

## केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय

### भारत सरकार

## **Central Ground Water Board**

Ministry of Water Resources, River Development and Ganga Rejuvenation Government of India

## Report on

## AQUIFER MAPPING AND MANAGEMENT PLAN

Jukkal Mandal, Nizamabad District, Telangana

दक्षिणी क्षेत्र, हैदराबाद Southern Region, Hyderabad

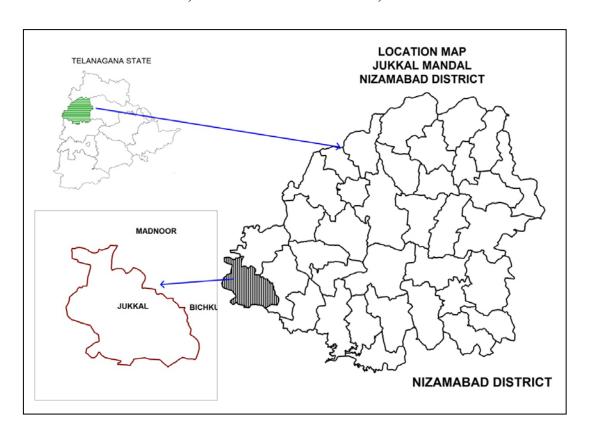


## भारत सरकार जल संसाधन नदी विकास एवम् गंगा संरक्षण मंत्रालय केंद्रीय भूमिजल बोर्ड

# GOVERNMENT OF INDIA MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

REPORT ON

AQUIFER MAPS & MANAGEMENT PLANS
JUKKAL MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE



CENTRAL GROUND WATER BOARD SOUTHERN REGION

#### HYDERABAD AUGUST-2016

# REPORT ON AQUIFER MAPS & MANAGEMENT PLANS JUKKAL MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE

	SALIENT FEATURES						
1	Name of the Mandal/Area	+-	TITE A T /247 IZ2				
1		:	JUKKAL/247 Km <sup>2</sup>				
	Revenue Division		NIZAMABAD				
	Location		EL77 <sup>0</sup> 31'20.62"- 77 <sup>0</sup> 43'19.87"				
	(Fig-1)		NL18 <sup>0</sup> 16'12.07"-18 <sup>0</sup> 27'3.04"				
2	No. of Revenue villages	:	35				
3	District/State	:	Nizamabad/Telangana				
4	Population / Density (2011 Census)	:	53980/219 per Km <sup>2</sup>				
5	Normal Rainfall (mm)	:	891.9 -Monsoon: 740.6 mm (83%)				
			-Non-Monsoon:151.30 mm (17%)				
	Actual Rainfall (mm)(2014-2015)		789				
6	Agriculture (Ha) (2014-15):	:	Kharif season:				
			1. Net area sown: 15234				
			2. Total oil seeds: 6669(44%)				
			3. Cotton: 3769 (25%)				
			4. Total pulses: 3422(22%)				
			5. Paddy: 246 (2%)				
			6. Maize: 681(4%)				
			7. Other crops: 447(3%)				
			Rabi season:				
			1. Net area sown: 2612				
			2. Total pulses: 1162(44%)				
			3. Paddy: 48 (2%)				
			4. Total oil seeds: 282(11%)				
			5. Maize: 124(5%)				
			6. Other crops: 984(38%)				
7	Irrigation (2014-15) (Ha)	:	Net area irrigated under				
			1. Gross irrigated area: 646				
			2. Net irrigated area: 246				
			3. Area irrigated more than once: 400				
			• Ground water: 646				
8	Existing and future water demands		Domestic & Industrial				
	(MCM)		• Existing:0.35				
	- /		• Future (year 2025):1.89				
			Irrigation (Existing): 6.38				
9	Depth to water level (m bgl)	1:	upto 20 m (Pre-monsoon)				
	Depart to water level (iii ogi)	1	upto 23 m (Post-monsoon)				
	AQUIFER DISPOSITION		apto 25 iii (1 oot monoooii)				
10	No of Aquifers	:	2				
11	3-D aquifer disposition and basic	•	Geology-Granites				
11	characteristics of each aquifer	'	Aqufer-1 (Weathered Zone):				
	(3D: Fig-2a		Weathering varies from 0-21 m				
	Section Layout:2b						
	Sections: 2c & 2d)		Transmissivity(T): 6-181 m <sup>2</sup> /day				
	Sections. 2c & 2d)		Specific Yield (Sy):0.2 to 2 % Aguifar 2 (Freetuned Zone):				
			Aquifer-2 (Fractured Zone): Depth of fracturing varies from 0-50 m.				
			Transmissivity (T): 10-117 m <sup>2</sup> /day				
			manomiosivity (1). 10-11/ m/day				

