



## केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण

विभाग, जल शक्ति मंत्रालय

भारत सरकार

### **Central Ground Water Board**

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

## **AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES**

**PALACODE FIRKA, DHARMAPURI**

**DISTRICT, TAMIL NADU**

दक्षिण पूर्वी तटीय क्षेत्र, चेन्नई

South Eastern Coastal Region, Chennai

**REPORT ON  
AQUIFER MAPS & MANAGEMENT PLANS  
PALACODE FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE**

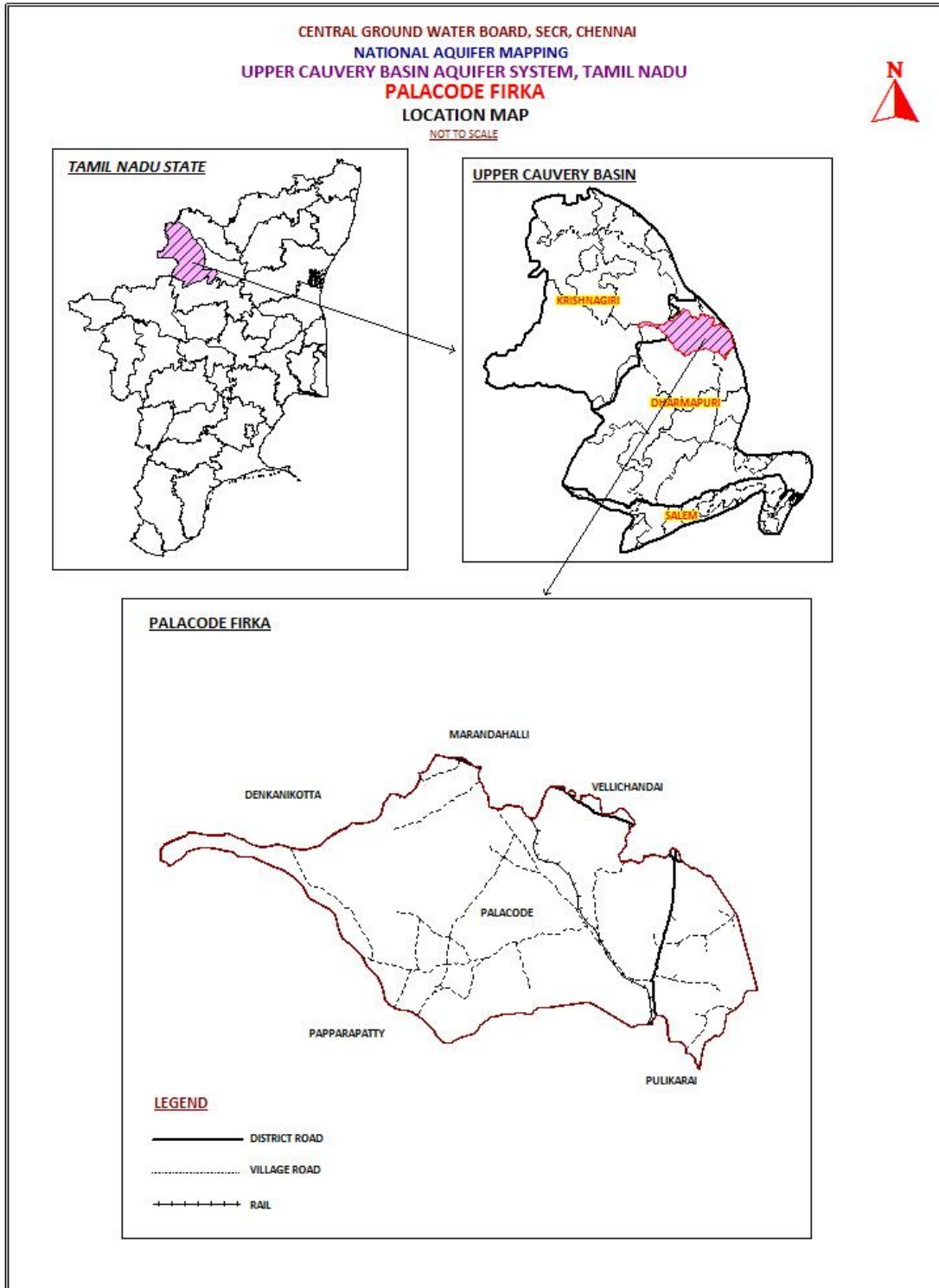
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Scientist-B

