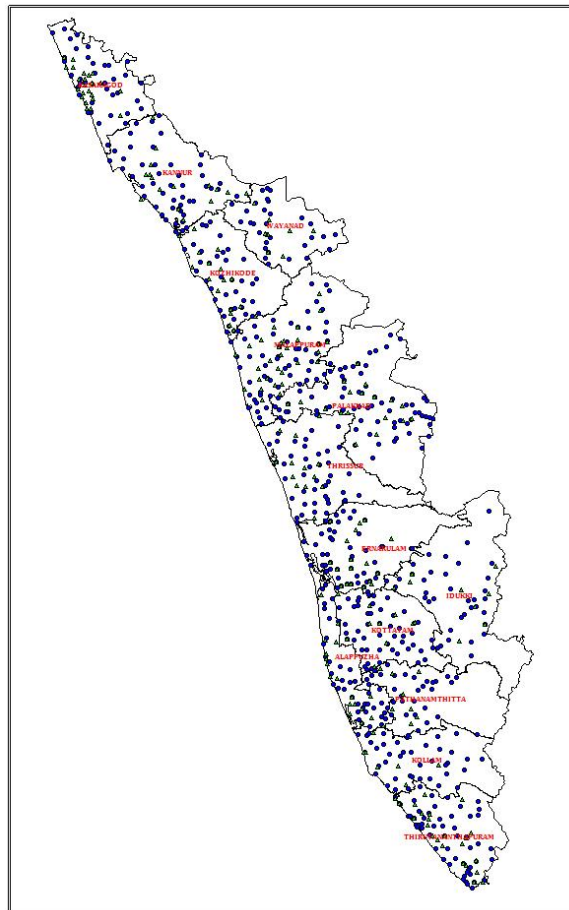


TECHNICAL REPORT SERIES



GOVERNMENT OF INDIA  
MINISTRY OF WATER RESOURCES  
CENTRAL GROUND WATER BOARD

# GROUND WATER YEAR BOOK OF KERALA (2015-2016)



KERALA REGION  
THIRUVANANTHAPURAM

SEPTEMBER 2016



# GROUND WATER YEAR BOOK OF KERALA (2015-2016)

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## FOREWORD

Ground water is an important source of water for meeting the drinking, agricultural and industrial needs in India. Over the last few decades, the use of ground water in the country has increased manifold, exerting pressure on the limited resources available and threatening their long-term sustainability in many places. Kerala, though blessed with copious rainfall and abundant surface water resources, depends heavily on the limited ground water resources to meet its drinking and domestic water requirements, especially in the rural habitations. In the recent past, scarcity of drinking water resources during summer months is being faced by several habitations in the State with increasing regularity.

Kerala State has limited ground water development prospects owing to the largely undulating topography and predominance of crystalline rocks devoid of any primary porosity. Increasing demand of fresh water resources due to change in life styles, agricultural practices and urbanisation has resulted in increasing stress on the ground water regime in several areas of the State. Contamination of ground water resources from natural and anthropogenic sources is also emerging as a major threat to the sustainability of ground water resources in many areas. Anticipated impact of impending climate change and sea level rise also has the potential to change the ground water regime in the State. Scientific management of ground water resources of the State has become imperative to ensure prevention of further ground water depletion and contamination and to ensure its long-term sustainability.

To build a realistic ground water management strategy, assessment of ground water availability and its quality is a pre-requisite. With this in view, Central Ground water Board has established a network of Ground Water Monitoring Wells (GWMW) tapping different aquifers in the State. Presently, there are 1672 GWMW in Kerala State, out of which 1404 are dug wells tapping phreatic aquifers and 268 are bore wells /tube wells tapping deeper semi-confined/confined aquifers, which are monitored four times a year. The document “**Ground Water Year Book Kerala (2015-16)**” is a compilation of water level and water quality data collected from these wells during 2015-16. The behaviour of water level during the four monitoring periods and their fluctuations – both seasonal and long term, have been analysed and included in this report. Besides this, behaviour of piezometric heads of deeper aquifers in hard rock as wells as in sedimentary aquifers have also been discussed. The chapter on Hydrochemistry brings out the ground water quality of water samples collected from the wells tapping the phreatic aquifer.

The efforts of the Officers of CGWB, Kerala Region, Thiruvananthapuram in collecting the data and the meticulous work done by the team of officers comprising Dr. N. Vinayachandran, Scientist-D, Smt.Rani V. R., Scientist- C, Shri Sreehari Sarangan, AHG, Smt. V. N. Sreelatha, Sc- C, and Smt. Bindu J. Viju, Scientist- B in compiling this document deserve appreciation. I hope this compilation will be of use to planners, policy makers and stakeholders in the field of ground water in Kerala.

**Thiruvananthapuram  
September 2016.**

**(V. Kunhambu)  
Regional Director**

## I INTRODUCTION

The awareness among the public about the importance of the groundwater has increased during the recent years. The need for groundwater being felt by all sectors because of the shortage of surface water sources to mitigate the growing needs of the society. Recently the problems of decline in water table, contamination of groundwater, seawater intrusion etc are being reported at many places. The shortage of rainfall in recent years and the increased utilisation of ground water caused concern among the public that water may become scarce commodity in future. In order to assess the real situation of ground water conditions, it is very essential to monitor the groundwater level and water quality over time and space. Central Ground Water Board is monitoring water level and quality through a network of Ground Water Monitoring Wells distributed throughout the State. The monitoring started from the year 1969 for nine monitoring wells and the numbers of monitoring wells were increased during the subsequent years and became 224 by the year 1979 and the number became 460 by the year 1988. Presently the total number of Ground Water Monitoring Wells (GWMWs) through out the Kerala State is 1672. Water level is being monitored four times a year during January, April, August and November months and water quality is being monitored from the water samples collected from GWMWs during April.

Kerala State is a narrow stretch of land covering 38863 sq.km area bordering the Lakshadweep Sea on the western side and Tamil Nadu and Karnataka States on the eastern side. The length of the State from north to south is 560 km and the average width is 70 km. with a maximum of 125 km. It lies between North latitudes  $08^{\circ}18'$  and  $12^{\circ}48'$  and East longitudes  $74^{\circ}52'$  and  $77^{\circ}22'$ .

The total number of GWMWs as on 31.3.2016 is 1672. Out of these, 1404 are dug wells tapping phreatic aquifers and 268 are borewells /tubewells tapping deeper aquifers of confined / semi-confined nature. These GWMWs are spread over all the physiographic divisions of the State. About 62% of the GWMWs fall in the midland region, 18% in coastal plains, 15% in highlands and 5% in Plateau region. Among the GWMWs tapping phreatic aquifer, 65% are tapping laterite, 17% tapping weathered and fractured crystallines, 15% tapping coastal alluvium and 3% tapping riverine alluvium. The data

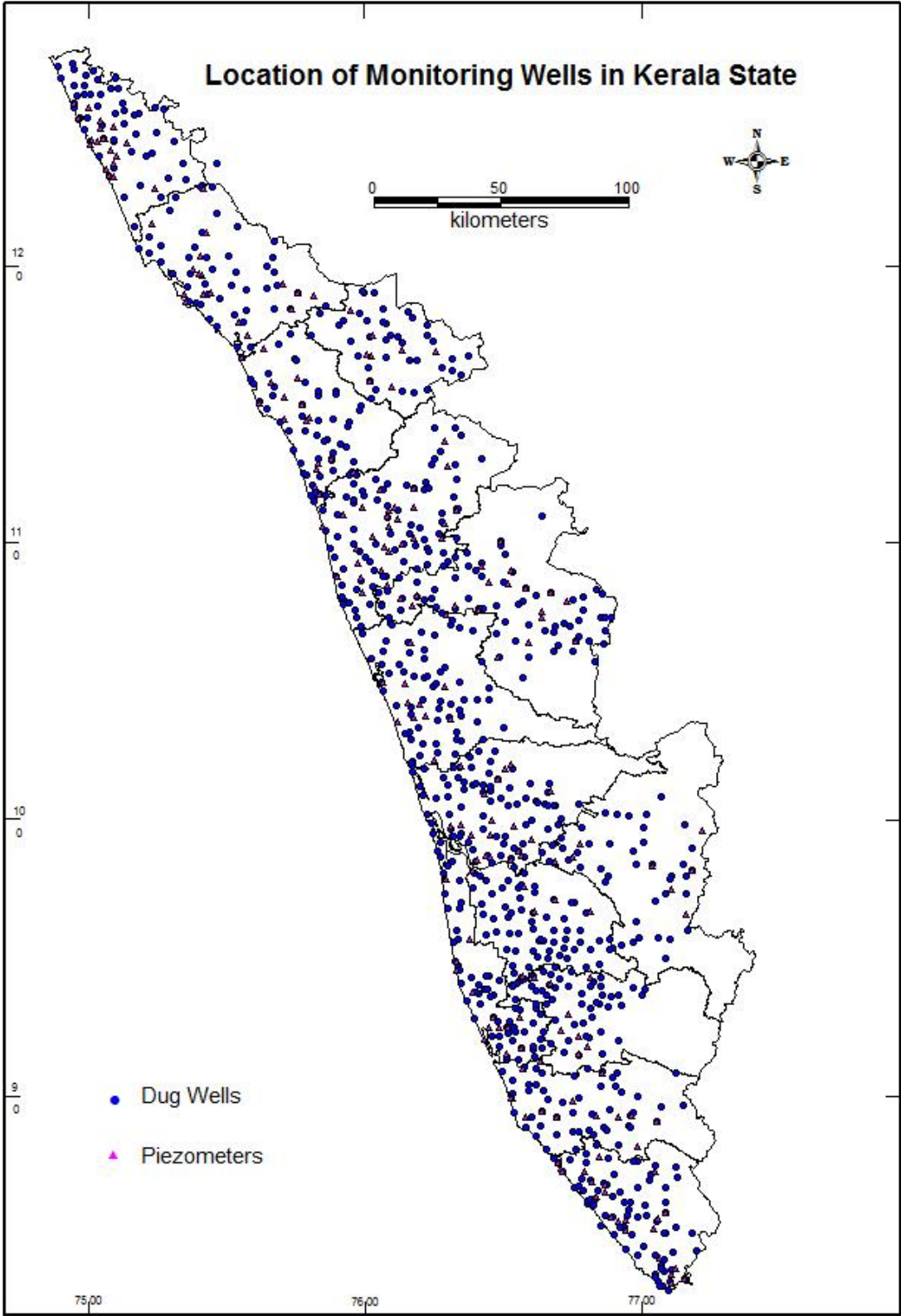
of these GWMWs were analysed to understand the depth to water level scenario in the State, annual fluctuation in the water levels due to the monsoon recharge, long term trend in water levels and the nature of the quality of ground water and the salient features are brought out in this report. Maps of depth to water level, water level fluctuation with respect to April and decadal mean are prepared using the data of GWMWs tapping phreatic aquifer. Some hydrographs representing phreatic, semi-confined and confined aquifers in sedimentary and hard rock aquifers are also incorporated in this report.

The district wise break-up of GWMWs are given in the Table 1.1 and locations are shown in Figure 1.1. The water level data collected during the year 2015– 16 of GWMWs (dug wells) are given in Annexure-I. The hydro-chemical data of water samples collected during April 2013 are given in Annexure- II.

**Table 1.1: District wise breakup of Ground Water Monitoring Wells in Kerala State as on 31-03-2016**

Sl. No.	Name of district	No. of GWMW as on 31-03-2016			Density km <sup>2</sup> /GWMW
		Dug Wells	Piezometers	Total	
1.	Thiruvananthapuram	114	22	136	12.1
2.	Kollam	109	20	129	12.4
3.	Pathanamthitta	82	14	96	11.1
4.	Alappuzha	81	22	103	12.6
5.	Kottayam	99	8	107	19.2
6.	Idukki	69	8	77	31
7.	Ernakulam	124	18	142	15.1
8.	Thrissur	120	20	140	13.7
9.	Palakkad	120	45	165	18.0
10.	Malappuram	121	21	142	17.3
11.	Kozhikode	84	20	104	18.2
12.	Wayanad	75	9	84	15.5
13.	Kannur	100	16	116	20.8
14.	Kasaragod	106	25	131	14.5
	<b>Total</b>	<b>1404</b>	<b>268</b>	<b>1672</b>	<b>16.2</b>

Fig No 1.1





## II HYDROGEOLOGY

The occurrence and movement of ground water is mainly controlled by factors like physiography, geological setting, etc and are described in the following paragraphs.

### **Physiography**

Physiographically the State is divided into three major units viz. the coastal plains, the midlands and the hill ranges. The coastal plains have an elevation of less than 7.6m whereas the elevation of the midland ranges from 7.6 to 76 m and that of the hill ranges is more than 76 m above mean sea level (amsl). Along the hill ranges two distinct plateau regions are seen, the important being the Wayanad plateau, which covers major part of Wayanad district, the general elevation of which is above 700 m amsl. The other plateau is the Munnar plateau in Idukki district, the elevation of which is about 1000 m amsl.

### **Geology**

Geologically 88% of the State is underlain by crystalline rocks of Archaean age, which is a part of the peninsular shield. The crystalline complex of Kerala is composed of charnockites, gneisses, schists, migmatites and rocks of the Wayanad supracrustals. Along the western portion of the State the crystalline rocks are overlain by the sedimentary formations of Tertiary age and Recent alluvial formations. The Tertiary sequence of formations have been divided into four beds viz. Alleppey, Vaikom, Quilon and Warkalli, the age of which ranges from Eocene to Lower Miocene. Laterites of Sub-recent age derived from the crystallines as well as sedimentary formations are seen all along the midlands. Along the coastal plains, sedimentaries and laterites are overlain by alluvium of Recent age. The geological succession in Kerala is given in Table 2.1.