			Specific storage (S):0.00001.0.02					
			Specific storage (S):0.00001-0.02					
10	C		Cumulative yield (Aq1 and Aq 2) (lps): 0 to 3					
12	Ground water Issues	:	• Anthropogenic contamination by Nitrate.					
- 10		• Sustainability of wells (3-4 hrs).						
13	Ground water resource availability	:	Net GW availability :19.85					
	and extraction		• Gross Ground Water draft for					
	(MCM)		Irrigation:5.55					
			Gross Ground water draft for domestic and					
			industrial supply:0.35					
			• Gross GW draft:5.90					
			• Stage of ground water development: 30%					
			Category: Safe					
14	Ground water extraction	:	No of ground water extraction structures :1715					
			No .of Dug wells :460					
			No. of Bore Wells:1255					
15	Chemical quality of ground water	:	Pre-monsoon					
	and contamination		EC (μS/cm) min: 200 and max:3050					
			NO <sub>3</sub> (mg/L): Min :2 and max 110					
			F (mg/L): Min 0.1 and Max:1.5					
			Post-monsoon					
			EC (μS/cm) min: 375 max:1000					
			$NO_3$ (mg/L): Min :1 and max 90					
			F (mg/L): Min: 0.1 and Max:2					
16	Cround Water Dechange Seenanie	:	3 villages are affected with high fluoride(>1.5mg/l)  MCM					
16.1	Ground Water Recharge Scenario	:	12.72					
16.1	Recharge from Rainfall (Monsoon) Recharge from Other sources	:	2.55					
10.2	(Tanks and applied irrigation)	•	2.33					
	(Monsoon)							
16.3	Recharge from rainfall (Non-	:	2.54					
10.5	Monsoon)	•	2.34					
16.4	Recharge from Other sources		3.28					
10.4	(Tanks and applied irrigation) (Non-	•	3.20					
	Monsoon)							
16.5	Total annual GW Recharge	:	21.09					
16.6	Natural Discharge	:	1.24					
16.7	Existing Minor Irrigation	:	13					
20.7	Tanks(nos)							
16.8	Storage from existing tanks	:	1.17					
16.9	Existing Artificial Recharge	:	30/53/402					
20.7	Structures (PT, CD and Farm ponds)	•						
17	Storage from existing AR Structures	:	3.7					
	1							

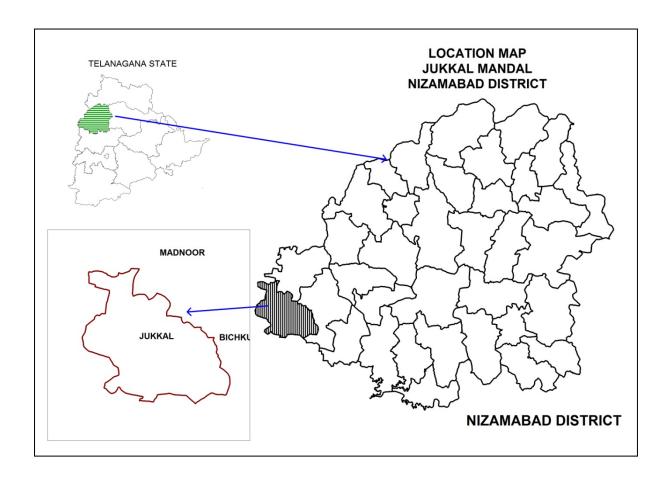


Fig-1: Location Map of Jukkal Mandal.

