the reports of Dynamic Resources of Ground Water as on March 2011 and Total Resources as on March 2009. The Regional Director, Central Ground Water Board, Western Region & Member Secretary, SLC briefed the committee about the methodology adopted in computation of ground water resources. He informed that as per the estimates as on 31/03/2011 Rajasthan has Net Groundwater availability to the tune of 10828.97 MCM and the Stage of Ground Water Development in the state is 137.07%. Allocation for domestic & industrial purpose is 2049.94 MCM and for irrigation is 654.18 MCM.

As per the previous estimation as on 31/03/2009 out of 239 Blocks in 33 Districts, 166 had been categorized as Over-exploited while 25 blocks fall in Critical Category and only 31 Blocks are under Safe Category. He also informed that during the assessment as on 31/03/2004 the No. of Over-exploited Blocks were 140 while 50 Blocks were under Critical

Category and the stage of Ground Water Development in the State had increased from 125% in 2004 to 135% in 2009.

As per the estimates on March, 2011 out of 243 blocks, only 25 blocks are in Safe category, 20 blocks are in Semi critical and 24 blocks are in Critical category, 172 (71%) blocks are Over Exploited and remaining two blocks are saline which have not been assessed.


Members of SLC inquired about R.I.F. & W.L.F. approach for calculation of recharge to ground water bodies and desired to know the names of blocks for which R.I.F. method had been used and those for which W.L.F. method had been used.

Chairman desired a table giving details of methodology adopted for each block may be incorporated in the report.

The Chairman suggested that in view of over-exploitation of ground water in the major part of the state, the management options for augmenting the ground water resources may also be suggested by CGWB and GWD.

In the last both the reports i.e. Total Availability of Groundwater Resources as on 31/03/2009 and Dynamic Groundwater Resources as on 31/03/2011 were approved by the committee.

The meeting concluded with vote of thanks to the chair and committee by the Regional Director, CGWB, WR, Jaipur. These minutes been the approval of the Principal Secretary, PHED & GWD Chairman, SLC on Ground Water Resource Estimation Committee (GWREC) conveyed by the Dy. Secretary, GWD II, Govt. of Rajasthan vide his letter no P 12(2) Bhujal/2010 dated 15.04.2013.


(P.K. Parchure)
Regional Director


TS/19/GWRE/CGWB/WR/2011- 953

Dated: 11-09-2013

Copy forwarded for necessary information:-

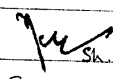

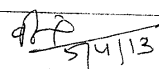


1. PS to Principal Secretary, PHED & GWD, Rajasthan & Chairman, State Secretariat, Jaipur
2. PS to Secretary Energy, Rajasthan, State Secretariat, Jaipur
3. The Member (SAM), CGWB, Bhujal Bhawan, NH-IV, Faridabad – 121001

4. Commissioner, Industries, Rajasthan, Udyog Bhawan, Tilak Marg, Jaipur
5. Commissioner, Agriculture, Rajasthan, Pant Krishi Bhawan, Janpat, C-Scheme, Jaipur
6. Chief Engineer, SWRPD, Rajasthan, Sinchai Bhawan, Ambedkar Circle, Jaipur
7. Chief Engineer, Water Resources, Rajasthan, J.L.N. Marg, OTS Circle, Jaipur
8. Chief Engineer, (HQ) PHED, Rajasthan, 2, Jal Bhawan, Civil Lines, Jaipur
9. Chief Engineer (Rural) PHED, Rajasthan, 2, Jal Bhawan, Civil Lines, Jaipur
10. Chief Engineer, GWD, Rajasthan, New Power House Road, Shastri Circle, Jodhpur
11. General Manager, NABARD, Jaipur 3, Nehru Place, Tonk Road, Jaipur
12. Regional Director, CGWB, WR, Jaipur

 11/10/13

(P.K. Parchure)
Regional Director

MEMBERS OF STATE LEVEL COMMITTEE
Meeting At 5:00 PM on 5-4-2013

1	Secretary to Govt. Energy	Member	 Sh. Nareesh B. Gangwar
2	Commissioner, Industries	Member	V (D.R. Nagarai Adh. Dir.)
3	Commissioner Agriculture	Member	 Subash Kumar J. Dir. (Agric.)
4	Chief Engineer, SWRPD	Member	
5	Chief Engineer, Water Resources	Member	 5/4/13 Sh. Narendra Mehtiya
6	Chief Engineer, (Hq.) PHED	Member	3/5/2 5/4/13
7	Chief Engineer, (Rural) PHED	Member	(Sh. Anil Bhargava)
8	Chief Engineer, GWD	Member	 Narender Kumar Meena
9	General Manager, NABARD	Member	
10	Regional Director, CGWB, Western Region, Jaipur	Member Secretary	 5/4/13 P. K. Parchure