**Table 2.1: Geological Succession of Kerala**

AGE	FORMATION	LITHOLOGY
Recent	Alluvium	Sand, clay, riverine alluvium etc. and flood plain deposits of Kuttanad area
Sub-recent	Laterite	Derived from crystalline and sedimentary rocks
Tertiary	Warkalli	Sand stone, clays with lignite seams
	Quilon	Limestone, marl and clay
	Vaikom	Sandstone with pebbles and gravel beds, clay and lignite
	Alleppey	Carbonaceous clay and fine sand
Undated	Intrusives	Dolerite, Gabbro, Granites, Quartzo-feldspathic Veins
Archaean	Wayanad group	Granitic gneiss and Schists
	Charnockites	Charnockites and associated rocks
	Khondalites	Khondalites suite of rocks and its associates

### Occurrence of Groundwater

Ground water occurs under phreatic, semi-confined and confined conditions in the above formations. The weathered crystallines, laterites and alluvial formations form the major phreatic aquifers, whereas the deep fractures in the crystallines and the granular zones in the Tertiary sedimentary formations form the semi-confined and confined aquifers.

Thick zones of weathered crystallines are seen along midland region. The depth to water level in the weathered crystallines in the midland area ranges from 3 to 16 mbgl. The midland area sustains medium capacity dug wells for irrigation. Along the hill ranges, the crystalline rocks are covered by thin weathered zone. Mostly dug wells that can cater to domestic needs are feasible along topographic lows. Bore wells tapping deeper fracture aquifer are feasible along potential fractures in the midland and hill ranges. Potential fractures are seen down to 240 mbgl and the most productive zone lies between 60 and 175 mbgl and the discharge of bore wells range between 36,000 and 1,25,000 lph.

Of the four Tertiary beds, the two beds viz. the Vaikom and Warkalli form potential aquifers. The oldest Alleppey beds contain brackish water as inferred from electrical

logs, whereas the Quilon beds are poor aquifers. The Vaikom aquifer is seen all along the coast between Quilon and Ponnani and the piezometric surface ranges from 1 to 18 m above msl. The aquifer is extensively developed between Quilon and Kayamkulam. The aquifer contains fresh water south of Karuvatta in Alleppey district and also in isolated pockets in Ernakulam district. The annual flow in the aquifer is computed as 43 MCM, of which 10 MCM is brackish. The Warkalli aquifer is seen south of Cochin. The piezometric head in the aquifer varies from 2.6 m above msl to 10 m below msl. The aquifer is largely developed in and around Alleppey. The annual flow in the aquifers is computed as 63 MCM and the draft is around 22 MCM.

Laterites are the most widely distributed lithological unit in the State and the thickness of the formation varies from a few meters to about 30m. The depth to water level in the formation ranges from less than a meter to 25 mbgl. Laterite forms potential aquifers along valleys and can sustain medium duty irrigation wells with the yields in the range of 0.5 - 6 m<sup>3</sup> per day.

The alluvium forms potential aquifer along the coastal plains and ground water occurs under phreatic and semi-confined conditions in this aquifer. The thickness of this formation varies from few meters to above 100 m and the depth to water level ranges from less than a meter to 6 mbgl. Filter point wells are feasible wherever the saturated thickness exceeds 5 m.

### **III RAINFALL DISTRIBUTION IN KERALA DURING 2015-16**

#### **Introduction**

Rainfall is the major source of ground water recharge and the rainfall pattern plays an important role on the water levels in the phreatic aquifers and also in the deeper aquifers. The rainfall data received from India Meteorological Department, Trivandrum for the period from April 2015 to March 2016 is analysed and discussed in this report.

#### **Annual rainfall distribution**

The total rainfall ranged from 1957 to 2964 mm during the period from April 2015 to March 2016. The maximum rainfall was recorded in Kannur district and the minimum in Palakkad district. During the southwest monsoon season, Trivandrum district recorded 798 mm and Kannur district recorded 2169 mm, which are the lowest and highest rainfall respectively. During the northeast monsoon season, Palakkad district recorded the lowest rainfall of 326 mm and Pathanamthitta district recorded the highest rainfall of 884 mm.

#### **Monthly rainfall distribution**

The monthly rainfall data for all the fourteen districts are given in Table 3.1. The maximum rainfall occurred during the months of October to December in all the 14 districts. Almost all the districts recorded with sufficient rainfall during the month of October to December due to the influence of north-east monsoon season. The state used to receive sufficient rainfall during the period June to September ie.during the south-west monsoon. This year it is reverse due to climate change.

#### **Normal rainfall vs. actual rainfall**

The actual rainfall during different seasons has been compared with the normal rainfall of the seasons to find out the variation of the rainfall and is discussed in details in the following paragraphs.

#### **Hot weather period**

The seasonal rainfall and their percentage departure from normal rainfall are given in Table 3.2. During the months of April-May 2015, the departure of pre-monsoon

rainfall varied from - 17 to 78% in different districts. As per the IMD norms the districts were recorded with normal to excess types of rainfall during this period and there is no deficient / scanty types of rainfall. The maximum departure towards negative side was observed in Kozhikode district with a maximum deviation of - 17% from the normal. Excess rainfall was received in Kollam, Kottayam, Palakkad, Pathanamthitta Trivandrum and Wayanad districts and remaining all the districts received normal rainfall. There is no scanty or deficient rainfall observed. The details are presented in Figure 3.1(a) and table. 3.2

### **South-west monsoon period**

During the southwest monsoon season from June to September 2015, the departure of rainfall in the districts varied from – 11% to 19%. The maximum deficit rainfall recorded in Wayanad and Alapuzha districts out of the total eleven deficient rainfall districts. Only three districts namely Kannur, Kottayam and Trivandrum districts received normal rainfall during this season. The details are given in Figure 3.1(b) and table.3.2.

### **North-east monsoon period**

During the northeast monsoon season from October to December 2015, the departure of rainfall varied from – 24% to 46 % in different districts. The maximum departure towards deficient rainfall recorded in Palakkad district. Only two districts recorded rainfall during this season. Normal rainfall is recorded in seven districts and excess rainfall in five districts. There is no scanty rainfall observed during the period and the details are presented in Figure 3.1(c) and table.3.2.

### **Winter period**

During the months of January to March 2016, the departure of rainfall varied from -93 to 48%. Three districts recorded excess rainfall, six districts have recorded scanty rainfall, one district normal rainfall and four districts recorded deficient rainfall during the winter season. The details are presented in Figure 3.1(d) and table.3.2.

### **Seasonal rainfall contribution to the total rainfall of the year 2015-16**

The seasonal rainfall contributions to the total rainfall in percentages are given in Table 3.3 and shown in Figure 3.2. The pattern shows that the southwest monsoon

season's contribution is increasing from south to north whereas, during the northeast monsoon season the rainfall is increasing from north to south. The other two seasons do not follow any specific pattern.

The rainfall during April and May contributes 8.99 to 26.94 %, south-west monsoon season from June to September 36.18 to 74.87 %, north-east monsoon season from October to December 11.89 to 31.05 % and January to March 0.0 to 3.9 % in different districts.

### **Comparison of 2014-15 rainfall with previous year rainfall**

The rainfall in various seasons of 2014-15 has been compared with the previous year rainfall for the assessment of the change in the ground water regime. The details are given in the following paragraphs.

#### **Summer season**

The rainfall of April and May 2015 has been compared with the summer rainfall of 2014 and the departure is given in Table 3.4 and Figure 3.3. The departure in summer rainfall in the district varied from 101.2 to -11.7 %. The maximum negative departure is observed in Kozhikode district and the minimum in Kollam district. The maximum positive departure is observed in Palakkad district and the minimum in Kasargod district.

#### **Southwest monsoon season**

The rainfall during June to September in 2015 has been compared with that in 2014 and the departure is given in Table 3.4 and Figure 3.3. The departure varied from -12.2 % to 38.7%. All the fourteen districts received less rainfall in comparison with the previous year. The average rainfall during the season is 1507 mm which is 74% of the annual rainfall.

#### **Northeast monsoon season**

The rainfall during October to December 2015 has been compared with that of 2014 and the departure is given in Table 3.4 and Figure 3.3. The departure varied from -8.1 to 78.6 %. Ten districts viz., Alapuzha, Ernakulam, Idukki, Kasargod, Kollam, Palakkad, Kozhikode, Pathanamthitta, Malapuram, and the Trivandrum recorded excess rainfall and the remaining four districts received less rainfall in comparison with previous year.

**Winter season**

The rainfall during January to March of 2016 has been compared with the rainfall of January to March 2015 and the departure is given in Table 3.4 and Figure 3.3. The departure varied from 107 to -93.5 %. During the winter season, only four district were received normal rainfall and three district were received excess rainfall and two districts were received deficient rain fall in comparison with the previous year. Record time five districts were received scanty rainfall during this season.

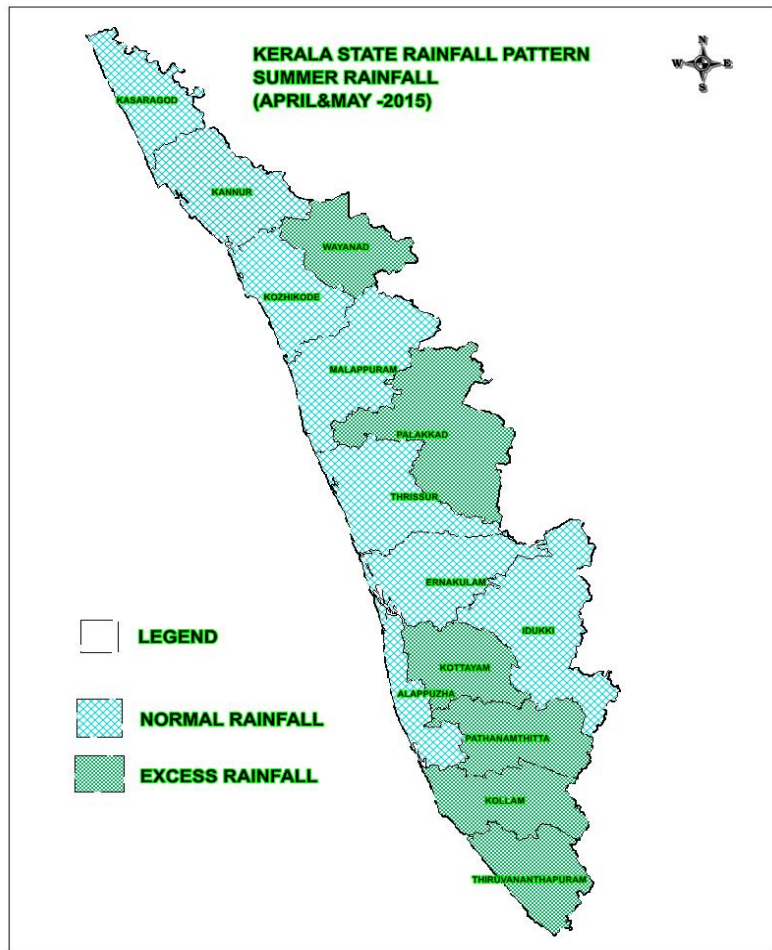


Fig 3.1(a)

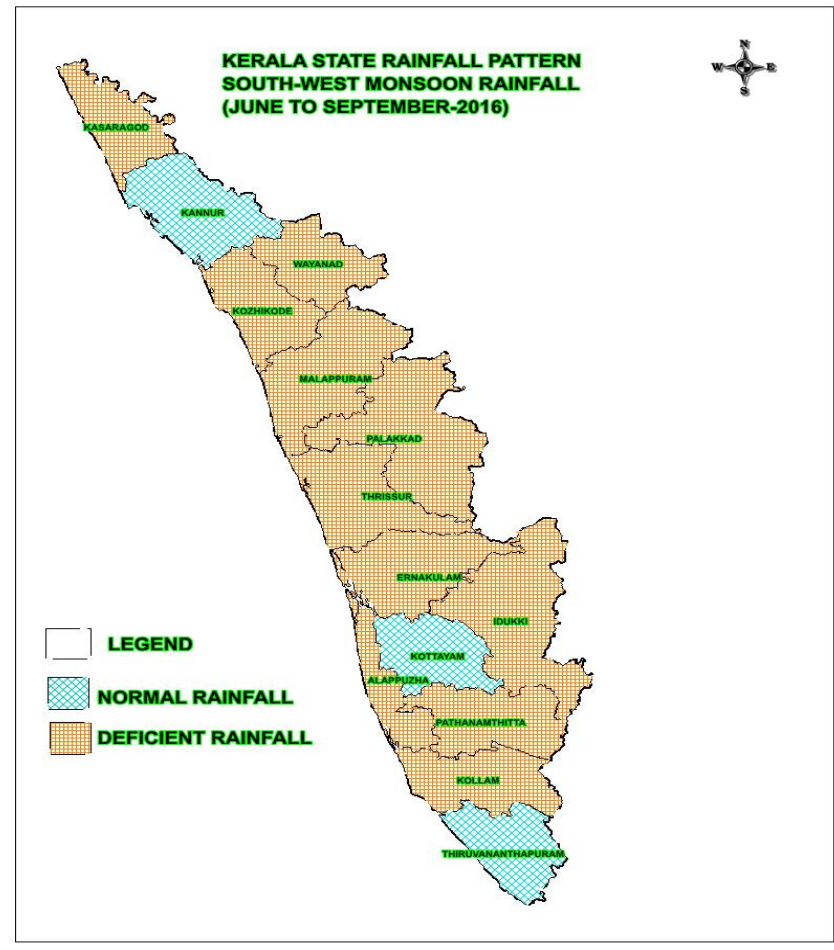


Fig 3.1(b)



