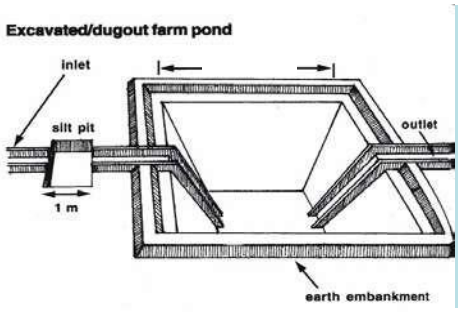
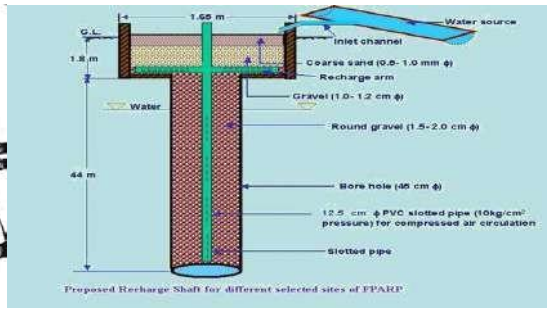
CENTRAL GROUND WATER BOARD

MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVANATION
GOVERNMENT OF INDIA





ARTIFICIAL RECHARGE TO GROUND WATER AND WATER CONSERVATION PLAN OF BUHANA BLOCK, DISTRICT JHUNJHUNU, RAJASTHAN

Western Region, Jaipur
January, 2016

ARTIFICIAL RECHARGE TO GROUND WATER AND WATER CONSERVATION PLAN BLOCK BUHANA, DISTRICT JHUNJHUNU

Plan at a Glance

1.	**Area of the Buhana Block**	**653.30 Sq.Km.**
2.	**Area identified for Artificial Recharge**	**624.30 Sq.Km.**
3.	**Dynamic Ground Water Resources (as on 31.03.2011)**	
	Net Ground Water Availability	**29.56 MCM**
	Annual Ground Water Draft	**54.37 MCM**
	Stage of Ground Water Development	**183.96 %**
4.	**Runoff available in the block** **Volume of water recharged** **Volume of water conserved for other interventions**	**1.8766 MCM** **1.8766 MCM** **-**
5.	**Volume of unsaturated aquifer zone available for recharge**	**1900.56 MCM**
6.	**Total number of structures to be proposed**	
	Recharge structures **Existing village pond with recharge shaft/ well** **Percolation tank**	 **Nil** **10 Nos.**
	Expected Annual GW recharge	**1.3136 MCM**
	Provision for supplemental irrigation, thus reducing GW withdrawal for irrigation	**-**
	Total recharge/ saving of ground water	**1.3136 MCM**
7.	**Estimated Cost** **Artificial Recharge Plan** **Piezometer construction** **Operation and maintenance**	**4.263 crore** **4.00 crore** **0.06 crore** **0.203 crore**

ARTIFICIAL RECHARGE TO GROUND WATER AND WATER CONSERVATION PLAN BLOCK BUHANA, DISTRICT JHUNJHUNU

1 INTRODUCTION

The demand of fresh water for agriculture, drinking and industrial uses etc. has significantly increased due to population growth and socio-economic development. As surface water resources in the State of Rajasthan are meagre, the dependability on ground water resources in the State has increased substantially. This has resulted in over exploitation of ground water resources vis a vis depletion of ground water levels in various parts of the State.

The **Buhana Block, district Jhunjhunu** is one of the over exploited blocks of Rajasthan and is under severe stress, as evident from the stage of ground water development, which has attained an alarming level of **183.96%.** In view of over exploitation of ground water resources in the block, ground water resources in the area are under continuous depletion. Thus there is urgent need for taking up suitable water management interventions based on integrated approach, which on one hand includes augmentation of ground water resources through appropriate techniques, and on the other hand requires the adoption of suitable water conservation measures, such as ensuring water use efficiency through creation of additional water storage facility, maintenance/ renovation of existing water bodies etc. Water awareness and capacity building of the stakeholders are also the important attributes of water management interventions as envisaged in the National Water Policy.

Artificial recharge to ground water is one of the most efficient, scientifically proven and cost effective technology to mitigate the problems of over exploitation of ground water resources. The technology serves as a means for restoring the depleted ground water storage, ameliorate the ground water quality problems and also enhance the sustainability of wells in the affected areas. A detailed knowledge of geology, hydrogeology, land use pattern, geomorphology and hydro-meteorological features are however, essential for selection of appropriate artificial recharge techniques as well as design and sites of ground water recharge structures.

As per directions of Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India and in pursuance to letter no 16-24/M(SML)/CGWB/ARP- OE Blocks/2015-6957, dated 13.7.2015 & 3.8.2015 & letter no 39(43)/TC/CHN/CGWB/2015-7929,dated 4.9.2015 from Central Headquarters, Central Ground Water Board, **the preparation of Artificial Recharge and Rainwater harvesting Plan for the Over exploited blocks in the State of Rajasthan has been taken up** on priority by the Western Region, Central Ground Water Board, Jaipur. Each Plan discusses the broad framework of ground water situation in the block, status of water availability (both surface and ground water), identification of feasible areas for interventions, feasibility of Artificial recharge and other water conservation structures, their design considerations, numbers and cost estimates. The expected outcomes of the proposed interventions have also been elucidated in the report

The GIS layers used in the Plan include administrative (upto village level), Hydrogeology, Depth to Water level (pre and post monsoon), geomorphic, drainage, water bodies and the map of tentative locations of proposed interventions.

Methodology:

