Draft Report

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

Gandhari Mandal, Nizamabad District, Telangana

दक्षिणी क्षेत्र, हैदराबाद

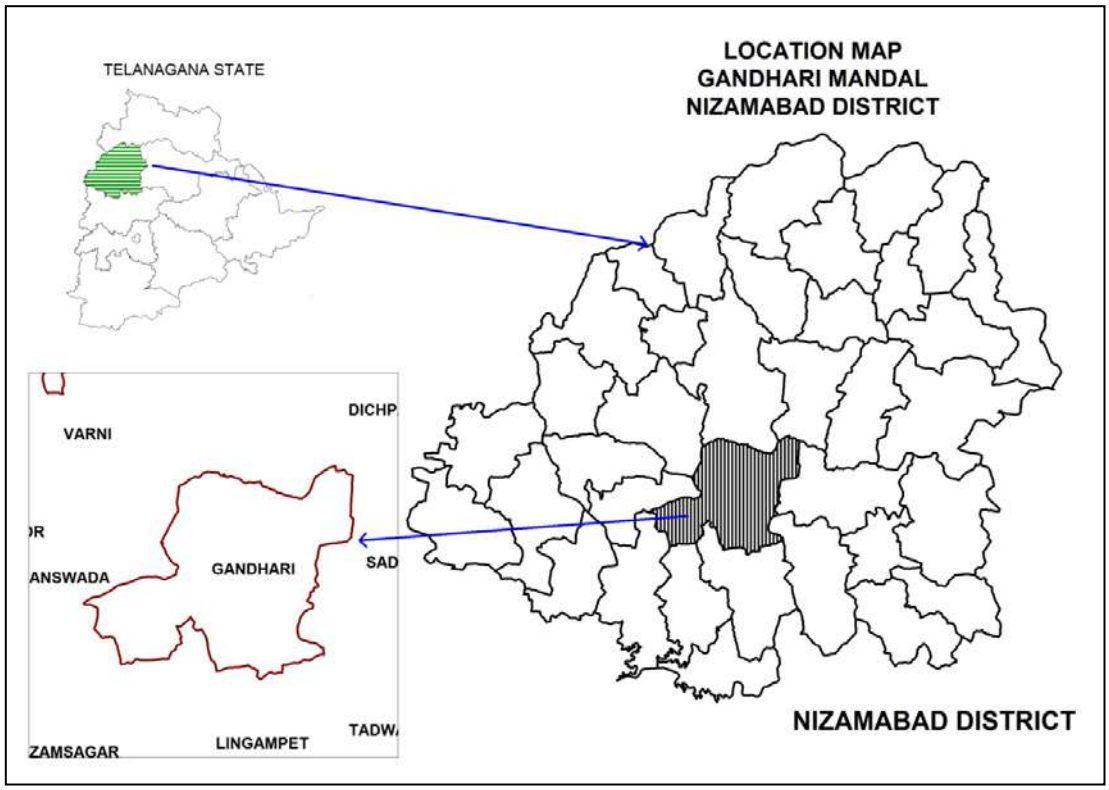
Southern Region, Hyderabad

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
GANDHARI MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE



