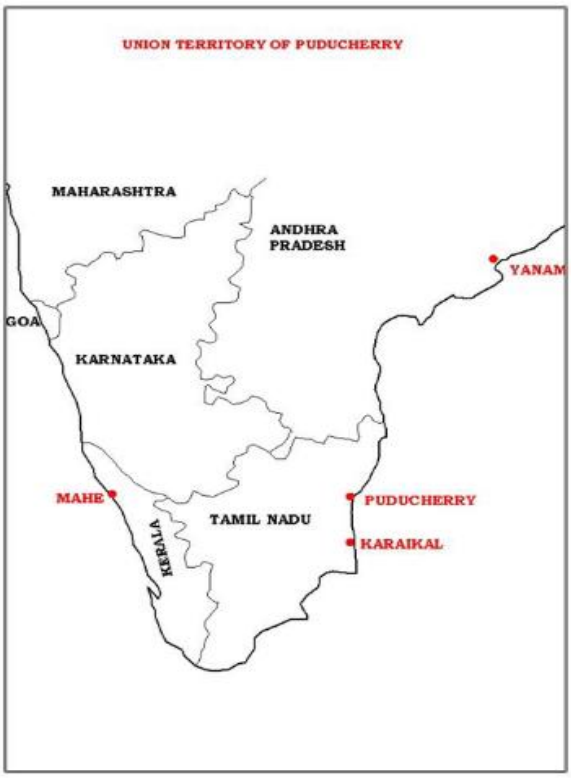
GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI

DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

CENTRAL GROUND WATER BOARD



GROUND WATER LEVEL BULLETIN
August 2025
UNION TERRITORY OF PUDUCHERY

ABSTRACT

Ground water level Scenario during August – 2025 highlighting the findings, status of ground water level in different aquifers and its annual and decadal comparison

CGWB, SOUTH EASTERN COASTAL REGION, CHENNAI

1.0 INTRODUCTION

Groundwater bulletin is prepared by CGWB depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attributes of groundwater regime monitoring are groundwater level.

The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc, whereas anthropogenic influences include pumping from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are being measured by Central Ground Water Board four times a year during January, May, August and November. The regime monitoring started in the year 1969 by Central Groundwater Board.

2.0 STUDY AREA

Union Territory of Pondicherry comprises of four regions, namely Pondicherry, Karaikal, Mahe and Yanam, of which Pondicherry, Karaikal and Yanam regions are located on the coromandal coast where as Mahe is situated on the Malabar coast. Therefore, the hydrometerological conditions are quite different.

The topography of Pondicherry is the same as that of coastal Tamil Nadu. Pondicherry's average elevation is at sea level and includes a number of sea inlets, referred to locally as "backwaters". Pondicherry experiences extreme coastal erosion as a result of a breakwater constructed in 1989 just to the south of the city. Where there was once a broad, sandy beach, now the city is protected against the sea by a 2-km-long seawall that sits at a height of 8.5 m above sea level. Today, the seawall consists of rows of granite boulders reinforced every year in an attempt to stop erosion.

The normal annual rainfall is 1323.06 mm which is precipitated in four seasons. The maximum rainfall is during north-east monsoon (Oct to Dec), which brings about 65% of the total annual rainfall, which accounts for about 660 mm. The Southwest monsoon rainfall, which precipitates between June and September, brings about 350mm rainfall. The rainfall in winter period (Jan & Feb) and hot weather period (March to May) is collectively accounts about 200mm.9The climate of Pondicherry region is tropical. Both winter and summer are not very severe. The temperature ranges from a minimum of 170C to a maximum of 420C. The humidity is comparatively higher.

Pondicherry region's urban area spread around 155 km^2 of the total 292 km^2. Co-ordinates: 11°55″N 79°49″E Puducherry comprise 5 Municipality namely Pondicherry Municipality, Oulgaret Municipality, Karaikal Municipality, Mahe Municipality and Yanam Municipality.

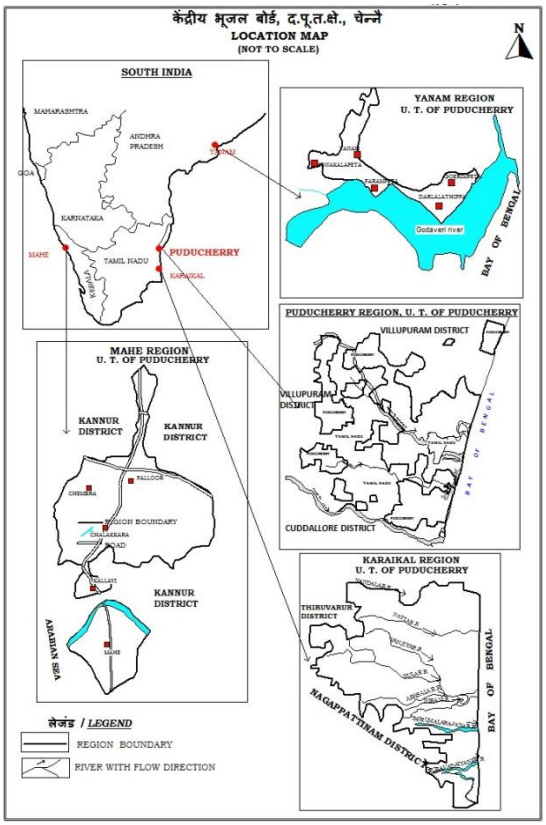
Karaikal region receives the rainfall under the influence of both Southwest and North east monsoon. Most of the precipitation occurs in the form of cyclonic storms caused due to the depression in Bay of Bengal, chiefly during northeast monsoon period. The normal annual rainfall is 1435.65 mm of which the northeast monsoon contributes 69% and the southeast monsoon contributes 21%.The region enjoys a humid and tropical climate. The monthly temperature varies between31.80C (May) and 21.70C (March). The relative humidity is generally high above 70% during August to April and minimum varying from 60 to 65% during the month of June and about 80% during October to April.

