



## **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**

**Kotgiri Mandal, Nizamabad District, Telangana**

दक्षिणी क्षेत्र, हैदराबाद

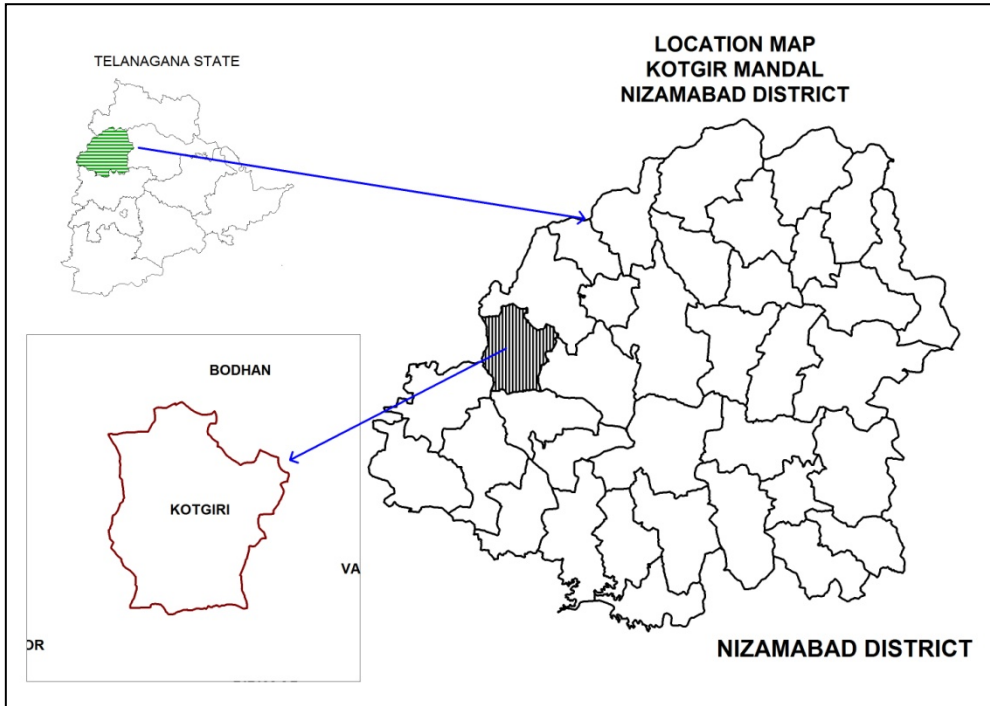
Southern Region, Hyderabad



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**  
**KOTGIRI MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE**