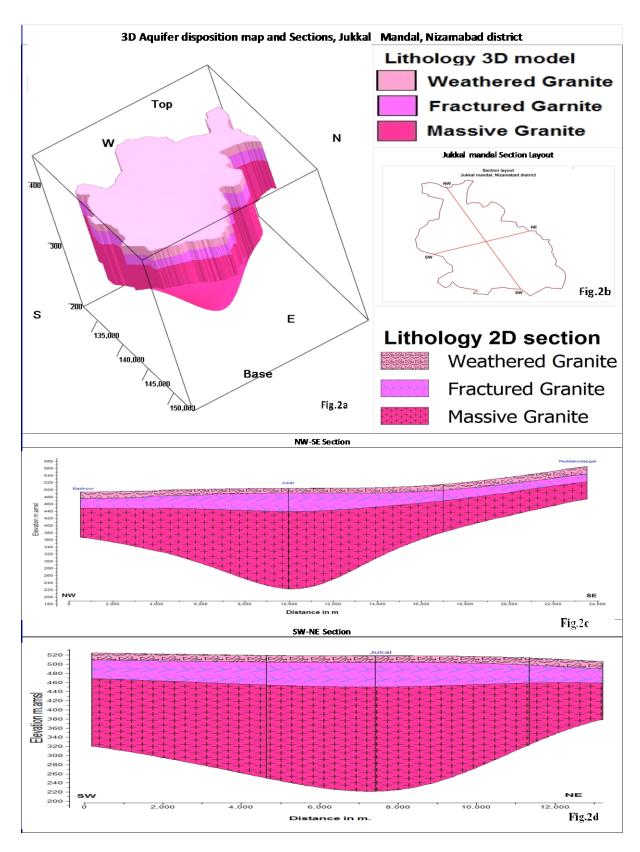


Fig-2(a-d): 3 D map and Sections.

#### GW MANAGEMENT STRATEGIES, JUKKAL MANDAL, NIZAMABAD DISTRICT

A	WATER RESOURCE AVAILABILITY		
	Ground water (as per GEC 2012-13)	:	19.85 MCM
	Surface Water (as per 2014-15	:	-
	irrigation data)		
	Total water availability	:	19.85 MCM
(a)	<b>Ground Water Resource Enhancement</b>		
	(Table-1)		
	Supply side Interventions		
1	Aquifer wise space available for recharge and	:	0-20 m
	proposed interventions		
2	Volume of Un-saturated zone (upto 3mbgl)	:	1906.6 MCM
3	Recharge Potential (Sy 2%)		38.1 MCM
4	Utilizable Yield available for ARS	:	6.55 MCM
5	No. of Check dams (CD's) / Mini percolation	:	180 (CDs:84+PTs:96)
	tanks (MPT's) recommended		
6	Total Cost of ARS	:	13.8 Cr
7	Expected Ground Water Recharge through	:	3.3 MCM
	ARS		
8	Water Conservation Measures (WCM) (Farm	:	660
	Ponds)		
9	Total Cost of WCM	:	1.65 Cr
10	Mission Kakatiya- Repair & Renovation of	:	0.15 MCM (9 tanks)
	existing Tanks		
11	Proposed tanks to be taken up in phased		4 tanks (@0.01 MCM)
	manner		
12	Expected GW Recharge under Mission	:	0.04 MCM(30 % of capacity)
10	Kakatiya		1.070.600.67
13	Mission Bhagiratha (Providing drinking	:	1.97MCM/year
	water needs to the entire population) @ 100		
	lpcd/person (rural) and 135 (urban) from surface water source from outside the mandal		
	area (From River Krishna)		
14	Net Saving of Ground water from Mission		0.35 MCM/year
14	Bhagiratha	•	0.33 WCW/year
(b)	DEMAND SIDE INTERVENTION		
15	Existing Micro Irrigation Intervention & Gross		127 Micro irrigation units/71.14 ha
13	area irrigated	•	127 Wileto Hilgation antis/71.17 ha
16	Proposed Micro Irrigation		3500 ha in 35 Villages @ 100 ha in each
	L		non command village.
17	Cost for micro-irrigation	:	21 Cr@ 0.60 lakhs per ha.
18	Expected ground water saving from micro-	:	7 MCM of water is expected to be
	irrigation		conserved.
(c)	REGULATION & COMMUNITY		
	INTERVENTIONS		
19	Regulation and control	:	WALTA-Act to be implemented
			in true spirit.
			• Regulation of power supply in 2
			spells @ 4 hours/spell to increase