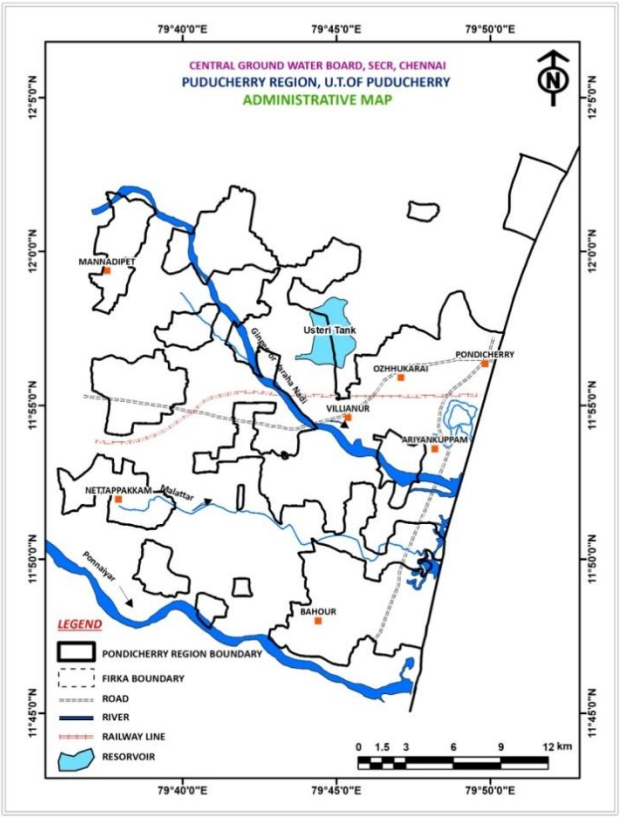
Mahe is a municipality and small town in the Mahe district of the Puducherry Union Territory. It is situated at the mouth of the Mahe River and is surrounded by the State of Kerala. The district of Kannur surrounds Mahe on three sides and Kozhikode district on one side.

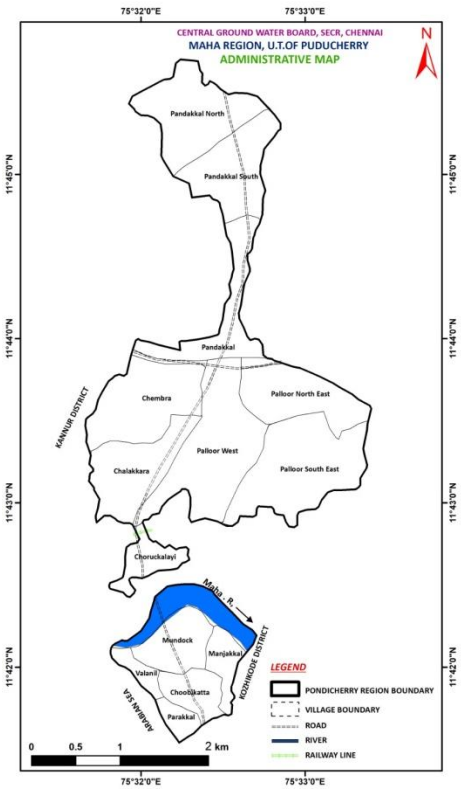
Mahe has a tropical monsoon climate typical for the Kerala and Karnataka coast. There is a dry season from December to March, but the location on the windward side of the Western Ghats means that during the westerly monsoon season the region receives exceedingly heavy rainfall, reaching up to 1,080 millimetres in July.

The Mahe municipal area comprises 9 square kilometres. Co-ordinates: 11°42′4″N 75°32′12″E

Yanam district occupies an area of 20 square kilometres. It is located south of Kakinada port on the north bank of Godavari river, slightly inland. It is bordered and surrounded by Konaseema district on South and Kakinada district on north (Districts of Andhra State). Co-ordinates: 16°44′2″N 82°12′39″E. Figure.1 Shows the location of U.T. of Puducherry& Administrative map of Puducherry.