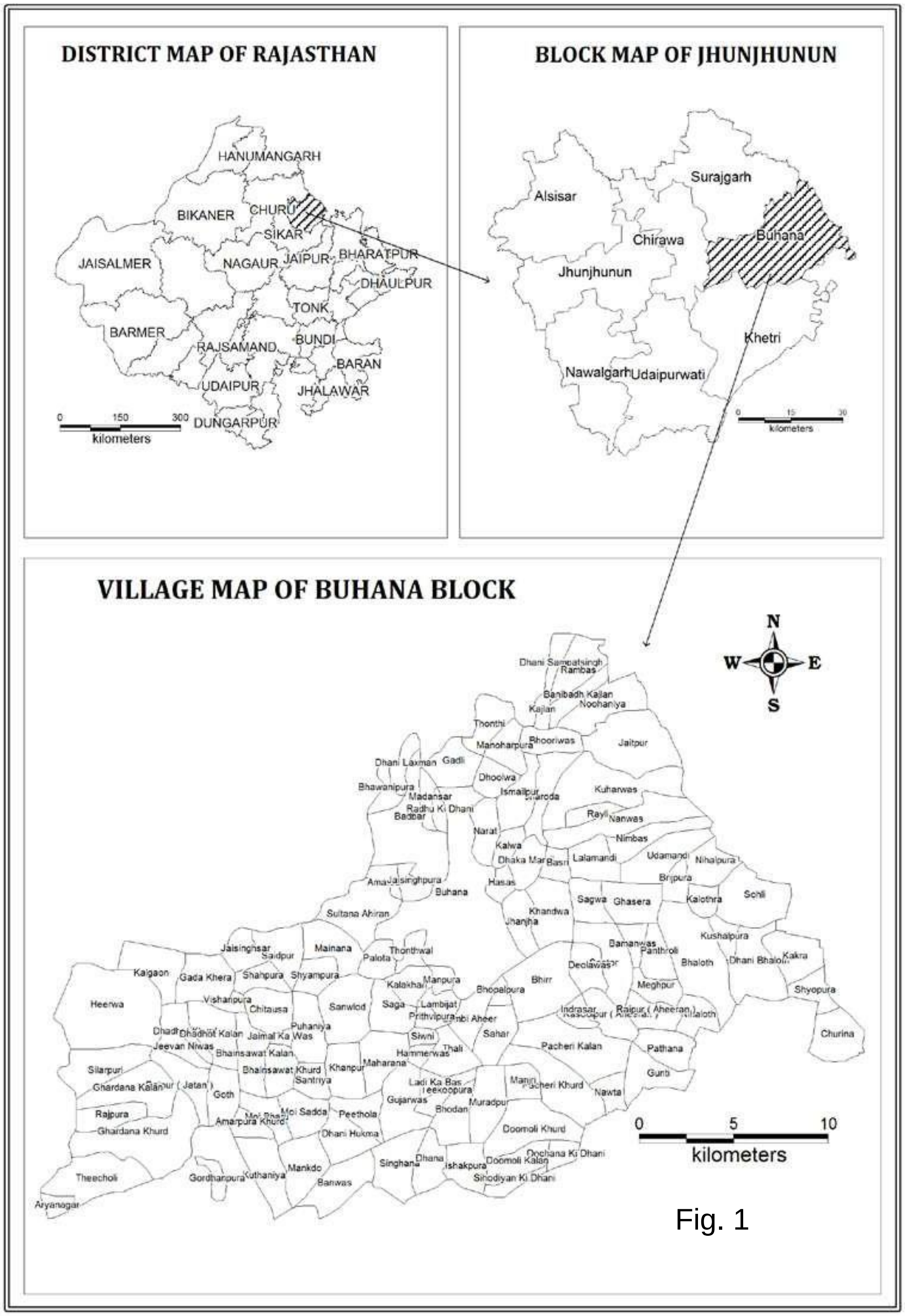
The methodology as adopted for the assessment of source water availability is as follows:
As per Ground Water Department, Government of Rajasthan direction the basin wise availability of surplus run off is calculated after taking into account 75 % dependability on the rain water for all uses. In furtherance, the sub basins with surplus run off available for recharge were taken into consideration.
The block area falling in particular sub basin was taken into account and a proportionate area of the sub-basin draining the block was calculated. Based on this area of sub-basin draining the block, proportionate surplus run off, in the block by the sub basin, for recharge was calculated.
Thus was calculated the final amount of surplus run off available for recharge in particular block by one particular sub-basin. The available run off was considered for Recharge through Recharge Shaft (@ 0.03 MCM) and Percolation tank (@ 0.2 MCM). If after allocating water for Recharge through Recharge Shaft, large amount of surface run off was left then the Water conservation through Farm Ponds, along with recharge through Percolation Tanks, was also taken into account.
Besides the available run off the Average Water Level for the time span of ten years (Nov., 2005 to Nov. 2014) and the Decadal Water Level trend (Nov., 2005 to Nov. 2014) were also taken into account. The blocks showing average water level more than 5 m bgl and declining water level trend were considered suitable for Artificial Recharge Plan.

1.1 Location of the block

The Buhana Block covering an area of 653.30 Sq. Km. falls in eastern part of Jhunjhunu District and is located between North latitudes 28°04’ & 28°20’ and East longitudes 75°39’05” & 76°06’. As per 2011 census, the total population of the Block is 223405 persons consisting of 116131 males & 107274 females and population density is 342 persons/ Sq. Km. Location map is shown in fig 1.

1.2 Source wise Irrigated Area

Out of total area of 653.30 Sq.Km., an area of 308.20 (47.18%) falls under irrigation. The dug wells/ Tubewells are the only major source of irrigation in Buhana Block. There no area that falls under canal & pond irrigation. The wells irrigate total 308.2 Sq.Km. area in this Block.


DISTRICT MAP OF RAJASTHAN
HANUMANGARH
BIKANER
CHURU
SIKAR
JAISALMER
NAGAUR
JAIPUR
BHARATPUR
DHAULPUR
TONK
BARMER
RAJSAMAND
BUNDI
BARAN
UDAIPUR
JHALAWAR
DUNGARPUR
0
150
300
kilometers
BLOCK MAP OF JHUNJHUNUN
Alsisar
Surajgarh
Chirawa
Buhana
Jhunjhunun
Khetri
Nawalgarh
Udaipurwati
kilometers
VILLAGE MAP OF BUHANA BLOCK
N
W
E
S
Jaitpur
Kuharwas
Gadli
Bhawanipura
Madansar
Nimbas
Lalamandi
Udamandi
Nihalpura
Brijpura
Buhana
Hasas
Sagwa
Ghasera
Kalothra
Sohli
Khandwa
Jhanjha
Sultana Ahiran
Kushalpura
Bhaloth
Kakra
Mainana
Palota
Thonthwal
Bhopalpura
Bhirr
Meghpur
Shyopura
Kalgaon
Gada Khera
Shahpura
Shyampura
Manpura
Heerwa
Vishanpura
Chitausa
Sanwlod
Saga
Lambijat
Churina
Puhaniya
Siwni
Sahar
Pacheri Kalan
Pathana
Silarpuri
Jeevan Niwas
Bhainsawat Kalan
Bhainsawat Khurd
Khanpur
Maharana
Thali
Santriya
Gurri
Goth
Nawta
Rajpura
Ghardana Khurd
Peethola
Gujarwas
Bhodan
Muradpur
Doomoli Khurd
Dhani Hukma
Mankdo
Banwas
Singhana
Dhana
Ishakpura
Doomoli Kalan
Sihodiyan Ki Dhani
Theecholi
Aryanagar
0
5
10
kilometers
Fig. 1

1.3 Physiography & Drainage

Physiographically (Fig 2), the block is characterized by presence of alluvial plains. The minimum and maximum elevation of Block is 280.8 m. amsl and 644.2 m. amsl, respectively.

There is no perennial river flowing in this Block. It is drained by ephemeral Sukhnadi flowing from southern to central parts. Only a very small south eastern part of block falls under Shekhawati (Mendha) basin. The map showing drainage and water bodies in the Buhana block is shown in fig 3.

