For official use

Technical Report Series

DISTRICT GROUNDWATER BROCHURE
DHARMAPURI DISTRICT, TAMIL NADU

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Government of India
Ministry of Water Resources

Central Ground Water Board

South Eastern Coastal Region
Chennai

OCTOBER 2009

DISTRICT GROUND WATER BROCHURE (DHARMAPURI DISTRICT)

DISTRICT AT A GLANCE (DHARMAPURI)

S.NO	ITEMS	STATISTICS	
1.	**GENERAL INFORMATION**		
	i. Geographical area (Sq. km)	**4452.64**	
	ii. Administrative Divisions as on 31-3-2007 Number of Taluks Number of Blocks Number of Villages	 4 8 476	
	iii. Population (as on 2001 Censes) Total Population Male Female	 1286552 666418 620134	
	iv. Normal Annual Rainfall (mm)	760	
2.	**GEOMORPHOLOGY**		
	i. Major physiographic Units	(i). Mysore Plateau (ii). Shevaroy Hills	
	ii. Major Drainages	Cauvery & Ponnaiyar.	
3.	**LAND USE (Sq. km) during 2005-06**		
	i. Forest area ii. Net area sown iii. Barren & Uncultivable waste	163.82 219.01 17.16	
4.	**MAJOR SOIL TYPES**	1.Block soil 2.Red loamy soil 3 Loamy soil. 4. Sandy soil 5. Clayey soil.	
5.	**AREA UNDER PRINCIPAL CROPS (AS ON 2005-2006)**	1.Groundnut -7493 Ha 16% 2.Paddy – 64284 Ha 14% 3.Ragi – 5403 Ha 12% 4.Jowar – 1011Ha < 5 %	
6.	**IRIGATION BY DIFFERENT SOURCES (During 2005-06)**	**Number**	**Area irrigated (Ha)**
	i. Dug wells	75673	51301
	ii. Tube wells	727	2056
	iii. Tanks	926	6482
	iv. Canals	85	6844
	vi. Net irrigated area	66690 ha	
	vii. Gross irrigated area	78381 ha	
7.	**NUMBERS OF GROUND WATER MONITORING WELLS OF CGWB (AS ON 31.03.2007)**		
	i. No of dug wells	30	
	ii. No of piezometers	22	
8.	**PREDOMINANT GEOLOGICAL FORMATIONS**	River Alluvium, Colluvium, Granites, Granite and Hornblende Gneisses and Charnockites.	
9.	**HYDROGEOLOGY**		
	i. Major water bearing formations	Crystalline rocks, Recent alluvial deposits	

	ii. Pre- monsoon depth to water level (May 2006)	2.66 – 20.06	
	iii. Pre- monsoon depth to water level (Jan'2007)	1.19 – 14.57	
	iv. Long term water level trend in 10 years (1998-2007) in m/yr	**Annual**	
		Rise (m/year)	**Fall (m/year)**
		Min : 0.1119 Max : 0.5744	Min : 0.0417 Max :0.6789
10.	**GROUND WATER EXPLORATION BY CGWB (As on 31-03-2007)**		
	i. Number of Exploratory wells ii. Number of Observation wells iii. Number of Piezometers under Hydrology Project.	12 11 22	
	iv. Depth range(m)	36 – 200	
	v. Discharge(lps)	1.6 – 12	
	vi. Storativity (S)	$5.693 \times 10^{-3} – 1.42 \times 10^{-2}$	
	vii. Transmissivity (m2/day)	10 – 300	
11.	**GROUND WATER QUALITY AS ON MAY 2006**		
	i. Presence of chemical constituents more than permissible limit	TH as $CaCO_3$, NO_3 and F	
	ii. Type of water	Ca-Cl , Ca-HCO_3	
12.	**DYNAMIC GROUND WATER RESOURCES (as on 31.03.2004) in MCM**		
	i. Net Groundwater Availability	496.62	
	ii. Total Annul Ground Water Draft for all purposes	737.69	
	iii. Projected demand for Domestic and Industrial Uses up to 2029	20.00	
	iv. Stage of Ground Water Development	149%	
13.	**AWARENESS AND TRAINING ACTIVITY**		
	i. Mass Awareness Programmes Organized		
	Year	1998	
	Place	Madam	
	No of Participants	200	
	ii. Water Management Training Organized	NIL	
	Date		
	Place		
	No of Participants		
14.	**EFFORTS OF ARTIFICIAL RECHARGE & RAINWATER HARVESTING**	Technical Guidance were provided as when sought	
15.	**GROUND WATER CONTROL AND REGULATION**		
	i. Number of Over Exploited Blocks	7	
	ii. Number of Critical Blocks	1	
	ii. Number of Blocks Notified	**Nil**	
16.	**MAJOR GROUND WATER PROBLEMS AND ISSUES.**	1. Ground water in phreatic aquifers in general, is slightly alkaline in nature. 2. TH as $CaCO_3$ and NO_3 concentration are fond in more than permissible limit at select places in the district. 3. Fluoride is in excess in number of places 4. The entire district is having water scarcity and out of eight blocks, seven are over exploited and one is critical.	

1.0 INTRODUCTION

1.1 Administrative Details

Dharmapuri district is divided into 4 taluks. The taluks are further divided into 8 blocks **(Plate-I),** which further divided into 476 villages.

Table : 1.1 Administrative Set-up of Dharmapuri District

S.No.	Taluk	Area (Sq.km)	No.of Villages	Block	No.of Villages
1	Dharmapuri	788.87	62	Dharmapuri	31
				Nallampalli	31
2	Harur	975.36	235	Harur	152
				Morappur	83
3	Palacode	733.36	54	Palacode	54
4	Pappireddipatti	835.29	86	Papireddipatti	46
5	Pennagaram	1119.76	39	Karimangalam	40
				Pennagaram	39
Total		**4452.64**	**476**		**476**

1.2 Basin and sub-basin

The district is part of the composite east flowing river basin "Between Cauavery and Ponnaiyar as per the Irrigation Atlas of India.