केंद्रीय भूजल बोर्ड, द.पू.त.क्षे., चेन्नै
LOCATION MAP
(NOT TO SCALE)
N
SOUTH INDIA
MAHARASHTRA
ANDHRA PRADESH
GOA
KARNATAKA
TAMIL NADU
PUDUCHERRY
KARAIKAL
MAHE
KERALA
YANAM REGION
U. T. OF PUDUCHERRY
YANAM
KAKINADA
Godavari river
BAY OF BENGAL
PUDUCHERRY REGION, U. T. OF PUDUCHERRY
VILLUPURAM DISTRICT
CUDDALORE DISTRICT
MAHE REGION
U. T. OF PUDUCHERRY
KANNUR DISTRICT
KANNUR DISTRICT
KANNUR DISTRICT
PALLOOR
CHEMBRA
REGION BOUNDARY
CHALAKKARA ROAD
MAHE
ARABIAN SEA
KARAIKAL REGION
U. T. OF PUDUCHERRY
THIRUVARUR DISTRICT
NAGAPATTINAM DISTRICT
लेजंड / LEGEND
REGION BOUNDARY
RIVER WITH FLOW DIRECTION


CENTRAL GROUND WATER BOARD, SECR, CHENNAI
PUDUCHERRY REGION, U.T.OF PUDUCHERRY
ADMINISTRATIVE MAP
79°40'0"E
79°45'0"E
79°50'0"E
12°5'0"N
12°0'0"N
11°55'0"N
11°50'0"N
11°45'0"N
MANNADIPET
Ussteri Tank
PONDICHERRY
OZHHUKARAI
VILLIANUR
ARIYANKUPPAM
NETTAPPAKKAM
Malattar
Ponnaiyar
BAHOUR
LEGEND
PONDICHERRY REGION BOUNDARY
FIRKA BOUNDARY
ROAD
RIVER
RAILWAY LINE
RESORVOIR
0 1.5 3 6 9 12 km


75°32'0"E
75°33'0"E
CENTRAL GROUND WATER BOARD, SECR, CHENNAI
MAHA REGION, U.T.OF PUDUCHERRY
ADMINISTRATIVE MAP
N
11°43'0"N
11°42'0"N
11°41'0"N
Pandakkal North
Pandakkal South
Pandakkal
Chembra
Palloor North East
KANNUR DISTRICT
Palloor West
Chalakkara
Palloor South East
Choorukalayl
Mahe R
Mundock
Manjakkal
Valanil
Chooliyatta
Parakkal
KODIYODE DISTRICT
ARABIAN SEA
LEGEND
PONDICHERRY REGION BOUNDARY
VILLAGE BOUNDARY
ROAD
RIVER
RAILWAY LINE
0 0.5 1 2 km

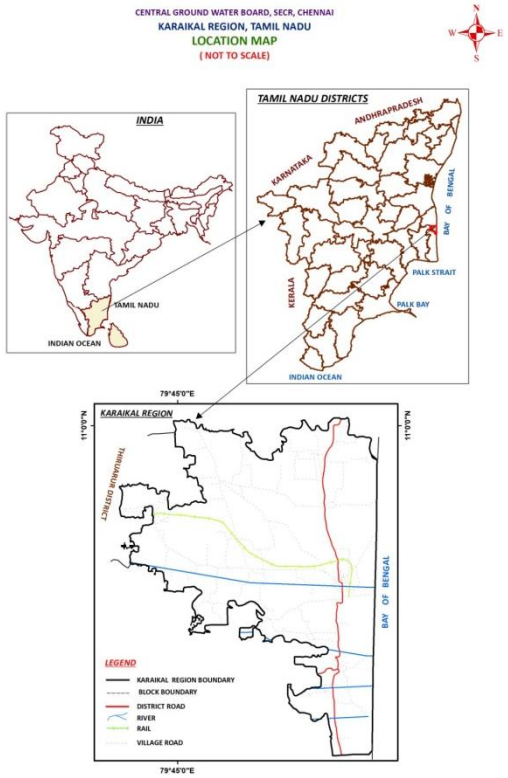
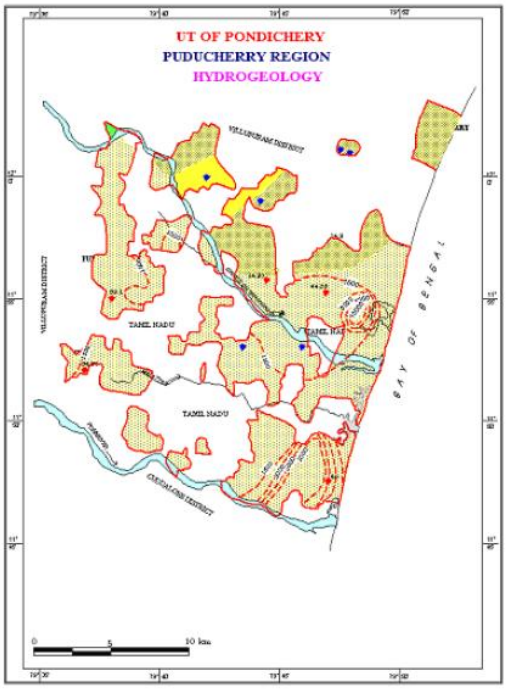
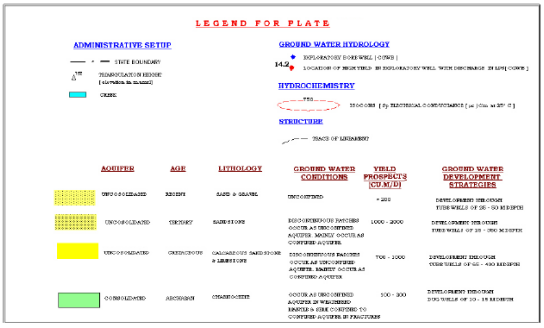
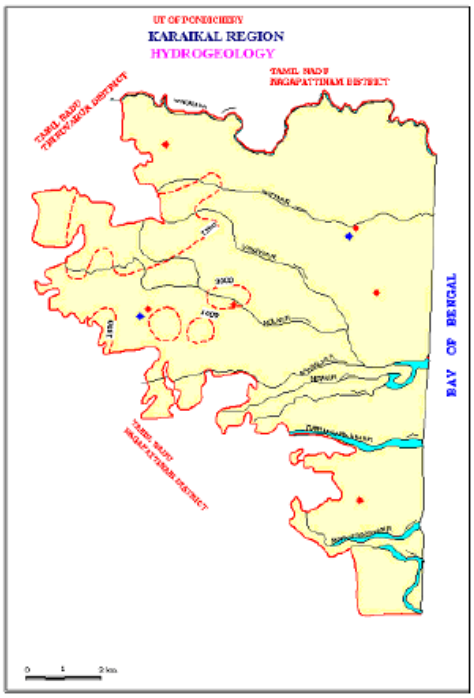
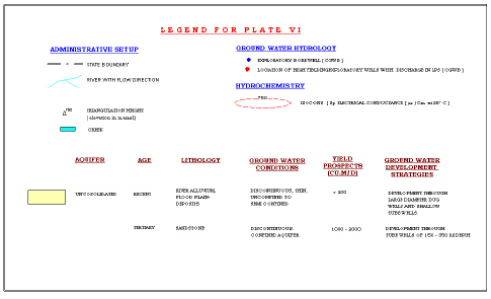