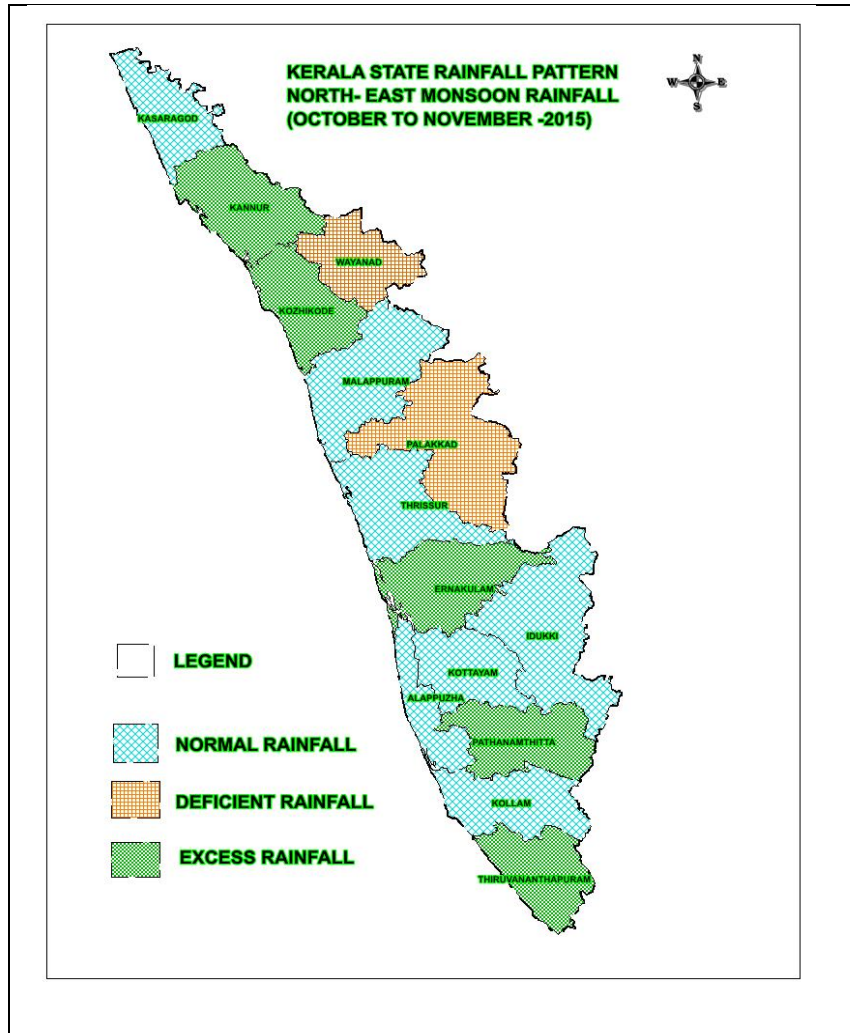


Fig 3.1(c)

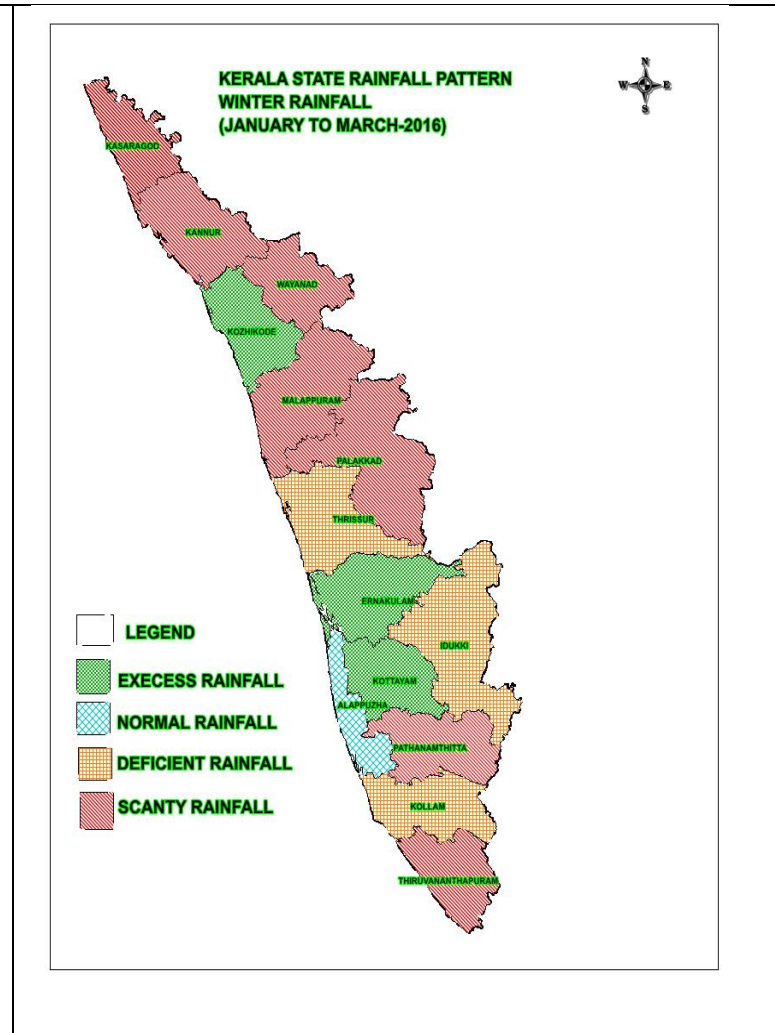


Fig 3.1(d)

**Table 3.1**

**Monthly Rainfall Distribution during 2015-16**  
(Figures in mm)

Sl.No.	District	2015									2016			Total
		April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
1	Allapuzha	232.3	179.1	474.5	241.3	182.6	238.6	365.4	198.7	121.8	5.9	52.2	32.5	2325.0
2	Kannur	103.3	163.1	701.5	808.4	328.3	331.4	352.9	150.3	24.2	0.0	0.0	0.8	2964.2
3	Ernakulam	225.0	171.2	575.9	364.6	238.8	396.5	367.9	304.7	185.3	0.4	91.4	1.9	2923.6
4	Idukki	282.4	157.6	647.9	448.8	251.4	347.5	247.4	263.1	118.7	5.1	5.1	23.1	2798.1
5	Kasaragod	116.4	153.1	553.6	851.9	386.2	235.0	304.5	88.6	14.2	2.9	0.5	0.0	2706.7
6	Kollam	280.3	208.8	413.3	188.5	135.7	247.8	345.4	332.7	81.1	1.0	50.3	30.7	2315.6
7	Kottayam	276.7	229.0	614.9	316.1	281.6	377.1	387.9	220.3	113.9	11.5	43.3	57.1	2929.3
8	Kozhicode	88.2	190.8	682.1	771.9	237.8	303.6	361.7	189.7	7.2	0.0	0.0	29.9	2863.0
9	Malappuram	163.6	190.6	601.0	409.2	253.9	268.6	305.0	222.4	31.0	0.0	1.8	2.6	2449.7
10	Palakkad	184.0	245.5	458.0	282.8	212.6	200.5	144.8	181.5	42.8	0.2	0.0	4.5	1957.1
11	Pathanamthitta	484.1	170.9	369.6	192.1	262.8	348.1	501.8	382.8	72.5	0.0	5.1	59.3	2849.0
12	Thiruvananthapuram	257.6	336.5	358.7	61.2	70.2	307.7	324.4	321.4	145.1	3.2	3.7	15.4	2205.1
13	Trichur	142.4	182.9	635.4	456.2	268.2	317.5	277.8	183.4	91.7	10.8	4.1	6.2	2576.5
14	Waynad	122.5	215.4	830.4	308.4	219.1	234.8	167.4	99.3	34.3	3.3	0.0	8.6	2243.4

**Table 3.2****Seasonal Rainfall, Normal Rainfall and the percentage Departure in 2015-16 in Kerala State**

Sl.No	District	Summer Season			S.W. Monsoon Season			N.E. Monsoon Season			Winter season		
		2015			2015			2015			2016		
		April + May	Normal	% Dep	June to September	Normal	% Dep	October to December	Normal	% Dep	January to March	Normal	% Dep
1	Allapuzha	411.4	432.7	-5	1137	1745.9	-35	564.2	572.1	-1	90.6	90.5	0
2	Kannur	266.4	292.9	-9	2169.6	2669	-19	503.2	345.1	46	0.8	12.1	-93
3	Ernakulam	396.2	412.4	-4	1575.8	2065	-24	672.6	489.3	37	93.7	63.2	48
4	Idukki	440.0	383	15	1695.6	2276.2	-26	510.5	564.2	-10	33.3	79.1	-58
5	Kasaragod	269.5	264.5	2	2026.6	3007.5	-33	393.0	337.9	16	3.4	11.7	-71
6	Kollam	489.1	407	20	985.3	1332.3	-26	678.1	638.6	6	82.0	113.8	-28
7	Kottayam	505.7	417.9	21	1589.6	1897.3	-16	608.2	535.1	14	111.9	80.2	40
8	Kozhicode	279.0	337.5	-17	1995.4	2603.1	-23	551.5	422.2	31	29.9	21.3	40
9	Malappuram	354.2	308.1	15	1532.7	2060.4	-26	527.4	448.3	18	4.4	18.3	-76
10	Palakkad	429.5	257.4	67	1153.8	1572.7	-27	326.3	428	-24	4.7	31.9	-85
11	Pathanamthitta	655.0	479.6	37	1172.6	1715.7	-32	884.5	624.2	42	64.4	138.9	-54
12	Thiruvananthapuram	594.1	333.3	78	797.8	871.3	-8	645.8	522.7	24	22.3	75.9	-71
13	Trichur	325.3	368.3	-12	1677.2	2197.5	-24	461.2	469.4	-2	21.1	27.9	-24

14	Waynad	337.9	257.9	31	1592.6	2632.1	-39	266.7	332.5	-20	11.9	30.6	-61
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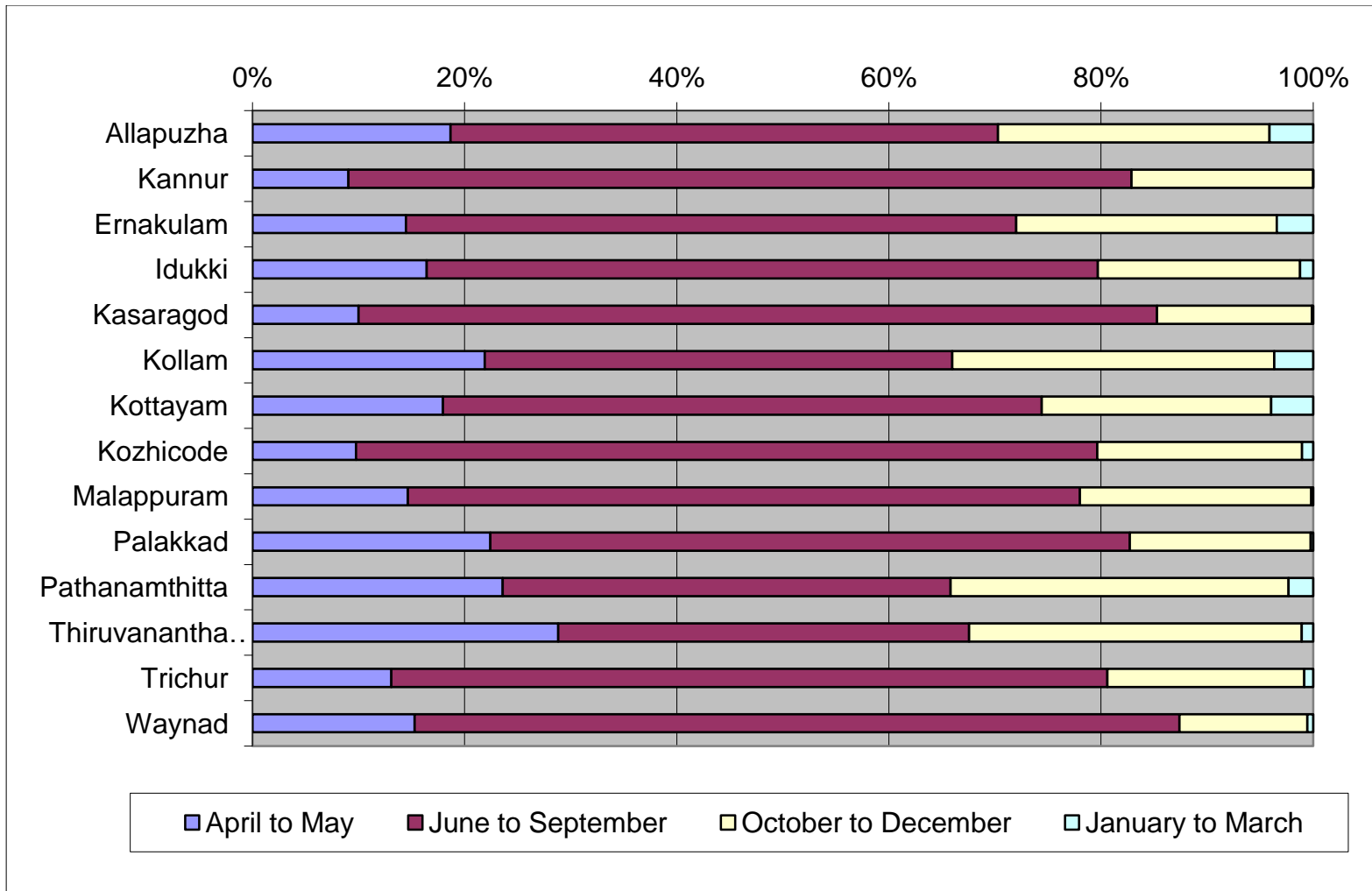
**Table 3.3****Seasonal Rainfall Distribution and their Percentage Contribution to Annual Rainfall (2015-16)**

Sl.No.	District	April + May		June to September		October to December		January to March		Annual rainfall mm
		2015		2015		2015		2016		
		Rainfall	%	Rainfall	%	Rainfall	%	Rainfall	%	
1	Allapuzha	411.4	17.69	1137	48.90	564.2	24.27	90.6	3.9	2325.0
2	Ernakulam	266.4	8.99	2169.6	73.19	503.2	16.97	0.8	0.0	2964.2
3	Idukki	396.2	13.55	1575.8	53.90	672.6	23.01	93.7	3.2	2923.6
4	Kannur	440.0	15.72	1695.6	60.60	510.5	18.24	33.3	1.2	2798.1
5	Kasaragod	269.5	9.96	2026.6	74.87	393.0	14.52	3.4	0.1	2706.7
6	Kollam	489.1	21.12	985.3	42.55	678.1	29.28	82.0	3.5	2315.6
7	Kottayam	505.7	17.26	1589.6	54.27	608.2	20.76	111.9	3.8	2929.3
8	Kozhicode	279.0	9.75	1995.4	69.70	551.5	19.26	29.9	1.0	2863.0
9	Malappuram	354.2	14.46	1532.7	62.57	527.4	21.53	4.4	0.2	2449.7
10	Palakkad	429.5	21.95	1153.8	58.95	326.3	16.67	4.7	0.2	1957.1
11	Pathanamthitta	655.0	22.99	1172.6	41.16	884.5	31.05	64.4	2.3	2849.0
12	Thiruvananthapuram	594.1	26.94	797.8	36.18	645.8	29.29	22.3	1.0	2205.1
13	Trichur	325.3	12.63	1677.2	65.10	461.2	17.90	21.1	0.8	2576.5
14	Waynad	337.9	15.06	1592.6	70.99	266.7	11.89	11.9	0.5	2243.4