CENTRAL GROUND WATER BOARD
SOUTHERN REGION

HYDERABAD
AUGUST-2016

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

	SALIENT FEATURES		
1	Name of the Mandal/Area Revenue Division Location **(Fig-1)**	**:**	**GANDHARI/370 Km^2** **NIZAMABAD** EL77^{0}56'49.92"- 78^{0}12'35.22" NL18^{0}18'16.99"-18^{0}30'33.31"
2	No. of Revenue villages	:	**37**
3	District/State	:	**Nizamabad/Telangana**
4	Population /Density (2011 Census)	:	58535/158 per Km^2
5	Normal Rainfall (mm) Actual Rainfall(mm)(2014-2015)	:	1219.7 -Monsoon: 1032.5mm (85%) -Non-Monsoon:187.20 mm (15%) 693
6	Agriculture (Ha) (2014-15):	:	Kharif season 1. Net area sown: 14220 2. Maize: 7155(50%) 3. Total oil seeds: 4300(30%) 4. Paddy: 1811(13%) 5. Cotton: 491(3%) 6. Total pulses: 77 (1%) 7. Other crops: 386(3%) Rabi season 1. Net area sown: 3431 2. Paddy: 227(7%) 3. Total oil seeds: 212(6%) 4. Maize: 1655(48%) 5. Total pulses: 159(5%) 6. Other crops: 1174(34%)
7	Irrigation (2014-15) (Ha)	:	1. Gross irrigated area: 5531 2. Net irrigated area: 2213 3. Area irrigated more than once: 3318 • Ground water: 5531
8	Existing and future water demands (MCM)		Domestic & Industrial • Existing:0.73 • Future (year 2025): 2.06 Irrigation (Existing): 23.91
9	Depth to water level (m bgl)	:	8-43 m (Pre-monsoon) 12-35 m (Post-monsoon)
	AQUIFER DISPOSITION	:	
10	No of Aquifers	:	2
11	3-D aquifer disposition and basic characteristics of each aquifer **(3D: Fig-2a** **Section Layout:2b** **Sections: 2c & 2d)**		**Geology-Granites** **Aqufer-1 (Weathered Zone):** Weathering varies from 6-33 m Transmissivity(T): 6-181 m^2/day Specific Yield (Sy):0.2 to 2 % **Aquifer-2 (Fractured Zone):** Depth of fracturing varies from 20-60 m. Transmissivity (T): 10-117 m^2/day

			Specific storage (S):0.00001-0.02 Cumulative yield (Aq1 and Aq 2) (lps): 1 to 2
12	Ground water Issues	:	• Anthropogenic contamination by nitrate. • Sustainability of wells (3-4 hrs).
13	Ground water resource availability and extraction (MCM)	:	• Net GW availability :42.11 • Gross Ground Water draft for Irrigation:16.99 • Gross Ground water draft for domestic and industrial supply:0.73 • Gross GW draft:17.71 • Stage of ground water development: 42% • Category: Safe
14	Ground water extraction	:	No .of ground water extraction structures:46843 No. of Dug wells :3185 No. of Bore Wells :43658
15	Chemical quality of ground water and contamination	:	**Pre-monsoon** EC (µS/cm) min: 750 max:1050 NO_3 (mg/L): Min :25 and max :85 F (mg/L): Min 0.75 and Max:1.5 **Post-monsoon** EC (µS/cm) min: 550 max:950 NO_3 (mg/L): Min :15 and max:55 F (mg/L): Min:0.5 and Max:1
	Ground Water Recharge Scenario	:	**MCM**
16	Recharge from Rainfall (Monsoon)	:	30.36
17	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	4.34
18	Recharge from rainfall (Non-Monsoon)	:	7.18
19	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	4.92
20	Total annual GW Recharge	:	46.79
21	Natural Discharge	:	4.68
22	Existing Minor Irrigation Tanks(nos)	:	94
23	Storage from existing tanks	:	3.63
24	Existing Artificial Recharge Structures (PT, CD and Farm ponds)	:	66/52/500
25	Storage from existing AR Structures	:	2.19