CENTRAL GROUND WATER BOARD, SECR, CHENNAI
KARAIKAL REGION, TAMIL NADU
LOCATION MAP
(NOT TO SCALE)
N
W
E
S
INDIA
TAMIL NADU
INDIAN OCEAN
TAMIL NADU DISTRICTS
ANDHRAPRADESH
KARNATAKA
KERALA
BAY OF BENGAL
PALK STRAIT
PALK BAY
INDIAN OCEAN
79°45'0"E
KARAIKAL REGION
THIRUVARUR DISTRICT
BAY OF BENGAL
LEGEND
KARAIKAL REGION BOUNDARY
BLOCK BOUNDARY
DISTRICT ROAD
RIVER
RAIL
VILLAGE ROAD

Figure.1 location & map of U.T. of Puducherry/ Administrative map of Puducherry, Mahe and Karaikal









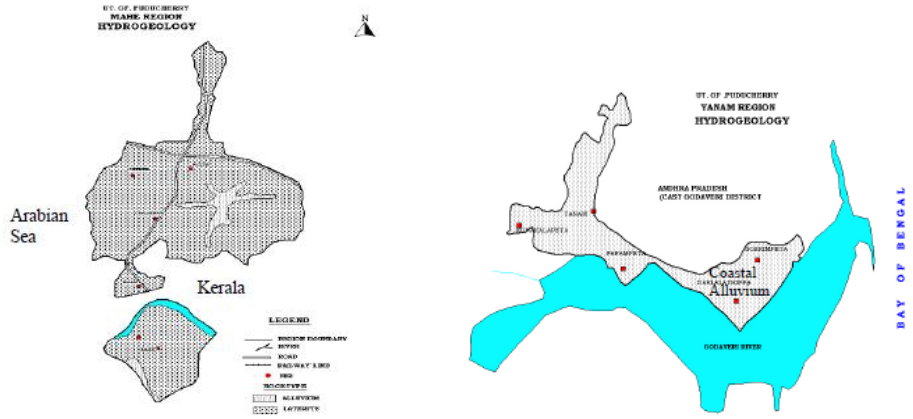


Figure 2: Map showing major aquifers of UT of Puducherry (Puducherry, Karaikal, Mahe and Yanam)

The U.T. of Puducherry is underlain by the semi-consolidated and unconsolidated sedimentary formations ranging in age from lower Cretaceous to Recent, lying on Archaean basement. The Puducherry region has a seaward dipping with increased thickness of strata consisting of unconsolidated and semi-consolidated formations lying on Archaean basement. The sediments are mainly clay, clay stone, silt, siltstone, marl, limestone, sand, sandstone and gravel. All these sediments occur as alternating strata. These sedimentary formations range in age from Cretaceous to Recent.

The Karaikal region is chiefly occupied by unconsolidated to semi-consolidated sediments ranging in age Tertiary to Quaternary. The Quaternary formations occupy the entire area and are underlain by older Tertiary formations. The unconsolidated sediments of Quaternary age comprise alluvium of fluvial origin consisting of sands clays, gravels and blown sands (Aeolian).The alluvium is underlain by the Karaikal beds (Pliocene) and Cuddalore sandstone (Miocene). Aeolian sands occur along the coast in the east.

The coastal area of Mahe region is covered by Quaternary alluvium. Rest of the area is occupied by Precambrian metamorphic rocks, represented by hornblende-biotite gneiss, outcrops of which are seen right on the coast. The gneisses are traversed by quartz veins and granitic bodies and are intruded by dolerite dykes. Both the Crystalline rocks and dolerite dykes. The crystallines are lateritised to a thickness up to 10m.