<b>SALIENT FEATURES</b>		
1	Name of the Firka/Area  Revenue Division  Location <b>(Fig-1)</b>	:    <b>PALACODE / 190.15 sq.km</b>  <b>PALACODE TALUK</b>  N 77° 52' 16" to 78°09' 28" E 12°15' 52 " to 12° 23'48"
2	No. of Revenue villages	: <b>21</b>
3	District/State	: <b>Dharmapuri / Tamilnadu</b>
4	Population (2011 Census)	: 69082
5	Normal Rainfall (mm)	: 965 Monsoon: 766 (79%) Non-Monsoon: 199 (21%)
6	Agriculture (2012-13)(Ha)	: 1. Gross irrigated area: 4071.14 2. Paddy: 397.01 3. Sugar cane: 2019.24 4. Banana:25.66 5. Other crops: 1629.24 6. Ground water: 3573.55 7. Surface water (Tanks): 500.19
7	Existing and future water demands	Domestic & Industrial • Existing: 89.34 • Future (year 2025): 101.54 Irrigation • Existing: 3108.45
8	Water level behaviour (m bgl)	: Pre-monsoon: 7.40 -12.50 Post-monsoon: 4.12 – 10.40
<b>AQUIFER DISPOSITION</b>		
9	No of Aquifers	: 2
10	3-D aquifer disposition and basic characteristics of each aquifer  <b>Fig.2: 3 D map and 2D - Sections</b>	: <b>Geology – Charnockites/Gneisses</b> <b>Aquifer-1 (Weathered Zone):</b> Thickness varies from 9 - 20 m Transmissivity(T): 3 - 45 m <sup>2</sup> /day Specific Yield (Sy): 0.01to 0.015 <b>Aquifer-2 (Fractured Zone):</b> Depth of fracturing varies from 20-150 m. Transmissivity (T): 10 -75 m <sup>2</sup> /day Specific storage (S): 0.00001- 0.0002 Cumulative yield (Aquifer 1 and Aquifer 2)

			0.1 to 2.5 lps.
11	Ground water Issues	:	Sustainability of wells (1-2 hrs).
12	Ground water resource availability and extraction-2012-13 (MCM)	:	<ul style="list-style-type: none"> <li>• Net GW availability : 22.55</li> <li>• Gross Ground Water draft for Irrigation: 31.09</li> <li>• Gross Ground water draft for domestic and industrial supply: 0.89</li> <li>• Gross GW draft: 31.98</li> <li>• Stage of ground water development: 142 %</li> <li>• Category: Over Exploited</li> </ul>
13	Ground water extraction	:	<p>Ground water extraction structures: 6909 no's</p> <ul style="list-style-type: none"> <li>• Bore wells: 1788 no's</li> <li>• Dug wells: 5121 no's</li> </ul>
14	Chemical quality of ground water, contamination and its suitability	:	<p>EC (<math>\mu</math>S/cm) min: 898 and max: 2650  NO<sub>3</sub> (mg/L): Min: 25 and max 100  F (mg/L): Min 0.65 and Max:2.3</p> <p>All chemical constituents are within the permissible limit of BIS drinking water standards (IS: 10500:2012) except Nitrate .and Fl are having High values.</p>
15	<b>Ground Water Recharge Scenario</b>	:	<b>MCM</b>
15.1	Recharge from Rainfall (Monsoon)	:	9.02
15.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	11.46
15.3	Recharge from rainfall (Non-Monsoon)	:	1.95
15.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	2.61
15.5	Total annual GW Recharge	:	25.05
15.6	Natural Discharge	:	2.50
15.7	Existing Minor Irrigation Tanks (Area in ha)	:	161.97
15.8	Storage from existing tanks (MCM)	:	1.62
16	Storage from existing AR Structures (MCM)	:	4.26