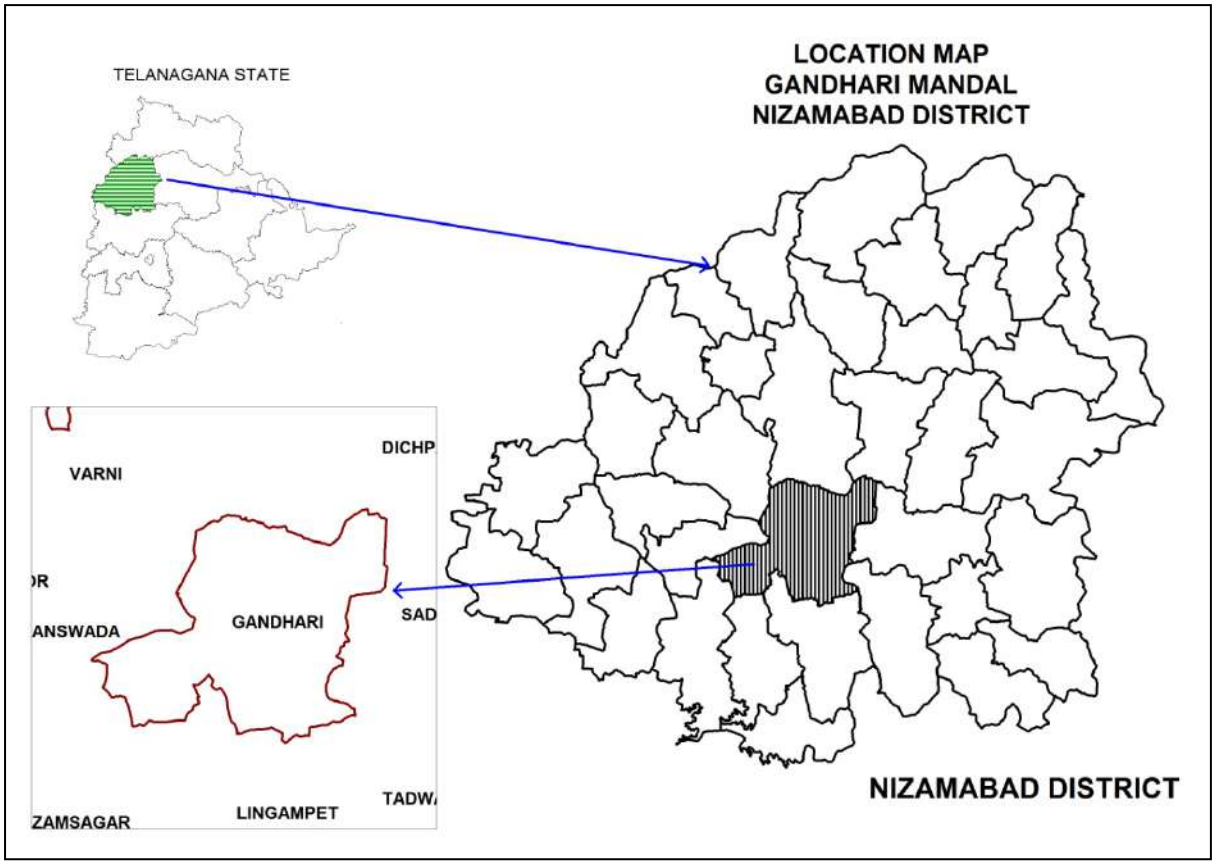


Fig-1: Location Map of Gandhari Mandal.