1.3 Drainage

Dharmapuri district is drained by Cauvery and Ponnaiyar rivers and their tributaries. Cauvery river flows along the south western boundary of the district. It flows in an easterly direction up to Bellgundla and then takes a more or less southerly course till it reaches the Stanley Reservoir. The Doddahalla and the Chinnar R. are important tributaries of Cauvery river in the district.

Ponnaiyar is the major river draining the district and is ephemeral in nature. It originates from Nandhi hills in Karnataka, enters Tamil Nadu west of Bagalur and flows almost in a south easterly direction till it reaches Daddampatti from where it takes an easterly course. Pambar, Vaniyar and Kallar are the important tributaries of Ponnaiyar draining the eastern part of the district whereas the Chinnar and Markandeya Nadhi drain the northern part of the district.

1.4 Irrigation Practices

The nine-fold lands use classification for the district is given below.(2005-06)

S.No	Classification	Area (Ha)
1	Forests	164177
2	Barren & Uncultivable Lands	19648
3	Land put to non agricultural uses	51248

S.No	Classification	Area (Ha)
4	Cultivable Waste	5364
5	Permanent Pastures & other grazing lands	6209
6	Groves not included in the area sown	2894
7	Current Fallows	31464
	Other Fallow Lands	5720
9	Net Area sown	163053
	Total	**449777**

(Source: Department of Economics & Statistics, Govt. of Tamil Nadu)

The chief irrigation sources in the area are the Canals, tanks, wells and bore wells and other sources. Irrigation is highest in Harur, Morappur and Karimangalam block followed by Palacode, Papireddipatti, Nallampalli, Dharmapuri, and Pennagaram blocks. The block wise and source wise net area irrigated (Ha) (2005-06 is given below).

S. No	Block	Net area irrigated by					Total Net Area irrigated
		Canals	Tanks	Tube/ Bore wells	Ordinary wells	Other Sources	
1	Dharmapuri	0	805	50	3928	0	4783
2	Nallampalli	134	639	51	4539	0	5363
3	Harur	830	1238	574	12767	0	15409
4	Morappur	1097	525	195	9019	0	10836
5	Palacode	1316	1122	405	6035	0	8878
6	Papireddipatti	2473	988	401	3918	0	7780
7	Karimangalam	884	698	358	7114	0	9054
8	Pennagaram	110	467	22	3981	7	4587
	Total	**6844**	**6482**	**2056**	**51301**	**7**	**66690**

(Source: Department of Economics & Statistics, Govt. of Tamil Nadu)

1.5 Studies /Activities carried out by CGWB

Ground water exploration for delineation of deeper fractured aquifers by drilling of exploratory wells was taken up by Central Ground Water Board during 1988 – 91. A total of 12 exploratory wells and 11 observation wells were drilled for this purpose in the district in the depth range of 105 to 300 m bgl.

Geophysical investigations for assessing the geo-electric characteristics of sub-surface litho-units were carried out in parts of the district during 1973-75, Remote sensing studies for delineation of areas suitable for ground water development and artificial recharge were carried out in Vaniar watershed comprising parts of Harur and Uthangarai taluks during 2001 – 02.

Monitoring of ground water levels and water quality in the district is being carried out by Central Ground Water Board since 1972 through a network of National Hydrograph Stations. At present, 32 such stations are being monitored 4 times a year.

The ground water monitoring network has been expanded through the construction of 29 purpose-built observation wells, constructed as part of the World Bank aided Hydrology Project during 1997-98.

Systematic Hydrogeological studies were carried out in the district by CGWB during 1980-1983. Reappraisal hydrogeological surveys were taken up in different parts of the district during 84-85, 87-88 and 2000-01.

CGWB constructed Sub Surface Dykes as a part of experimental studies to determine the efficacy of the structure in water conservation techniques. 2 sub surface dykes were constructed during 1998-1999 under Central Sector Schemes in the district and the impact assessment studies have shown that they were found very effective in water conservation.

2.0 RAINFALL AND CLIMATE

The normal annual rainfall over the district varies from about 760mm to about 910mm. It is lowest around Rayakota (766.5mm) in the northern part of the district. It gradually increases towards south, west and east and attains a maximum around Denkanikota (912.0mm) in the northwestern part small area the northwestern part around Thally. It increases towards the north and reaches a maximum in the northern part around Rayakota

The district temperature is a gradual decrease of both day and night temperatures from June onwards till December, when the mean daily maximum is about 30°C and the mean daily minimum about 19°C in the plains. The day temperatures increase gradually from January onwards. The lowest temperature is reached in January when the mean daily minimum is about 19°C. April and May are the hottest months in the year with the mean daily maximum temperature of about 37°C and the mean daily minimum temperature of about 25°C in the plains. However, in the higher areas in Hosur, Thally and Krishnagiri taluks day and night temperatures are lower by about 2°C to 3°C. In these areas weather is comparatively pleasant round the year. In the lower plains weather is also pleasant except on individual days in May, June and July when weather becomes occasionally oppressive and sultry due to high temperatures (about 42°C).

The climate of the district on the whole is slightly humid. The driest months are February and March with average relative humidity of about 30% in the afternoons. During the rainy months the average humidity is appreciably below the saturation level.
Skies are generally clear or lightly clouded during the period January to about the middle of April. The cloudiness increases from the later half of April and from middle of June onwards when the skies are generally clouded till about the middle of November.

Winds are generally light to moderate in strength round the year. In open areas, winds blow from northeasterly to easterly directions during the period November to March and from southwesterly to westerly directions during the period May to September. April and October are the transition months. During March, winds are mainly from easterly directions, and in October, winds are mainly from southwest direction in the

morning and easterly direction in the afternoon. However, winds in the higher and sheltered places or valleys may differ very much.