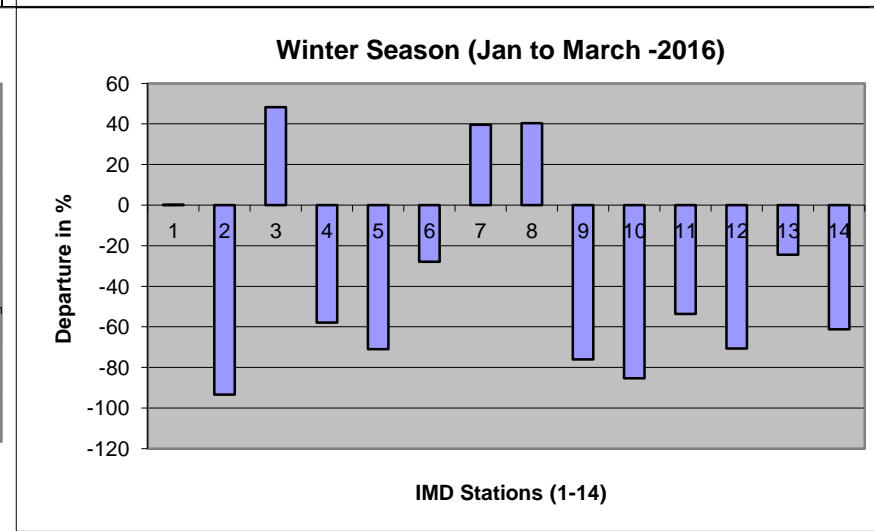
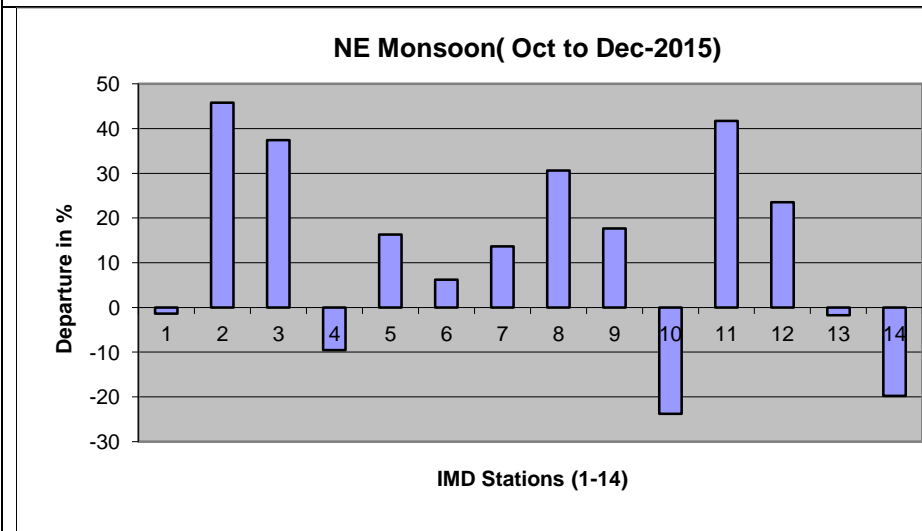
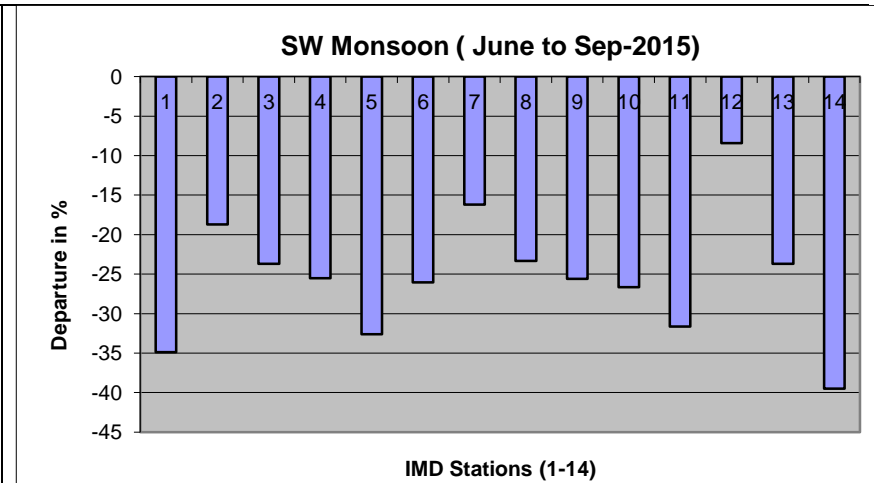
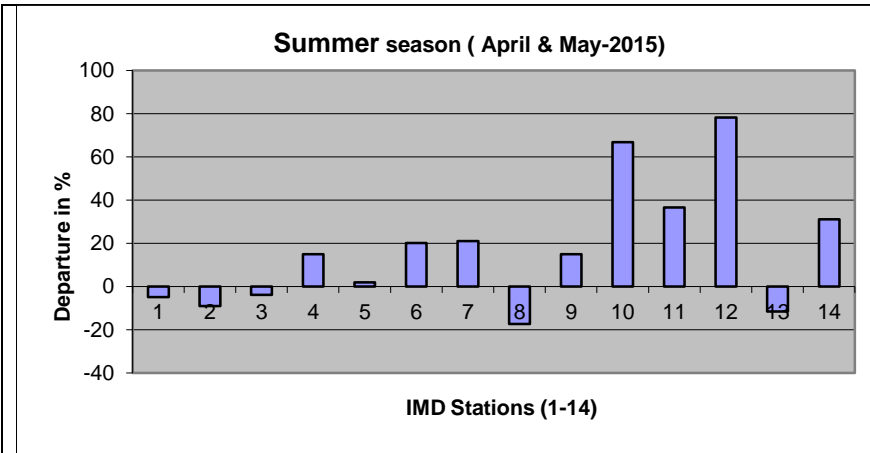
**Table 3.4****Comparison of 2014-15 Seasonal Rainfall with the Seasonal Rainfall of 2015-16**

Sl.No.	District	Summer Season			S.W. Monsoon Season			N.E. Monsoon Season			Winter season		
		2015 (mm)	2014 (mm)	% Dep	2015 (mm)	2014 (mm)	% Dep	2015 (mm)	2014 (mm)	% Dep	2016 (mm)	2015 (mm)	% Dep
1	Allapuzha	411.4	402.36	2.2	1137	1558.3	-27.0	564.2	403.16	39.9	90.6	102.97	-12.0
2	Ernakulam	266.4	284.27	-6.3	2169.6	2862.3	-24.2	503.2	354.3	42.0	0.8	12.3	-93.5
3	Idukki	396.2	386.13	2.6	1575.8	2376.1	-33.7	672.6	548.77	22.6	93.7	45.1	107.8
4	Kannur	440	346.3	27.1	1695.6	2706.8	-37.4	510.5	548.96	-7.0	33.3	82.8	-59.8
5	Kasaragod	269.5	268.11	0.5	2026.6	2721.3	-25.5	393.0	338.8	16.0	3.4	31.971	100.0
6	Kollam	489.1	498.79	-1.9	985.3	1422.9	-30.8	678.1	529.47	28.1	82.0	62.771	30.6
7	Kottayam	505.7	454.26	11.3	1589.6	2106.2	-24.5	608.2	622.56	-2.3	111.9	115.27	-2.9
8	Kozhicode	279	316.14	-11.7	1995.4	2773.6	-28.1	551.5	437.26	26.1	29.9	35.1	-14.8
9	Malappuram	354.2	281.06	26.0	1532.7	2296.1	-33.2	527.4	492.46	7.1	4.4	37.8	-88.4
10	Palakkad	429.5	213.43	101.2	1153.8	1708.2	-32.5	326.3	322.87	1.1	4.7	33.871	-86.1
11	Pathanamthitta	655	580.2	12.9	1172.6	1913.3	-38.7	884.5	495.31	78.6	64.4	69.157	-6.9
12	Thiruvananthapuram	594.1	416.54	42.6	797.8	909.1	-12.2	645.8	409.36	57.8	22.3	50.343	-55.7
13	Trichur	325.3	293.56	10.8	1677.2	1947.7	-13.9	461.2	502	-8.1	21.1	42.086	-49.9
14	Waynad	337.9	321.3	5.2	1592.6	2559.6	-37.8	266.7	284	-6.1	11.9	53.686	-77.8

**Fig. 3.2 Seasonal rainfall contribution to annual rainfall in percentage (2015-16)**



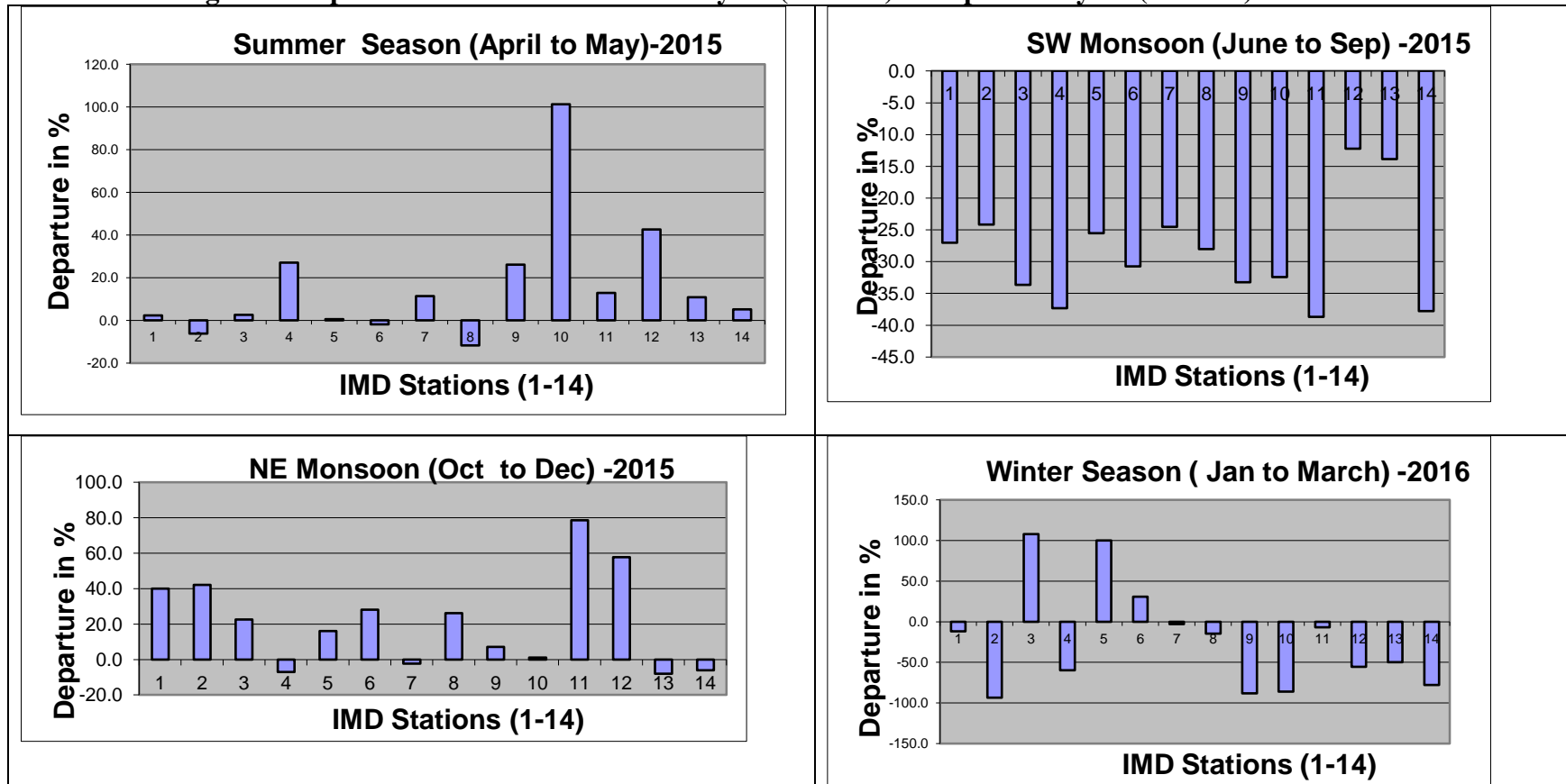
**Fig.3.3 Seasonal rainfall Departure from its Normal during the period 2015-16**



1. Alapuzha 2. Ernakulam 3. Idukki 4. Kannur 5. Kasaragod 6. Kollam 7. Kottayam 8. Kozhikode 9. Malapuram 10. Palakkad 11. Pathanamthitta 12. Thiruvananthapuram 13. Thrichur 14. Wayanad



**Fig.3.4 Comparison of Seasonal rainfalls of year (2015-16) with previous year (2014-15) rainfall**



1. Alapuzha 2. Ernakulam 3. Idukki 4. Kannur 5. Kasaragod 6. Kollam 7. Kottayam 8. Kozhikode 9. Malapuram 10. Palakkad 11. Pathanamthitta 12. Thiruvananthapuram 13. Thrichur 14. Wayanad

#### IV. DEPTH TO WATER LEVEL SCENARIO DURING 2015-16

The depth to water level is being monitored from 1672 monitoring wells distributed throughout the State during the months of April, August, November and January. The water level measured during the month of April is taken as pre-monsoon water level and the data of August and November are taken as post-monsoon water level depending on the rainfall distribution. The water level data of GWMWs during 2015-16 is compiled in Annexure I.