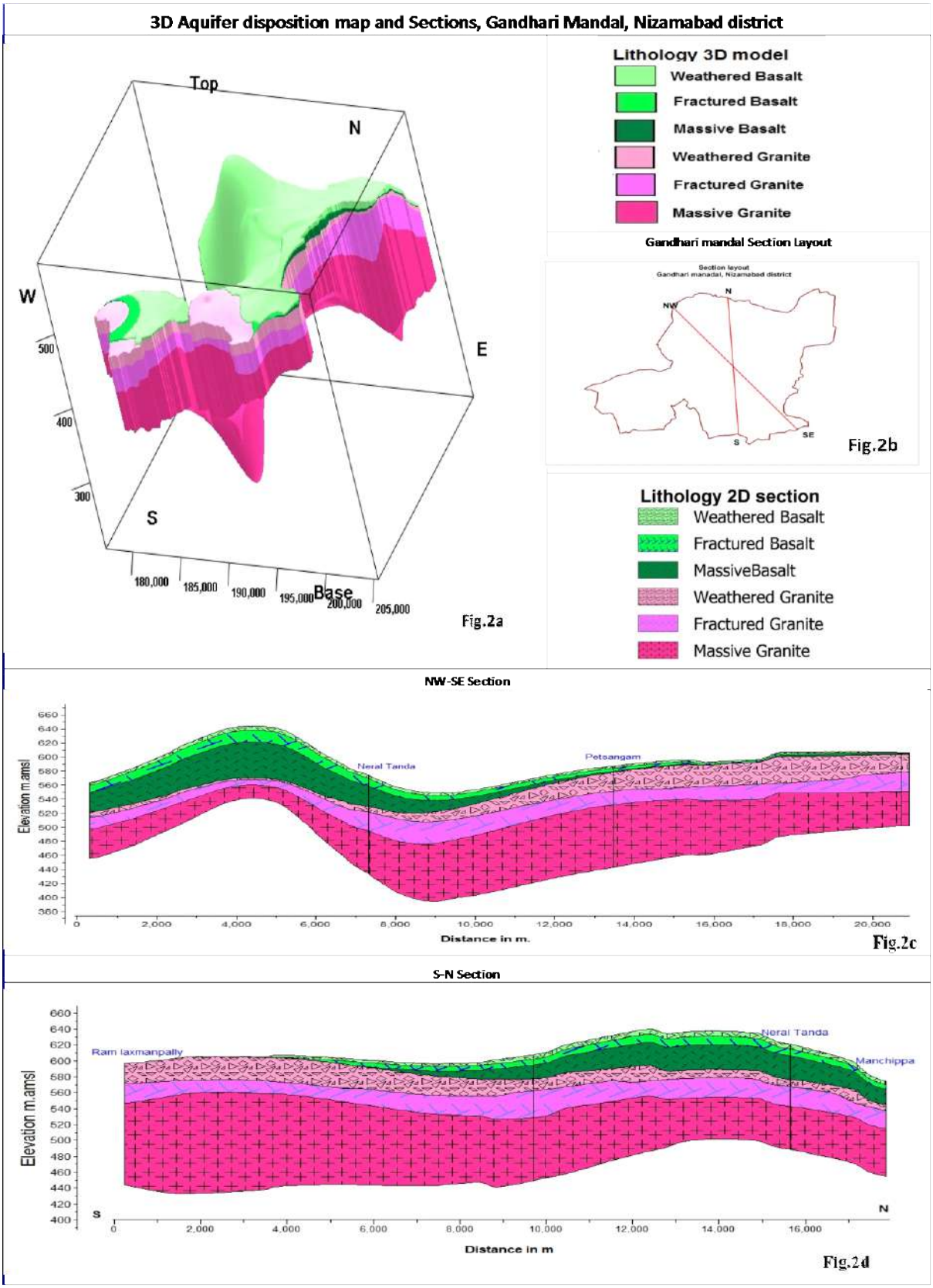


Fig-2(a-d): 3 D map and Sections.

GW MANAGEMENT STRATEGIES, GHANDHARI MANDAL, NIZAMABAD DISTRICT

A	**WATER RESOURCE AVAILABILITY**		
	• Ground water (as per GEC 2012-13)	:	42.11 MCM
	• Surface Water (as per 2014-15 irrigation data)	:	0 MCM
	• Total water availability	:	42.11 MCM
(a)	**Ground Water Resource Enhancement (Table-1)**		
	Supply side Interventions		
1	Aquifer wise space available for recharge and proposed interventions	:	10-32 m
2	Volume of Un-saturated zone (upto 3mbgl)	:	5098 MCM
4	Recharge Potential (Sy 2%)		102 MCM
5	Utilizable Yield available for ARS	:	20.56 MCM
6	No. of Check dams (CD's) / Mini percolation tanks (MPT's) recommended	:	717 (CDs:350+PTs:367)
8	Total Cost of ARS	:	54.2 Cr
9	Expected Ground Water Recharge through ARS	:	10.3 MCM
10	Water Conservation Measures (WCM) (Farm Ponds)	:	460
12	Total Cost of WCM	:	1.15 Cr
13	**Mission Kakatiya-** Repair & Renovation of existing Tanks	:	0.36 MCM (24 tanks)
14	Proposed tanks to be taken up in phased manner		70tanks (@0.01 MCM)
15	Expected GW Recharge under **Mission Kakatiya**	:	0.11 MCM(30 % of capacity)
16	**Mission Bhagiratha** (Providing drinking 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**)	:	2.14 MCM/year
17	Net Saving of Ground water from **Mission Bhagiratha**	:	1.28 MCM/year
(b)	**DEMAND SIDE INTERVENTION**		
18	Existing Micro Irrigation Intervention & Gross area irrigated	:	109 Micro irrigation units/110.28 ha
19	Proposed Micro Irrigation	:	2800 ha in 28 Villages @ 100 ha in each non command village.
20	Cost for micro-irrigation	:	16.8 Cr@ 0.60 lakhs per ha.
21	Expected ground water saving from micro-irrigation	:	5.6 MCM of water is expected to be conserved.
(c)	**REGULATION & COMMUNITY INTERVENTIONS**		
22	Regulation and control	:	• WALTA-Act to be implemented in true spirit. • Regulation of power supply in 2