Block Wise Ground Water Resources of Rajasthan as on March 2011

Annexure III

S. No.	District	S. No.	Block	Area of Block (Sq.km.)	Potential zone area (Sq.km.)	Total Annual Ground Water Recharge (mcm)	Natural Discharge during Non - Monsoon season (mcm)	Net Annual Ground Water Availability (mcm)	Existing Gross Ground Water Draft for Irrigation (mcm)	Existing Gross G.W. Draft for Dom. & Ind. Use (mcm)	Existing Gross Ground Water Draft for all uses (mcm)	Stage of G.W. Develop-ment. (%)	Category
1	2		3	4	5	6	7	8	9	10	11	12	13
1	AJMER	1	ARAIN	1194.40	1064.01	45.10	4.51	40.59	42.52	4.27	46.79	115.27	OVER EXPLOITED
	AJMER	2	BHINAI	1216.19	1150.82	48.25	4.82	43.42	44.36	3.97	48.34	111.32	OVER EXPLOITED
	AJMER	3	JAWAJA	674.51	484.33	22.03	2.20	19.83	21.94	6.42	28.36	143.03	OVER EXPLOITED
	AJMER	4	KEKRI	985.92	889.67	59.85	4.12	55.73	80.37	4.90	85.26	153.00	OVER EXPLOITED
	AJMER	5	MASUDA	891.99	817.00	35.55	3.56	32.00	32.66	3.70	36.35	113.62	OVER EXPLOITED
	AJMER	6	PISANGAN	1239.91	1108.05	59.83	5.71	54.12	103.30	9.24	112.54	207.94	OVER EXPLOITED
	AJMER	7	SILORA	1245.09	1012.88	48.69	4.87	43.82	52.59	4.66	57.25	130.65	OVER EXPLOITED
	AJMER	8	SRINAGAR	1032.99	940.00	35.81	3.26	32.55	37.74	9.75	47.49	145.88	OVER EXPLOITED
	AJMER		DISTRICT	8481.00	7466.76	355.11	33.05	322.06	415.47	46.91	462.38	143.57	OVER EXPLOITED
2	ALWAR	1	BEHROR	351.69	334.60	39.83	3.98	35.84	88.58	8.35	96.92	270.40	OVER EXPLOITED
	ALWAR	2	BANSUR	664.43	604.12	82.68	8.27	74.41	119.58	4.75	124.33	167.08	OVER EXPLOITED
	ALWAR	3	KATHUMAR	569.99	362.35	35.93	3.59	32.34	96.20	4.27	100.46	310.68	OVER EXPLOITED
	ALWAR	4	KISHANGARH	526.46	413.22	41.56	3.93	37.63	68.82	7.73	76.55	203.42	OVER EXPLOITED
	ALWAR	5	KOTKASIM	344.43	306.59	57.57	2.88	54.69	87.94	4.32	92.26	168.68	OVER EXPLOITED
	ALWAR	6	LAXMANGARH	623.95	415.01	38.98	3.90	35.08	66.23	3.05	69.28	197.48	OVER EXPLOITED
	ALWAR	7	MANDAWAR	577.26	545.78	72.01	7.20	64.81	121.01	3.86	124.86	192.67	OVER EXPLOITED
	ALWAR	8	NEEMRANA	378.82	327.43	41.44	4.14	37.30	59.22	5.25	64.48	172.88	OVER EXPLOITED
	ALWAR	9	RAJGARH	1034.21	455.95	36.59	3.66	32.93	45.50	4.92	50.42	153.12	OVER EXPLOITED
	ALWAR	10	RAMGARH	616.97	568.46	64.12	3.21	60.91	100.13	4.30	104.43	171.44	OVER EXPLOITED
	ALWAR	11	RENI	392.05	331.04	19.80	1.98	17.82	37.08	2.20	39.28	220.49	OVER EXPLOITED
	ALWAR	12	THANAGAZI	1060.33	752.33	64.68	6.47	58.21	53.64	4.81	58.44	100.39	OVER EXPLOITED
	ALWAR	13	TIJARA	673.48	611.52	93.60	4.68	88.92	127.44	7.58	135.02	151.84	OVER EXPLOITED
	ALWAR	14	UMRAIN	906.39	796.81	106.73	5.93	100.80	144.16	30.29	174.45	173.06	OVER EXPLOITED
	ALWAR		DISTRICT	8720.46	6825.21	795.51	63.82	731.70	1215.52	95.66	1311.18	179.20	OVER EXPLOITED
3	BANSWARA	1	ANANDPURI	337.40	329.38	16.57	2.49	14.09	6.64	1.70	8.33	59.15	SAFE
	BANSWARA	2	BAGIDORA	522.34	500.49	33.08	2.46	30.62	14.94	2.70	17.63	57.59	SAFE
	BANSWARA	3	GARHI	710.55	700.44	48.15	4.82	43.34	13.19	3.86	17.05	39.35	SAFE
	BANSWARA	4	GHATOL	778.40	680.91	51.28	4.87	46.41	12.83	3.02	15.85	34.14	SAFE
	BANSWARA	5	KUSHALGARH	651.80	507.89	23.17	3.48	19.70	12.65	1.53	14.18	72.01	SEMI CRITICAL
	BANSWARA	6	CHHOTI SARWAN	383.37	294.95	16.63	1.66	14.97	6.70	1.15	7.85	52.47	SAFE
	BANSWARA	7	SAJJANGARH	392.29	349.97	14.49	2.90	11.59	4.33	1.69	6.02	51.91	SAFE
	BANSWARA	8	TALWARA	759.93	615.93	54.25	4.29	49.95	21.04	3.97	25.01	50.06	SAFE
	BANSWARA		DISTRICT	4536.08	3979.96	257.62	26.96	230.66	92.31	19.61	111.92	48.52	SAFE