3.0 GEOMORPHYLOGY AND SOIL TYPES

3.1 Geomorphology

Dharmapuri district forms part of the upland plateau region of Tamil Nadu with many hill ranges and undulating plains. The western part of the district between Pennagaram and Denkanikottai has hill ranges of Mysore Plateau with a chain of undulating hills. The southern boundary of the district is occupied by the Shevaroy hill ranges. The plains occupying the central, eastern and southern parts of the district have an average elevation of 488 m. above Mean Sea Level. The Plateau region along the western boundary and the northwestern part of the district has an average elevation of 914 m. above Mean Sea Level.

The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural Hills 2) Inselberg 3) pediments, 4) Buried pediments 5) Shallow Buried Pediments 6) Plateau, 7) Flood plain, and 8) Bazada Zone.

3.2 Soils

The soils of Dharmapuri district can be classified into i) Red Soil, ii) Red lateritic soil, (iii) Brown soil and iv) alluvial soil The soils are mostly in-situ in nature, lateritic, earthy and pale reddish in colour. They are derived from laterisation of gneisses. The soils derived from gneisses are mostly brownish. The thickness of soils in the mounts is almost negligible whereas in the valleys it is around 2 m.

4.0 GROUND WATER SCENARIO

4.1 Hydrogeology

The district is underlain by Archaean Crystalline formations with recent alluvial deposits of limited areal and vertical extents along major rivers. **(Plate-II)**. The important aquifer systems in the district are constituted by i) unconsolidated & semi-consolidated formations and (ii) weathered and fractured crystalline rocks.

In the areas underlain by crystalline rocks, occurrence of ground water is essentially limited to zone of weathering and fracturing. Generally the hard rock aquifers are heterogeneous in nature, which is indicated by the variations in lithology, structure and texture. Ground water occurs under phreatic condition in the weathered mantle and semi confined to confined condition in the fracture and fissured zones of these rocks. Thickness of weathered material varied widely from less than 1m bgl to more than 20m bgl.

The Alluvium with intervening crystalline outcrops are noticed as patches west of Dharmapuri, and Papireddipatti areas. The ground water occurs under water table to semi-confined conditions. The discharge ranges from 10 to 20 m^3/day.

The yield of large diameter wells in the district, tapping the weathered mantle of crystalline rocks ranges from 150-200 m^3/day and are able to sustain pumping for 2 to 4 hours per day. The yield of large diameter wells tested in crystalline rocks ranges from 150 to 200 m^3/day for drawdown of 1 to 3 m. The yield characteristics of wells vary considerably depending on the topographic set-up, litho logy and nature of weathering. The transmissivity of weathered formations computed from pumping test data using empirical methods range from 12 to 22 m^2/day. The specific capacity in the fissured formation ranges from 2.89 to 153.74 lpm/m/dd. In the porous formation the specific capacity values vary from 6.31 to 28.7 lpm/m/dd.

The yield of bore wells drilled down to a depth of 36 to 200 m bgl, by various state agencies mainly for domestic purposes. The discharge ranged from 2 to 33 lps. The yield of successful bore wells drilled down to a depth of 200 m bgl during the ground water exploration programme of Central Ground Water Board ranged from 1 to 12 lps. The aquifer and well parameters of the wells show wide variation, both in crystalline and sedimentary formations.

The depth to water level in the district varied between 5.27 and 16.70 m bgl during pre-monsoon **(Plate-III)** and varied between 2.47 and 11.32 m bgl during post monsoon **(Plate-IV).** The seasonal fluctuation shows a rise in water level, which ranges from 3.71 to 7.06 m bgl. The piezometric head varied between 2.66 to 20.06 m bgl (May 2006) during pre monsoon and 1.19 to 14.57 m bgl during post monsoon.

4.1.1 Long Term Fluctuation (1998-2007)

The long-term water level fluctuation for the period 1998-2007 indicates rise in water level in the area 0.0225 to 0.5744 m/year and fall in the range between 0.0600 to 0.6789 m/year.

4.1.2 Aquifer Parameters

The Transmissivity values in weathered, partly weathered and jointed rocks vary from 12 to 300 m^2/day and specific yield in this formation is less than 2% and the Transmissivity values ranged from 4 to 16 m^2/day. The specific yield varied formations is around 2% to 4%.

4.2 Ground Water Resources

The ground water resources have been computed jointly by Central Ground Water Board and State Ground & Surface Water Resources and Data Center (PWD, WRO, Government of Tamil Nadu) as on 31st March 2004. The salient features of the computations are furnished below. The computation of ground water resources available in the district has been done using GEC 1997 methodology.

Stage of Groundwater Development in Dharmapuri as on 31st March 2004 (in Ham)								
Block	**Net Groundwater Availability**	**Existing Gross Draft for Irrigation**	**Existing Gross Draft for Domestic and industrial water supply**	**Existing Gross Draft for all uses**	**Allocation for Domestic and Industrial Requirement supply up to next 25 years (2029)**	**Net groundwater Availability for future Irrigations Development**	**Stage of Groundwater Development**	**Categorization for Future groundwater development (Safe/Semi Critical/Critical/Over Exploited)**
	4	**5**	**6**	**7= 5+6**	**8**	**9 = 4-(6+8)**	**10 = (7/4)*100**	**6**
Dharmapuri	5434.10	6693.37	264.22	6957.60	277.39	-1536.66	128	Over Exploited
Harur	7366.46	9479.24	219.88	9699.12	230.84	-2343.61	132	Over Exploited
Karimangalam	4771.41	6465.42	274.20	6739.63	287.87	-1981.88	141	Over Exploited
Morappur	7047.62	12301.27	223.48	12524.75	234.62	-5488.27	178	Over Exploited
Nallampalli	5657.18	7162.10	297.73	7459.83	312.57	-1817.49	132	Over Exploited
Palacode	6207.44	9467.64	250.68	9718.32	263.17	-3523.37	157	Over Exploited
Pappireddipatti	7589.42	14950.55	161.75	15112.30	169.81	-7530.94	199	Over Exploited
Pennagaram	5588.80	5344.72	213.26	5557.98	223.89	20.20	99	Critical
	49662.43	**71864.29**	**1905.22**	**73769.51**	**2000.16**	**-24202.02**	**149**	

4.3 Ground Water Quality

The chemical characteristics of ground water in the phreatic zone in Dharmapuri district has been studied using the analytical data of ground water samples collected from Network Hydrograph Stations of Central Ground Water Board. The study of quality of ground water in deeper aquifers in the district has been attempted using the data collected from exploratory bore/tube wells constructed in the district.

