



## 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 VELLICHANDAI FIRKA, DHARMAPURI DISTRICT, TAMIL NADU**

दक्षिण पूर्वी तटीय क्षेत्र, चेन्नई

South Eastern Coastal Region, Chennai

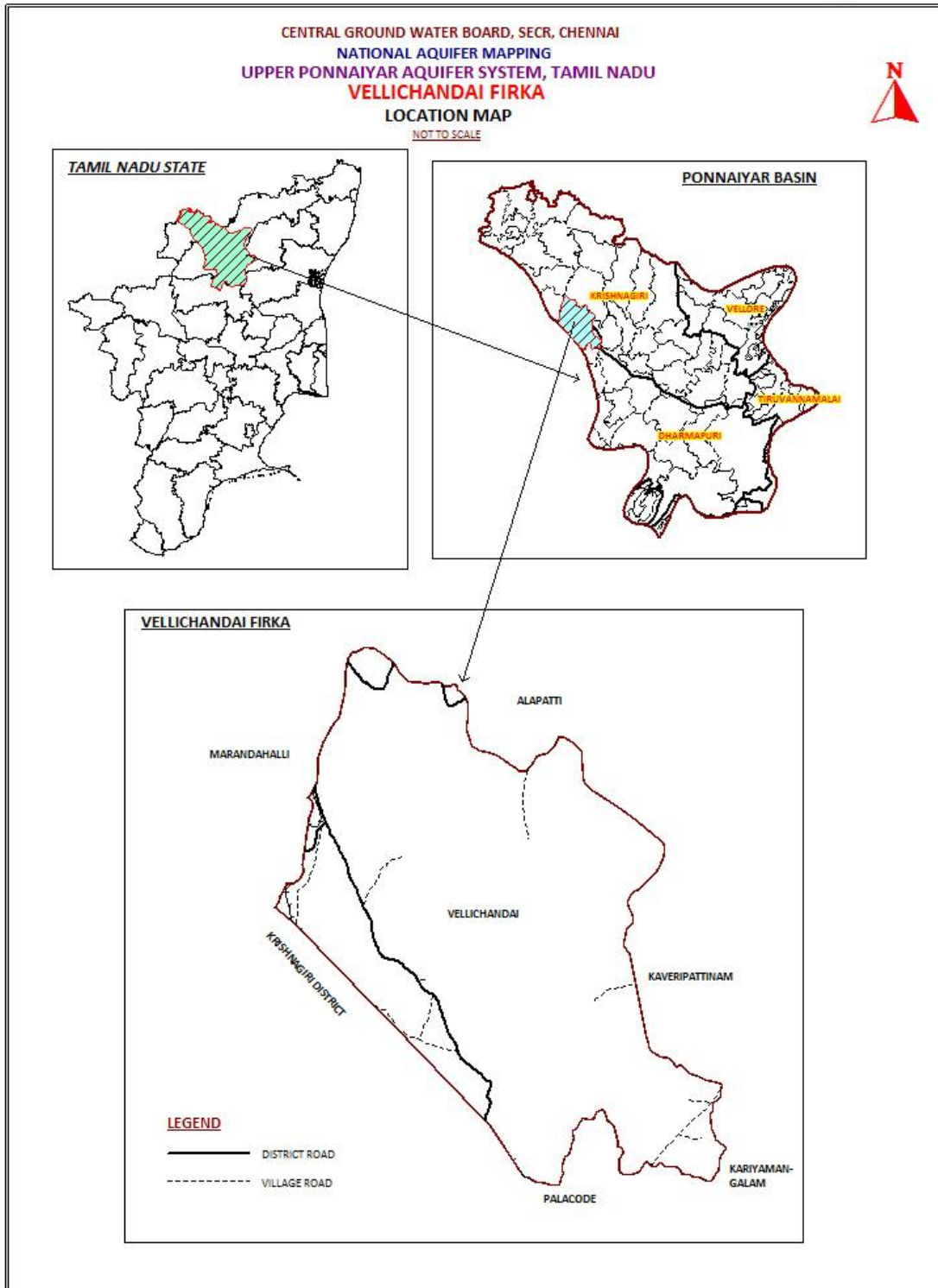
**REPORT ON  
AQUIFER MAPS & MANAGEMENT PLANS  
VELLICHANDAI FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE**