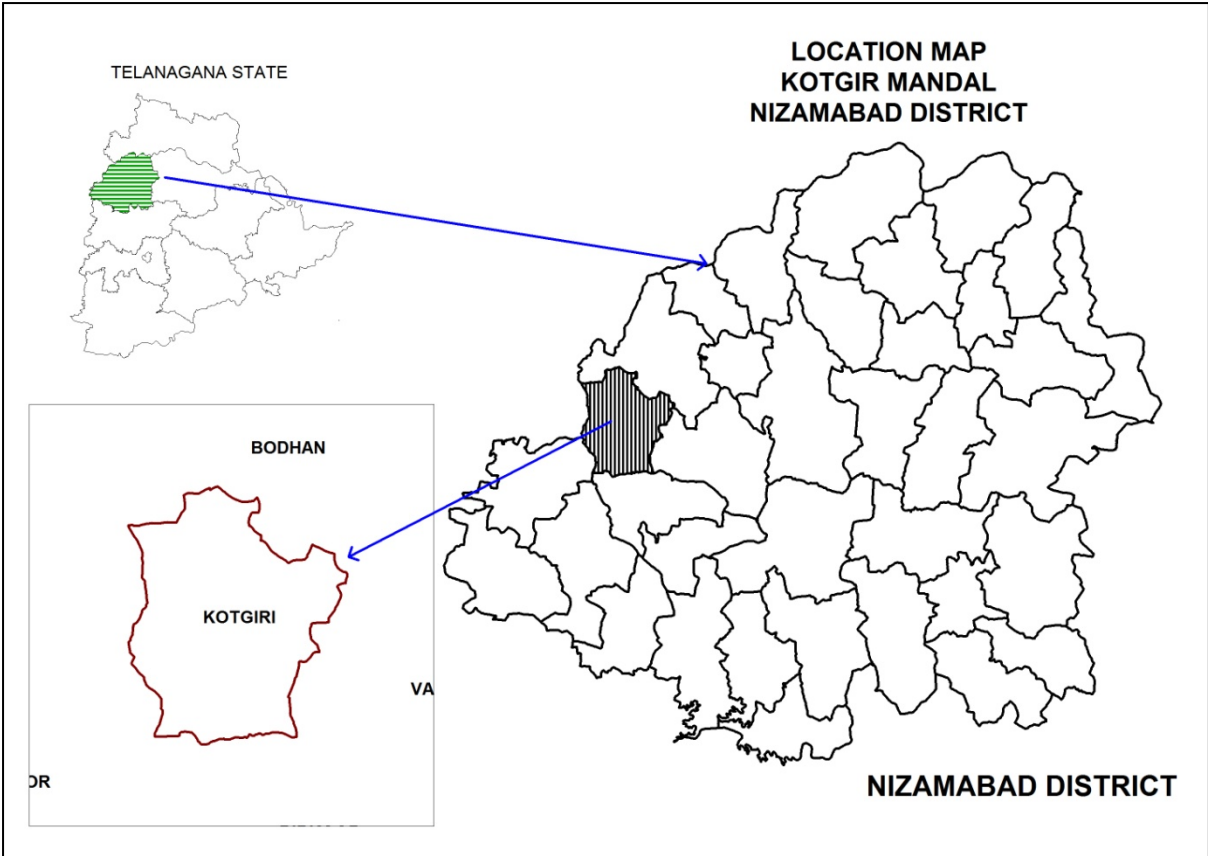


**CENTRAL GROUND WATER BOARD**  
**SOUTHERN REGION**  
**HYDERABAD**  
**JULY-2016**

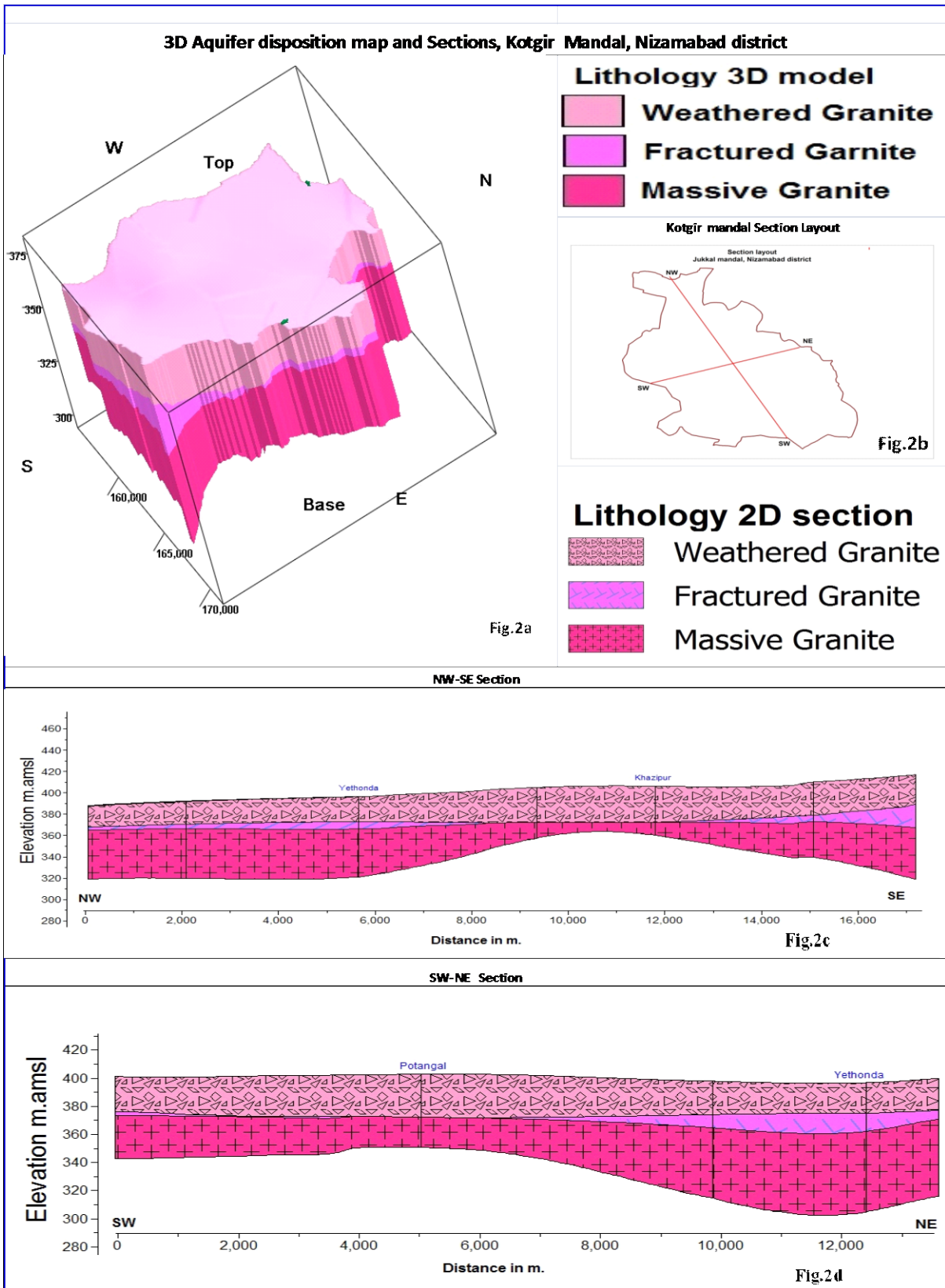
**REPORT ON  
AQUIFER MAPS & MANAGEMENT PLANS  
KOTGIRI MANDAL, NIZAMABAD DISTRICT, TELANGANA STATE**