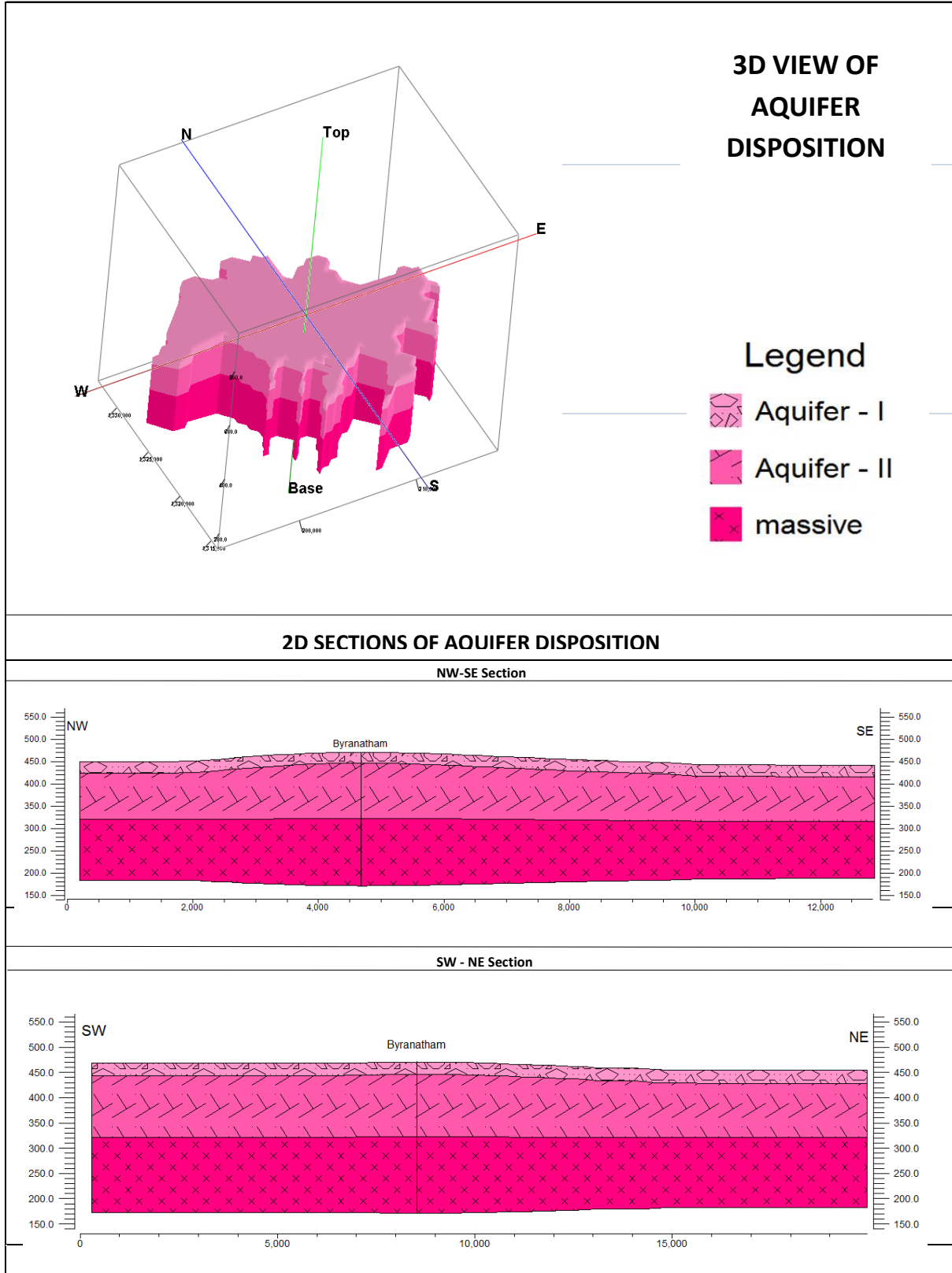
**Fig-1: Location Map of Palacode Firka.**