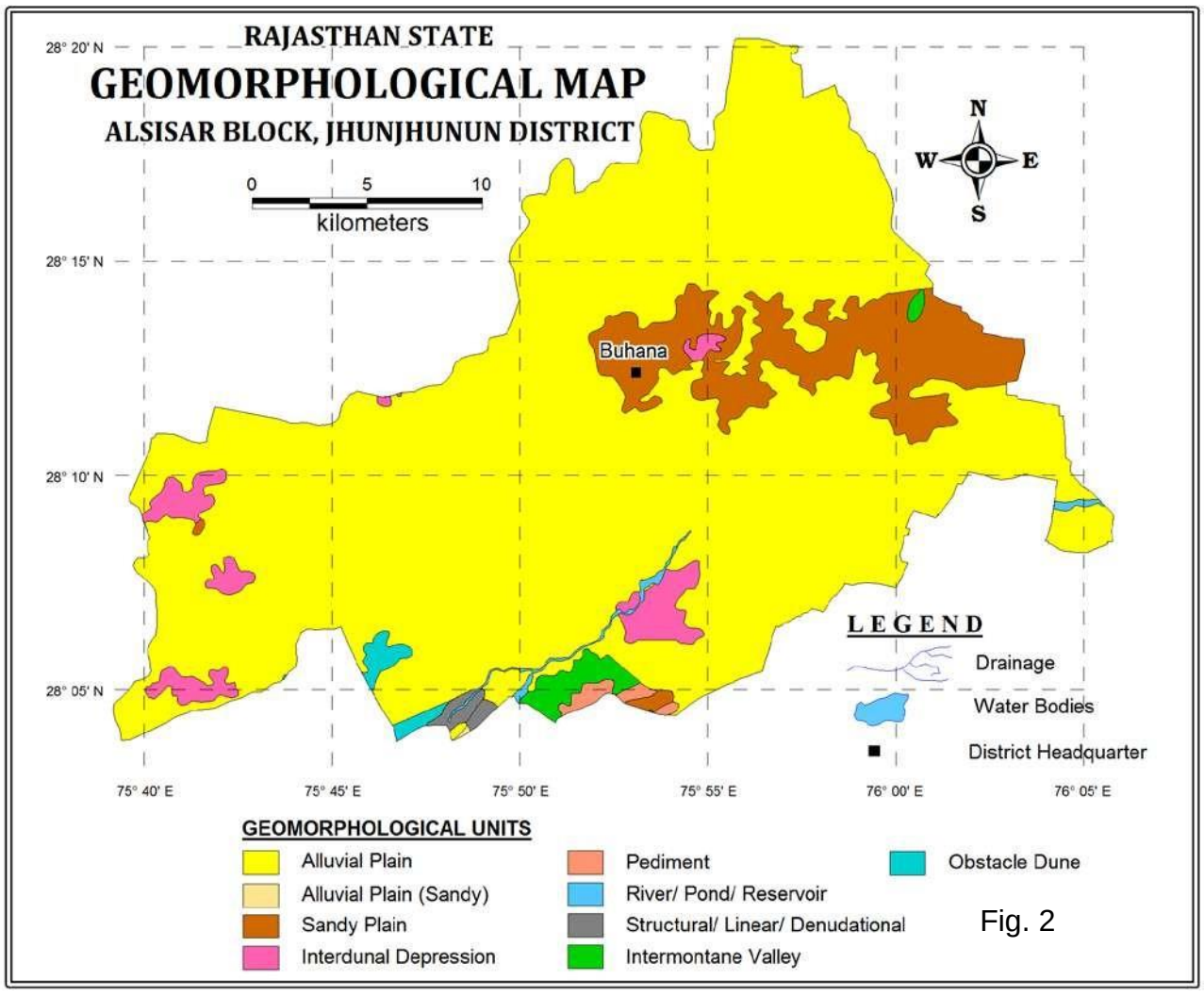
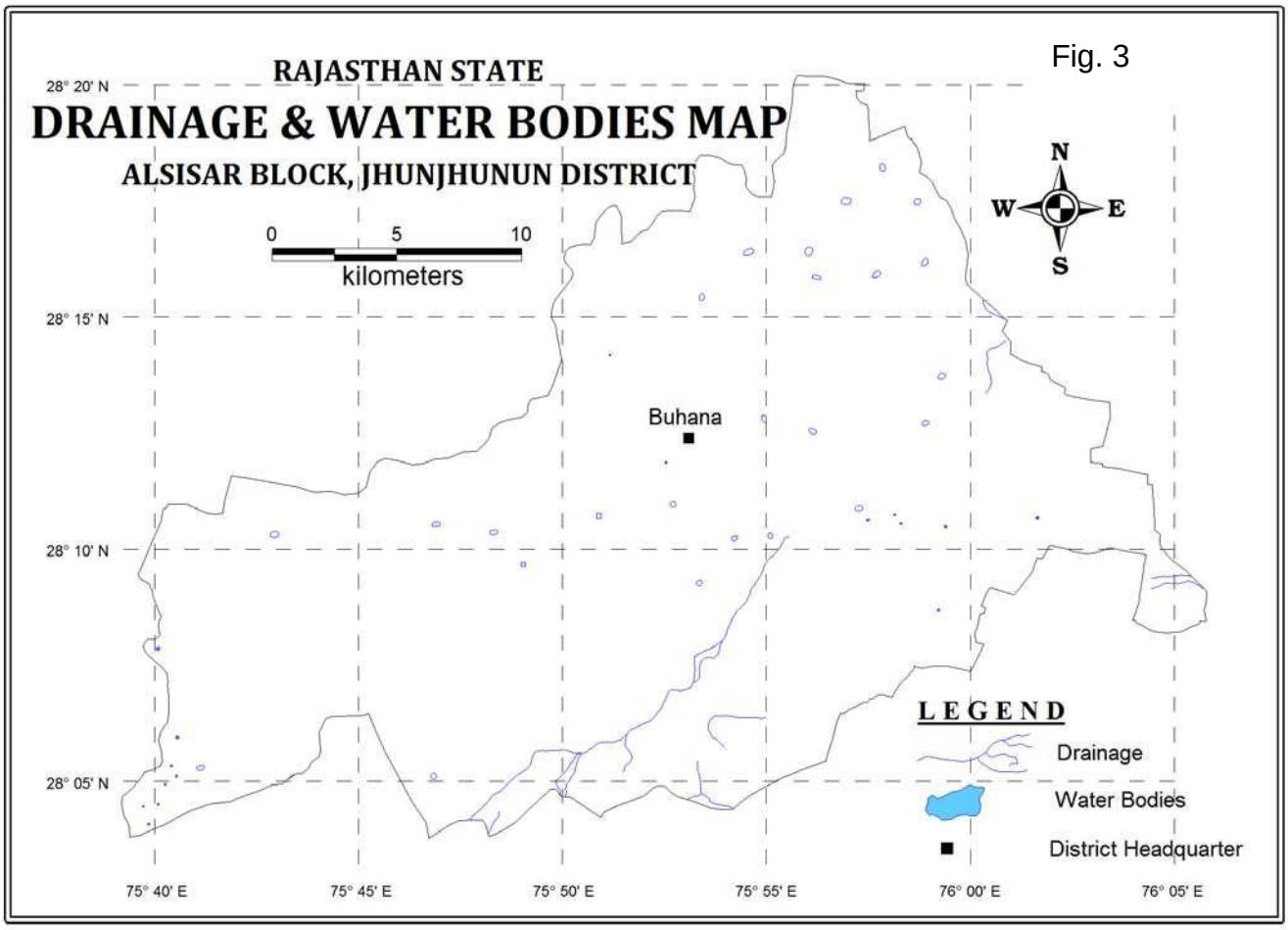


Fig. 2

Fig. 3



1.4 Rainfall

The climate of the block is semi arid. The Normal annual rainfall of block is 562.83mm. Failure of rains has observed several times. The available data of rainfall indicates that larger part of annual rainfall is received through SW monsoon during July to September. In March, there is transition to summers. The summer months of April to June are the hottest months and temperature upto 48°C is reached. From end of June to September, south western monsoon is received. The months of July and August are the wettest months, receiving about 70% of total annual rainfall. Winter season starts from November and lasts upto February. Average temperature during these months remains between 15° to 18°C, however from end of December to mid January, temperature remains in the range of 5° to 10°C.

1.5 Hydrogeology of the Area

Quaternary alluvium is the principal water bearing formation and hard rocks of Delhi Super Group including post Delhi Intrusive form ancillary aquifers in the block. Alluvium (composed of sand, silt, clay, kankar and gravel) forms the principal and potential aquifer in the area. Out of total geographical area of 651.14 Sq. Km, areas of 490.1 Sq. Km. (75.27%) under Older alluvium & 134.2 Sq,Km. (20.61%) under Quartzites form potential zones and remaining 26.84 Sq. Km.(4.12%) area is represented by hills.Ground water occurs under unconfined to semi-confined conditions in the primary porosity i.e. pore spaces. Quartzite, schist, phyllite, gneisses and limestone of Delhi Super Group including granites, amphibolites and pegmatites of post Delhi intrusives form the ancillary aquifer. Ground water occurs under unconfined condition in the weathered mantle (ranging in thickness from 10 to 15 m) and under unconfined to semi-confined conditions in deep seated secondary porosity i.e. fractures, joints, contacts etc. of hard formation. In general yield of wells tapping alluvial aquifers varies from 2.92 to 15 lps depending on the thickness of saturated granular zones and yield of the wells tapping hard rock aquifers in ranges from 0.83 to 12.08 lps. The map showing aquifer system in the Buhana block is shown in **Fig. 4**

Ground Water Level:

As per Average decadal depth to water level (from November, 2005 to November, 2014), the block majorly falls in water level range 60-70 and 70-80 m bgl range with the southern area showing 20-50 and 50-60 m bgl range. **(Fig 5)**
The average decadal depth to water level is 70.22 mbgl for Pre monsoon. According to depth to water level maps of May 2014 & November 2014, the water level is more than 40 mbgl in the entire block. **(Fig 6 & 7).**

Water Level Trend:

The hydrographs of wells monitored by CGWB & GWD from 1997 to 2010 shows declining water level trend. A water level fall of 3.01 m/year during pre monsoon and 3.54 m/year during post monsoon has been observed for this period.
As per the Decadal Water level trend (from November, 2005 to November, 2014), the declining trend is visible in the block. The fall in the range of 1to2, 2 to 3, 3 to 4, 4 to 5 in ground water level is prevalent in the block. The map of Decadal Water Level Trend is shown in **fig. 8**.