1	2	3	4	5	6	7	8	9	10	11	12	13
4	BARAN	1 ANTA	949.01	949.00	76.30	7.63	68.67	71.65	8.47	80.12	116.66	OVER EXPLOITED
	BARAN	2 ATRU	860.30	846.47	55.45	5.54	49.90	71.46	6.71	78.18	156.66	OVER EXPLOITED
	BARAN	3 BARAN	626.21	626.21	80.97	8.10	72.87	121.93	7.34	129.27	177.39	OVER EXPLOITED
	BARAN	4 CHHABRA	790.79	773.37	68.42	6.84	61.58	69.15	4.53	73.68	119.65	OVER EXPLOITED
	BARAN	5 CHHIPABAROD	828.76	804.50	61.35	4.29	57.07	84.67	4.61	89.29	156.46	OVER EXPLOITED
	BARAN	6 KISHANGANJ	1430.98	1429.72	110.02	11.00	99.02	77.25	3.82	81.07	81.88	SEMI CRITICAL
	BARAN	7 SHAHBAD	1469.26	1462.94	67.15	4.64	62.52	29.84	3.89	33.73	53.96	SAFE
	BARAN	DISTRICT	6955.31	6892.21	519.67	48.04	471.63	525.96	39.38	565.34	119.87	OVER EXPLOITED
5	BARMER	1 BAETU	3228.03	476.56	6.86	0.69	6.18	3.69	11.26	14.95	242.02	OVER EXPLOITED
	BARMER	2 BALOTRA	3513.87	852.32	21.09	2.11	18.98	25.22	8.89	34.11	179.69	OVER EXPLOITED
	BARMER	3 BARMER	3841.58	1986.88	28.68	1.76	26.92	5.54	6.47	12.01	44.60	SAFE
	BARMER	4 CHOHTAN	3306.26	2135.94	51.89	5.19	46.70	36.44	9.63	46.07	98.66	CRITICAL
	BARMER	5 DHORIMANNA	2688.80	2125.06	47.42	4.74	42.68	57.74	5.93	63.67	149.17	OVER EXPLOITED
	BARMER	6 SINDHARI	3115.73	1078.13	47.45	3.85	43.61	36.00	5.62	41.62	95.44	CRITICAL
	BARMER	7 SIWANA	2025.24	1425.00	51.95	5.20	46.76	61.95	3.09	65.04	139.09	OVER EXPLOITED
	BARMER	8 SHEO	6667.49	2654.76	17.17	1.72	15.46	12.43	16.77	29.20	188.90	OVER EXPLOITED
	BARMER	DISTRICT	28387.00	12734.65	272.53	25.24	247.29	239.01	67.66	306.66	124.01	OVER EXPLOITED
6	BHARATPUR	1 BAYANA	808.69	676.31	89.50	8.36	81.14	73.26	6.37	79.63	98.14	CRITICAL
	BHARATPUR	2 DEEG	492.85	338.91	45.60	4.56	41.04	36.28	4.39	40.67	99.10	CRITICAL
	BHARATPUR	3 KAMA	562.49	492.93	71.24	7.12	64.12	57.01	5.36	62.37	97.28	CRITICAL
	BHARATPUR	4 KUMHER	454.51	119.08	18.24	1.82	16.41	13.16	4.89	18.05	109.94	OVER EXPLOITED
	BHARATPUR	5 NADBAI	446.70	281.34	43.69	4.37	39.32	65.68	4.77	70.45	179.16	OVER EXPLOITED
	BHARATPUR	6 NAGAR	623.80	291.36	53.26	5.33	47.94	40.39	6.12	46.51	97.02	CRITICAL
	BHARATPUR	7 ROOPWAS	539.01	501.10	69.88	3.49	66.39	66.97	5.45	72.42	109.08	OVER EXPLOITED
	BHARATPUR	8 SEWAR	509.52	281.10	40.50	2.03	38.48	40.04	16.20	56.24	146.18	OVER EXPLOITED
	BHARATPUR	9 WEIR	606.53	430.39	60.59	6.06	54.53	65.60	10.24	75.84	139.08	OVER EXPLOITED
	BHARATPUR	DISTRICT	5044.10	3412.52	492.50	43.14	449.36	458.39	63.78	522.18	116.21	OVER EXPLOITED
7	BHILWARA	1 ASIND	1136.10	990.46	34.64	3.46	31.17	47.01	3.39	50.41	161.70	OVER EXPLOITED
	BHILWARA	2 BANERA	687.80	662.58	35.51	3.46	32.05	32.79	2.62	35.41	110.47	OVER EXPLOITED
	BHILWARA	3 HURDA	621.80	612.76	26.25	2.63	23.63	24.57	2.78	27.35	115.77	OVER EXPLOITED
	BHILWARA	4 JAHAZPUR	1089.70	865.87	51.77	5.18	46.59	58.25	3.55	61.80	132.65	OVER EXPLOITED
	BHILWARA	5 KOTRI	934.00	898.31	48.89	4.10	44.79	51.30	3.14	54.43	121.53	OVER EXPLOITED
	BHILWARA	6 MANDAL	1234.20	1155.95	48.12	4.81	43.31	46.73	3.54	50.27	116.08	OVER EXPLOITED
	BHILWARA	7 MANDALGARH	1499.10	1032.73	67.71	6.77	60.94	73.31	3.68	76.99	126.34	OVER EXPLOITED
	BHILWARA	8 RAIPUR	524.20	486.36	21.44	2.14	19.30	28.97	1.87	30.84	159.82	OVER EXPLOITED
	BHILWARA	9 SAHADA	653.90	634.69	24.23	2.34	21.90	27.15	2.17	29.31	133.87	OVER EXPLOITED
	BHILWARA	10 SHAHPURA	1159.30	1125.13	61.47	5.44	56.02	64.31	2.61	66.92	119.45	OVER EXPLOITED
	BHILWARA	11 SUWANA	914.90	890.01	44.29	4.43	39.86	47.58	10.46	58.04	145.63	OVER EXPLOITED
	BHILWARA	DISTRICT	10455.00	9354.85	464.32	44.76	419.55	501.98	39.80	541.78	129.13	OVER EXPLOITED