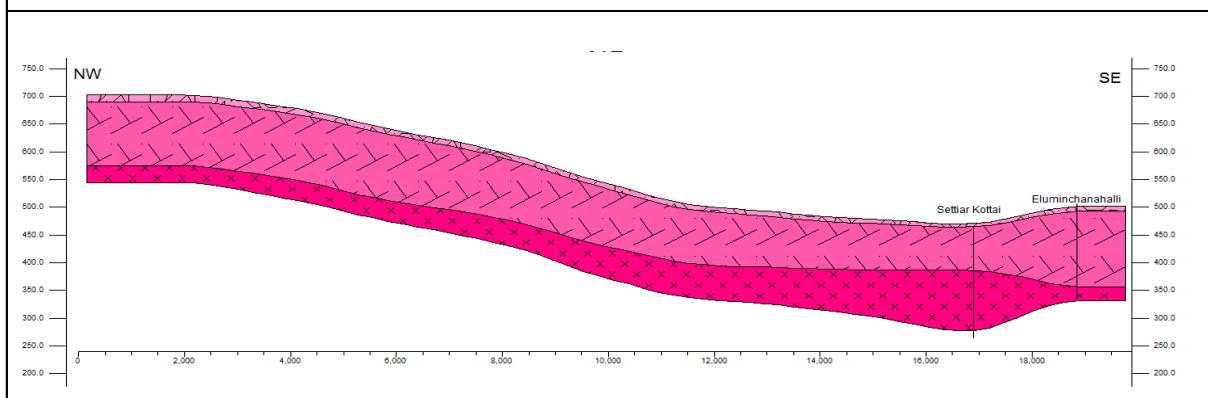
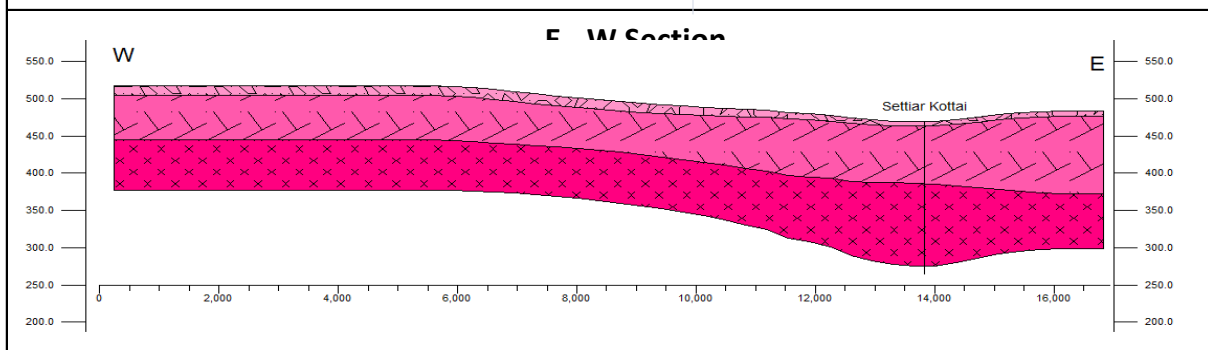
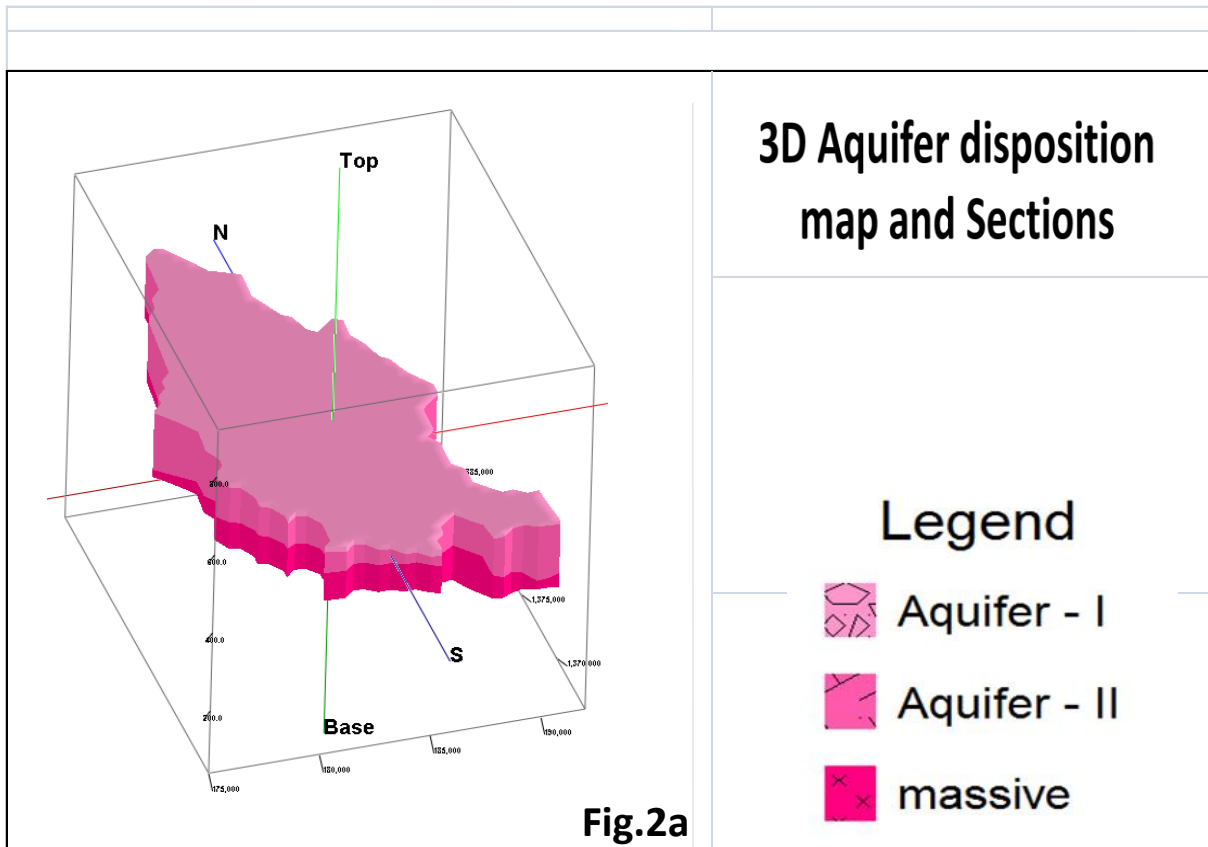
<b>SALIENT FEATURES</b>			
1	Name of the Firka/Area Revenue Division Location <b>(Fig-1)</b>	:	<b>VELLICHANDAI / 160.41 (Sq. Km.) Palacode Taluk N 78° 00' 51" to 78° 09' 42" &amp; E 12° 20' 36" to 12° 31' 09"</b>
2	No. of Revenue villages	:	<b>14</b>
3	District/State	:	<b>Dharmapuri / Tamilnadu</b>
4	Population (2011 Census)	:	63347
5	Normal Rainfall (mm) (2013-2014)	:	766.24  Monsoon: 400.20  Non-Monsoon: 199.25
6	Agriculture (2013-14)(Area in Ha)	:	1. Paddy: 679.67 2. Sugarcane: 655.13 3. Banana: 14.32 4. Other crops: 4036 5. Irrigation by Groundwater: 6363 6. Irrigation using Surface water (Tanks): 16.91
7	Existing and future water demands (HaM)		Domestic & Industrial • Existing: 89.36 • Future (year 2025): 101.56 Irrigation (Existing): 3836.10
8	Water level behaviour (m bgl)	:	Ave. Pre-monsoon: 4.8138 Ave. Post-monsoon: 3.4098
<b>AQUIFER DISPOSITION</b>		:	
9	No of Aquifers	:	2
10	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> varies from 5- 20.5 m Transmissivity(T): 6-84.9 m <sup>2</sup> /day Specific Yield (Sy): 0.12 to 2 % <b>Aquifer-2 (Fractured Zone):</b> Depth of fracturing varies from 28-88 m. Transmissivity (T): 10-117 m <sup>2</sup> /day Specific storage (S): 0.00001-0.02 Cumulative yield (Aq1 and Aq 2) (lps): 0.2 to 1.5