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, South Eastern Coastal Region, is monitoring changes in ground water regime of UT of Puducherry on quarterly basis continuously. This is facilitated by a network of monitoring stations in the State located in diverse hydrogeological and geomorphic

units. The number of operational wells after completion of August 2025 monitoring stands at 11. The district-wise breakup of the water level monitoring stations is given in **Table-1**

Figure-2: Maps showing locations of monitoring wells (NHNS) in UT of Puducherry

Name of State/UT	District/Region	Number of wells
Union Territory of Puducherry	Puducherry	4
Union Territory of Puducherry	Karaikal	4
Union Territory of Puducherry	Mahe	2
Union Territory of Puducherry	Yanam	1

Table-1:District-wise distribution of water level monitoring stations

4.0 RAINFALL

The rainfall data collected and compiled from weekly and monthly weather reports from India Meteorological Department were used to analyse the rainfall for the period 01.04.2025 to 30.04.2025. Figure.3 shows the district-wise rainfall distribution for the period 1st July 2025 to 31st July 2025. District-wise distribution of Rainfall from 1st July 2025 to 31st July 2025 is given in Table-2.

Table-2:District-wise distribution of Rainfall from 01.07.2025 to 31.07.2025

RAINFALL STATEMENT					
Seasonal rainfall for the period from 01-07-2025 to 31-07-2025					
Districts		Actual (mm)		Normal *(mm)*	Departure (%)
Karaikal		Karaikal		1.6	51.9
Puducherry		Puducherry		23.8	77
Largely deficient	**Deficient**	**Normal**	**Excess**	**Large Excess**	**No rain**
-60% to -99%	**-20% to -59%**	**-19% to +19%**	**+20% to +59%**	**≥ 60%**	**-100%**

5.0 GROUND WATER LEVEL SCENARIO (May 2025)

5.1 Shallow Aquifer (Unconfined)

5.1.1 Depth to Water Level

The depth to water level of 11 wells is used for the analysis. Analysis of depth to water level

data of 11 wells shows water levels ranged from 0.73 m bgl at Mahe to 6.64 m bgl at M.N.Kuppam Pondicherry region. Water level of less than 2 m bgl is recorded in 4 wells, between 2 to 5 m bgl in 6 wells, more than 5 mbgl in 1 well.

Table 3 shows August 2025 water level of UT of Puducherry

Sl. No	Latitude	Longitude	District / Region	Location	August 2025 (Mbgl)
1	10.93218	79.831325	Karaikal	**Karaikal dw**	**3.58**
2	10.95692	79.825702	Karaikal	**Kottucherry**	**2**
3	10.950328	79.828186	Karaikal	**Kilakasakudi**	**2.79**
4	10.92611	79.7922222	Karaikal	**Tirunallar dw**	**3**
5	11.900	79.8166667	Puducherry	**M.N.Kuppam**	**6.64**
6	11.93369	79.834785	Puducherry	**Pondicherry**	**4.29**
7	11.88333	79.7666667	Puducherry	**Reddichavadi**	**3.66**
8	11.90834	79.750633	Puducherry	**Villianur**	**4.82**
9	11.6973	75.5348	Mahe	**Mahe**	**0.73**
10	11.7325	75.5372	Mahe	**Palloor**	**1.65**
11	16.7294	82.2141	Yanam	**Yanam**	**1.89**