Fig: 4

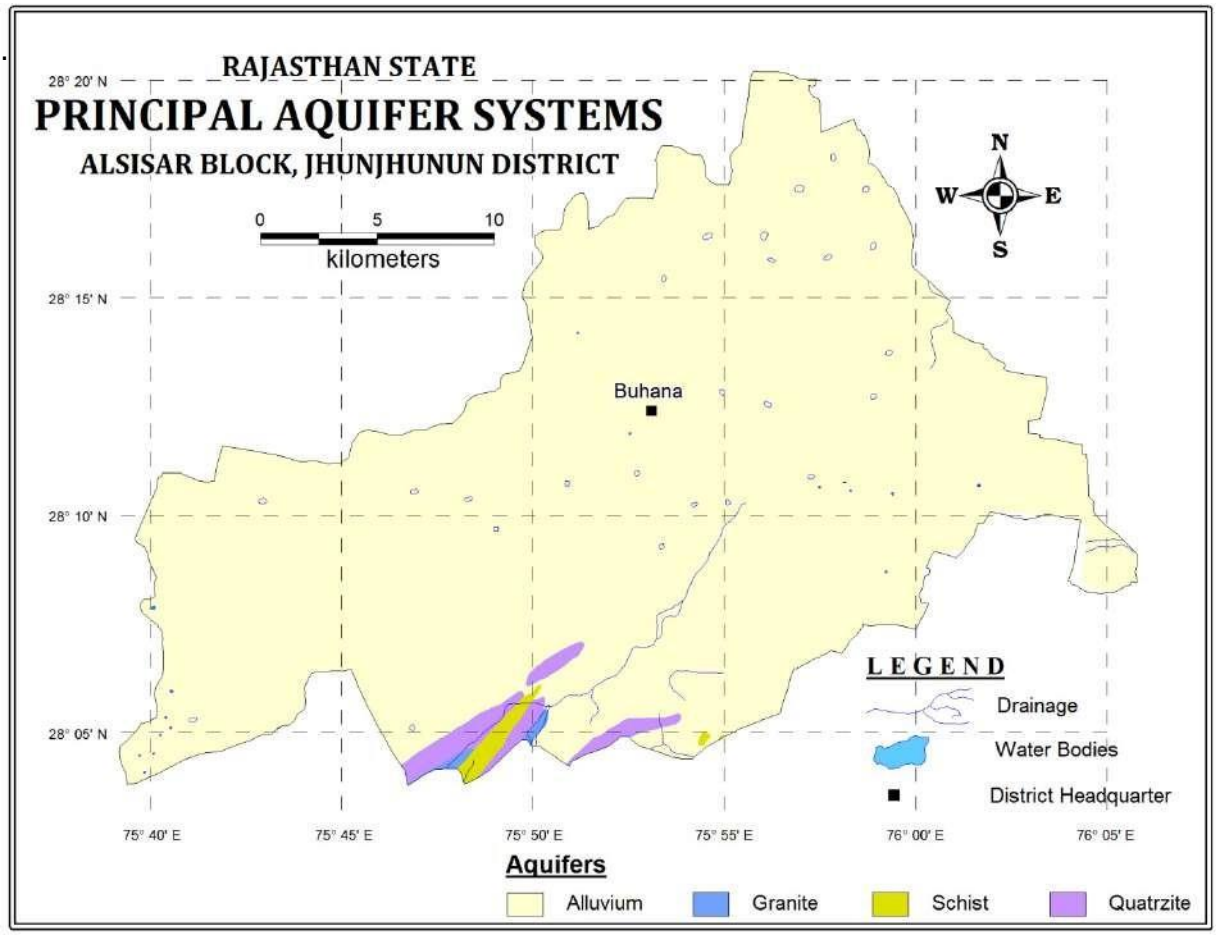

RAJASTHAN STATE
PRINCIPAL AQUIFER SYSTEMS
ALSISAR BLOCK, JHUNJHUNUN DISTRICT
0 5 10
kilometers
N
W E
S
28° 20' N
28° 15' N
28° 10' N
28° 05' N
Buhana
75° 40' E
75° 45' E
75° 50' E
75° 55' E
76° 00' E
76° 05' E
LEGEND
Drainage
Water Bodies
District Headquarter
Aquifers
Alluvium
Granite
Schist
Quatrzite