1	2	3	4	5	6	7	8	9	10	11	12	13
8	BIKANER	1 BIKANER	3824.76	3191.00	60.99	3.05	57.94	80.99	25.50	106.49	183.78	OVER EXPLOITED
	BIKANER	2 DUNGARGARH	3003.90	2703.88	52.15	2.61	49.54	48.93	16.09	65.02	131.24	OVER EXPLOITED
	BIKANER	3 KHAJUWALA* (NEW)	5453.24	0.00	0.00	0.00	0.00	-	-	-	-	-
	BIKANER	4 KOLAYAT	7970.86	1924.00	30.36	1.52	28.84	12.19	9.06	21.25	73.66	SEMI CRITICAL
	BIKANER	5 LUNKARANSAR	6328.02	2071.00	35.44	1.77	33.66	8.55	6.14	14.69	43.63	SAFE
	BIKANER	6 NOKHA	3800.97	3712.63	73.71	3.69	70.02	108.01	26.96	134.97	192.75	OVER EXPLOITED
	BIKANER	DISTRICT	30381.75	13602.51	252.65	12.63	240.01	258.67	83.74	342.41	142.66	OVER EXPLOITED
9	BUNDI	1 HINDOLI	1275.30	884.81	77.33	10.53	66.79	73.37	6.33	79.70	119.32	OVER EXPLOITED
	BUNDI	2 K.PATAN	1243.51	1152.88	128.97	12.90	116.07	89.47	5.80	95.28	82.08	SEMI CRITICAL
	BUNDI	3 NAINWA	1095.19	966.85	60.58	6.06	54.52	53.98	8.32	62.31	114.28	OVER EXPLOITED
	BUNDI	4 TALERA	1886.00	1235.64	155.78	30.21	125.57	119.86	6.66	126.52	100.76	OVER EXPLOITED
	BUNDI	DISTRICT	5500.00	4240.18	422.65	59.70	362.95	336.69	27.11	363.80	100.23	OVER EXPLOITED
10	CHITTORGARH	1 BARISADARI	504.68	428.38	20.11	2.01	18.10	27.64	1.15	28.79	159.06	OVER EXPLOITED
	CHITTORGARH	2 BEGUN	970.35	626.85	43.75	4.37	39.37	55.99	1.17	57.17	145.20	OVER EXPLOITED
	CHITTORGARH	3 BHADESAR	539.06	492.53	25.20	2.52	22.68	36.42	0.70	37.12	163.67	OVER EXPLOITED
	CHITTORGARH	4 BHAINSRORGARH	1605.46	779.36	33.12	2.20	30.91	34.24	0.22	34.46	111.47	OVER EXPLOITED
	CHITTORGARH	5 BHUPALSAGAR	398.24	382.12	18.00	1.80	16.20	19.14	0.53	19.68	121.48	OVER EXPLOITED
	CHITTORGARH	6 CHITTORGARH	951.33	741.32	60.61	6.06	54.55	73.26	4.85	78.11	143.18	OVER EXPLOITED
	CHITTORGARH	7 DUNGLA	494.00	465.43	21.63	2.16	19.46	20.11	0.50	20.61	105.89	OVER EXPLOITED
	CHITTORGARH	8 GANGRAR	555.64	536.62	25.72	2.57	23.15	28.98	0.43	29.41	127.04	OVER EXPLOITED
	CHITTORGARH	9 KAPASAN	515.92	502.01	19.97	2.00	17.97	30.37	0.87	31.24	173.80	OVER EXPLOITED
	CHITTORGARH	10 NIMBAHERA	895.35	702.81	64.20	6.42	57.78	81.29	2.71	84.01	145.39	OVER EXPLOITED
	CHITTORGARH	11 RASHMI	449.97	437.57	20.46	2.05	18.41	24.81	0.65	25.47	138.32	OVER EXPLOITED
	CHITTORGARH	DISTRICT	7880.00	6095.00	352.76	34.17	318.60	432.27	13.79	446.06	140.01	OVER EXPLOITED
11	CHURU	1 CHURU	1606.87	484.38	9.79	0.49	9.31	3.68	4.31	7.99	85.82	SEMI CRITICAL
	CHURU	2 RAJGARH	2224.92	324.25	6.46	0.32	6.14	23.18	4.50	27.69	451.03	OVER EXPLOITED
	CHURU	3 RATANGARH	1622.41	1045.30	28.29	1.41	26.88	14.31	4.84	19.15	71.26	SEMI CRITICAL
	CHURU	4 SARDARSHAHAR	3860.80	2123.76	58.91	2.95	55.96	15.06	6.30	21.36	38.16	SAFE
	CHURU	5 SUJANGARH	2667.55	1214.05	37.55	1.88	35.67	38.22	4.14	42.36	118.74	OVER EXPLOITED
	CHURU	6 TARANAGAR*	1810.40	1810.40*	0.00	0.00	0.00	0.00	0.00	0.00	-	-
	CHURU	DISTRICT	13792.95	5191.74	141.01	7.05	133.95	94.45	24.08	118.54	88.49	SEMI CRITICAL
12	DAUSA	1 BANDIKUI	632.94	528.90	42.65	4.27	38.39	70.23	3.97	74.20	193.30	OVER EXPLOITED
	DAUSA	2 DAUSA	943.76	894.74	61.28	6.13	55.15	68.57	9.03	77.60	140.72	OVER EXPLOITED
	DAUSA	3 LALSOT	871.24	780.36	68.45	6.84	61.60	117.82	3.23	121.05	196.50	OVER EXPLOITED
	DAUSA	4 MAHUA	470.00	442.00	38.91	3.89	35.02	45.33	4.48	49.81	142.23	OVER EXPLOITED
	DAUSA	5 SIKRAI	502.23	439.62	52.45	5.07	47.38	76.91	4.17	81.08	171.13	OVER EXPLOITED
	DAUSA	DISTRICT	3420.17	3085.62	263.73	26.20	237.53	378.86	24.87	403.74	169.97	OVER EXPLOITED