The depth to water level mostly depends on the hydrogeological conditions of the area as well as topography, rainfall pattern etc. In coastal plains the depth to water level is generally restricted to 6 mbgl. In midland areas, where the undulating topography is seen, the depth to water level generally varies from near ground level to 25 mbgl. The variation is mostly due to topographical variations, thickness of lateritic overburden etc. In areas where laterites are underlain by sedimentary aquifers of Tertiary age, the water level goes very deep, even to the extent of 55 mbgl. In highlands the depth to water level is in the range of few cm to 10 mbgl depending on the topography and thickness of overburden (weathered zone).

##### **Depth to water level during April 2015**

The premonsoon depth to water level in the State varied widely from 0.3 to 55.90 mbgl in dug wells. Shallow water level in the range of 0 – 2 mbgl is seen in Alappuzha district, coastal tracts of Ernakulam, Thrissur districts and in the valley portion located in the eastern part of Idukki, Kozhikkod and Kottayam districts and also as small patches in remaining districts. The areas falling in the midland region generally show water level in the range of 2 – 10 mbgl. Water level of more than 20 m bgl is seen as isolated patches in Thiruvananthapuram, Thrissur and Kasargod districts. The district-wise well frequency for different ranges of depth to water level during April 2015 has been prepared and is given in Table 4.1. The analysis of the data reveals that 82.84 % of the monitoring wells (GWMWs) have water levels within the range of 0.1 to 10 mbgl. Deeper water level (> 20 mbgl) is seen in Thiruvananthapuram (Poovar, Pulluvila, Veyloor, Melvettoor and Kanjiramkulam), and Kasargod district as isolated pockets which can be attributed to the local hydrogeological conditions such as thick lateritic overburden and the wells situated at elevated areas.

The map showing the depth to water level in Kerala State during April 2015 is given in Figure 4.1. In many districts, viz Kasargod, Kannur, Malappuram, Palakkad, Thrissur, Ernakulam, Kollam and Thiruvananthapuram districts more than 50% of monitoring wells show water level greater than 5 m bgl. Deepest water level is recorded in Thiruvananthapuram district.

#### **Depth to water level during August 2015**

During the month of August 2015 the depth to water level in the State varied widely from 0.03 to 38.75 mbgl in dug wells. Shallow water level in the range of 0 – 2 mbgl is seen in Alappuzha district, coastal tracts of Ernakulam, Thrissur, Kozhikkod, Kannur and Kasargod districts and in the valley portion located in the eastern part of Idukki, Kozhikkod and Kottayam districts and also as small patches in remaining districts. The areas falling in the midland region generally show water level in the range of 2 – 10 mbgl. Water level of more than 20 m bgl is seen as isolated patches in Thiruvananthapuram, Kollam, Kannur and Kasargod districts. The district-wise well frequency for different ranges of depth to water level during August 2015 has been prepared and is given in Table 4.2. The analysis of the data reveals that 82.84 % of the monitoring wells (GWMWs) have water levels within the range of 0.1 to 10 mbgl. Deeper water level (> 20 mbgl) is seen in Thiruvananthapuram (Poovar, Pulluvila, Veyloor, Melvettoor and Kanjiramkulam), and Kasargod district as isolated pockets which can be attributed to the local hydrogeological conditions such as thick lateritic overburden and the wells situated at elevated areas.

The map showing the depth to water level in Kerala State during August 2015 is given in Figure 4.2. In many districts, viz Kasargod, Kannur, Malappuram, Palakkad, Thrissur, Ernakulam, Kollam and Thiruvananthapuram districts more than 50% of monitoring wells show water level greater than 5 m bgl. Deepest water level is recorded in Thiruvananthapuram district.

#### **Depth to water level during November 2015**

During postmonsoon period, the depth to water level in the State varied widely from 0.02 to 49.5 mbgl in dug wells. Shallow water level in the range of 0 – 2 mbgl is seen in Alappuzha district, coastal tracts of Ernakulam, Thrissur and Kozhikkod districts and in the valley portion located in the eastern part of Idukki and Kottayam districts and also as small patches in remaining districts. The areas falling in the midland region generally

show water level in the range of 2 – 10 mbgl. Water level of more than 20 m bgl is seen as isolated patches in Thiruvananthapuram, Kollam and Kasargod districts.. The analysis of the data reveals that 90.92 % of the monitoring wells (GWMWs) have water levels within the range of 0.1 to 10 mbgl. Deeper water level (> 20 mbgl) is seen in Thiruvananthapuram (Poovar, Pulluvila and Kanjiramkulam), and Kasargod district as isolated pockets which can be attributed to the local hydrogeological conditions such as thick lateritic overburden and the wells situated at elevated areas.

The map showing the depth to water level in Kerala State during November 2015 is given in Figure 4.3. In Kasargod and Kollam districts more than 50% of monitoring wells show water level greater than 5 m bgl. Deepest water level is recorded in Thiruvananthapuram district. The district-wise well frequency for different ranges of depth to water level during November 2015 has been prepared and is given in Table 4.3.

#### **Depth to water level during January 2016**

During the month of January 2016, the depth to water level in the State varied widely from 0.33 to 34.13 mbgl in dug wells. Shallow water level in the range of 0 – 2 mbgl is seen in Alappuzha district, coastal tracts of Ernakulam, Thrissur, Kozhikkod and Kannur districts and in the valley portion located in the eastern part of Idukki and Kottayam districts and also as small patches in remaining districts. The areas falling in the midland region generally show water level in the range of 2 – 10 mbgl. Water level of more than 20 m bgl is seen as isolated patches in Thiruvananthapuram, and Kasargod districts. The district-wise well frequency for different ranges of depth to water level during January 2016 has been prepared and is given in Table 4.4. The analysis of the data reveals that 86.65 % of the monitoring wells (GWMWs) have water levels within the range of 0.1 to 10 mbgl. Deeper water level (> 20 mbgl) is seen in Thiruvananthapuram (Poovar, Pulluvila and Kanjiramkulam), and Kasargod district as isolated pockets which can be attributed to the local hydrogeological conditions such as thick lateritic overburden and the wells situated at elevated areas.

The map showing the depth to water level in Kerala State during January 2016 is given in Figure 4.4. In Kannur, Kollam and Thrissur districts more than 50% of monitoring wells show water level greater than 5 m bgl. Deepest water level is recorded in Thiruvananthapuram district.