Fig: 5

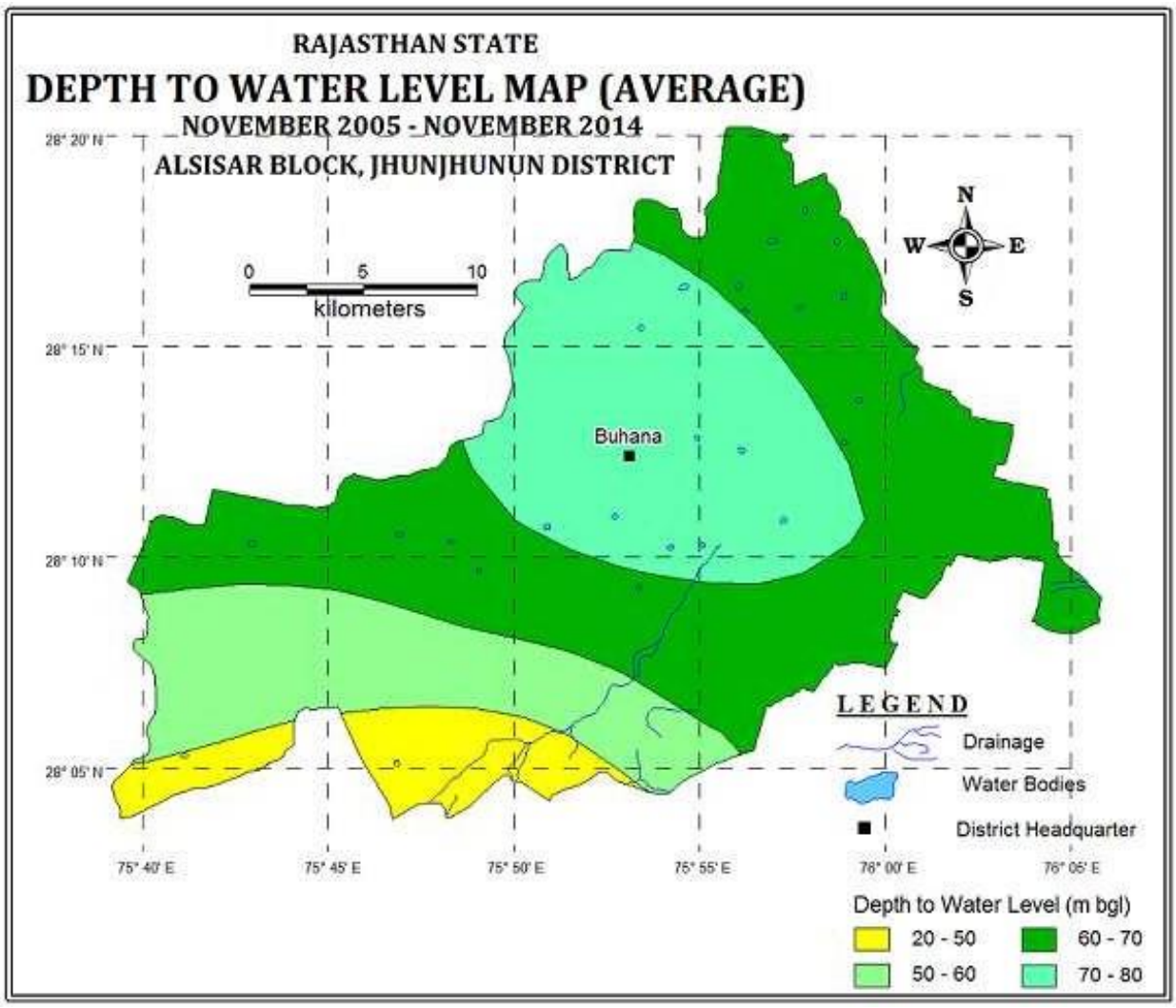

RAJASTHAN STATE
DEPTH TO WATER LEVEL MAP (AVERAGE)
NOVEMBER 2005 - NOVEMBER 2014
ALSISAR BLOCK, JHUNJHUNUN DISTRICT
28° 20' N
28° 15' N
28° 10' N
28° 05' N
75° 40' E
75° 45' E
75° 50' E
75° 55' E
76° 00' E
76° 05' E
0
5
10
kilometers
N
W
E
S
Buhana
LEGEND
Drainage
Water Bodies
District Headquarter
Depth to Water Level (m bgl)
20 - 50
50 - 60
60 - 70
70 - 80

Fig: 6

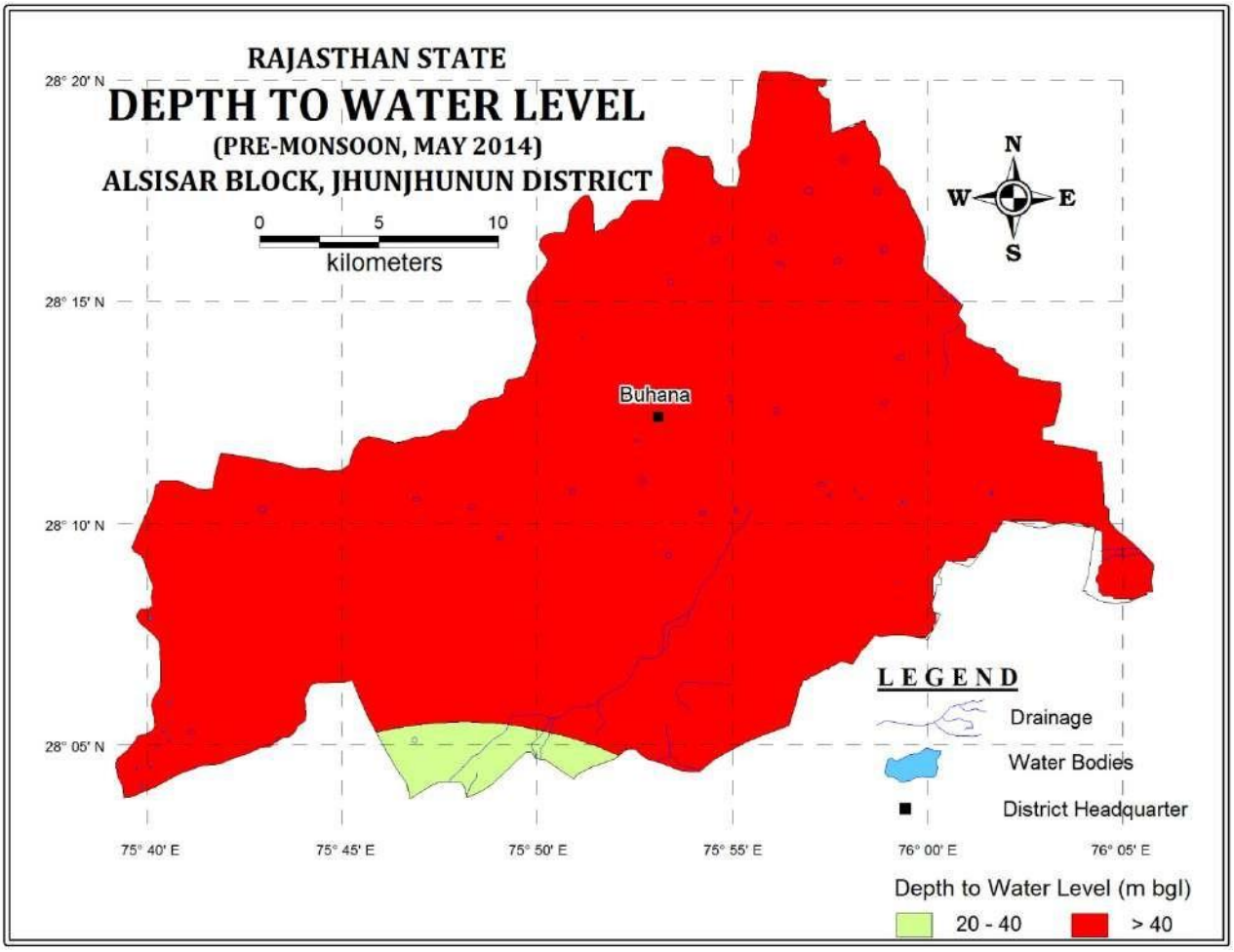

RAJASTHAN STATE
DEPTH TO WATER LEVEL
(PRE-MONSOON, MAY 2014)
ALSISAR BLOCK, JHUNJHUNUN DISTRICT
0
5
10
kilometers
N
W
E
S
28° 20' N
28° 15' N
28° 10' N
28° 05' N
75° 40' E
75° 45' E
75° 50' E
75° 55' E
76° 00' E
76° 05' E
Buhana
LEGEND
Drainage
Water Bodies
District Headquarter
Depth to Water Level (m bgl)
20 - 40
> 40