Ground water in phreatic aquifers in Dharmapuri district in general, is colourless, odourless and slightly alkaline in nature. The specific electrical conductance of ground water in phreatic zone (in MicroSeimens at $25^{o}C$) during May 2006 was in the range of 320 to 6010 in the district. It is between 750 and 2250 µS/cm at $25^{o}C$ in the major part of the district. Conductance below 750 µS/cm have been observed in ground water in only one sample is Dharmapuri block Whereas Conductance exceeding 2250µS/cm have been observed in parts of Papireddipatti, Pennagaram and Morappur block

It is observed that the ground water is suitable for drinking and domestic uses in respect of all the constituents except total hardness and Nitrate in more than 90 percent of samples analysed. Total Hardness as $CaCO_3$ is observed in all samples have with in the excess of permissible limits in about 40 percent of samples analysed whereas Nitrate is found in excess of 45 mg/l in about 32 percent samples. The incidence of high total hardness is attributed to the composition of lithounits constituting the aquifers in the district, whereas the Nitrate pollution is most likely due to the use of pesticides and fertilizers for agriculture.

With regard to irrigation suitability based on specific electrical conductance and Sodium Adsorption Ratio (SAR), it is observed that ground water in the phreatic zone may cause high to very high salinity hazard and medium to high alkali hazard when used for irrigation. Proper soil management strategies are to be adopted in the major part of the district while suing ground water for irrigation.

4.4 Status of Ground Water Development

The estimation of groundwater resources for the district has shown that all block is under "Over Exploited" category. The shallow alluvial aquifers along Cauvery and Ponnaiyar rivers serve as an important source of drinking water irrigation development for Dharmapuri district. Dug wells are the most common ground water abstraction structures used for irrigation in the district. The yield of dug wells range from 150 to 200 m3/day in weathered crystalline rocks and 20 to 200 m3/day in Recent alluvial formations along major drainage courses.

5.0 Groundwater Management Strategy

5.1 Groundwater Development

The yields of dug wells in crystalline are improved at favorable locations by construction of extension bores, which are 20 to 40 m. deep. In recent years, a large number of bore wells have also been drilled by farmers for irrigation purposes.

The development of ground water for irrigation in the district is mainly through dug wells tapping the weathered residuum or recent alluvial deposits. Bore wells have also become popular as the source for irrigation in the district in recent years. Dug wells with extension bores wherever necessary is ideal for hard rock areas whereas large diameter dug wells with radials is suitable for alluvial areas.

The map showing the development prospects for the district is shown in (**Plate VI**).

5.2 Water Conservation and Artificial Recharge

The topography of Dharmapuri district, in general, is suited for construction of various artificial recharge structures such as percolation ponds, check dams and sub-surface dykes. However, detailed studies are necessary to formulate a comprehensive scheme for artificial recharge of phreatic ground water in the district in view of the variations in the geomorphic set-up and the complex hydrological and hydrogeological conditions.

Free technical guidance for implementation of rooftop rainwater harvesting schemes is also being provided by Central Ground Water Board, and manual is also published to give more scientific design tips.

6.0 Groundwater related Issues & Problems

TH as CaCO3 and Nitrate concentration are found more than permissible limit at select places. Fluoride is in excess in number of places. The entire district is having water scarcity and out of eight blocks seven are over exploited and one is critical. Limited Groundwater potential and excess fluoride are the main issues in the district

7.0 Awareness & Training Activity

Mass Awareness Campaign was conducted at Madam, adjacent to the site, where sub surface dyke was constructed in 1998 and about 200 farmers participated in the programme.

8.0 Area Notified by CGWA/SGWA

Neither Central Ground Water Authority nor State Government of Tamil Nadu has notified any block in the district.

9.0 Recommendations

The occurrence and movement of ground water in the hard rock is limited to weathered, jointed, fractured and sheared zones. Ground water occurs under phreatic and confined conditions. Thickness and aerial extent of formations is very limited. In the bore wells tapping deep fracture zones, in certain pockets, water is brackish in nature and hence need treatment before using for the drinking purposes.

Large scale rainwater harvesting to strengthen the sustainability of groundwater system is necessary and micro level water balance studies and detailed action plan for recharge under various central and State schemes need to be prepared and implemented in a given time frame.