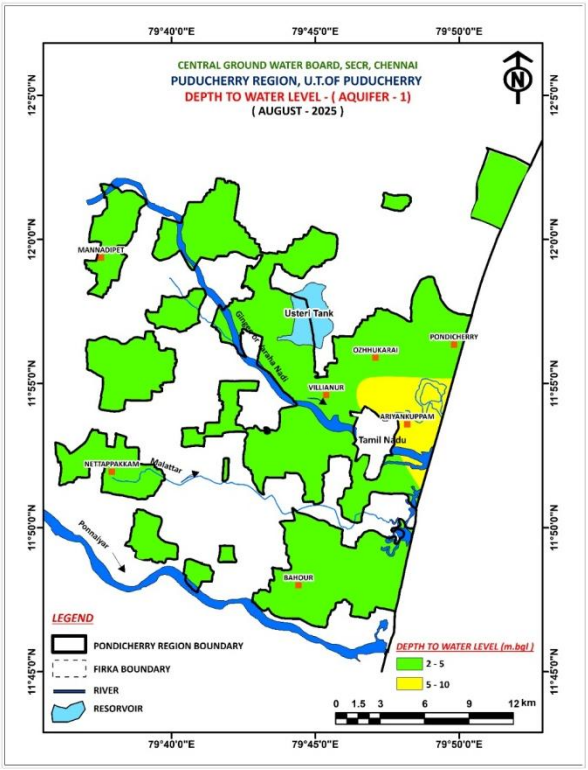


Figure: 3 Depth to water level August 2025 of Puducherry unconfined Aquifer

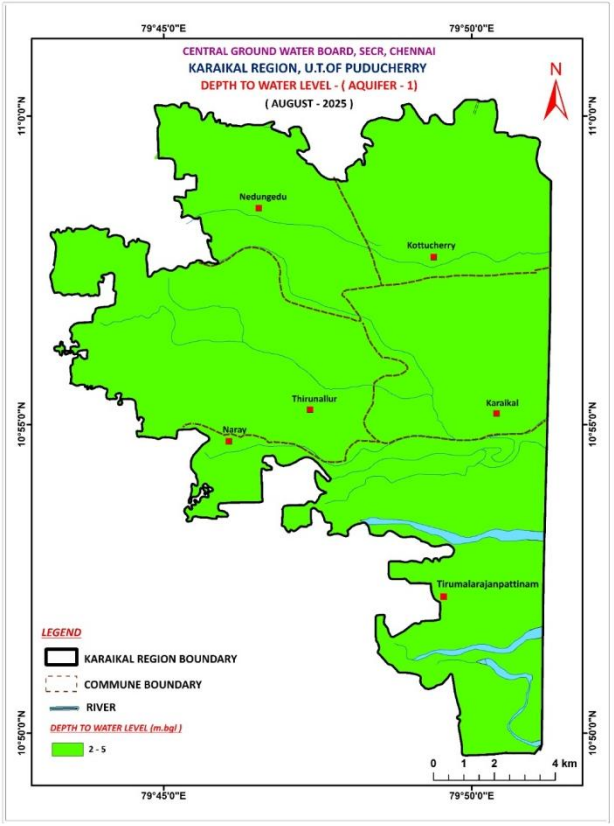


Figure: 4 Depth to water level August 2025 of Karaikal unconfined Aquifer

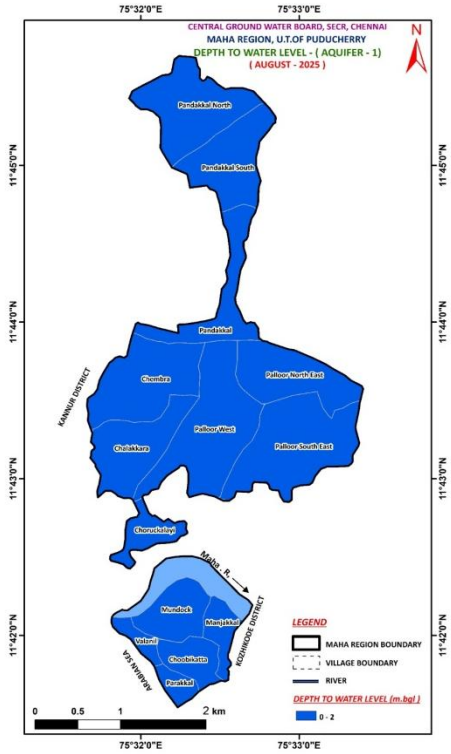


Figure: 5 Depth to water level August 2025 of Mahe unconfined Aquifer

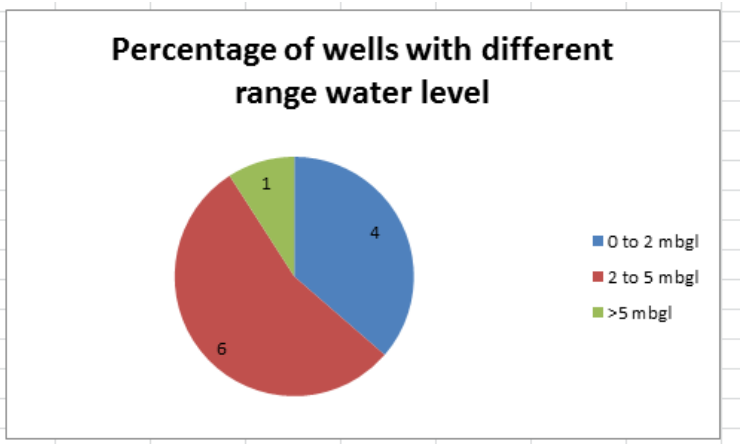


Figure-5: Percentage of wells in different water level ranges in unconfined aquifer.

5.1.2 ANNUAL FLUCTUATION IN WATER LEVEL

Annual Fluctuation of Water Level in Unconfined Aquifer (August 2024 to August 2025)

Rise in Water Levels:

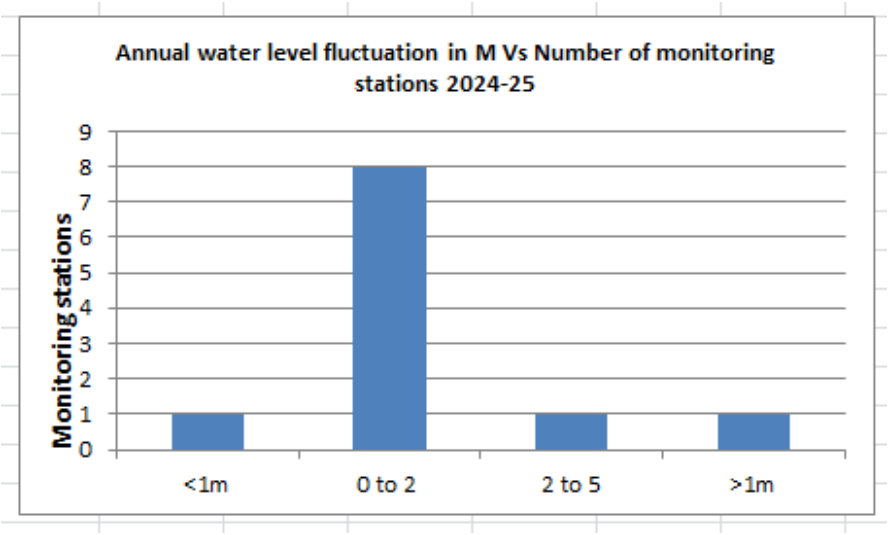
Out of 11 wells, water level rise of 10 wells. Water level rise less than 2 m is recorded in 8 wells and 1 well rise 8.35m.