1	2		3	4	5	6	7	8	9	10	11	12	13
13	DHOLPUR	1	BARI	816.24	694.67	61.88	4.21	57.67	45.71	6.62	52.33	90.74	CRITICAL
	DHOLPUR	2	BASERI	1001.42	813.90	81.29	5.61	75.68	72.92	6.04	78.96	104.34	OVER EXPLOITED
	DHOLPUR	3	DHOLPUR	609.32	488.85	74.88	7.49	67.39	117.81	7.08	124.89	185.33	OVER EXPLOITED
	DHOLPUR	4	RAJAKHERA	582.07	488.72	65.07	6.51	58.57	70.62	5.53	76.15	130.01	OVER EXPLOITED
	DHOLPUR		DISTRICT	3009.05	2486.14	283.12	23.82	259.31	307.06	25.26	332.33	128.16	OVER EXPLOITED
14	DUNGARPUR	1	ASPUR	675.95	499.24	33.30	2.14	31.16	14.61	1.40	16.01	51.38	SAFE
	DUNGARPUR	2	BICHHIWARA	704.97	436.59	22.17	2.22	19.95	14.98	1.49	16.47	82.53	SEMI CRITICAL
	DUNGARPUR	3	DUNGARPUR	552.00	366.74	16.53	1.65	14.87	10.94	1.85	12.79	85.98	SEMI CRITICAL
	DUNGARPUR	4	SAGWARA	590.12	404.58	24.11	2.41	21.69	14.57	2.03	16.59	76.48	SEMI CRITICAL
	DUNGARPUR	5	SIMALWARA	1246.96	926.98	44.93	4.49	40.43	28.87	2.05	30.92	76.46	SEMI CRITICAL
	DUNGARPUR		DISTRICT	3770.00	2634.13	141.03	12.91	128.12	83.96	8.82	92.78	72.41	SEMI CRITICAL
15	GANGANAGAR	1	ANUPGARH	2388.42	516.74	99.96	10.00	89.96	6.92	0.21	7.13	7.92	SAFE
	GANGANAGAR	2	GANGANAGAR	866.65	242.40	118.61	11.86	106.75	64.85	0.84	65.69	61.53	SAFE
	GANGANAGAR	3	KARANPUR	826.83	249.70	48.54	4.85	43.69	25.61	0.84	26.45	60.55	SAFE
	GANGANAGAR	4	PADAMPUR	846.91	146.40	51.60	5.16	46.44	26.55	0.76	27.31	58.80	SAFE
	GANGANAGAR	5	RAISINGH NAGAR	1368.32	96.30	21.91	2.19	19.72	8.09	0.46	8.55	43.35	SAFE
	GANGANAGAR	6	SADUL SHAHAR	892.67	31.50	21.11	2.11	19.00	6.56	0.00	6.56	34.55	SAFE
	GANGANAGAR	7	SURATGARH	3026.53	137.60	25.88	2.59	23.30	13.96	2.21	16.16	69.38	SAFE
	GANGANAGAR	8	GHARSANA	1387.32	125.00	20.38	2.04	18.34	3.65	0.14	3.79	20.64	SAFE
	GANGANAGAR		DISTRICT	11603.65	1545.64	407.98	40.80	367.19	156.17	5.45	161.63	44.02	SAFE
16	HANUMAN GARH	1	BHADRA	1776.77	158.10	17.97	1.80	16.17	10.20	2.19	12.39	76.60	SAFE
	HANUMAN GARH	2	HANUMAN GARH	3691.11	1063.30	198.79	19.88	178.91	139.48	4.74	144.22	80.61	SAFE
	HANUMAN GARH	3	NOHAR	4111.66	57.10	9.73	0.97	8.76	7.48	0.13	7.61	86.84	SAFE
	HANUMAN GARH		DISTRICT	9579.54	1278.50	226.49	22.65	203.84	157.16	7.05	164.21	80.56	SAFE
17	JAIPUR	1	AMER	898.64	850.48	82.77	8.28	74.49	141.51	40.83	182.35	244.80	OVER EXPLOITED
	JAIPUR	2	BAIRATH	706.10	663.98	59.70	5.97	53.73	64.72	9.23	73.94	137.62	OVER EXPLOITED
	JAIPUR	3	BASSI	654.69	631.23	44.38	4.44	39.94	86.95	9.40	96.35	241.21	OVER EXPLOITED
	JAIPUR	4	CHAKSU	811.92	729.36	60.37	6.04	54.33	79.69	5.10	84.79	156.07	OVER EXPLOITED
	JAIPUR	5	DUDU	1870.64	1790.87	74.07	5.82	68.25	64.16	16.76	80.92	118.57	OVER EXPLOITED
	JAIPUR	6	GOVINDGARH	685.12	638.08	45.94	4.59	41.34	99.51	11.41	110.93	268.30	OVER EXPLOITED
	JAIPUR	7	J.RAMGARH	1033.70	961.88	74.01	7.40	66.61	94.22	4.64	98.86	148.41	OVER EXPLOITED
	JAIPUR	8	JHOTWARA	568.79	553.04	41.38	2.07	39.31	57.94	112.30	170.23	433.04	OVER EXPLOITED
	JAIPUR	9	KOTPUTLI	691.71	572.75	44.20	4.42	39.78	71.97	8.07	80.04	201.18	OVER EXPLOITED
	JAIPUR	10	PHAGI	1114.34	773.51	47.26	4.00	43.26	33.91	3.12	37.03	85.60	SEMI CRITICAL
	JAIPUR	11	SAMBHER	938.40	831.48	60.31	6.03	54.28	135.96	9.61	145.57	268.20	OVER EXPLOITED
	JAIPUR	12	SANGANER	657.54	613.87	45.94	4.59	41.35	85.22	18.95	104.17	251.94	OVER EXPLOITED
	JAIPUR	13	SHAH PURA	429.85	384.14	32.05	3.20	28.84	65.34	7.44	72.79	252.34	OVER EXPLOITED
	JAIPUR	13	DISTRICT	11061.44	9994.67	712.38	66.85	645.53	1081.11	256.86	1337.97	207.27	OVER EXPLOITED

