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

Pitlam Mandal, Nizamabad District, Telangana

दक्षिणी क्षेत्र, हैदराबाद

Southern Region, Hyderabad

भारत सरकार
जल संसाधन नदी विकास एवम् गंगा संरक्षण मंत्रालय
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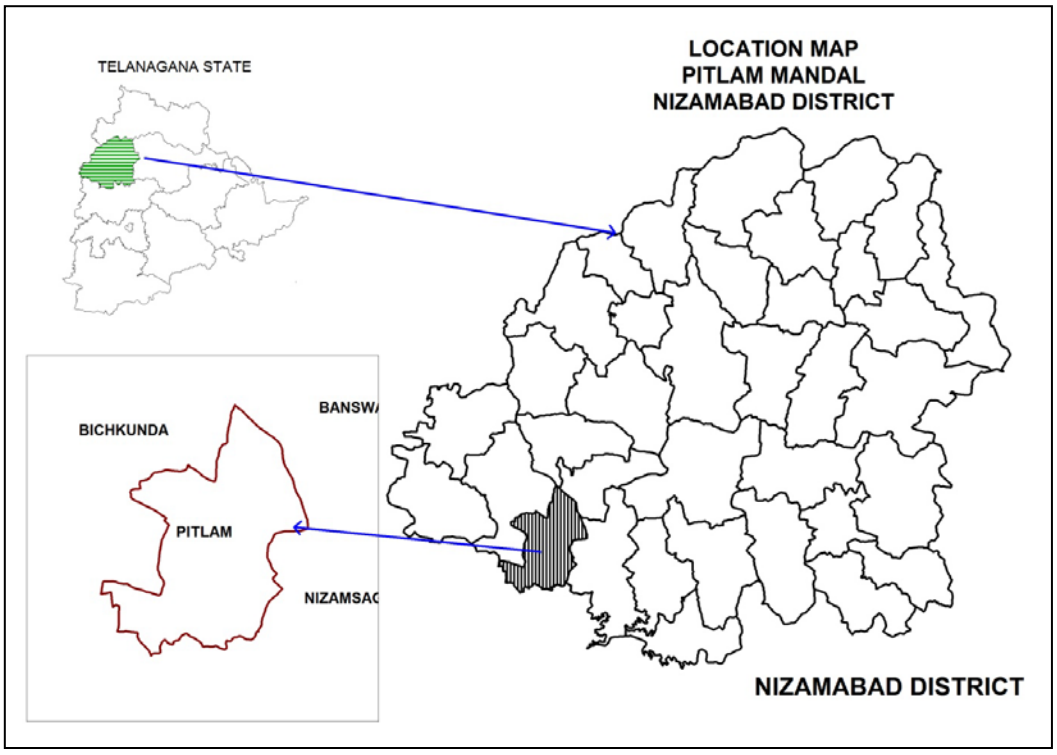
GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