Fig -



**Fig-2: 3 D map and 2D - Sections.**

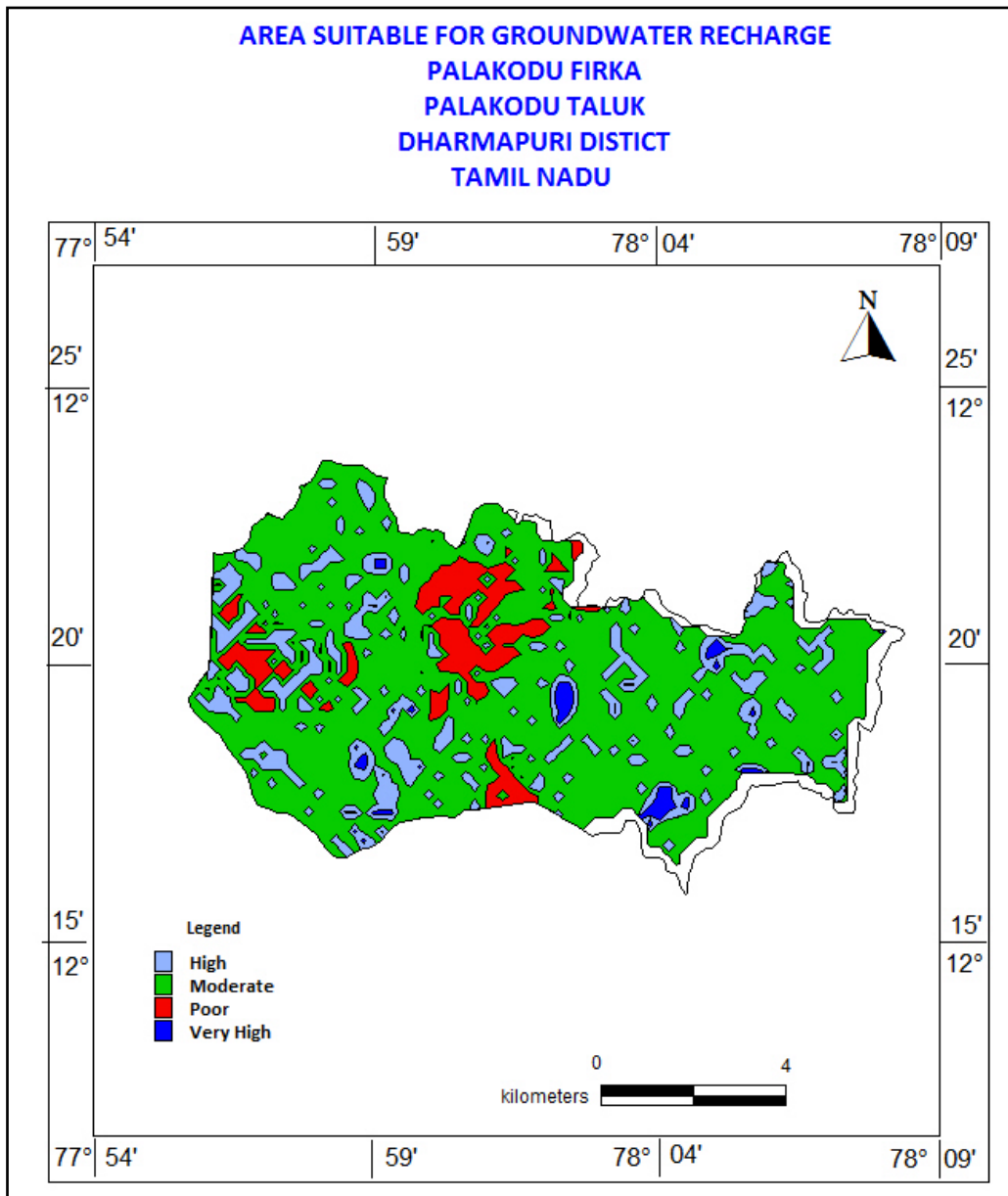
**Fig:2 3D and 2D View of Aquifer Disposition, Bommidi Firka, Dharmapuri District**