Fall in Water Levels:

Water level fall is recorded in 1 well less than 1 m.

Number of monitoring stations	Fluctuation	Rise / Fall
8	0 to 2 m	Rise
1	2 to 5m	Rise
1	More than 5m	Rise
1	Less than 1 m	Fall

Table-4: Wells showing rise and fall in WL in unconfined aquifer (August 2024 & August 2025)



Annual Fluctuation of Water Level in Unconfined Aquifer (August 2023 to August 2025)

Rise in Water Levels:

Out of 11 wells, water level rise of 8 wells. Water level rise 0 to 2 m is recorded in 7 wells and 1 well rise 4.57m.

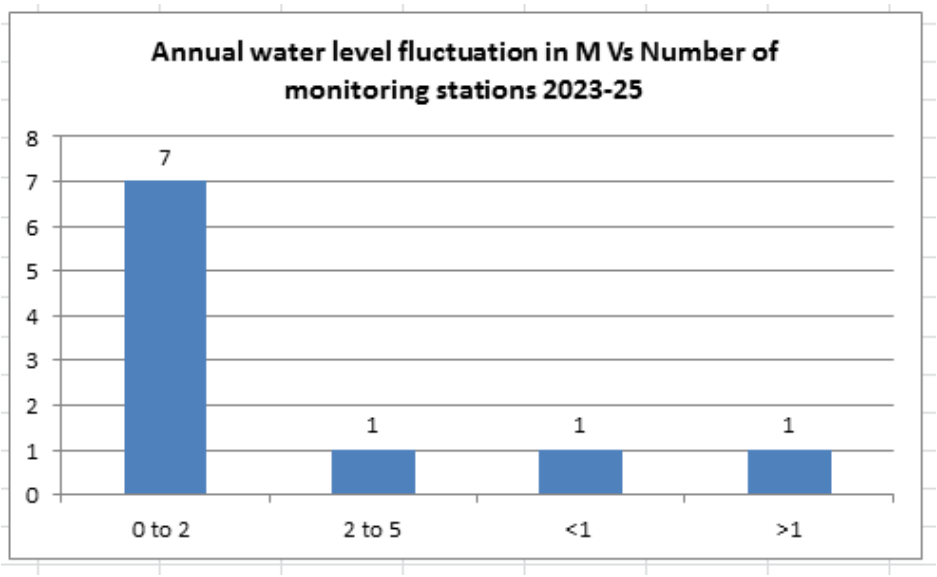
Fall in Water Levels:

Water level fall is recorded in 3 wells, 2 wells water level fall less than 1 m and one well water

level fall 4.82m.

Number of monitoring stations	Fluctuation	Rise / Fall
7	0 to 2 m	Rise
1	More than 2m	Rise
2	Less than 1 m	Fall
1	>1m	Fall

Table-5: Wells showing rise and fall in WL in unconfined aquifer (August 2023 & August 2025)



Annual Fluctuation of Water Level in Unconfined Aquifer (August 2022 to August 2025)

Rise in Water Levels:

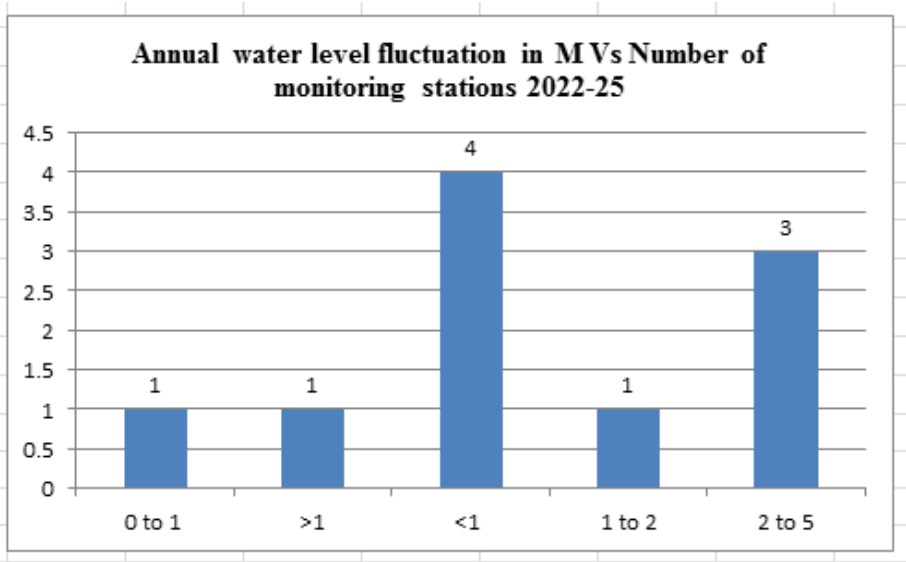
Out of 11 wells, water level rise of 6 wells. Water level rise less than 1 m is recorded in 1 well. and 1to 2m one well. 2 to 5m rise in 3 wells and >5m in one well rise 11.43m.