PLATE - I

CENTRAL GROUND WATER BOARD, SECR, CHENNAI

DHARMAPURI DISTRICT, TAMIL NADU

LOCATION

(NOT TO SCALE)

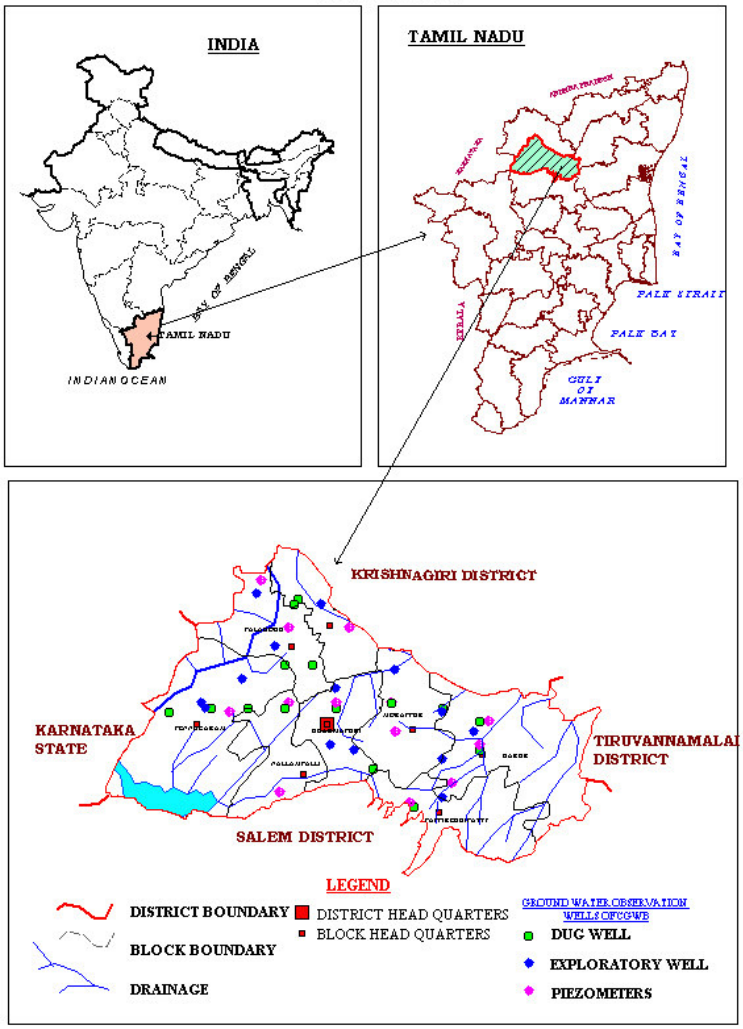
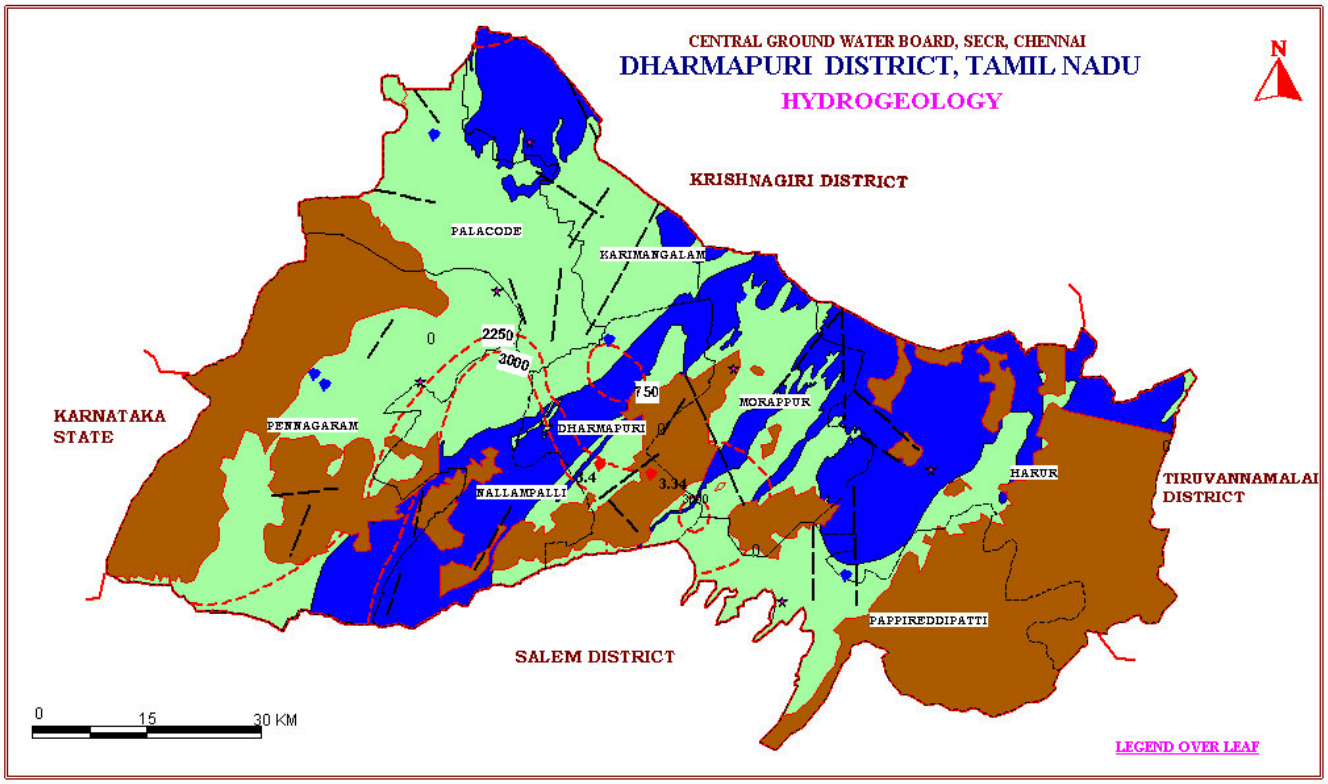


PLATE - II


CENTRAL GROUND WATER BOARD, SECR, CHENNAI
DHARMAPURI DISTRICT, TAMIL NADU
HYDROGEOLOGY
N
KRISHNAGIRI DISTRICT
PALACODE
KARIMANGALAM
0
2250
3000
7.50
MORAPPUR
KARNATAKA STATE
PENNAGARAM
DHARMAPURI
0
HARUR
TIRUVANNAMALAI DISTRICT
NALLAMPALLI
3.4
3.34
3000
PAPPIREDDIPATTI
SALEM DISTRICT
0
15
30 KM
LEGEND OVER LEAF