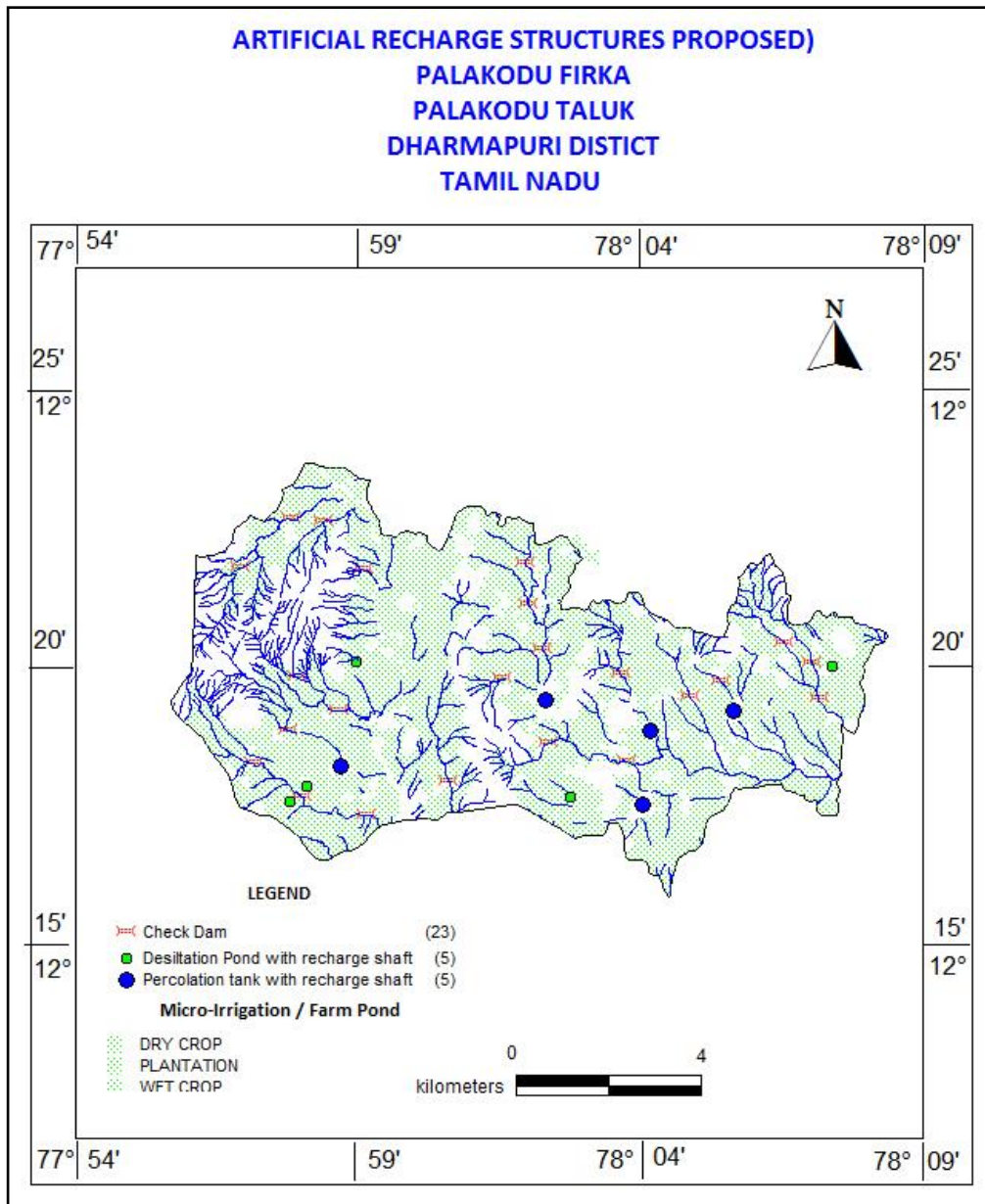
**AQUIFER MANAGEMENT PLAN  
PALACODE FIRKA,  
DHARMAPURI DISTRICT, TAMILNADU STATE**