			spells @ 4 hours/spell to increase bore well/GW sustainability. • 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.
(d)	**OTHER INTERVENTIONS SUGGESTED**	:	• Participatory Ground Water Management with community and women participation. • Paddy cultivation during rabi 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. • 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. • The bore well owner should be suitably compensated for the cost of well by funding to farmers for adopting micro irrigation practices by the Govt.
(e)	**EXPECTED RESULTS AND OUTCOME**		
23	Total Cost of Interventions (Excluding Mission Kakatiya and Bhagiratha)	:	72.15 Cr
24	Likely benefit of Interventions	:	~17.29 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 12 % (from 42 % to 30%).

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	Chinnapur	21	1.0	0.1	3	0	15	0.07
2	Medpalle	20	2.3	0.3	7	6	95	0.17
3	Sarvapur	19	0.9	0.1	3	1	25	0.07
4	Durgam	10	1.5	0.5	6	9	120	0.23
5	Gujjul	13	2.3	0.8	13	15	215	0.39
6	Pedda Gouraram	19	7.6	1.2	24	24	360	0.62
7	Pothangal (Kalan)	23	2.3	0.4	7	7	105	0.19
8	Pothangal (Khurd)	24	10.6	1.6	31	31	465	0.81
9	Somaram	10	0.7	0.2	0	4	40	0.11
10	Utnoor	11	0.9	0.6	10	10	150	0.30
11	Vajjepally (Kalan)	11	1.0	0.3	5	5	75	0.14
12	Vajjeplly Thanda	11	0.6	0.2	3	3	45	0.09
	Priority-1(Total)				**112**	**115**	**1710**	**3.20**
	Priority-2							
1	Gandivet	18	5.4	0.9	16	12	200	0.45
2	Madholi	17	3.0	0.5	10	7	120	0.27
3	Narsapur (Madholi)	15	3.2	0.6	12	10	160	0.32
4	Sithaipalle	19	2.3	0.4	6	6	90	0.19
5	Venkatapur	18	3.3	0.6	11	8	135	0.28
6	Bangarwadi	15	1.3	0.3	5	6	85	0.16
7	Boppajiwadi	14	0.3	0.1	0	1	10	0.04
8	Brahmanpalle	21	2.3	0.4	6	8	110	0.21
9	Burgul	14	1.9	0.5	8	9	130	0.25
10	Gandhari	22	15.3	2.6	44	49	710	1.28
11	Gurjal	15	2.7	0.8	13	14	205	0.39
12	Juvvadi	13	1.1	0.4	5	6	85	0.18
13	Karakwadi	13	0.5	0.1	3	3	45	0.07
14	Katewadi	19	2.3	0.5	9	9	135	0.23
15	Konaipalle	23	0.5	0.1	2	2	30	0.04
16	Mathsangam	22	3.2	0.5	6	9	120	0.24
17	Naglur	15	3.8	0.9	17	18	265	0.47
18	Naral	14	2.4	0.6	9	12	165	0.31
19	Petasangam	32	4.9	0.6	9	11	155	0.29
20	Ramalakshmanpalle	16	0.8	0.1	1	2	25	0.07
21	Thimmapuram	24	2.3	0.4	6	7	100	0.18
22	Tipparam	18	1.7	0.3	6	7	100	0.17
23	Vendrikal	15	2.0	0.6	9	10	145	0.28
24	Yacharam	10	3.6	1.4	25	26	385	0.70

	Priority-2 (Total)				**238**	**252**	**3710**	**7.08**
	Total (P-1&P-2)				**350**	**367**	**5420**	**10.28**