11	Ground water Issues	:	<ul style="list-style-type: none"> <li>• Geogenic contamination by Fluoride.</li> <li>• Sustainability of wells (1-2 hrs).</li> </ul>
12	Ground water resource availability and extraction (MCM)	:	<ul style="list-style-type: none"> <li>• Net GW availability : 19.00</li> <li>• Gross Ground Water draft for Irrigation: 38.36</li> <li>• Gross Ground water draft for domestic and industrial supply: 0.893</li> <li>• Gross GW draft: 39.25</li> <li>• Stage of ground water development: 215 %</li> <li>• Category: Over Exploited</li> </ul>
13	Ground water extraction	:	<p>Ground water extraction structures: 5370 no's</p> <ul style="list-style-type: none"> <li>• Bore wells: 746 no's</li> <li>• Dug wells: 6973 no's</li> </ul>
14	Chemical quality of ground water, contamination and its suitability	:	<p>EC (<math>\mu\text{S}/\text{cm}</math>) min: 700 and max:1500  NO<sub>3</sub> (mg/L): Min:30 and max 120  F (mg/L): Min 0.25 and Max:1.58</p>
15	<b>Ground Water Recharge Scenario</b>	:	<b>MCM</b>
15.1	Recharge from Rainfall (Monsoon)	:	9.25
15.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	6.99
15.3	Recharge from rainfall (Non-Monsoon)	:	2.00
15.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	2.88
15.5	Total annual GW Recharge	:	21.11
15.6	Natural Discharge	:	2.11
15.7	Improving Water Efficiency /Saving (Micro irrigation system for 100 ha)		0.7 MCM
15.8	Excepted groundwater recharge		1.217 MCM
15.9	Excepted total groundwater recharge/saving		1.917 MCM
16.0	Expected raise in water level by recharging/saving		0.307m