REPORT ON

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



CENTRAL GROUND WATER BOARD
SOUTHERN REGION
HYDERABAD

AUGUST-2016

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

	SALIENT FEATURES		
1	Name of the Mandal/Area Revenue Division Location **(Fig-1)**	**:**	**PITLAM/193 Km^2** **NIZAMABAD** EL77^{0}43'45.38"- 77^{0}53'25.02" NL18^{0}11'14.41"-18^{0}22'50.60"
2	No. of Revenue villages	:	**28**
3	District/State	:	**Nizamabad/Telangana**
4	Population /Density (2011 Census)	:	47581/247 per Km^2
5	Normal Rainfall (mm) Actual Rainfall (2014-2015)(mm)	:	1068.3 -Monsoon: 863.0 mm (81%) -Non-Monsoon:205.30 mm (19%) 477.6
6	Agriculture (Ha) (2014-15):	:	Kharif season 1. Net area sown: 9398 2. Total oil seeds:2405(26%) 3. Paddy: 2415 (26%) 4. Maize: 2005(21%) 5. Total pulses:1288 (14%) 6. Cotton :1136(12%0 7. Other crops 149(2%) Rabi season 1. Net area sown: 2911 2. Paddy: 1017 (35%) 3. Total oil seeds:115(4%) 4. Total pulses:158 (5%) 5. Maize: 414(14%) 6. Other crops :1207(41%)
7	Irrigation (2014-15) (Ha)	:	1. Gross irrigated area: 5181 2. Net irrigated area: 2491 3. Area irrigated more than once: 2690 • Ground water: 5181
8	Existing and future water demands (MCM)		Domestic & Industrial • Existing:0.48 • Future (year 2025): 1.64 Irrigation (Existing): 18.35
9	Depth to water level (m bgl)	:	8-31 m (Pre-monsoon) 10-32 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 7-22 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): 0.5 to 3.5
12	Ground water Issues	:	• Geogenic contamination by Fluoride. • Anthropogenic contamination by Nitrate. • Sustainability of wells (3-4 hrs).
13	Ground water resource availability and extraction (MCM)	:	• Net GW availability :29.51 • Gross Ground Water draft for Irrigation:21.24 • Gross Ground water draft for domestic and industrial supply:0.48 • Gross GW draft:21.72 • Stage of ground water development: 74 % • Category: Semi critical
14	Ground water extraction	:	No of ground water extraction structures :4932 No. of Dug wells:329 No.of Bore wells :4603
15	Chemical quality of ground water and contamination	:	**Pre-monsoon** EC (µS/cm) min: 600 max:1650 NO_3 (mg/L): Min :20 and max 285 F (mg/L): Min 0.5 and Max:1.5 **Post-monsoon** EC (µS/cm) min: 650 max:2550 NO_3 (mg/L): Min :20 and max:75 F (mg/L): Min :0.75 and Max 1.75 3 villages are affected with high fluoride(f>1.5mg/l)
16	**Ground Water Recharge Scenario**	:	**MCM**
16.1	Recharge from Rainfall (Monsoon)	:	17.95
16.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	3.90
16.3	Recharge from rainfall (Non-Monsoon)	:	3.97
16.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	5.24
16.5	Total annual GW Recharge	:	31.07
16.6	Natural Discharge	:	1.55
16.7	Existing Minor Irrigation Tanks(nos)	:	35
16.8	Storage from existing tanks	:	0.18
16.9	Existing Artificial Recharge Structures (PT, CD and Farm ponds)	:	38/50/200
17	Storage from existing AR Structures	:	3.2

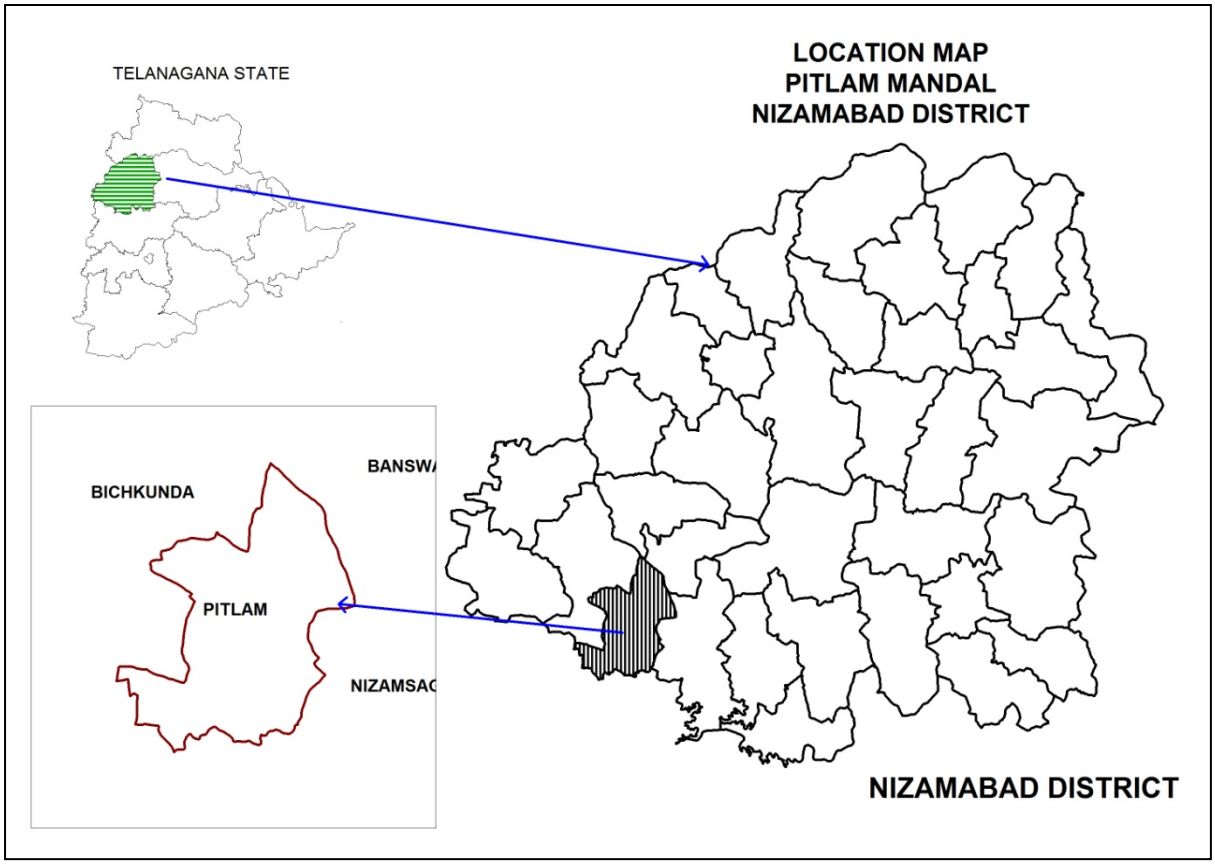


Fig-1: Location Map of Pitlam Mandal.