LEGEND FOR PLATE - II

ADMINISTRATIVE SETUP

DISTRICT BOUNDARY

BLOCK BOUNDARY

HILLY AREA

GROUND WATER HYDROLOGY

EXPLORATORY BORE WELL [CGWB]

HIGH YIELDING BORE WELL [CGWB]

FLORIDE > 1.5 (mgl)

HYDROCHEMISTRY

750 ISOCONS [Sp ELECTRICAL CONDUCTANCE [µS /Cm at 25° C]

STRUCTURE

TRACE OF LINEAMENT

	AQUIFER	AGE	LITHOLOGY	GROUND WATER CONDITIONS	YIELD PROSPECTS (lpm)	GROUND WATER DEVELOPMENT STRATEGIES
	SEMI CONSOLIDATED	ARCHAEAN	WEATHRED GRANITE & GNEISS	THIN,UNCONFINED AQUIFERS	200 - 400	DEVELOPMENT THROUGH LARGE DIAMETER DUG WELLS & BOREWELLS
	CONSOLIDATED	ARCHAEAN	GRANITE, GNEISSES, CHARNOCKITE	DISCONTINUOUS, UNCONFINED TO SEMICONFINED AQUIFERS,RESTRICTED TO WEATHERED RESIDUUM AND FRACTURES	400 - 600	SUITABLE FOR DEVELOPMENT THROUGH DUG WELLS.BOREWELLS FEASIBLE IN FRACTURE ZONES, BEST LOCATIONS BEING INTERSECTION OF FRACTURES

PLATE - III

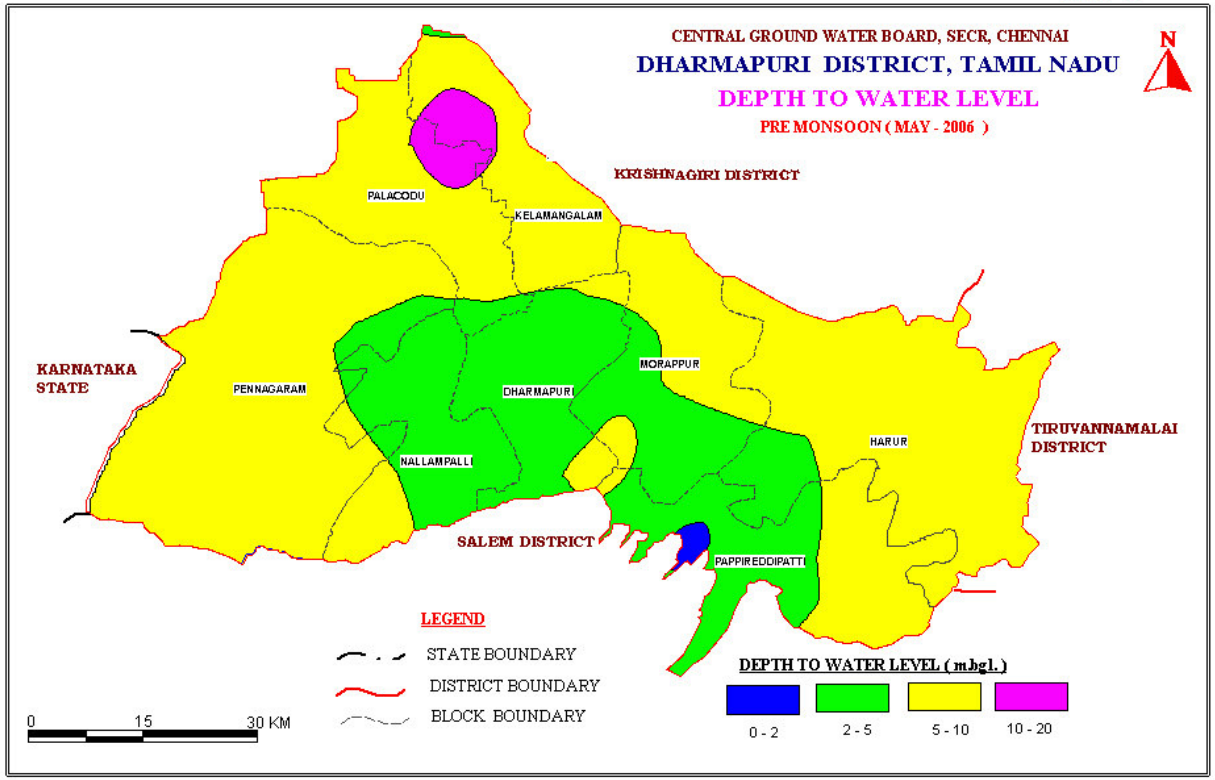

CENTRAL GROUND WATER BOARD, SECR, CHENNAI
DHARMAPURI DISTRICT, TAMIL NADU
DEPTH TO WATER LEVEL
PRE MONSOON (MAY - 2006)
N
KRISHNAGIRI DISTRICT
PALACODU
KELAMANGALAM
KARNATAKA STATE
PENNAGARAM
DHARMAPURI
MORAPPUR
HARUR
TIRUVANNAMALAI DISTRICT
NALLAMPALLI
SALEM DISTRICT
PAPPIREDDIPATTI
LEGEND
STATE BOUNDARY
DISTRICT BOUNDARY
BLOCK BOUNDARY
0 15 30 KM
DEPTH TO WATER LEVEL (mbgl.)
0 - 2
2 - 5
5 - 10
10 - 20