Figure 4.1

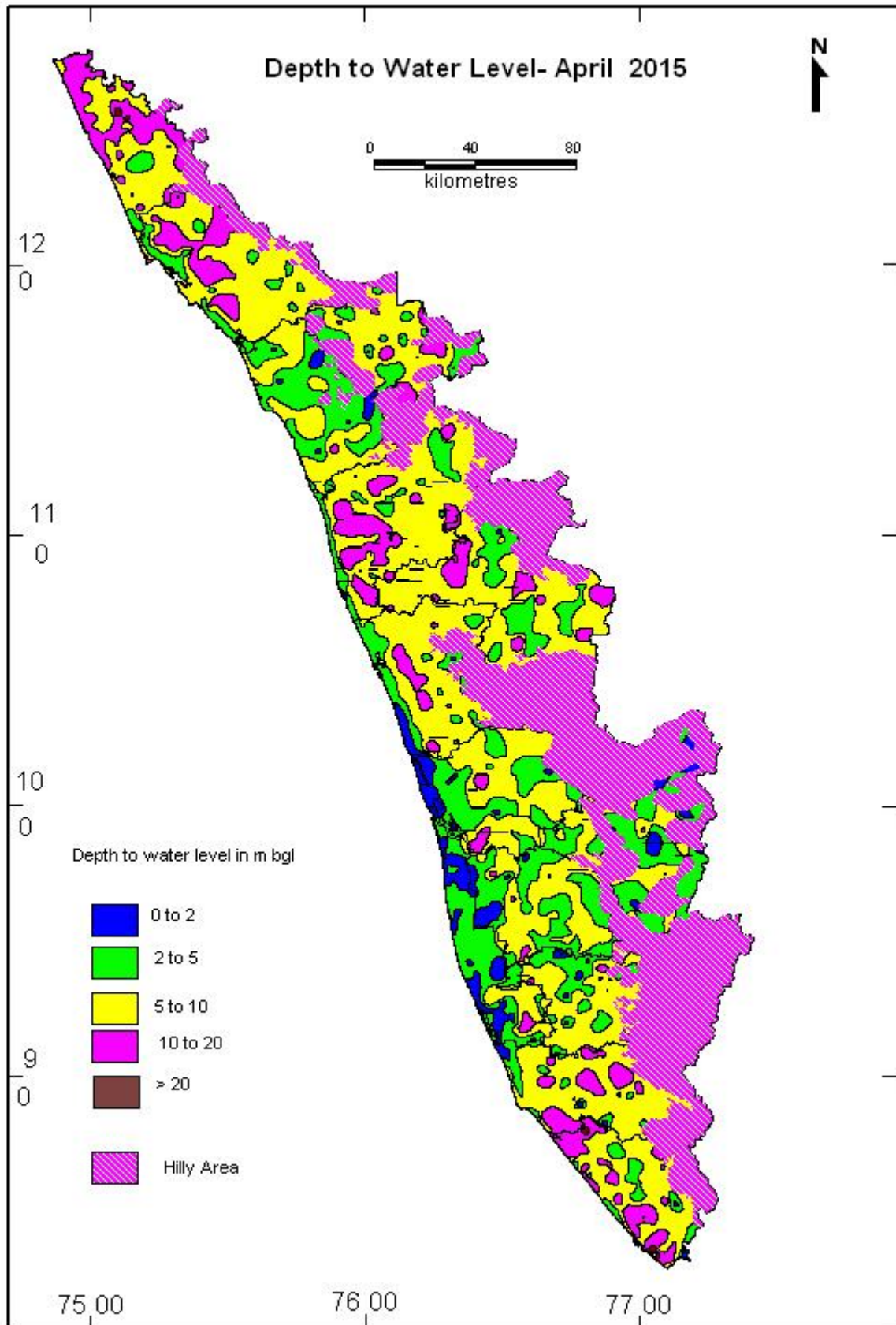


Figure 4.2

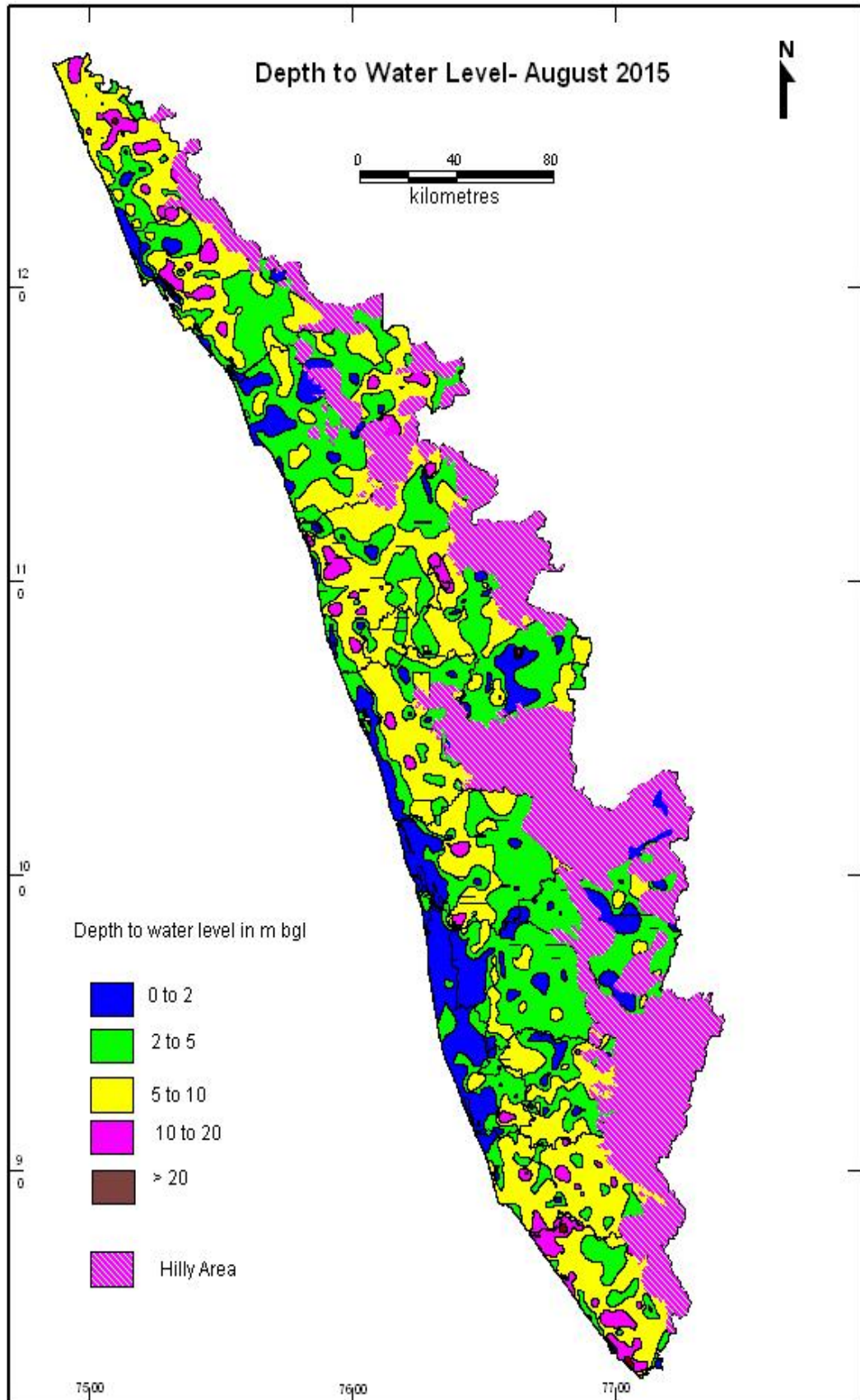




Figure 4.3

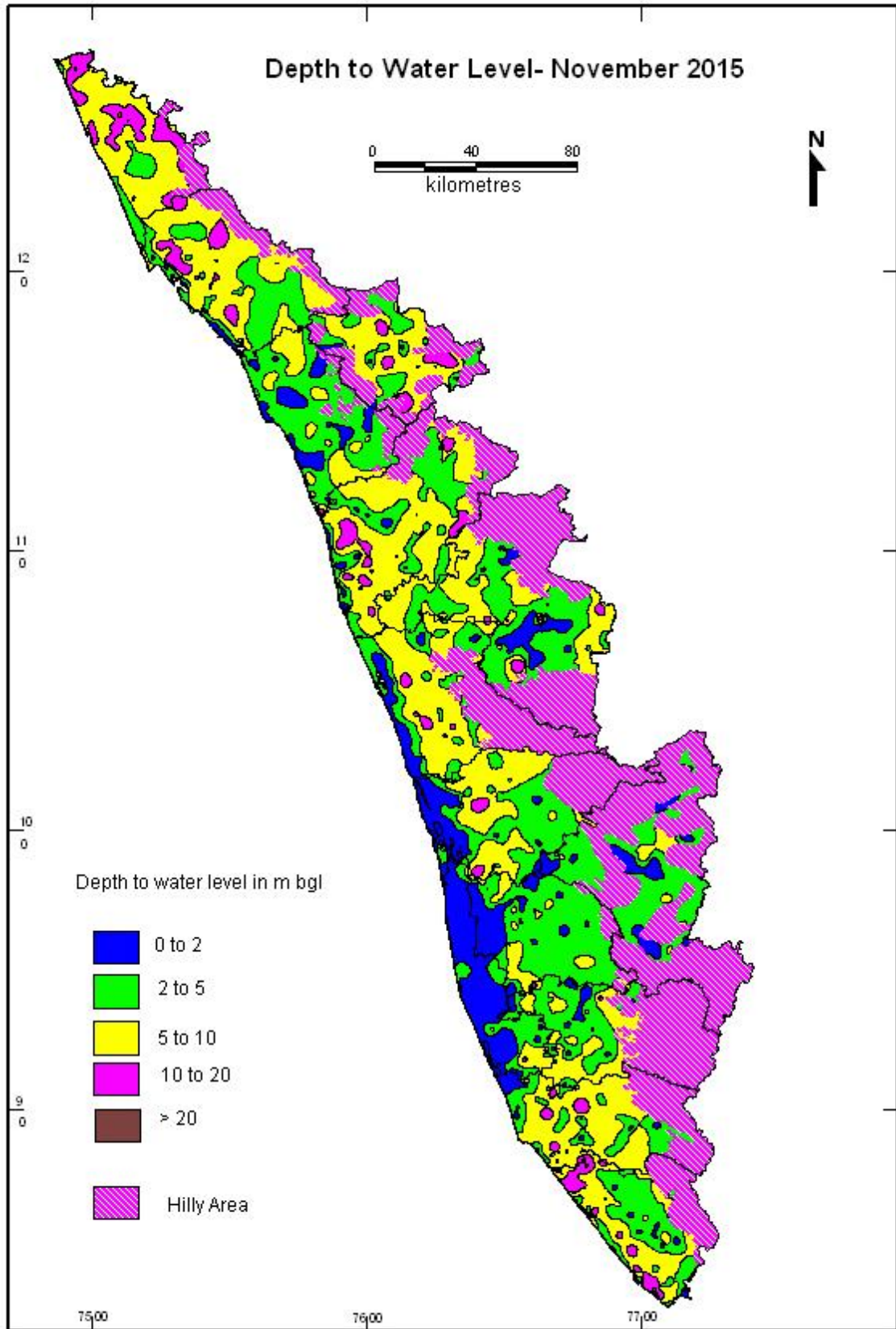
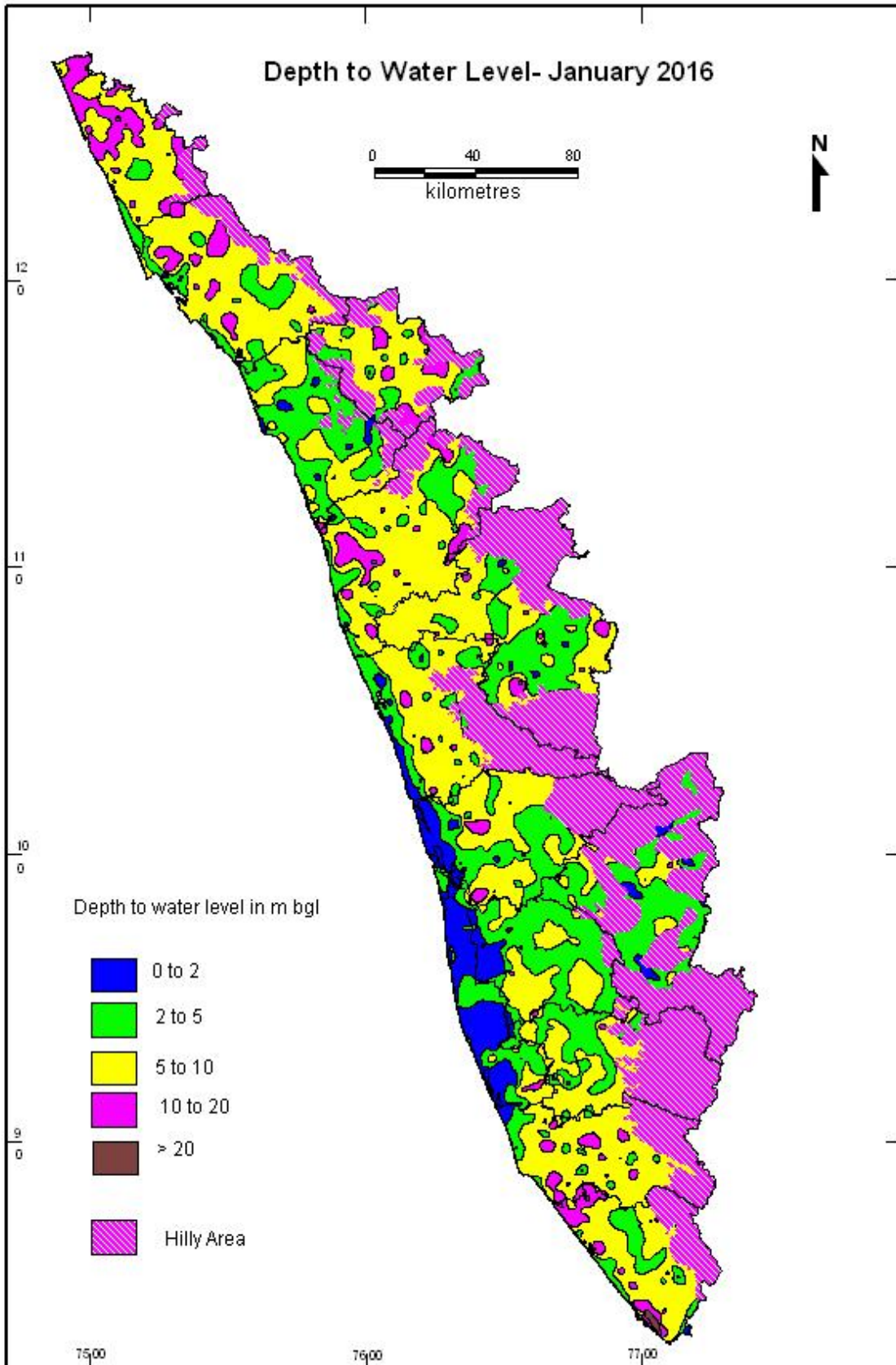


Figure 4.4





**Table 4.1: District wise Well Frequency for Different ranges of depth to water level for April 2015**

District	No. of Wells Analysed	Depth to Water level(mbgf)		No. & Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0.0 – 2.0	2.0 – 5.0	5.0 – 10.0	10.0 – 20.0	20.0 – 40.0	> 40.0
ALAPPUZHA	87	0.3	13.45	31 35.63%	36 41.38%	11 12.64%	9 10.34%	0	0
ERNAKULAM	120	0.45	16.2	20 16.67%	43 35.83%	52 43.33%	5 4.17%	0	0
IDUKKI	72	0.47	11.15	9 12.5%	38 52.78%	22 30.56%	3 4.17%	0	0
KANNUR	101	1.79	20.21	1 5.81%	22 21.78%	53 52.48%	24 23.76%	1 0.99%	0
KASARGOD	117	2.07	25.75	0	10 8.55%	52 44.44%	53 45.30%	2 1.71%	0
KOLLAM	110	0.3	19.05	8 7.27%	16 14.55%	63 57.27%	23 20.91%	0	0
KOTTAYAM	104	1.05	13.87	11 11.58%	46 44.23%	41 39.42%	6 5.77%	0	0
KOZHIKODE	91	1.2	16.52	08 8.79%	37 40.66%	40 43.96%	6 6.59%	0	0
MALAPPURAM	111	1.71	19.24	3 2.7%	23 20.72%	57 51.35%	28 25.23%	0	0
PALAKKAD	124	1.38	29.4	5 4.03%	34 27.42%	68 54.84%	12 9.68%	5 4.03%	0
PATHANAMTHITTA	90	1.1	16	6 6.67%	34 37.78%	45 50.00%	5 5.56%	0	0
THIRUVANANTHAPURAM	114	0.94	55.9	4 3.51%	21 18.42%	53 46.49%	30 26.32%	5 4.39%	1 0.88%
THRISSUR	112	0.5	13.21	8 7.14%	31 27.68%	61 54.46%	12 10.71%	0	0
WAYANAD	69	0.99	17.71	5 7.25%	19 27.54%	31 42.03%	14 20.29%	0	0
<b>TOTAL</b>	1422	0.3	55.9	19 8.36 %	410 28.83%	649 45.64%	230 16.17%	13 0.91%	1 0.07%

**Table 4.2: District wise Well Frequency for Different ranges of depth to water level for August 2015**

District	No. of Wells Analysed	Depth to Water level(mbgl)		No. & Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0.0 – 2.0	2.0 – 5.0	5.0 – 10.0	10.0 – 20.0	20.0 – 40.0	> 40.0
ALAPPUZHA	88	0.05	15.30	58 65.91%	17 19.3.2%	7 7.95%	6 6.82%	0	0
ERNAKULAM	133	0.3	13.2	39 29.32%	50 37.59%	40 30.08%	4 3.01%	0	0
IDUKKI	75	0.4	9.95	20 26.67%	43 57.33%	12 16.00%	0	0	0
KANNUR	101	0.03	20.45	13 12.87%	35 34.65%	41 40.59%	11 10.89%	1 0.99%	0
KASARGOD	119	0.50	22.45	13 10.92%	31 26.05%	52 43.7%	22 18.49%	1 0.84%	0
KOLLAM	110	0.59	21.04	12 10.91%	22 20.00%	62 56.36%	13 11.82%	1 0.91%	0
KOTTAYAM	100	0.15	9.396	28 28.00%	51 51.00%	21 21.00%	0	0	0
KOZHIKODE	92	0.1	13.3	25 27.17%	38 41.3%	26 28.26%	3 3.26%	0	0
MALAPPURAM	109	0.55	16.23	16 14.68%	34 31.19%	45 41.28%	14 12.84%	0	0
PALAKKAD	139	0.04	17.58	31 22.3%	55 39.57%	43 30.94%	10 7.19%	0	0
PATHANAMTHITTA	91	0.60	14.5	19 20.88%	28 30.77%	42 46.15%	2 2.2%	0	0
THIRUVANANTHAPURAM	122	0.83	0.83	6 4.92%	35 28.69%	49 40.16%	27 22.13%	5 4.10%	0
THRISSUR	125	0.52	0.52	28 22.4%	38 30.4%	55 44.00%	4 3.2%	0	0
WAYANAD	66	0.70	0.7	9 13.64%	25 37.88%	24 36.36%	8 12.12%	0	0
<b>TOTAL</b>	1470	0.03	38.75	317 21.56%	502 34.14%	519 35.1%	124 8.5%	8 0.5%	0

**Table 4.3: District wise Well Frequency for Different ranges of depth to water level for November 2015**

District	No. of Wells Analysed	Depth to Water level(mbg)		No. &Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0.0 – 2.0	2.0 – 5.0	5.0 – 10.0	10.0 – 20.0	20.0 – 40.0	> 40.0
ALAPPUZHA	85	0.05	10.85	59 69.41%	14 16.47%	10 11.76%	2 2.35%	0	0
ERNAKULAM	125	0.03	14.30	34 27.20%	41 32.80%	48 38.40%	2 1.60%	0	0
IDUKKI	73	0.30	10.70	20.27.40%	41 56.16%	11 15.07%	1 1.37%	0	0
KANNUR	103	0.40	19.45	9 8.74%	34 33.01%	45 43.69%	15 14.56%	0	0
KASARGOD	113	0.55	22.85	4 3.54%	15 13.27%	64 56.64%	28 24.78%	2 1.77%	0
KOLLAM	107	0.45	20.02	17 15.89%	27 25.23%	56 52.34%	6 5.61%	1 0.93%	0
KOTTAYAM	99	0.15	10.60	30 30.30%	49 49.49%	19 19.19%	1 1.01%	0	0
KOZHIKODE	93	0.20	14.20	28 30.11%	36 38.71%	25 26.88%	4 4.30%	0	0
MALAPPURAM	120	0.55	17.15	16 13.33%	37 30.83%	50 41.67%	17 14.17%	0	0
PALAKKAD	132	0.20	19.60	29 21.97%	51 38.64%	43 32.58%	9 6.82%	0	0
PATHANAMTHITTA	92	0.62	15.50	18 19.57%	32 34.78%	38 41.30%	4 4.35%	0	0
THIRUVANANTHAPURAM	115	0.33	34.18	16 13.91%	40 34.78%	38 33.04%	17 14.78%	4 3.48%	0
THRISSUR	126	0.57	13.22	22 17.46%	39 30.95%	59 46.83%	6 4.76%	0	0
WAYANAD	71	0.85	17.37	13 18.31%	18 25.35%	27 38.03%	13 18.31%	0	0
<b>TOTAL</b>	1454	0.03	34.18	315 21.66%	474 32.60%	533 36.66%	125 8.60%	7 0.48%	0