<b>SALIENT FEATURES</b>		
1	Name of the Mandal/Area Revenue Division Location <b>(Fig-1)</b>	: <b>KOTGIRI/197 Km<sup>2</sup> NIZAMABAD NL77<sup>0</sup>44'19.00"- 77<sup>0</sup>53'7.88" EL18<sup>0</sup>29'47.55"-18<sup>0</sup>40'2.63"</b>
2	No. of Revenue villages	: <b>39</b>
3	District/State	: <b>Nizamabad/Telangana</b>
4	Population /Density (2011 Census)	: 56917/289 per Km <sup>2</sup>
5	Normal Rainfall (mm)  Actual Rainfall(2014-2015)	: 1118.7 -Monsoon: 905.7 mm (81%) -Non-Monsoon:213.00 mm (19%) 597.2
6	Agriculture (Ha) (2014-15):	: Kharif season 1. Net area sown: 9028 2. Paddy: 4532(50%) 3. Total oil seeds: 3650(40%) 4. Total pulses: 362 (4%) 5. Cotton: 254(3%) 6. Other crops 196(2%) Rabi season 1. Net area sown: 6501 2. Paddy: 2921(45%) 3. Total oil seeds: 1742(27%) 4. Total pulses: 1339 (21%) 5. Cotton:254(3%) 6. Maize: 213(3%)
7	Irrigation (2014-15) (Ha)	: 1. Gross irrigated area: 9589 2. Net irrigated area:4749 3. Area irrigated more than once: 4840 • Ground water: 6734 • Surface water (Tanks):2855
8	Existing and future water demands (MCM)	: Domestic & Industrial • Existing:0.58 • Future (year 2025):2.07 Irrigation (Existing): 23.37
9	Water level behaviour	: 9-22 m (Pre-monsoon) 10-24 m (Post-monsoon)
<b>AQUIFER DISPOSITION</b>		:
10	No of Aquifers	: 2
11	3-D aquifer disposition and basic characteristics of each aquifer <b>(3D: Fig-2a Section Layout:2b Sections: 2c &amp; 2d)</b>	: <b>Geology-Granites</b> <b>Aquifer-1 (Weathered Zone):</b> Weathering varies from 13-25 m Transmissivity(T): 6-181 m <sup>2</sup> /day Specific Yield (Sy):0.2 to 2 % <b>Aquifer-2 (Fractured Zone):</b> Depth of fracturing varies from 15-30 m. Transmissivity (T): 10-117 m <sup>2</sup> /day Specific storage (S):0.00001-0.02