1	2		3	4	5	6	7	8	9	10	11	12	13
18	JAISALMER	1	JAISALMER	11591.00	2510.22	22.04	1.86	20.17	40.93	11.85	52.78	261.63	OVER EXPLOITED
	JAISALMER	2	SAM	21194.80	7960.65	27.83	2.78	25.05	11.86	10.70	22.56	90.05	CRITICAL
	JAISALMER	3	SANKRA	5615.20	1619.17	18.05	1.68	16.37	40.77	6.38	47.16	288.11	OVER EXPLOITED
	JAISALMER		DISTRICT	38401.00	12090.04	67.92	6.33	61.59	93.56	28.93	122.49	198.89	OVER EXPLOITED
19	JALORE	1	AHORE	1613.77	535.24	26.08	2.30	23.78	24.87	4.92	29.79	125.27	OVER EXPLOITED
	JALORE	2	BHINMAL	1365.61	1322.75	79.15	7.27	71.88	149.14	6.03	155.17	215.87	OVER EXPLOITED
	JALORE	3	JALORE	1049.05	834.37	47.61	4.76	42.85	52.63	4.95	57.57	134.36	OVER EXPLOITED
	JALORE	4	JASWANTPURA	1058.42	932.37	55.59	5.56	50.03	61.19	3.55	64.74	129.39	OVER EXPLOITED
	JALORE	5	RANIWARA	1009.75	918.62	62.18	6.22	55.96	111.83	4.82	116.65	208.45	OVER EXPLOITED
	JALORE	6	SANCHORE	3054.97	1236.90	69.22	6.65	62.57	123.53	7.39	130.92	209.25	OVER EXPLOITED
	JALORE	7	CHITALWANA		1075.60	62.30	3.12	59.19	59.82	1.35	61.17	103.35	OVER EXPLOITED
	JALORE	8	SAYLA	1488.43	1372.25	60.72	4.98	55.73	196.52	7.90	204.41	366.76	OVER EXPLOITED
	JALORE		DISTRICT	10640.00	8228.10	462.85	40.86	422.00	779.52	40.90	820.42	194.41	OVER EXPLOITED
20	JHALAWAR	1	BAKANI	879.12	865.98	65.15	6.52	58.64	73.33	2.28	75.61	128.95	OVER EXPLOITED
	JHALAWAR	2	DAG	1120.87	1087.09	66.00	3.30	62.70	72.82	2.81	75.63	120.63	OVER EXPLOITED
	JHALAWAR	3	J.PATAN	1330.91	1299.62	82.22	4.11	78.11	91.60	3.45	95.05	121.68	OVER EXPLOITED
	JHALAWAR	4	KHANPUR	945.70	932.90	82.80	8.28	74.52	67.73	2.44	70.18	94.17	CRITICAL
	JHALAWAR	5	M.THANA	932.46	919.97	71.56	3.58	67.98	84.64	2.38	87.02	128.02	OVER EXPLOITED
	JHALAWAR	6	PIRAWA	1009.94	1000.60	73.98	3.70	70.28	85.88	2.47	88.35	125.71	OVER EXPLOITED
	JHALAWAR		DISTRICT	6219.00	6106.16	441.71	29.48	412.23	476.01	15.83	491.83	119.31	OVER EXPLOITED
21	JHUNJHUNUN	1	ALSISAR	837.15	707.37	26.77	2.68	24.09	17.26	8.36	25.62	106.34	OVER EXPLOITED
	JHUNJHUNUN	2	BUHANA	653.30	624.30	32.84	3.28	29.56	45.58	8.80	54.37	183.96	OVER EXPLOITED
	JHUNJHUNUN	3	CHIRAWA	493.04	493.04	23.15	2.32	20.84	53.47	10.55	64.03	307.26	OVER EXPLOITED
	JHUNJHUNUN	4	JHUNJHUNUN	751.90	744.96	32.28	3.23	29.05	56.52	15.23	71.75	246.93	OVER EXPLOITED
	JHUNJHUNUN	5	KHETRI	831.44	575.83	33.78	2.33	31.45	43.01	6.37	49.38	156.99	OVER EXPLOITED
	JHUNJHUNUN	6	NAWALGARH	699.80	632.00	36.04	1.80	34.23	87.56	12.45	100.01	292.14	OVER EXPLOITED
	JHUNJHUNUN	7	SURAJGARH	779.09	779.09	33.17	3.32	29.85	67.47	10.78	78.25	262.16	OVER EXPLOITED
	JHUNJHUNUN	8	UDAIPURWATI	882.28	717.10	45.48	4.55	40.93	85.18	13.16	98.34	240.26	OVER EXPLOITED
	JHUNJHUNUN		DISTRICT	5928.00	5273.69	263.51	23.50	240.01	456.04	85.71	541.75	225.72	OVER EXPLOITED
22	JODHPUR	1	BALESAR	1888.25	1503.03	25.64	2.56	23.07	43.39	6.94	50.33	218.13	OVER EXPLOITED
	JODHPUR	2	BAORI	1387.33	1387.33	32.87	3.29	29.58	112.17	13.93	126.10	426.26	OVER EXPLOITED
	JODHPUR	3	BAP	4393.31	3586.92	63.00	6.30	56.70	18.90	5.78	24.67	43.51	SAFE
	JODHPUR	4	BHOPALGARH	1757.69	1718.69	56.98	5.70	51.28	121.51	9.94	131.44	256.31	OVER EXPLOITED
	JODHPUR	5	BILARA	1504.33	1234.20	47.43	4.74	42.69	106.39	11.15	117.54	275.34	OVER EXPLOITED
	JODHPUR	6	LUNI	1978.95	758.78	23.35	2.06	21.29	13.74	1.82	15.56	73.07	SEMI CRITICAL
	JODHPUR	7	MANDORE	1260.96	1165.19	29.27	2.93	26.34	36.22	8.18	44.40	168.54	OVER EXPLOITED
	JODHPUR	8	OSIAN	2861.07	2861.07	59.04	5.90	53.14	181.91	17.28	199.19	374.87	OVER EXPLOITED
	JODHPUR	9	PHALODI	3118.13	3118.13	51.30	5.13	46.17	45.52	23.35	68.87	149.18	OVER EXPLOITED
	JODHPUR	10	SHERGARH	2099.98	1534.58	40.64	3.78	36.86	51.89	5.78	57.67	156.46	OVER EXPLOITED
	JODHPUR		DISTRICT	22250.00	18867.92	429.52	42.39	387.13	731.64	104.15	835.79	215.89	OVER EXPLOITED