**Table 4.4: District wise Well Frequency for Different ranges of depth to water level for January 2016**

District	No. of Wells Analysed	Depth to Water level(mbgl)		No. & Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0.0 – 2.0	2.0 – 5.0	5.0 – 10.0	10.0 – 20.0	20.0 – 40.0	> 40.0
ALAPPUZHA	84	0.33	11.56	53 63.1%	18 21.43%	8 9.52%	6 5.95%	0	0
ERNAKULAM	133	0.46	15.9	29 21.8%	39 29.32%	60 45.11%	5 3.76%	0	0
IDUKKI	73	0.35	10.5	11 15.07%	42 57.53%	17 23.29%	3 4.11%	0	0
KANNUR	102	0.90	19.61	7 6.86%	21 20.59%	58 56.86%	16 15.69%	0	0
KASARGOD	115	1.99	23.07	1 0.87%	11 9.57%	57 49.57%	44 38.26%	2 174%	0
KOLLAM	102	0.5	19.94	6 5.88%	15 14.71%	63 61.76%	18 17.65%	0	0
KOTTAYAM	98	0.8	11.24	15 15.31%	44 44.9%	38 38.78%	1 1.02%	0	0
KOZHIKODE	93	0.82	15.45	11 15.31%	42 45.16%	35 37.63%	5 5.38%	0	0
MALAPPURAM	116	0.68	30.3	7 6.03%	29 25.00%	57 49.14%	22 18.97%	1 0.86%	0
PALAKKAD	139	0.5	22.6	12 8.63%	57 41.01%	58 41.73%	9 6.47%	3 2.16%	0
PATHANAMTHITTA	94	0.66	15.8	10 10.64%	37 39.36%	44 46.81%	3 3.19%	0	0
THIRUVANANTHAPURAM	115	0.7	34.13	6 5.22%	27 23.48%	57 49.57%	20 17.39%	5 4.35%	0
THRISSUR	121	0.98	12.84	14 11.57%	36 29.75%	62 51.24%	9 7.44%	0	0
WAYANAD	69	1.07	17.6	7 10.14%	18 26.09%	31 44.93%	13 18.84%	0	0
<b>TOTAL</b>	1454	0.33	34.13	189 19.07%	436 29.98%	645 44.36%	173 11.89%	11 0.75%	0

## **V WATER LEVEL FLUCTUATION IN KERALA DURING 2015-2016**

In Kerala the premonsoon water level measurements are carried out during April and postmonsoon measurements during August and November. The fourth water level measurement is during January. The estimation of water level fluctuation between premonsoon and postmonsoon is very important in the estimation of natural recharge to groundwater regime, which gives the dynamic resource of available groundwater.

The water level fluctuation between and pre and postmonsoon periods in coastal alluvium, riverine alluvium and valley fills are mostly restricted to 4 meters. In laterites water level fluctuation is generally in the range of a few centimetres to 9 metres, but mostly restricted to 4 m. In crystalline areas the water level fluctuation is in the range of a few cm to 6m.

### **Fluctuation between April 2015 and August 2015**

Comparison of August 2015 water level with that of April 2015 indicates rise in water level in the range of 0 – 4 .00 metres in most parts of the State whereas fall in water level is noticed in certain small isolated pockets mainly in Thiruvananthapuram, Kottayam, Ernakulam, Idukki, Kozhikkode, Kannur, Wayanad and Kasargod districts. In general the rise in water level is in the range of 0-2 m throughout all districts. Rise in water level in the range of 4 m and above is noticed in isolated pockets in Kannur, Kasargod and Wayanad, Malappuram, Thrissur and Thiruvananthapuram districts. Rise in water level is represented by 88 % of total monitoring wells. 5 wells have recorded zero or no fluctuation in Thiruvananthapuram, Alapuzha, Ernakulam, Kozhikkode and Wayanad districts.

The map of Kerala showing fluctuation between August 2015 and April 2015 is given in Fig: 5.1. District-wise well frequency for different ranges of water level fluctuation (August 2015 and April 2015) is given in Table 5.1.

### **Fluctuation between April 2015 and November 2015**

Comparison of November 2015 water level with that of April 2015 indicates rise in water level in the range of 0 – 8 .00 metres in most parts of the State whereas fall in water level also is noticed in certain small isolated pockets mainly in Thiruvananthapuram,

Kottayam, Pathanamthitta, Ernakulam, Kozhikkode and Wayanad districts. In the southern and northern districts of Kerala state, the rise in water level is in the range of 2-8 m, whereas in the central districts of Kerala rise in water level in the range of 0-2 is predominantly seen. Also the rise in water level in Malappuram, Thrissur and Palakkad districts is in the range of 2-8 m. Rise in water level is represented by 90 % of total monitoring wells

The map of Kerala showing fluctuation between November 2015 and April 2015 is given in Fig: 5.2. District-wise well frequency for different ranges of water level fluctuation (November 2015 and April 2015) is given in Table 5.2.

### **Fluctuation between April 2015 and January 2015**

Comparison of January 2016 water level with that of April 2015 indicates rise in water level in the range of 0 – 4 .00 metres in most parts of the State whereas fall in water level is noticed in certain small isolated pockets mainly in Kottayam, Pathanamthitta, Ernakulam, Idukki, Thrissur, Wayanad and Kasargod districts. In general the rise in water level is in the range of 0-2 m through out all districts except Wayanad district where fall is predominant. Rise in water level in the range of 4 m and above is noticed in isolated pockets in Kasargod, Palakkad, Thrissur, Malappuram, Pathanamthitta and Thiruvananthapuram districts. Thiruvananthapuram district has highest density of water level fluctuation (> 4 m). Rise in water level is represented by 75.17 % of total monitoring wells.

The map of Kerala showing fluctuation between January 2016 and April 2015 is given in Fig: 5.32. District-wise well frequency for different ranges of water level fluctuation (January 2016 and April 2015) is given in Table 5.3.