Fall in Water Levels:

Water level fall is recorded in 5 wells, 4 wells water level fall less than 1 m. 1 well fall between more than 1m.

Number of monitoring stations	Fluctuation	Rise / Fall
1	<1m	Rise
1	1 to 2 m	Rise
3	2 to 5m	Rise
1	>5m	Rise
4	Less than 1 m	Fall
1	>1m	Fall

Table-6: Wells showing rise and fall in WL in unconfined aquifer (August 2022 & August 2025)



5.1.3 Decadal Fluctuation

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean August (2015-2025) to August 2025

Rise in Water Levels:

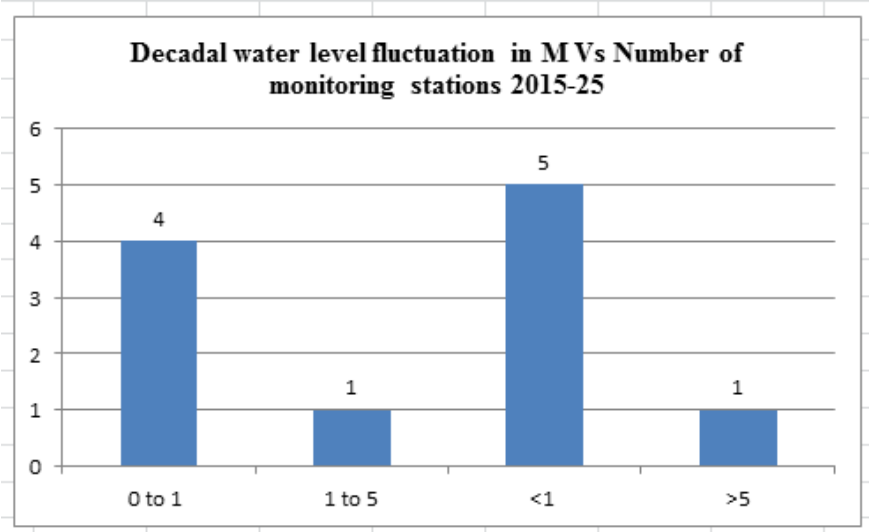
Out of 11 wells, water level rise of 5 wells. Water level rise 0 to 2 m is recorded in 4 wells and 1 well rise >5m.

Fall in Water Levels:

Water level fall is recorded in 6 wells, 5 wells water level fall less than 1 m and one well water level fall >5m.

Number of monitoring stations	Fluctuation	Rise / Fall
4	0 to 2 m	Rise
1	More than 5 m	Rise
5	Less than 1 m	Fall
1	>1m	Fall

Table-7: Wells showing rise and fall in WL in unconfined aquifer (August 2015 & August 2025)



6.0 RECOMMENDATIONS

In order to enhance the groundwater scenario of UT of Puducherry utmost effort should be made to harvest the rainwater received during monsoon days and use it either for ground water recharge or for domestic use. Periodic maintenance of the Rainwater harvesting / Recharges structures is also recommended to maintain the efficiency.

Abandoned bore wells/dug well can be used to recharge the aquifer utilizing the surplus surface runoff available during rainy days.

Master plan for artificial recharge of UT of Puducherry, District Recharge Plan and NAQUIM reports of CGWB helps in selecting sites for artificial recharge structures.

Point recharge structures are recommended to recharge deeper aquifers.

Efficient micro irrigation practices can save up to 40% of water.

Use of Grey water after treatment, opting for water efficient fixtures and low flow plumbing fixtures reduce the stress on groundwater. Low flow technology is normally used in faucets, aerator, shower heads and toilets

7.0 SUMMARY

As a component of the National Ground Water Monitoring Program, the CGWB, SECR, Chennai conducts monitoring of the ground water conditions on a quarterly basis: in pre-monsoon May, August, November and post- monsoon January . Additionally, a yearly assessment of ground water quality is performed in May. As on August 2025, the Central Ground Water Board supervises 11 dug wells. This comprehensive effort aims to portray the variations in the state's ground water conditions across different aquifers.

The depth to water level of 11 wells is used for the analysis. Analysis of depth to water level data of 11 wells shows water levels ranged from 0.7m bgl at Mahe district to 6.64 m bgl at M.N.Kuppam Pondicherry district. Water level of less than 2 m bgl is recorded in 4 wells, between 2 to 5 m bgl in 6 wells, more than 5 mbgl in 1 well.

Annual fluctuation observed that out of 11 wells, water level rise of 10 wells. Water level rise 0 to 2 m is recorded in 8 wells and 1 well rise >5m. Water level fall is recorded in 1 well, water level fall <1m.

Decadal fluctuation observed that Out of 11 wells, water level rise of 5 wells. Water level rise 0 to 2 m is recorded in 4 wells and 1 well rise >5m. Water level fall is recorded in 6 wells, 5 wells water level fall less than 1 m and one well water level >1m.