(d)	OTHER INTERVENTIONS SUGGESTED	:	<ul> <li>As mandatory measures power connection may be given to only those farmers who are adopting micro irrigation for all new bore well to be constructed.</li> <li>Participatory Ground Water Management with community and women participation.</li> <li>Paddy cultivation during rabbi season should be reduced and to be shifted to ID Crops and drought resistant crops. If necessary some regulatory rules may be framed and implemented.</li> <li>In the existing ground water areas sharing of ground water amongst the users to be encouraged to increase the sustainability of wells by reducing well interference.</li> <li>The bore well owner should be suitably compensated for the cost of well by funding to farmers for adopting micro irrigation</li> </ul>
	EXPECTED DEGLI EG AND OVEGOVE		practices by the Govt.
(e)	EXPECTED RESULTS AND OUTCOME		26 45 Cu
20	Total Cost of Interventions (Excluding Mission Kaktiya and Bhagiratha)	:	36.45 Cr
21	Likely benefit of Interventions	:	~11.52 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 11 % (from 30 % to 19%).

Table-1: Village wise list of Artificial Recharge Structures Recommended.

S.No	Village	Unsaturated thickness upto 3 m. bgl (m.)	Village Recharge potential MCM (upto 3 m.bgl)	20% of Runoff for AR MCM	Proposed CD's	Proposed PT's	Total cost	Expected GW Recharge in MCM
	Priority-1	m	MCM	MCM	NO.	NO.	Lakhs	MCM
1	Mailar	4	0.1	0.1	0	0	0	0.03
	Priority-1(Total) Priority-2				0	0	0	0.03
1	Babulgaon	4	0.6	0.3	5	5	75	0.16
2	Bangarpalle	4	0.4	0.1	1	0	5	0.06
3	Baswapur	4	0.2	0.1	0	2	20	0.07
4	Bijjalwadi	15	1.5	0.1	0	2	20	0.07
5	Chandegaon	19	1.9	0.1	3	3	45	0.07
6	Chinna Edgi	9	0.5	0.1	1	1	15	0.04
7	Chinna Ghulla	7	0.3	0.1	0	1	10	0.03
8	Dongaon	4	0.5	0.3	5	4	65	0.15
9	Dostpalle	4	0.3	0.1	2	0	10	0.05
10	Gundur	5	0.6	0.2	3	3	45	0.09
11	Hangarga	20	4.4	0.3	6	6	90	0.15
12	Jukkal	4	1.0	0.3	7	5	85	0.17
13	Kanthali	8	0.9	0.2	0	3	30	0.08
14	Kathalwadi	15	0.7	0.1	0	0	0	0.04
15	Khanapur	4	0.2	0.1	1	0	5	0.03
16	Khandeballoor	6	1.5	0.4	7	6	95	0.18
17	Khemrajakallali	11	1.4	0.2	2	3	40	0.09
18	Kowlas	9	3.2	0.5	10	9	140	0.26
19	Ladegaon	9	1.4	0.2	4	4	60	0.11
20	Lingampalle	5	0.7	0.3	1	4	45	0.17
21	Longaon	7	0.3	0.1	0	1	10	0.03
22	Madhapur	19	1.2	0.1	2	1	20	0.04
23	Mahammadabad	9	1.3	0.2	0	3	30	0.10
24	Nagulgaon	16	3.2	0.3	5	5	75	0.14
25	Padampalle	17	1.8	0.2	1	3	35	0.08
26	Pedda Edgi	12	1.9	0.2	0	3	30	0.11
27	Pedda Ghulla	8	2.4	0.4	6	7	100	0.22
28	Pocharam	8	1.2	0.2	2	3	40	0.10
29	Rudrapahad	4	0.2	0.1	1	1	15	0.03
30	Savargaon	5	0.2	0.1	0	0	0	0.05
31	Shivapur	11	1.4	0.2	4	3	50	0.09
32	Siddapur	4	0.6	0.2	4	3	50	0.11
33	Sopoor	-3	-0.1	0.0	0	0	0	0.00
34	Wajrakhandi	4	0.4	0.1	1	2	25	0.07
	Priority-2 (Total)				84	96	1380	3.25
	Total (P-1&P-2)				84	96	1380	3.28