Fig: 7

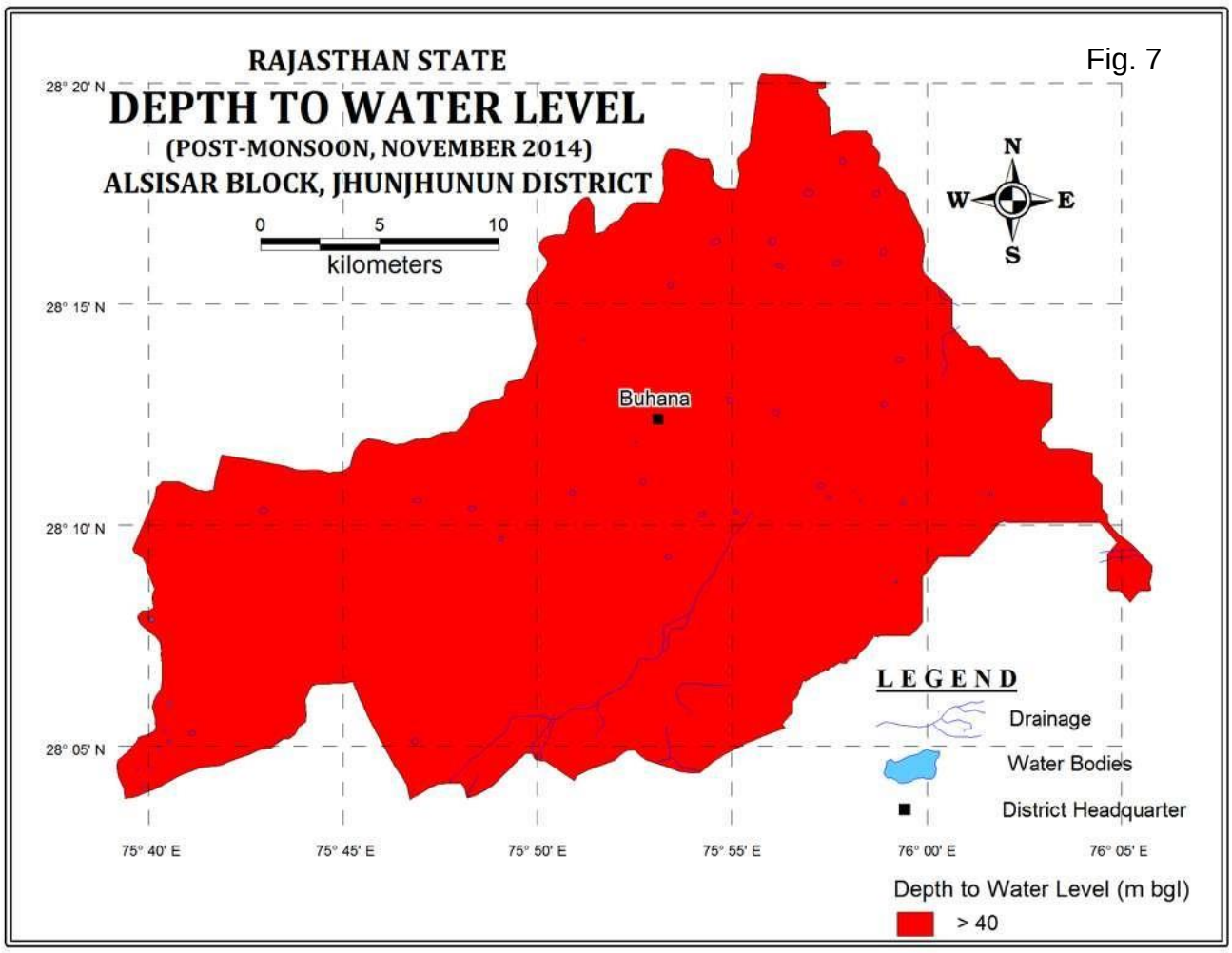
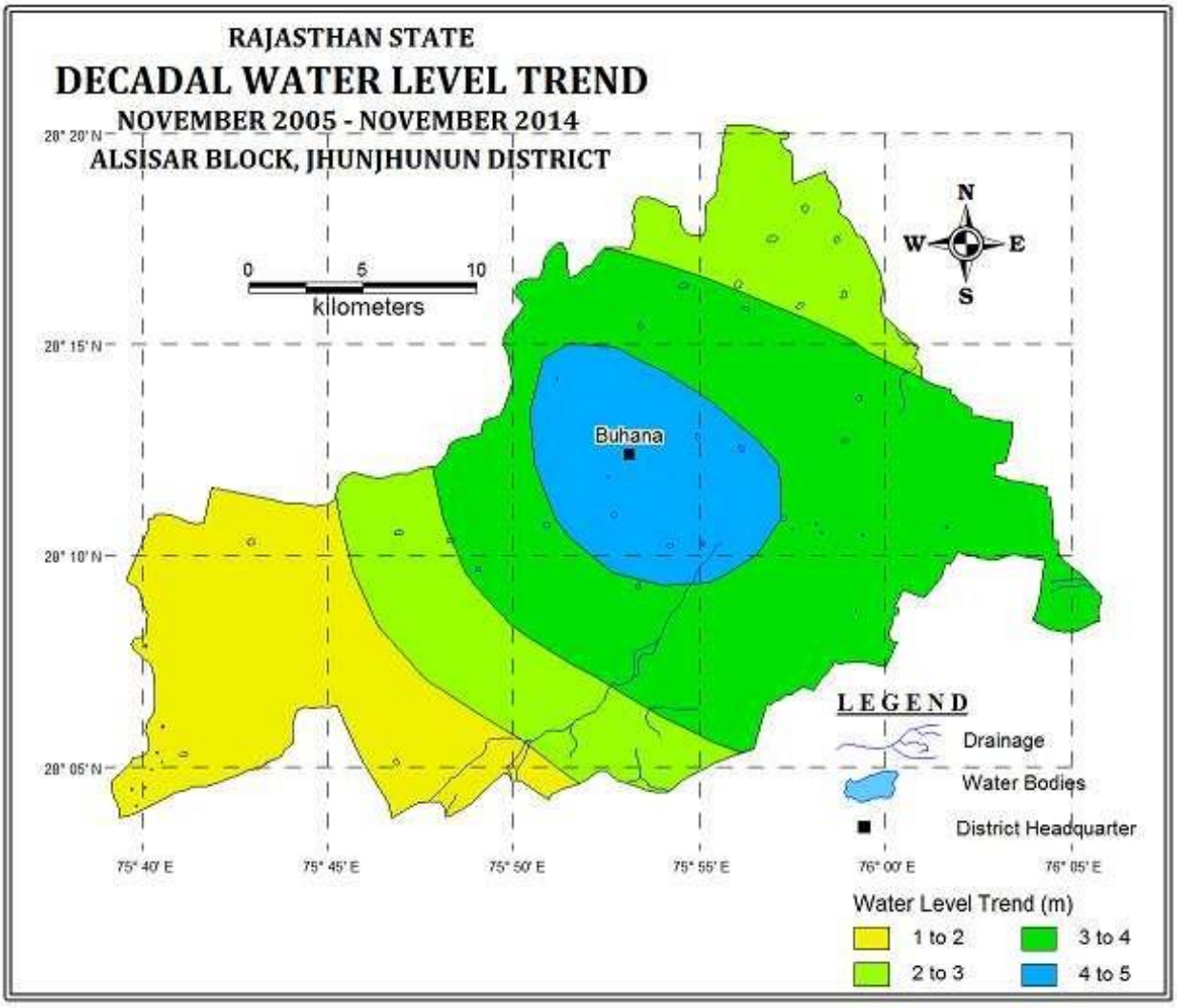

RAJASTHAN STATE
DEPTH TO WATER LEVEL
(POST-MONSOON, NOVEMBER 2014)
ALSISAR BLOCK, JHUNJHUNUN DISTRICT
0 5 10
kilometers
N
W E
S
28° 20' N
28° 15' N
28° 10' N
28° 05' N
Buhana
75° 40' E
75° 45' E
75° 50' E
75° 55' E
76° 00' E
76° 05' E
LEGEND
Drainage
Water Bodies
District Headquarter
Depth to Water Level (m bgl)
> 40

Fig. 7

Fig: 8



1.6 Subsurface Hydrogeology

As inferred from borehole data of the Buhana Block; Alluvium, Schist, Phyllite & Quartzite form the aquifers. However, the ground water in Schist, Phyllite, Quartzite only occurs in shallow weathered parts or fractures due to absence of primary porosity. Exploratory bore hole data has revealed the presence of aquifer system down to the depth of 100 m in general. The depth of drilling ranges from 52.7 to 172.5 mbgl and the average discharge ranges from 0.33 to 8.83 lps. The quality of water has 2 major problems, i.e., Salinity & Fluoride. Transmissivity value varies between 25 to 466 m^2/day.

1.7 Dynamic Ground Water Resource

The Ground water Resources for the block are given in Table 2 as per 31.03.2011 Ground Water Resource Assessment. The Net Ground water Availability of Block is 2955.77 ham and Annual Ground water draft is 5437.47 ham. Due to this excessive draft over recharge, stage of Ground water development has reached 183.96%.

Table 2 Ground Water Availability, Utilization and Stage of Development Buhana Block, Jhunjhunu District

Natural Discharge During Non Monsoon Period	328.42 ham
Net Ground Water Availability	2955.77 ham
Annual Ground Water Draft	5437.47 ham
Net Ground water Availability for Future Irrigation Use	0 ham
Stage of Ground Water Development	183.96%
Source: Ground Water Resource Assessment 31.03.2011	

Proposal for Artificial Recharge

Generally the Artificial recharge structures suitable in this type of area are Check dams/ Anicuts/ Percolation tanks and Recharge Shafts/ Recharge wells. Since the water levels are quite deep in the block (upto 40 mbgl), the structures like Percolation tanks and Check dams are not very suitable. Besides a large number of Check dams/ Anicuts have already been constructed by different State Government Agencies at most of the feasible locations. Considering this aspect it is felt that Recharge Shaft/ Recharge wells are the most suitable structures.