	<b>WATER RESOURCE AVAILABILITY (MCM)</b>		
1	Ground water (as per GEC 2013)	:	22.55
2	Surface Water (as per 2012-13irrigation data)	:	5.88
3	Total water availability	:	28.43
	<b>Ground Water Resource Enhancement (MCM)</b>		
4	Uncommitted surface runoff available for the Firka	:	20.10
5	Total volume of weathered zone	:	20.99
6	Total volume of aquifer available for recharge, considering 3m below Ground Level.		39.35
(a)	<b>Supply side Interventions</b>		
<b>ARTIFICAIL RECHARGE/CONSERVATION MEASURES</b>			
7	Structures Proposed (nos)  Masonry Check dam Revival, repair of pond, tanks with recharge haft Percolation Pond with Recharge Shaft Farm Pond:	:	Based on spatial integration : Fig-3 Area suitable for GW recharge : Fig-4 Location of ARS : 23 (Table -1) 05 + 05 (Table -2) 05 + )5 (Table -3) 150 units
8	Excepted total groundwater recharge (MCM)	:	4.28
9	Tentative total cost of the project (Rs. In Cr)		7.947
10	Irrigation Potential in Ha		0.733sq.km
(b)	<b>Demand side Interventions</b>		
11	Existing total Groundwater Draft (MCM)	:	31.98
12	Proposed Micro Irrigation in Ha	:	150
13	Cost for micro-irrigation (Rs in Lakhs)	:	90
14	Expected ground water saving from micro-irrigation (MCM)	:	0.45
	<b>REGULATION &amp; COMMUNITY INTERVENTIONS</b>		
15	Regulation and control	:	Systematic monitoring in groundwater contaminated area particularly Fluoride. Planning of alternate source for drinking water purposes.  The systematic development of groundwater is suggested to sustain the available and recharged groundwater.

**Fig-3 Area suitable for GW recharge**



**Fig-4 Location of ARS in Palacode Firka**





**Table 1. Location of proposed Check dam**

S. No.	Longitude	Latitude	Structures
1	78.13	12.34	Check Dam
2	78.14	12.34	Check Dam
3	78.14	12.33	Check Dam
4	78.11	12.33	Check Dam
5	78.08	12.33	Check Dam
6	78.05	12.35	Check Dam
7	78.05	12.37	Check Dam
8	78.06	12.34	Check Dam
9	78.10	12.33	Check Dam
10	77.96	12.36	Check Dam
11	77.98	12.38	Check Dam
12	77.98	12.33	Check Dam
13	77.99	12.38	Check Dam
14	78.00	12.36	Check Dam
15	77.97	12.31	Check Dam
16	77.98	12.30	Check Dam
17	78.00	12.29	Check Dam
18	78.03	12.30	Check Dam
19	77.99	12.32	Check Dam
20	77.98	12.32	Check Dam
21	78.04	12.33	Check Dam
22	78.08	12.31	Check Dam
23	78.06	12.31	Check Dam

**Table 2. Location of proposed de-siltation of pond/tanks with recharge shaft**

S. No.	Longitude	Latitude	Structure	Action
1	78.00	12.34	Tank / Reservoir	De-siltation And Recharge Shaft
2	77.98	12.29	Tank / Reservoir	De-siltation And Recharge Shaft
3	77.98	12.30	Tank / Reservoir	De-siltation And Recharge Shaft
4	78.06	12.30	Tank / Reservoir	De-siltation And Recharge Shaft
5	78.14	12.34	Tank / Reservoir	De-siltation And Recharge Shaft

**Table 3. Location of proposed Percolation pond/tanks with recharge shaft**

S. No.	Longitude	Latitude	Structure	Action
1	77.99	12.31	Tank / Reservoir	Percolation Tank With Shaft
2	78.06	12.33	Tank / Reservoir	Percolation Tank With Shaft
3	78.09	12.32	Tank / Reservoir	Percolation Tank With Shaft
4	78.11	12.32	Tank / Reservoir	Percolation Tank With Shaft
5	78.09	12.29	Tank / Reservoir	Percolation Tank With Shaft