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

Fig -





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

**GW MANAGEMENT STRATAGIES VELLICHANDAI FIRKA, DHARMAPURI  
DISTRICT, TAMILNADU STATE**

<b>A WATER RESOURCE AVAILABILITY</b>		
	• Ground water (as per GEC 2011)	: 23.45 MCM
	• Surface Water (as per 2013-14 irrigation data)	: 2.50 MCM
	• Total water availability	: 25.95 MCM
<b>(a)</b>	<b>Ground Water Resource Enhancement (Table-1)</b>	
	<b>Supply side Interventions</b>	
1	Uncommitted surface runoff available for the Firka	: 16.80 MCM
2	Total volume of weathered zone	: 1190 MCM
3	Total volume of aquifer available for recharge. Considering 5m depths.	744 MCM
<b>ARTIFICAIL RECHARGE/CONSERVATION MEASURES</b>		
6	No. of Structures Proposed (tentative) Masonry Check dam Percolation Pond with recharge shaft Revival, repair of pond, tanks with recharge shaft Recharge shaft	: 05 07 07 08
7	Improving Water Efficiency /Saving (Micro irrigation system for 100 ha )	: 0.7 MCM
8	Excepted groundwater recharge	: 1.217MCM
9	Excepted total groundwater recharge/saving	: 1.917 MCM
	Tentative total cost of the project	Rs. 5.34 Cr
	Expected raise in water level by recharging/saving	0.307m
<b>(b)</b>	<b>DEMAND SIDE INTERVENTION</b>	
16	Existing total Groundwater Draft	: 38.36
17	Proposed Micro Irrigation	: 100 ha
18	Cost for micro-irrigation	: 60 lakhs @ 0.60 lakhs per ha.
19	Expected ground water saving from micro-irrigation	: 0.7 MCM of water is expected to be conserved.
<b>(c)</b>	<b>REGULATION &amp; COMMUNITY INTERVENTIONS</b>	
20	Regulation and control	: Periodical reassessments of groundwater potential on a scientific basis, considering quality of water available Regulation of exploitation of groundwater sources so that extraction does not exceed recharge.

**Table 1: location of proposed 60 Check dam in the firka**

S. No.	LONGITUDE	LATITUDE	STRUCTURES
1	78.16	12.32	Check dam
2	78.17	12.29	Check dam
3	78.19	12.28	Check dam
4	78.19	12.26	Check dam
5	78.22	12.26	Check dam

**Table 2: location of proposed de-siltation of pond/tanks with recharge shaft**

S. No.	Longitude	Latitude	Structure	Action
1	78.17	12.31	Tank / Reservoir	De-siltation And Recharge Shaft
2	78.18	12.32	Tank / Reservoir	De-siltation And Recharge Shaft
3	78.21	12.31	Tank / Reservoir	De-siltation And Recharge Shaft
4	78.19	12.24	Tank / Reservoir	De-siltation And Recharge Shaft
5	78.19	12.22	Tank / Reservoir	De-siltation And Recharge Shaft
6	78.21	12.23	Tank / Reservoir	De-siltation And Recharge Shaft
7	78.22	12.22	Tank / Reservoir	De-siltation And Recharge Shaft
8	78.23	12.25	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	78.24	12.27	Tank / Reservoir	Percolation Tank With Shaft
2	78.24	12.25	Tank / Reservoir	Percolation Tank With Shaft
3	78.24	12.24	Tank / Reservoir	Percolation Tank With Shaft
4	78.20	12.21	Tank / Reservoir	Percolation Tank With Shaft
5	78.21	12.27	Tank / Reservoir	Percolation Tank With Shaft
6	78.17	12.30	Tank / Reservoir	Percolation Tank With Shaft
7	78.23	12.23	Tank / Reservoir	Percolation Tank With Shaft