1	2		3	4	5	6	7	8	9	10	11	12	13
23	KARAULI	1	HINDAUN	637.70	575.20	63.58	6.10	57.48	116.97	9.39	126.37	219.84	OVER EXPLOITED
	KARAULI	2	KARAULI	1262.09	1084.46	107.11	10.71	96.40	83.37	9.36	92.73	96.19	CRITICAL
	KARAULI	3	NADAUTI	650.50	571.06	38.80	3.73	35.07	22.65	5.42	28.07	80.04	CRITICAL
	KARAULI	4	SAPOTRA	1958.81	1219.49	106.15	9.87	96.28	94.60	9.79	104.40	108.43	OVER EXPLOITED
	KARAULI	5	TODABHIM	529.50	452.21	57.49	5.75	51.74	94.17	16.68	110.85	214.23	OVER EXPLOITED
	KARAULI		DISTRICT	5038.60	3902.42	373.14	36.17	336.97	411.77	50.64	462.41	137.23	OVER EXPLOITED
24	KOTA	1	ITAWA	898.51	897.51	140.13	14.01	126.11	97.41	6.07	103.48	82.06	SEMI CRITICAL
	KOTA	2	KHAIRABAD	794.26	750.60	55.91	5.59	50.31	55.50	9.16	64.65	128.50	OVER EXPLOITED
	KOTA	3	LADPURA	1540.80	1521.35	126.23	12.62	113.61	65.42	14.92	80.34	70.72	SEMI CRITICAL
	KOTA	4	SANGOD	1057.80	1044.14	78.83	7.88	70.95	88.22	9.68	97.89	137.98	OVER EXPLOITED
	KOTA	5	SULTANPUR	912.57	909.57	165.79	13.48	152.32	114.43	9.08	123.51	81.09	SEMI CRITICAL
	KOTA		DISTRICT	5203.94	5123.17	566.89	53.59	513.30	420.97	48.91	469.88	91.54	CRITICAL
25	NAGAU	1	DEGANA	1463.34	1203.34	41.55	4.15	37.39	50.03	15.29	65.32	174.68	OVER EXPLOITED
	NAGAU	2	DIDWANA	1637.59	1637.59	63.74	6.37	57.36	79.35	18.26	97.61	170.16	OVER EXPLOITED
	NAGAU	3	JAYAL	1948.08	1724.58	57.26	5.73	51.53	38.39	20.48	58.87	114.24	OVER EXPLOITED
	NAGAU	4	KUCHAMAN	1507.13	1125.88	73.19	6.38	66.81	166.40	16.54	182.94	273.82	OVER EXPLOITED
	NAGAU	5	LADNU	1530.08	1448.83	44.24	4.42	39.81	26.56	12.01	38.57	96.89	CRITICAL
	NAGAU	6	MAKRANA	1140.08	1065.08	39.09	3.91	35.18	27.22	15.31	42.53	120.91	OVER EXPLOITED
	NAGAU	7	MERTA	1434.80	1378.55	47.99	4.16	43.83	129.38	13.60	142.98	326.19	OVER EXPLOITED
	NAGAU	8	MUNDWA	2207.29	2207.29	70.59	7.06	63.53	173.95	30.43	204.38	321.69	OVER EXPLOITED
	NAGAU	9	NAGAU	2532.90	2270.40	53.31	5.33	47.98	27.05	17.41	44.46	92.66	CRITICAL
	NAGAU	10	PARBATSAR	1071.70	1071.70	32.21	3.22	28.99	44.60	8.23	52.83	182.24	OVER EXPLOITED
	NAGAU	11	RIYAN	1245.26	1245.26	57.60	5.76	51.84	48.95	11.35	60.30	116.32	OVER EXPLOITED
	NAGAU		DISTRICT	17718.25	16378.50	580.75	56.49	524.26	811.86	178.93	990.79	188.99	OVER EXPLOITED
26	PALI	1	BALI	1449.80	943.75	46.89	4.69	42.20	41.08	3.25	44.33	105.06	OVER EXPLOITED
	PALI	2	DESURI	815.40	565.31	30.30	3.03	27.27	28.23	2.37	30.60	112.20	OVER EXPLOITED
	PALI	3	JAITARAN	1377.41	1212.48	59.99	5.72	54.26	65.39	5.77	71.16	131.14	OVER EXPLOITED
	PALI	4	MARWAR Jn.	1404.07	1150.00	40.62	4.06	36.56	44.90	6.12	51.01	139.54	OVER EXPLOITED
	PALI	5	PALI	1387.03	309.43	10.78	1.08	9.70	7.11	0.22	7.33	75.54	SEMI CRITICAL
	PALI	6	RAIPUR	1092.22	656.25	19.87	1.84	18.04	20.58	1.56	22.14	122.77	OVER EXPLOITED
	PALI	7	RANI	782.04	625.17	30.04	3.00	27.03	28.14	2.97	31.12	115.10	OVER EXPLOITED
	PALI	8	ROHAT	1407.75	106.25	5.04	0.50	4.53	4.43	0.00	4.43	97.67	CRITICAL
	PALI	9	SOJAT	1681.55	1133.50	34.42	3.29	31.13	33.48	2.94	36.42	117.00	OVER EXPLOITED
	PALI	10	SUMERPUR	959.73	660.40	50.64	5.06	45.58	41.03	2.27	43.30	95.00	CRITICAL
	PALI		DISTRICT	12357.00	7362.54	328.59	32.29	296.31	314.36	27.47	341.84	115.37	OVER EXPLOITED