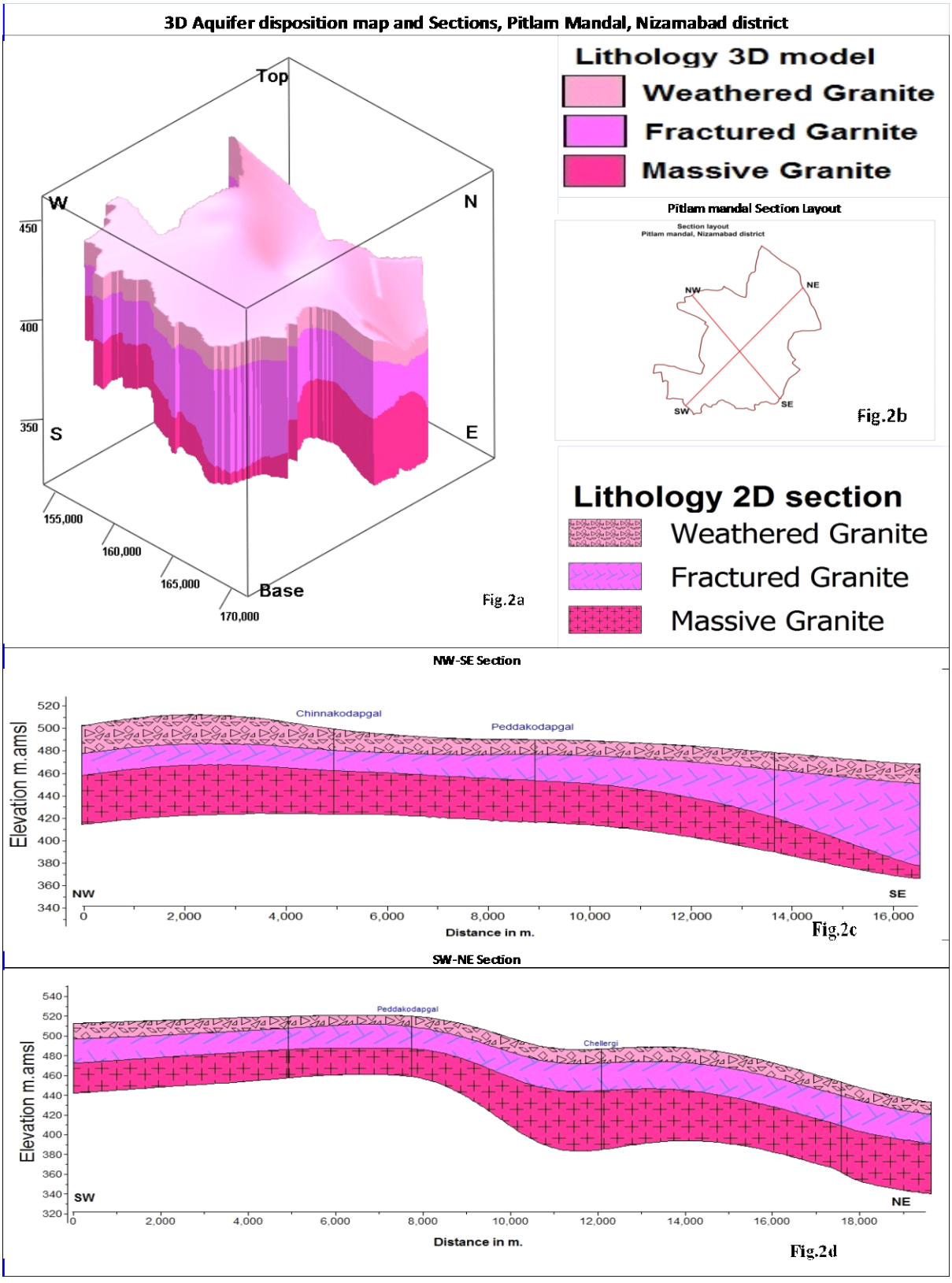


Fig-2(a-d): 3 D map and Sections.