PLATE - IV

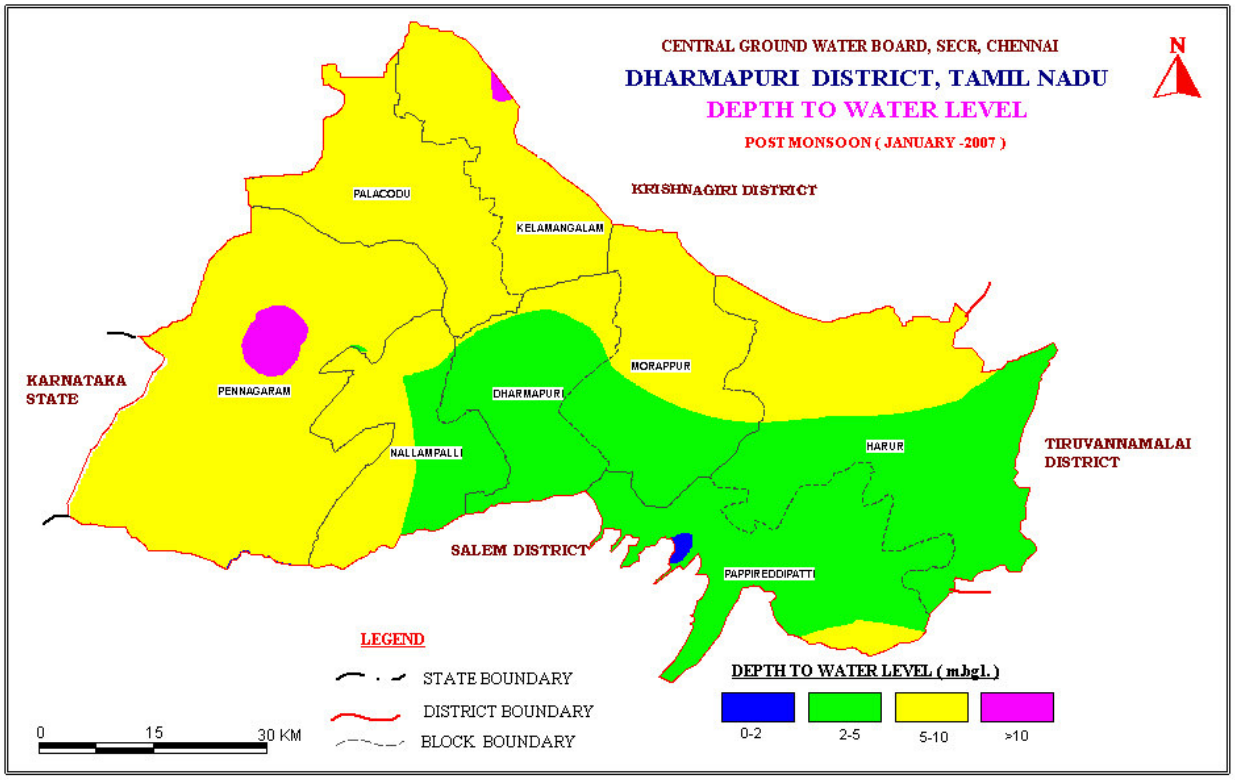

CENTRAL GROUND WATER BOARD, SECR, CHENNAI
DHARMAPURI DISTRICT, TAMIL NADU
DEPTH TO WATER LEVEL
POST MONSOON (JANUARY -2007)
N
KRISHNAGIRI DISTRICT
PALACODU
KELAMANGALAM
MORAPPUR
DHARMAPURI
PENNAGARAM
KARNATAKA STATE
NALLAMPALLI
HARUR
TIRUVANNAMALAI DISTRICT
SALEM DISTRICT
PAPPIREDDIPATTI
LEGEND
STATE BOUNDARY
DISTRICT BOUNDARY
BLOCK BOUNDARY
0
15
30 KM
DEPTH TO WATER LEVEL (mbgl.)
0-2
2-5
5-10
>10