1	2		3	4	5	6	7	8	9	10	11	12	13
27	PRATAPGARH	1	ARNOD	663.07	563.35	31.02	3.10	27.92	37.58	1.25	38.83	139.08	OVER EXPLOITED
	PRATAPGARH	2	CHHOTISADRI	703.04	542.38	30.60	3.06	27.54	37.65	0.67	38.32	139.12	OVER EXPLOITED
	PRATAPGARH	3	DHARIYAWAD	882.94	458.56	23.01	2.30	20.71	18.81	1.43	20.24	97.78	CRITICAL
	PRATAPGARH	4	PEEPALKHOONT	840.86	483.50	23.26	1.16	22.10	13.96	0.76	14.72	66.59	SAFE
	PRATAPGARH	5	PRATAPGARH	1269.89	902.60	47.32	4.73	42.59	60.84	1.85	62.69	147.22	OVER EXPLOITED
	PRATAPGARH		DISTRICT	4359.80	2950.39	155.21	14.36	140.86	168.84	5.97	174.81	124.10	OVER EXPLOITED
28	RAJASMAND	1	AMET	523.56	465.19	13.83	1.38	12.45	12.00	2.29	14.29	114.81	OVER EXPLOITED
	RAJASMAND	2	BHIM	687.39	337.16	12.40	1.24	11.16	12.21	1.80	14.01	125.56	OVER EXPLOITED
	RAJASMAND	3	DEOGARH	617.01	390.76	12.23	1.22	11.00	10.13	1.17	11.30	102.74	OVER EXPLOITED
	RAJASMAND	4	KHAMNOR	791.68	675.86	26.34	2.63	23.71	21.52	3.08	24.60	103.76	OVER EXPLOITED
	RAJASMAND	5	KUMBHALGARH	788.35	536.56	22.70	2.27	20.43	18.55	1.89	20.44	100.03	OVER EXPLOITED
	RAJASMAND	6	RAILMAGRA	608.14	600.18	16.82	1.68	15.14	15.36	2.00	17.35	114.63	OVER EXPLOITED
	RAJASMAND	7	RAJSAMAND	619.33	534.38	14.40	1.44	12.96	12.93	3.02	15.95	123.07	OVER EXPLOITED
	RAJASMAND		DISTRICT	4635.46	3540.09	118.72	11.87	106.85	102.70	15.25	117.95	110.39	OVER EXPLOITED
29	SIKAR	1	DANTA RAMGARH	1210.51	1140.45	50.88	5.09	45.80	73.67	8.07	81.74	178.48	OVER EXPLOITED
	SIKAR	2	DHOD	911.15	904.00	41.81	4.18	37.63	52.94	7.89	60.82	161.64	OVER EXPLOITED
	SIKAR	3	FATEHPUR	1291.23	1258.74	47.73	4.08	43.65	21.19	9.43	30.62	70.14	SEMI CRITICAL
	SIKAR	4	KHANDELLA	743.46	693.99	33.03	3.30	29.73	43.73	3.73	47.47	159.68	OVER EXPLOITED
	SIKAR	5	LACHHMANGARH	1051.62	1008.30	47.45	4.74	42.70	35.35	7.78	43.13	101.01	OVER EXPLOITED
	SIKAR	6	NEEM KA THANA	1197.12	875.18	31.44	2.06	29.38	33.01	6.91	39.92	135.85	OVER EXPLOITED
	SIKAR	7	PIPRALI	807.66	726.18	32.44	3.24	29.20	50.80	8.91	59.72	204.52	OVER EXPLOITED
	SIKAR	8	SRI MADHOPUR	668.10	656.62	36.69	3.67	33.02	59.83	5.70	65.53	198.45	OVER EXPLOITED
	SIKAR		DISTRICT	7880.85	7263.46	321.48	30.37	291.11	370.52	58.42	428.94	147.35	OVER EXPLOITED
30	SAWAIMADHOPUR	1	BAMANWAS	721.10	656.55	69.42	4.46	64.96	65.48	8.15	73.63	113.34	OVER EXPLOITED
	SAWAIMADHOPUR	2	BONLI	1004.50	983.38	69.87	6.43	63.43	54.19	14.45	68.63	108.20	OVER EXPLOITED
	SAWAIMADHOPUR	3	GANGAPUR	645.50	498.92	68.70	6.87	61.83	85.88	19.79	105.67	170.92	OVER EXPLOITED
	SAWAIMADHOPUR	4	KHANDAR	1453.81	1178.49	88.64	8.20	80.43	72.09	11.94	84.04	104.48	OVER EXPLOITED
	SAWAIMADHOPUR	5	S.MADHOPUR	1195.74	1008.29	99.74	9.97	89.77	96.44	25.14	121.57	135.43	OVER EXPLOITED
	SAWAIMADHOPUR		DISTRICT	5020.65	4325.63	396.36	35.94	360.42	374.08	79.47	453.55	125.84	OVER EXPLOITED
31	SIROHI	1	ABU ROAD	838.17	331.06	28.44	1.87	26.56	24.20	2.17	26.37	99.27	CRITICAL
	SIROHI	2	PINDWARA	1156.90	882.90	62.91	6.10	56.80	53.97	1.76	55.73	98.11	CRITICAL
	SIROHI	3	REODAR	1086.76	985.80	71.72	6.53	65.19	87.86	2.43	90.30	138.50	OVER EXPLOITED
	SIROHI	4	SHEOGANJ	887.42	772.89	66.24	6.62	59.62	67.93	2.10	70.03	117.46	OVER EXPLOITED
	SIROHI	5	SIROHI	1166.75	1103.05	74.08	7.41	66.67	65.56	2.62	68.19	102.28	OVER EXPLOITED
	SIROHI		DISTRICT	5136.00	4075.70	303.38	28.54	274.85	299.52	11.08	310.61	113.01	OVER EXPLOITED

1	2		3	4	5	6	7	8	9	10	11	12	13
32	TONK	1	DEOLI	1242.09	1242.09	82.61	7.23	75.38	59.29	12.98	72.27	95.87	CRITICAL
	TONK	2	MALPURA	1464.47	1239.72	66.77	6.68	60.09	53.46	12.66	66.12	110.02	OVER EXPLOITED
	TONK	3	NEWAI	1061.87	1004.57	87.87	8.79	79.09	75.55	11.33	86.87	109.85	OVER EXPLOITED
	TONK	4	TODARASINGH	1027.02	911.14	47.23	2.63	44.60	33.63	5.50	39.13	87.73	SEMI CRITICAL
	TONK	5	TONK	1414.23	1164.90	118.84	11.88	106.96	71.55	19.68	91.23	85.30	SEMI CRITICAL
	TONK	6	UNIARA	990.38	962.30	80.20	7.38	72.82	63.98	14.21	78.19	107.36	OVER EXPLOITED
	TONK		DISTRICT	7200.06	6524.72	483.53	44.59	438.94	357.45	76.35	433.80	98.83	CRITICAL
33	UDAIPUR	1	BADGAON	466.44	262.84	13.98	2.10	11.88	10.43	2.00	12.43	104.63	OVER EXPLOITED
	UDAIPUR	2	BHINDER	1086.31	906.15	28.90	2.89	26.01	31.39	2.97	34.37	132.15	OVER EXPLOITED
	UDAIPUR	3	LASADIYA	493.75	348.14	11.09	1.11	9.98	8.05	1.02	9.07	90.82	CRITICAL
	UDAIPUR	4	GIRWA	1402.80	1007.80	45.25	6.79	38.47	31.65	8.27	39.92	103.78	OVER EXPLOITED
	UDAIPUR	5	GOGUNDA	1077.56	712.63	27.17	4.08	23.10	21.70	1.59	23.30	100.86	OVER EXPLOITED
	UDAIPUR	6	JHADOL	1469.74	756.43	23.16	2.08	21.08	18.20	2.22	20.42	96.89	CRITICAL
	UDAIPUR	7	KHERWARA	1088.57	792.30	26.70	4.01	22.70	18.38	3.13	21.51	94.75	CRITICAL
	UDAIPUR	8	KOTRA	1761.12	627.80	21.00	2.10	18.90	14.17	1.50	15.66	82.87	SEMI CRITICAL
	UDAIPUR	9	MAVLI	808.58	783.57	29.39	1.87	27.52	30.85	3.80	34.65	125.91	OVER EXPLOITED
	UDAIPUR	10	SALUMBER	1023.00	744.63	33.51	3.35	30.16	25.44	2.95	28.39	94.13	CRITICAL
	UDAIPUR	11	SARADA	1082.73	828.63	26.69	3.58	23.11	19.04	2.49	21.53	93.18	CRITICAL
	UDAIPUR		DISTRICT	11760.60	7770.92	286.85	33.94	252.90	229.31	31.95	261.25	103.30	OVER EXPLOITED
			STATE TOTAL	342326.71	220603.74	11941.45	1112.49	10828.96	13133.18	1709.82	14843.00	137.07	OVER EXPLOITED