Almost all the villages in the State of Rajasthan have one or two village ponds & other ponds. With time, these ponds get silted & hardly any water percolates downward. Also, any excess water coming into the pond goes away as a run off due to limited storage capacity. This surplus runoff can very well be utilized for recharging the ground water. Since natural recharge from these ponds is limited due to siltation and ground water levels are deep, the most effective ground water structure would be Recharge Shaft/ Recharge well constructed within the pond itself.

Such a Recharge well needs to be designed in a manner that maximum surplus water is utilized for recharge as well as sufficient water is retained in the pond for local use.

The design of typical Recharge well is given in Figure 8a and 8b. The major features required are.

1. The well should have sufficient diameter for recharge- 10 to 12 inch diameter well with bottom screen/ opening just above the highest water level.
2. The well should have screen/ opening at the top, which should be at least 1.5m above the bed level of the pond.
3. The upper opening should be surrounded with filter pack comprising graded filter media of medium, coarse sand & gravel, so that the Recharge well does not get silted.

The opening for inflow to the well has been proposed at 1.5m above Bed level of pond. This is necessary to ensure that the pond retains sufficient water for use by villages. However, this may necessitate further deepening of pond itself so that the pond is 3-4 m

deep. A Single well as discussed above would be suitable for a pond upto area of about 2.5 ha. Therefore, more number of such Recharge wells may be required for larger ponds.

Surface water availability

As per the studies carried out by Water Resources Department, Govt of Rajasthan there is hardly any surplus water available for further development at 75% dependability. However, after taking into account the availability of source water in the basins of Rivers flowing in the State proportionate amount of surplus runoff available in particular block by particular sub basin was calculated.

Accordingly about 1.8766 MCM has been considered for recharge plan in the block. Optimum utilization of rainwater runoff depends on availability of land, feasible conditions, etc. Surface water availability, allocation and number of structures are presented in table 2.

Table 3: Source water for artificial recharge and number of recharge structure

District	District code	Block	Block code	Area of Block (Sq.km.)	Potential area suitable for recharge (Sq.km.)	Type of Aquifer	Area feasible for artificial recharge (Sq km)	Sp Yield
JHUNJHUNUN	RJ21	BUHANA	RJ2102	653.30	624.30	alluvium	490.10	0.100
JHUNJHUNUN	RJ21	BUHANA				hard rock	134.20	0.030

Table 3 (contd): Source water for artificial recharge and number of recharge structure

Average DTW (mbgl) NOV 2013	Thickness of unsaturated zone 3 m below ground level (m)	Volume of sub surface storage space available for artificial recharge (MCM)	Sub Basin	Surplus available in the block (in Mm3)	Surplus water used in Recharge Shaft (RS)	No. of RS 0.03 MCM/RS	Remaining Surplus water for Percolation tank (PT)	No. of PT (0.2 MCM/ PT)
75.8	72.8	3567.928	Dohan	1.8766	-	-	1.8766	10
60.92	57.92	233.186						

Feasible Artificial Recharge and water conservation structures

A wide spectrum of techniques is in vogue, which are being implemented to recharge the ground water reservoir, conserve the utilizable rainfall and enhance the water use

efficiency. Based on prevailing field conditions, out of total block area of 653.3 sq km practically 624.3 sq km area is feasible for implementing recharge measures. Based on available information about the area such as ground water scenario, hydrogeology, hydrology, topography, rainfall pattern, drainage, soil cover, utilizable rainfall etc. scope for various interventions has been studied and assessment of suitable areas, tentative design and costs of structures has been worked out in the present plan.

Identification of feasible areas

Buhana block is having ground water level mostly ranges 20 to 40m below ground level and as per dynamic ground water resource estimation, the block is over exploited with stage of ground water development at 167.08%. The Buhana block is feasible for recharge due to presence of permeable zone above water table, favorable land slope and availability of water from rainfall.

Generally the Artificial recharge structures suitable in this type of area are Check dams/ Anicuts/ Percolation tanks and Recharge Shafts/ Recharge wells. Since the ground water levels are quite deep in the block, the structures like ani-cuts and Check dams are not suitable and also their construction is regulated. Considering these aspect the proposal for Recharge Shaft/ Recharge wells and percolation tanks have been firmed up in the present Plan are the most suitable structures in Buhana block.

Details of Ground Water Recharge Measures

1. Recharge Shaft

Due to non availability of any pond in the area falling under Dohan basin of the Buhana block, Recharge saft has been not proposed in the block. The recharge would be done throughPercolation tanks.