GW MANAGEMENT STRATEGIES, PITLAM MANDAL, NIZAMABAD DISTRICT

A	**WATER RESOURCE AVAILABILITY**		
	• Ground water	:	29.51 MCM
	• Surface Water	:	-
	• Total water availability	:	29.51 MCM
(a)	**Ground Water Resource Enhancement (Table-1)**		
	Supply side Interventions		
1	Aquifer wise space available for recharge and proposed interventions	:	7-29 m
2	Volume of Un-saturated zone (upto 3mbgl)	:	3262.6 MCM
3	Recharge Potential (Sy 2%)		65.3 MCM
4	Utilizable Yield (MCM) available for ARS	:	7.61 MCM
5	No. of Check dams (CD's) / Mini percolation tanks (MPT's) recommended	:	220 (CDs:103+PTs117)
6	Total Cost of ARS	:	16.85 Cr
7	Expected Ground Water Recharge through ARS	:	3.8 MCM
8	Water Conservation Measures (WCM) (Farm Ponds)	:	540
9	Total Cost of WCM	:	1.35 Cr
10	**Mission Kakatiya-** Repair & Renovation of existing Tanks	:	0.18 MCM (29 tanks)
11	Proposed tanks to be taken up in phased manner		6 tanks (@0.01 MCM)
12	Expected GW Recharge under **Mission Kakatiya**	:	0.05 MCM(30 % of capacity)
13	**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**)	:	1.74MCM/year
14	Net Saving of Ground water from **Mission Bhagiratha**	:	1.04MCM/year
(b)	**DEMAND SIDE INTERVENTION**		
15	Existing Micro Irrigation Intervention & Gross area irrigated	:	96 Micro irrigation units/75.92 ha
16	Proposed Micro Irrigation	:	2800 ha in 28 Villages @ 100 ha in each non command village.
17	Cost for micro-irrigation	:	16.8 Cr@ 0.60 lakhs per ha.
18	Expected ground water saving from micro-irrigation	:	5.6 MCM of water is expected to be 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

			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**		
20	Total Cost of Interventions (Excluding Mission Kakatiya and Bhagiratha)	:	35 Cr
21	Likely benefit of Interventions	:	~10.49 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 20 % (from 74 % to 54%).

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	Bollakpalle	13	1.02	0.16	0	2	20	0.08
2	Burnapur	18	1.18	0.13	1	2	25	0.07
3	Chinna Gouraram	15	1.37	0.19	4	4	60	0.09
4	Hasnapur	26	1.02	0.10	2	1	20	0.05
5	Pedda Annaram	11	1.13	0.21	4	4	60	0.10
6	Peddarampur	14	2.69	0.41	8	8	120	0.21
7	Pothreddipalle	22	1.66	0.15	1	2	25	0.08
	Priority-1(Total)				**20**	**23**	**330**	**0.67**
	Priority-2							
1	Allapur	18	0.85	0.09	1	1	15	0.05
2	Bandapalle	14	1.91	0.35	7	6	95	0.18
3	Brahmanpalle	15	0.83	0.11	0	1	10	0.06
4	Chillangi	16	4.19	0.57	9	10	145	0.28
5	Chinna Kodapgal	24	6.12	0.51	10	9	140	0.26
6	Dharmaram	25	2.55	0.21	4	3	50	0.10
7	Godamgaon	28	3.65	0.28	5	3	55	0.14
8	Karegaon	29	2.84	0.21	2	2	30	0.10
9	Katepalle	17	3.24	0.38	3	6	75	0.19
10	Khambapur	28	3.76	0.29	3	4	55	0.14
11	Kistapur	17	1.22	0.14	2	2	30	0.07
12	Koranpalle	16	2.07	0.26	4	4	60	0.13
13	Kurthi	7	1.46	0.42	6	6	90	0.21
14	Maddel Cheruvu	15	1.28	0.19	0	2	20	0.09
15	Mardanda	28	1.79	0.13	2	1	20	0.06
16	Nagampalle	9	1.27	0.30	3	5	65	0.15
17	Peradpalle	16	2.89	0.40	3	6	75	0.20
18	Pitlam	19	4.76	0.59	6	9	120	0.29
19	Siddapur	15	1.87	0.25	3	4	55	0.13
20	Sonpet	15	0.74	0.10	1	1	15	0.05
21	Thimmanagar	26	5.90	0.49	9	9	135	0.24
	Priority-2 (Total)				**83**	**94**	**1355**	**3.13**
	Total (P-1&P-2)				**103**	**117**	**1685**	**3.81**