			Cumulative yield (Aq1 and Aq 2) (lps): 1.5 to 3.5
12	Ground water Issues	:	<ul style="list-style-type: none"> <li>• Anthropogenic contamination by Nitrate.</li> <li>• Sustainability of wells (3-4 hrs).</li> </ul>
13	Ground water resource availability and extraction (MCM)	:	<ul style="list-style-type: none"> <li>• Net GW availability :46.89</li> <li>• Gross Ground Water draft for Irrigation:23.91</li> <li>• Gross Ground water draft for domestic and industrial supply:0.58</li> <li>• Gross GW draft:24.49</li> <li>• Stage of ground water development: 52%</li> <li>• Category: Safe</li> </ul>
14	Ground water extraction	:	No of ground water extraction structures:5438 No. of Dug wells :435 No. of Bore Wells:5003
15	Chemical quality of ground water and contamination	:	<p><b>Pre-monsoon</b> EC (<math>\mu\text{S}/\text{cm}</math>) min: 200 max:2050 NO<sub>3</sub> (mg/L): Min : 5 and max :105 F (mg/L): Min :0.1 and Max:1.25</p> <p><b>Post-monsoon</b> EC (<math>\mu\text{S}/\text{cm}</math>) min: 375 max:3548 NO<sub>3</sub> (mg/L): Min :5 and max:65 F (mg/L): Min:0.1 and Max :2 7 villages are affected with either high (EC&gt;3000<math>\mu\text{s}/\text{cm}</math>) &amp;high fluoride (f&gt;1.5mg/l)</p>
16	<b>Ground Water Recharge Scenario</b>	:	<b>MCM</b>
16.1	Recharge from Rainfall (Monsoon)	:	15.56
16.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	16.23
16.3	Recharge from rainfall (Non-Monsoon)	:	1.90
16.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	18.81
16.5	Total annual GW Recharge	:	52.10
16.6	Natural Discharge	:	5.21
16.7	Existing Minor Irrigation Tanks(nos)	:	39
16.8	Storage from existing tanks	:	0
16.9	Existing Artificial Recharge Structures (PT, CD and Farm ponds)	:	34/21/760
17	Storage from existing AR Structures	:	0.57



**Fig-1: Location Map of Kotgiri Mandal**



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

**GW MANAGEMENT STRATEGIES, KOTGIRI MANDAL, NIZAMABAD DISTRICT**

<b>A</b>	<b>WATER RESOURCE AVAILABILITY</b>	
	• Ground water	: 46.89 MCM
	• Surface Water (Tanks)	: 22.84 MCM
	• Total water availability	: 69.73 MCM
<b>(a)</b>	<b>Ground Water Resource Enhancement (Table-1)</b>	
	<b>Supply side Interventions</b>	
1	Aquifer wise space available for recharge and proposed interventions	: 7-21 m
2	Volume of Un-saturated zone (upto 3mbgl)	: 3219.7 MCM
3	Recharge Potential (Sy 2%)	64.4 MCM
4	Utilizable Yield available for ARS	: 8.41MCM
5	No. of Check dams (CD's) / Mini percolation tanks (MPT's) recommended	: 269 (CDs:140+PTs129)
6	Total Cost of ARS	: 19.9 Cr
7	Expected Ground Water Recharge through ARS	: 4.2 MCM
8	Water Conservation Measures (WCM) (Farm Ponds)	: 0
9	Total Cost of WCM	: 0 Cr
10	<b>Mission Kakatiya-</b> Repair & Renovation of existing Tanks	: 0.46MCM (18 tanks)
11	Proposed tanks to be taken up in phased manner	21 tanks (@0.01 MCM)
12	Expected GW Recharge under <b>Mission Kakatiya</b>	: 0.23MCM(50 % of capacity)
13	<b>Mission Bhagiratha</b> (Providing drinking water needs to the entire population) @ 100 lpcd/person (rural) and 135 (urban) from surface water source from outside the mandal area ( <b>From River Krishna</b> )	: 2.08 MCM/year
14	Net Saving of Ground water from <b>Mission Bhagiratha</b>	: 1.7 MCM/year
<b>(b)</b>	<b>DEMAND SIDE INTERVENTION</b>	
15	Existing Micro Irrigation Intervention & Gross area irrigated	: 53 Micro irrigation units/34.22 ha
16	Proposed Micro Irrigation	: 0 ha in 0Villages @ 100 ha in each NC village.
17	Cost for micro-irrigation	: 0 Cr@ 0.60 lakhs per ha.
18	Expected ground water saving from micro-irrigation	: 0 MCM of water is expected to be conserved.
<b>(c)</b>	<b>REGULATION &amp; COMMUNITY INTERVENTIONS</b>	
19	Regulation and control	: <ul style="list-style-type: none"> <li>• WALTA-Act to be implemented in true spirit.</li> <li>• Regulation of power supply in 2 spells @ 4 hours/spell to increase bore well/GW sustainability.</li> </ul>