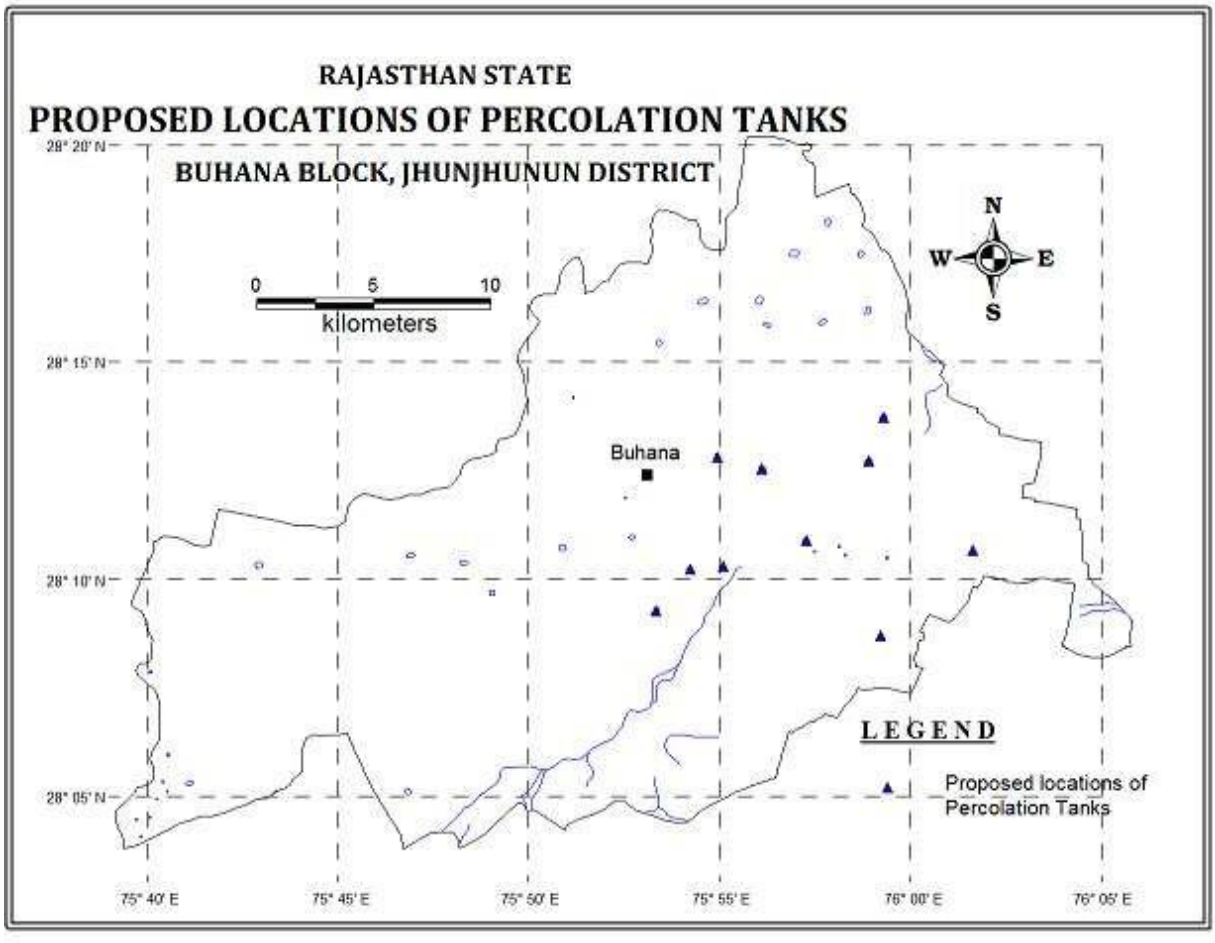
2. Percolation tanks

Percolation tanks are among the most common runoff harvesting structures in India. A percolation tank can be defined as an artificiallly created surface water body submerging a highly permeable land area so that the surface runoff is made percolate and recharge the ground water storage. These are not provide with sluices or outlests for discharging water from tank for irrigation or other purposes. They may, however, be provided with arrangements for spilling away the surplus water that may enter the tank so as to avoid over-topping of the tank bund. It is possible to have more than one percolation tank in a catchment if sufficient surplus runoff is available and the site characxterisitcs favor recahrge through such structures. Under the plan, 10 Nos. percolation tanks (200mx200mx1.5m) in the vicinity of respective villages. Location of percolation tanks is given in Fig 9 and Table 5.

Table 5: Tentative location of village proposed for percolation tank

SN	District	Block	Village	Longitude	Latitude
1	Jhunjhunun	Buhana	Lambi Aheer	75.889	28.155
2	Jhunjhunun	Buhana	Bhopalpura	75.904	28.170
3	Jhunjhunun	Buhana	Khandwa	75.935	28.209
4	Jhunjhunun	Buhana	Deolawas	75.955	28.182
5	Jhunjhunun	Buhana	Jhanjha	75.916	28.214
6	Jhunjhunun	Buhana	Ghasera	75.982	28.212
7	Jhunjhunun	Buhana	Bhirr	75.918	28.172
8	Jhunjhunun	Buhana	Udamandi	75.988	28.229
9	Jhunjhunun	Buhana	Dhani Bhaloth	76.027	28.178

Fig 9



B. Revival, repair of water bodies

The existing ponds and tanks in loose their storage capacity as well as the natural ground water recharge through these water bodies has also become negligible due to siltation and encroachment by farmers for agriculture purposes. There are several such villages where ponds/ tanks are in dilapidated condition. These existing village tanks, which are normally silted and damaged, can be modified to serve as recharge structure in case these are suitably located to serve as percolation tanks. Through desilting, coupled with providing proper waste weir, the village tanks can be converted into recharge structure.

Impact Assessment and Monitoring

Assessment of impact of the artificial recharge schemes implemented is essential to assess the efficacy of structures constructed. It helps in identification of cost-effective recharge mechanisms for optimal recharge into the ground water system. It also helps to make necessary modifications in site selection, design and construction of structures in future. The monitoring system should be designed judiciously to monitor impact of these structures individually as well as collectively. Demarcation of the zone of influence of the artificial recharge structure is one of the main objectives of monitoring.

It is proposed to utilize the existing data available with the Government of Rajasthan and CGWB baseline data. For assessment of the impact of proposed measures additional data will be generated by construction of the piezometer at suitable and strategic sites.

It is proposed to construct 10 piezometer, at suitable locations for monitoring of water levels, in the vicinity of proposed recharge structure. The depth of the piezometer may vary from 20 to 50 mbgl. This will help in assessing the impact of the project implementation.

Since the implantation of the Plan involves institutional framework, it is proposed to constitute State Level Technical Coordination Committee (SLTCC) and District Level Technical Coordination Committee (DLTCC) for proper monitoring and review of the implementation of the Plan.

Financial Outlay of the Plan

The total estimated cost of the Plan is 4.263 cr, which includes Rs 4.0 cr for ground water recharge activities, Rs 0.06 cr for ground water monitoring (Piezometer construction) and Rs 0.203 cr towards operation and maintenance charges. The tentative cost estimates of the various activities of the Plan are shown in Table 6 & 7.

The tentative cost for different activities is given in table 6. The unit rates are as followed by the Govt. of Rajasthan (BSR). The total estimated cost of the project is **Rs** 4.263 **Crores**.

Table 6: Cost of the recharge structures

Cost Percolation Tank in Rs in crs (Unit cost Rs 0.4 cr)	Cost Recharge Shaft Rs in crs (Unit cost Rs 0.05 cr)
4.00	-

Table 6: Tentative cost of different activities

Feasible Artificial Recharge & Water Conservation structures/ activities	Tentative Design	Quantity (in nos. or area in sq. m)	Rainwater harvested (mcm)	Tentative unit cost (in Rs lakh)	Total tentative cost (in Rs lakh)	Expected Annual GW recharge/ conservation (mcm)
Recharge Structures/ Activities						
Percolation tanks (3 fillings)	200m*200m*1.5m	10	1.8766	40	400	1.3136
Sub total					400	1.3136
Impact assessment & Monitoring						
Piezometer	Up to 80 m bgl	10		0.6	6	
Impact assessment will be carried out by implemneting agency						
O & M - 5% of total cost of the scheme					20.3	
TOTAL					**426.3**	

Note: Type, number and cost of structure may vary according to site after ground verification

Time Schedule

The project is to be implemented in two years, however impact assessment will be carried out for five years**.** A time schedule for different activities is given in table 7.

Table 7: Time Schedule

Steps	1st phase	2th Phase	3rd Phase	4th Phase	5th Phase	6th Phase	7th Phase	8th Phase
Constitution of State Level Technical Coordination Committee (SLTCC) and District Level Technical Coordination Committee (DLTCC)								
Arranging meeting of SLTCC for provision available under the scheme, request to implementing agencies for submission of DPR								

Scrutiny, recommendations & approval of AR Projects / Schemes in DLTCC & SLTCC Forwarding the DPR to Central Ground Water Board (CHQ), New Delhi for approval and issuing of sanction from the Ministry Meeting of TCC(CHQ) and release of sanction of funds								
Construction of artificial recharge structures & Monitoring of water levels in the area locally								
Completion and Utilisation certificate								
Impact Assessment and submission of report								

Expected Benefits or outcome of the Plan

Ground water recharge and water conservation Plan of Buhana block, Jhunjhunun envisages gainful utilization of 1.3136 MCM of surplus monsoon runoff for recharging of depleted aquifer system.

With the additional recharge and water conservation interventions as proposed in the Plan, it is anticipated that with enhanced recharge and reduction in ground water draft, the stage of ground water development will reduce to 176.13 % from the existing 183.96%. The projected status of ground water resources and utilization scenario is presented in table 8.

Table 8:Projected Status of Groundwater Resource & Utilization

Net G.W. Availability (Ham)	Additional Recharge from RWH & conservation (mcm)	Total Net G.W. Availability after intervention (mcm)	Existing G.W Draft for all purpose (mcm)	Saving of Ground water through projects (mcm)	Net GW draft after interventions (mcm)	Present stage of G.W. development (%)	Projected stage of G.W. Dev. (in %)
29.5577	1.3136	30.8713	54.3747	0	54.3747	183.96	176.13

- The implementation of the project would result in additional recharge. The other tangible/ non-tangible benefits of the project are:

- Recharging the ground water will help in arresting the rapid decline in ground water resources and will also ensure improvement in quality of ground water by way of dilution.
- Proposed structures and measures will also enhance the ground water potential and would ensure sustainability of ground water resources.
- Surface runoff water stored or harnessed can be used as supplemental irrigational resources and will reduce the stress on the ground water.
- Besides, it will also help in reducing the amount and spate of storm water being drained by river and controlling soil erosion.