PLATE - V

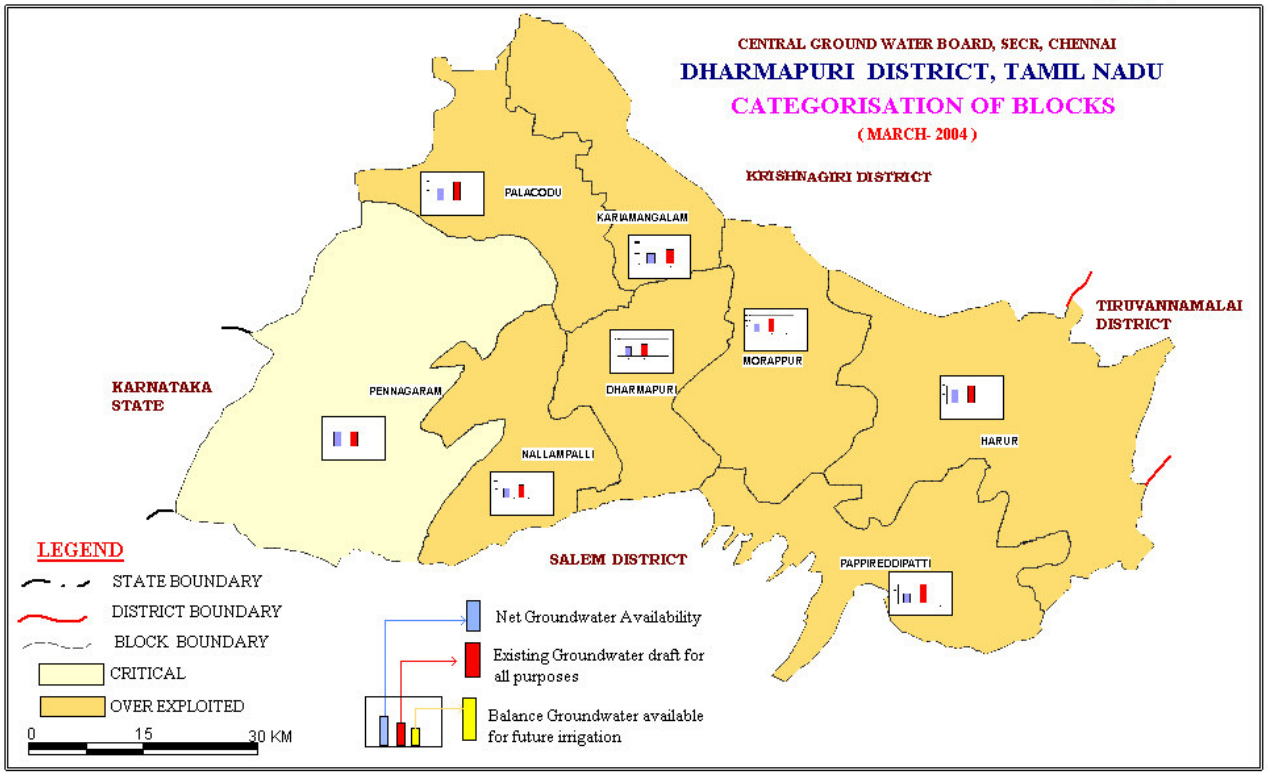
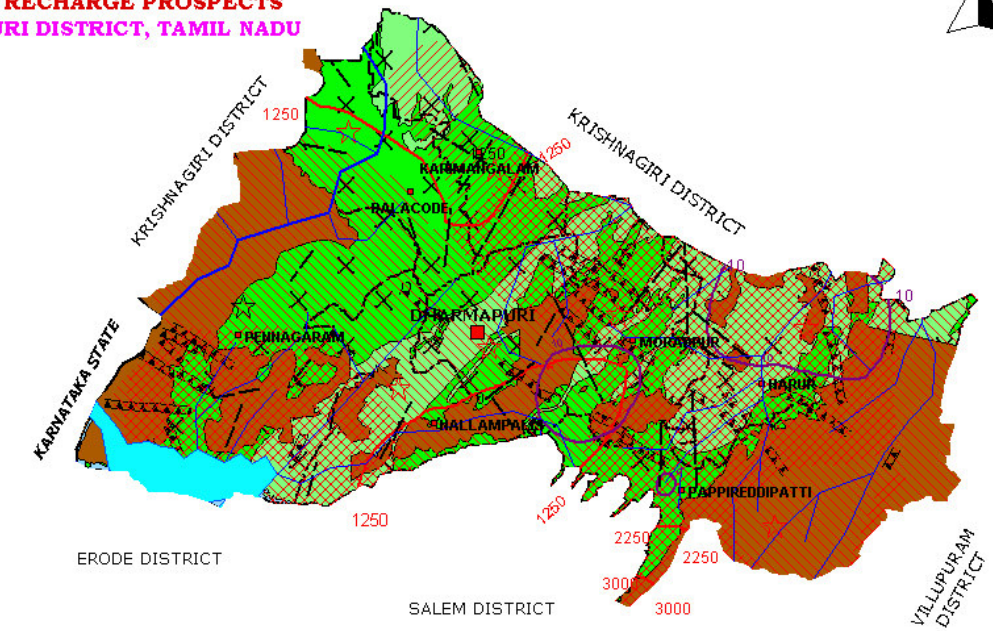

CENTRAL GROUND WATER BOARD, SECR, CHENNAI
DHARMAPURI DISTRICT, TAMIL NADU
CATEGORISATION OF BLOCKS
(MARCH- 2004)
KRISHNAGIRI DISTRICT
PALACODU
KARIAMANGALAM
MORAPPUR
DHARMAPURI
PENNAGARAM
NALLAMPALLI
HARUR
PAPPIREDDIPATTI
TIRUVANNAMALAI DISTRICT
KARNATAKA STATE
SALEM DISTRICT
LEGEND
STATE BOUNDARY
DISTRICT BOUNDARY
BLOCK BOUNDARY
CRITICAL
OVER EXPLOITED
0
15
30 KM
Net Groundwater Availability
Existing Groundwater draft for all purposes
Balance Groundwater available for future irrigation

PLATE-VI

CENTRAL GROUND WATER BOARD, SECR, CHENNAI.

GROUND WATER DEVELOPMENT POTENTIAL AND ARTIFICAL RECHARGE PROSPECTS

DHARMAPURI DISTRICT, TAMIL NADU



LEGEND FOR PLATE- VI

DISTRICT – DHARMAPURI

	Wells Feasible	Rigs Suitable	Depth Of Well (M)	Discharge (LPM)	Suitable Artificial Recharge Structures
Hard Rock Aquifer	Dug Well Bore Well	Manual DTH	15 – 20 100 - 300	60 - 180	Gully Plugs / Percolation Ponds
Hard Rock Aquifer	Dug Well Bore Well	Manual DTH	15 – 20 100 - 300	180 - 300	Gully Plugs / Recharge Shafts / Percolation Ponds
	District Boundary			Block Boundary	
	District Headquarters			Block Headquarters	
5	Water Level-Pre-Monsoon (Decadal Mean 1993-2002) Mbgl		1250	EC In Microsiemens / Cm At 25°C	
	River			Nitrate Greater Than Maximum Permissible Limit (> 45mg/L)	
	Fluoride Greater Than Maximum Permissible Limit (1.5mg/L)			Dyke	
	Hilly Area			Lineament	

OTHER INFORMATION

Geographical Area	4453 Sq.Km
Number Of Blocks	8
Major Drainage	Cauvery
Population (2001)	1286552
Average Annual Rainfall	760 mm
Annual Range of Temperature	19 – 42°C
Regional Geology	**Hard rocks:** Gneisses, Granites & Basic Rocks
Net Ground Water Availability For Future Irrigation	Nil
Stage Of Ground Water Development as on 31st March 2004	146 %
Names Of Blocks Showing Intensive Ground Water Development	**Over Exploited** –Dharmapuri, Nallampalli, Harur, Morappur, Palacode, Papiredipatti and Karimangalam **Critical** - Pennagaram

SAVE WATER

AND

CONSERVE WATER

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