			<ul style="list-style-type: none"> <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> </ul>
(d)	<b>OTHER INTERVENTIONS SUGGESTED</b>	:	<ul style="list-style-type: none"> <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 practices by the Govt.</li> </ul>
(e)	<b>EXPECTED RESULTS AND OUTCOME</b>		
20	Total Cost of Interventions (Excluding Mission Kaktiya and Bhagiratha)	:	19.9 Cr
21	Likely benefit of Interventions	:	~6.13 MCM ground water can be saved from the above interventions. The stage of Ground water development may likely to be come down by 6 % (from 52 % to 46%).



**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	ETHONDA	16	3.2	0.5	9	9	135	0.23
2	GANNAVARAM	16	0.4	0.1	1	1	15	0.03
3	MIRZAPUR	21	0.5	0.1	0	1	10	0.03
4	RAIKUR	11	0.4	0.1	1	1	15	0.06
5	SOMPUR	21	1.7	0.2	2	3	40	0.09
6	TAKLI	21	3.1	0.3	5	6	85	0.17
	<b>Priority-1(Total)</b>				18	21	300	0.60
	<b>Priority-2</b>							
1	ADKAS PALLE	7	0.3	0.1	2	1	20	0.05
2	AMRAPUR	16	0.6	0.1	2	1	20	0.04
3	BAREEDPUR	13	0.4	0.1	1	0	5	0.03
4	BASWAPUR	7	0.2	0.1	0	0	0	0.03
5	CHIKATPALLE	15	0.6	0.1	2	2	30	0.07
6	DOMALEDGI	21	1.7	0.2	4	3	50	0.10
7	EKLASPUR	20	2.5	0.3	5	3	55	0.14
8	FAKEERABAD	16	0.2	0.0	1	0	5	0.02
9	HANGERGA	19	2.6	0.3	5	6	85	0.16
10	HEGDOLI	21	3.0	0.3	5	6	85	0.16
11	HUMNAPUR	20	1.2	0.1	2	3	40	0.07
12	JALLAPALLE	20	2.0	0.2	3	2	35	0.11
13	KALLUR	19	3.4	0.4	8	7	110	0.21
14	KAREGOAN	20	2.4	0.3	4	5	70	0.13
15	KODCHERLA	19	3.0	0.4	7	6	95	0.19
16	KOLLUR	21	1.6	0.2	3	3	45	0.09
17	KOTGIRI	21	5.6	0.6	12	10	160	0.32
18	KOTHAPALLE	18	2.1	0.3	5	0	25	0.14
19	LINGAMPALLE	9	0.6	0.2	3	3	45	0.08
20	LINGAPUR	12	0.9	0.2	2	1	20	0.09
21	MALKAPUR	21	0.5	0.1	0	1	10	0.03
22	POTANGAL	18	4.7	0.6	11	11	165	0.30
23	RAMANPALLE	13	1.1	0.2	4	3	50	0.10
24	RAMPUR	17	1.7	0.2	4	2	40	0.11
25	ROZAPUR	21	0.2	0.0	0	0	0	0.01
26	SAILAMPUR	14	1.0	0.2	3	1	25	0.08
27	SIDDAPUR	12	0.5	0.1	1	2	25	0.04
28	SUDLAM	13	2.4	0.4	8	8	120	0.21
29	SUNKINI	21	4.1	0.5	9	9	135	0.23
30	TIRMALAPUR	20	1.3	0.2	2	3	40	0.08

31	VALLABHAPUR	14	0.7	0.1	1	2	25	0.06
32	YADGARPUR	21	0.8	0.1	1	2	25	0.04
33	ZAINAPUR	21	0.9	0.1	2	2	30	0.05
	<b>Priority-2 (Total)</b>				<b>122</b>	<b>108</b>	<b>1690</b>	<b>3.60</b>
	<b>Total (P-1&amp;P-2)</b>				<b>140</b>	<b>129</b>	<b>1990</b>	<b>4.20</b>