Figure 5.1

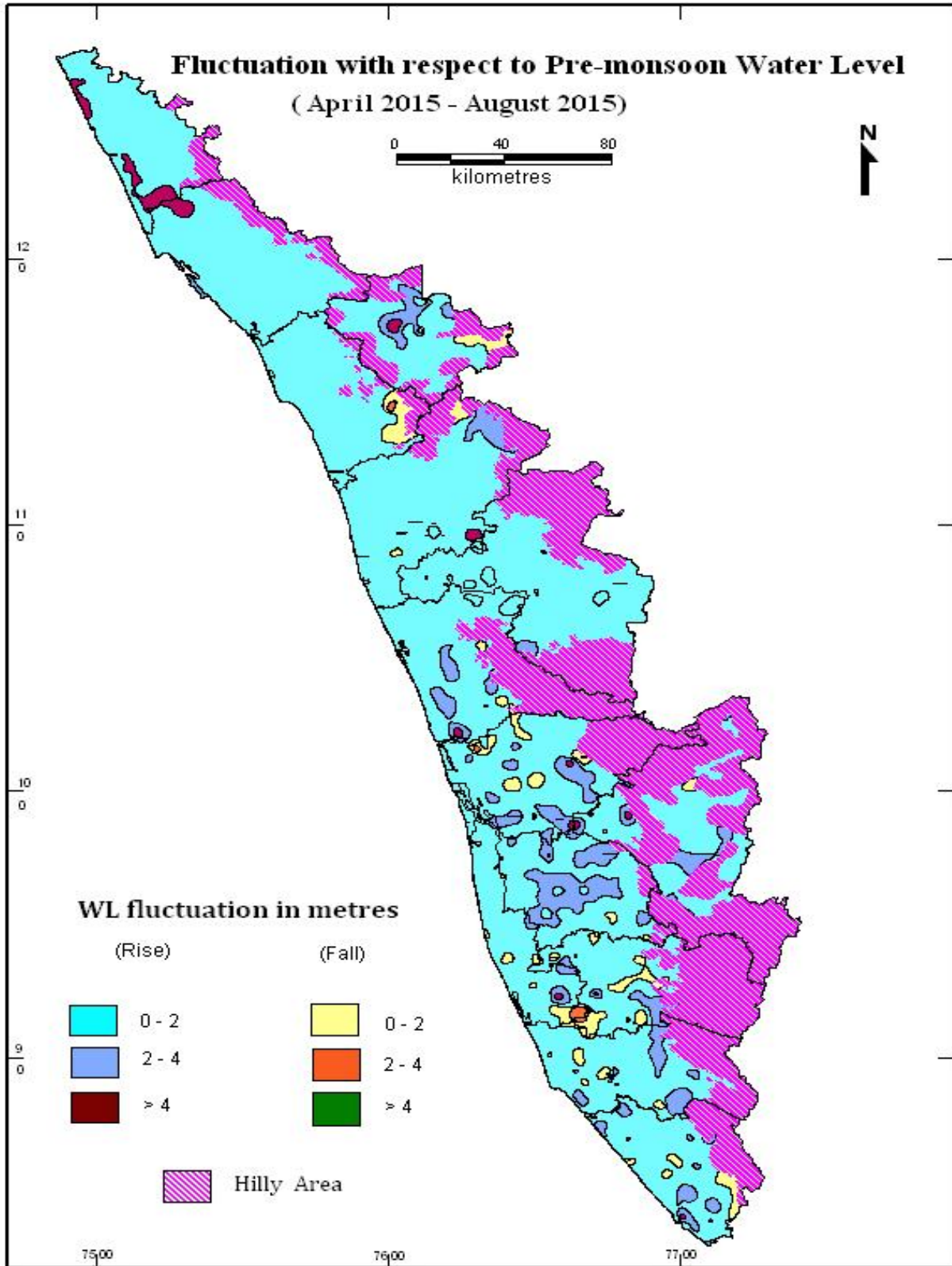




Figure 5.2

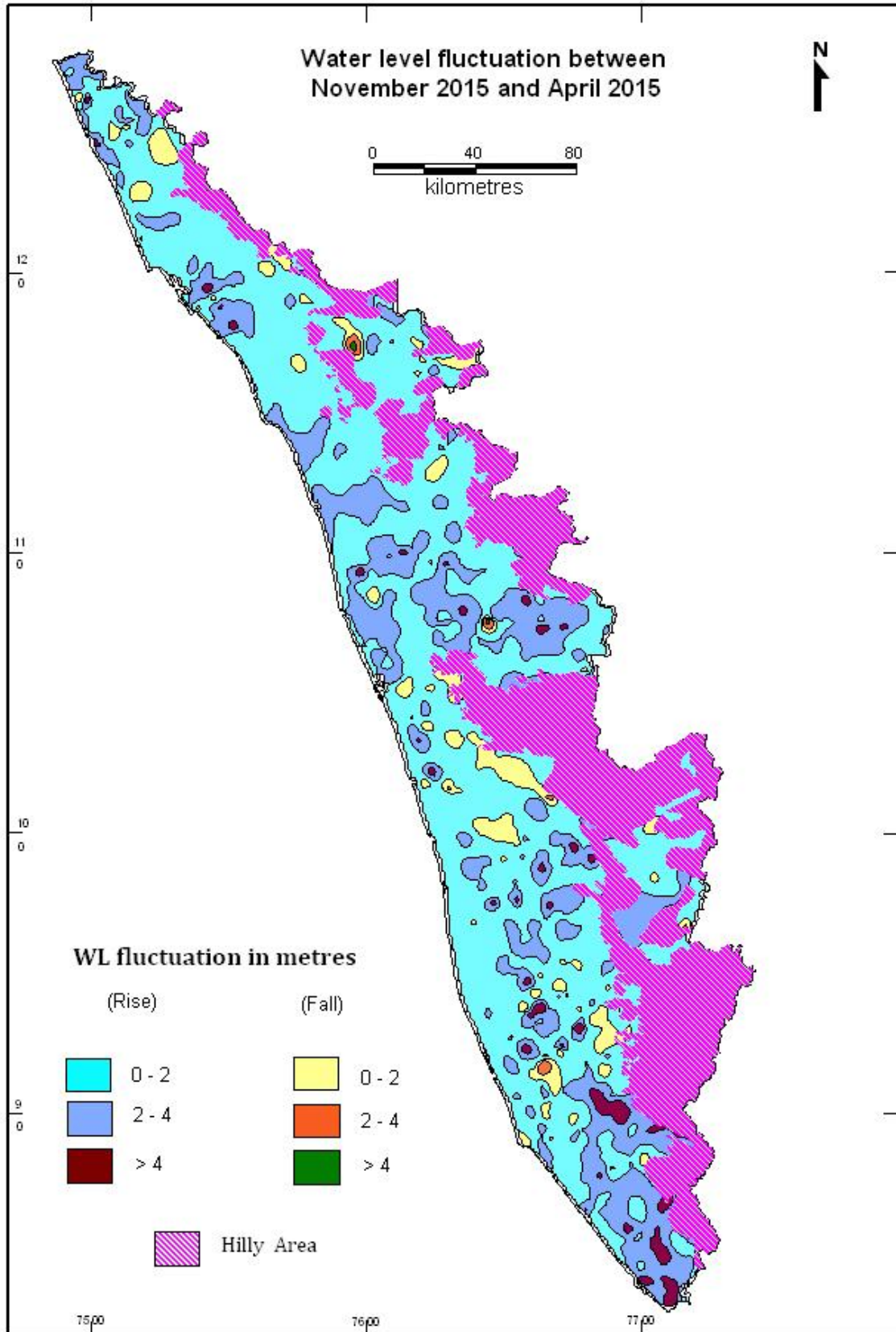




Figure 5.3

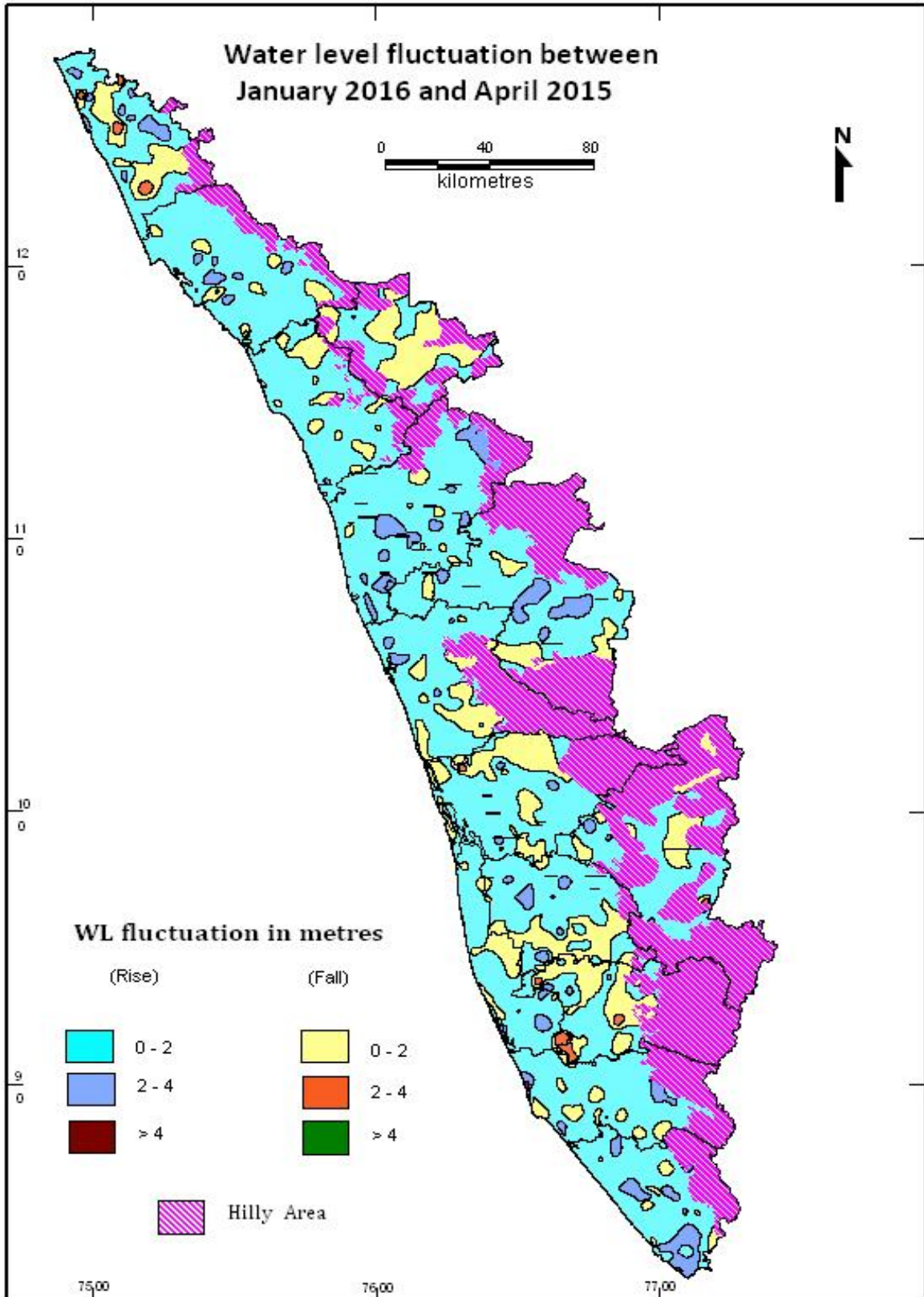


Table 5.1: District wise – Fluctuation and Frequency Distribution from Different Ranges from April 2015 – August 2015

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells / Percentage Showing Fluctuation						No Fluctuation	Total No. of Wells	
		Rise		Fall		Rise			Fall				Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4			
ALAPPUZHA	76	0.01	3.6	0.09	3.76	58 76.32%	4 5.26%	0	11 14.47%	2 2.63%	0	1 1.31%	62	13
ERNAKULAM	89	0.02	6.85	0.1	3.56	54 60.67%	18 20.22%	4 4.49%	8 8.99%	4 4.49%	0	1 1.12%	76	12
IDUKKI	62	0.12	5.64	0.96	0.96	46 74.19%	13 20.97%	2 3.23%	1 1.61%	0	0	0	61	1
KANNUR	57	0.05	7.25	0.12	3.00	23 40.35%	17 29.82%	12 21.05%	3 5.26%	2 3.51%	0	0	52	5
KASARGOD	102	0.2	16.6	0.3	7.15	21 20.59%	24 23.53%	52 50.98%	3 2.94%	0	2 1.96%	0	97	5
KOLLAM	97	0.17	11.93	0.02	4.82	59 60.82%	19 19.59%	8 8.25%	10 10.31%	0	1 1.03%	0	86	11
KOTTAYAM	79	0.01	5.66	0.29	1.02	43 54.43%	29 36.71%	5 6.33%	2 2.53%	0	0	0	77	2
KOZHIKODE	58	0.15	5.00	0.05	2.7	27 46.55%	19 32.76%	3 5.17%	5 8.62%	3 5.17%	0	1 1.72%	49	8
MALAPPURAM	80	0.22	16.8	0.14	2.44	31 38.75%	34 42.5%	7 8.75%	7 8.75%	1 1.25%	0	0	72	8
PALAKKAD	87	0.15	16.04	0.05	1.53	28 32.18%	39 44.83%	15 17.24%	5 5.75%	0	0	0	82	5
PATHANAMTHITTA	78	0.03	4.34	0.03	4.7	48 61.54%	9 11.54%	2 2.56%	16 20.21%	2 2.56%	1 1.28%	0	59	19
THIRUVANANTHA PURAM	105	0.05	12.1	0.08	3.5	54 51.43%	21 20.00%	8 7.62%	19 18.1%	2 1.9%	0	1 0.95%	83	21
THRISSUR	102	0.16	6.08	0.06	2.79	54 52.94%	28 27.45%	12 11.76%	6 5.88%	2 1.96%	0	0	94	8
WAYANAD	53	0.07	9.64	0.1	1.7	34 64.15%	8 15.09%	2 3.77%	8 15.09%	0	0	1 1.88%	44	8
<b>TOTAL</b>	<b>1125</b>	<b>0.22</b>	<b>3.6</b>	<b>0.02</b>	<b>7.15</b>	<b>580</b> 51.55%	<b>282</b> 25.06%	<b>132</b> 11.73%	<b>104</b> 9.25%	<b>18</b> 1.6%	<b>4</b> 0.35%	<b>5</b> <b>0.44%</b>	<b>994</b> <b>88.35%</b>	<b>126</b> <b>11.2%</b>

Table 5.2: District wise – Fluctuation and Frequency Distribution From Different Ranges from April 2015–November 2015

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells /Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
ALAPPUZHA	70	0.06	7.50	0.19	6.45	48 68.75%	11 15.71%	3 4.29%	6 8.57%	1 1.43%	1 1.43%	62	8
ERNAKULAM	83	0.06	5.27	0.15	3.25	51 61.45%	15 18.07%	2 2.41%	9 10.84%	4 4.82%	0	68	13
IDUKKI	61	0.19	5.34	0.02	0.78	40 65.57%	17 27.87%	2 3.28%	2 3.28%	0	0	59	2
KANNUR	58	0.08	8.60	0.25	4.06	28 48.28%	15 25.86%	8 13.79%	3 5.17%	3 5.17%	1 1.72%	51	7
KASARGOD	97	0.20	11.80	0.05	7.91	39 40.21%	39 40.21%	13 13.40%	4 4.12%	0	1 1.03%	91	5
KOLLAM	93	0.36	12.27	0.10	5.38	40 43.01%	31 33.33%	15 16.13%	6 6.45%	0	1 1.08%	86	7
KOTTAYAM	80	0.18	5.58	0.08	0.87	44 55.00%	25 31.25%	6 7.50%	5 6.25%	0	0	75	5
KOZHIKODE	59	0.20	3.42	0.02	2.69	33 55.93%	16 27.12%	0	8 13.56%	2 3.39%	0	49	10
MALAPPURAM	87	0.30	16.40	0.07	2.14	43 49.43%	30 34.48%	6 6.90%	6 6.90%	1 1.15%	0	79	7
PALAKKAD	85	0.06	12.80	2.18	2.18	37 435.53%	34 40.00%	13 15.29%	0	1 1.18%	0	84	1
PATHANAMTHITTA	75	0.03	4.57	0.01	2.47	49 65.33%	9 12.00%	1 1.33%	14 18.67%	1 1.33%	0	59	15
THIRUVANANTHAPURAM	99	0.13	10.76	0.19	1.58	40 40.40%	29 29.29%	27.27.27%	3 3.03%	0	0	96	3
THRISSUR	101	0.04	6.12	0.03	2.42	53 52.48%	25 24.75%	6 5.94%	16 15.84%	1 0.99%	0	84	17
WAYANAD	56	0.07	7.86	0.02	6.29	38 67.86%	6 10.71%	1 1.79%	8 14.29%	0	2 3.5%	45	10
<b>TOTAL</b>	<b>1104</b>	<b>0.36</b>	<b>3.42</b>	<b>0.01</b>	<b>7.91</b>	<b>583</b> <b>59.01%</b>	<b>302</b> <b>30.57%</b>	<b>103</b> <b>10.43%</b>	<b>90</b> <b>81.82%</b>	<b>14</b> <b>12.73%</b>	<b>6</b> <b>5.45%</b>	<b>988</b> <b>90%</b>	<b>110</b> <b>10%</b>

Table 5.3: District wise – Fluctuation and Frequency Distribution from Different Ranges from April 2015 – January 2016

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells /Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
ALAPPUZHA	73	0.14	3.49	0.02	3.86	52 71.23%	5 6.85%	0	14 19.18%	1 1.37%	0	57	15
ERNAKULAM	108	0.02	2.75	0.01	3.3	65 60.19%	3 2.78%	0	35 32.41%	1 0.93%	0	68	36
IDUKKI	70	0.05	3.68	0.05	3.6	51 72.86%	6 8.57%	0	11 15.71%	1 1.43%	0	57	12
KANNUR	94	0.01	3.44	0.01	3.61	68 72.34%	12 12.77%	0	11 11.70%	2 2.13%	0	80	13
KASARGOD	111	0.03	9.26	0.04	6.5	65 58.56%	17 15.32%	1 0.9%	20 18.02%	7 6.31%	1 0.98%	83	28
KOLLAM	95	0.01	8.85	0.01	3.98	69 72.63%	8 8.42%	2 2.11%	14 14.74%	2 2.11%	0	79	16
KOTTAYAM	98	0.02	3.74	0.02	1.8	52 53.06%	12 12.24%	0	31 31.63%	0	0	64	31
KOZHIKODE	87	0.01	2.15	0.04	1.94	68 78.16%	1 1.15%	0	18 20.69%	0	0	69	18
MALAPPURAM	104	0.01	9.46	0.08	1.54	76 73.08%	15 14.42%	4 3.85%	9 8.65%	0	0	95	9
PALAKKAD	115	0.09	10.4	0.07	9	71 61.74%	17 14.78%	5 4.33%	15 13.04%	2 1.74%	1 0.87%	93	18
PATHANAMTHITTA	86	0.04	5.82	0.05	3.5	44 51.16%	4 4.65%	3 3.49%	28 32.56%	6 6.98%	0	51	34
THIRUVANANTHAPURAM	107	0.03	11.28	0.04	5.26	64 59.81%	22 20.56%	6 5.61%	13 12.15%	1 0.93%	1 0.93%	92	15
THRISSUR	107	0.01	5.99	0.02	2.12	69 64.49%	5 4.67%	2 1.87%	30 28.04%	1 0.93%	0	76	31
WAYANAD	66	0.01	3.28	0.02	1.17	28 42.42%	1 1.52%	0	37 56.06%	0	0	29	37
<b>TOTAL</b>	<b>1321</b>	<b>0.14</b>	<b>2.15</b>	<b>0.01</b>	<b>9</b>	<b>842</b> 63.74%	<b>128</b> 9.69%	<b>23</b> 1.74%	<b>286</b> 21.65%	<b>24</b> 1.81%	<b>3</b> 0.22%	<b>993</b> 75.17%	<b>313</b> 23.69%

## **VI COMPARISON OF 2015-16 WATER LEVELS WITH THE DECADAL MEAN (2005-2014)**

Water levels during the year 2015-16 in comparison with the decadal mean (2005-2014) value of the respective measurements is discussed in this chapter. The analysis brings out the deviations in water level from the general behaviour of water level of the past decade. In general, the change in water level is confined to the range of +2 to -2 m.

### **Fluctuation between Mean April (2005-2014) and April 2015**

The change in water level over the last ten years period is brought out by the comparison of water level with decadal mean value of April measurements for the period 2005-2014. This analysis indicates that the change in water level is mostly restricted to +2 (rise) to -2 (fall) m as recorded by 90.90 % of GWMW. However, fall in water level is predominant mainly in eastern part of Thiruvananthapuram, Kollam, Pathanamthitta, Palakkad, Malappuram and Kannur districts as represented by 40.78% of monitoring wells. Rise in water level is predominant in Thrissur, Kottayam, Ernakulam, Idukki and Kasargod districts and southern part of Kozhikkod district. Only 4 wells have recorded zero or no fluctuation in Thrissur, Wayanad and Thiruvananthapuram districts.

The frequency of wells showing rise and fall in different ranges (0-2m, 2-4m, 4m ) when compared with decade mean water level is given in Table 6.1. Figure 6.1 shows the water level fluctuation in the State for April 2015 with respect to Decadal mean (2005-2014).

### **Fluctuation between Mean August (2005-2014) and August 2015**

The change in water level over the last ten years period is brought out by the comparison of water level with decadal mean value of August measurements for the period 2005-2014. This analysis indicates that the change in water level is mostly restricted to +2 (rise) to -2 (fall) m as recorded by 85.57 % of GWMW. However, fall in water level is predominant through out the state. Rise in water level is predominant in Kasargod, Kottayam and Ernakulam districts. Only 8 wells have recorded zero or no fluctuation in Alapuzha, Ernakulam, Kollam, Pathanamthitta, Malappuram, and Kozhikkod districts.

The frequency of wells showing rise and fall in different ranges (0-2m, 2-4m, 4m ) when compared with decade mean water level is given in Table 6.2. Figure 6.2 shows the water level fluctuation in the State for August 2015 with respect to Decadal mean (2005-2014).

### **Fluctuation between Mean November (2005-2014) and November 2015**

The change in water level over the last ten years period is brought out by the comparison of water level with the mean value of November measurements of the period 2005-2014. This analysis indicates that the change in water level is mostly restricted to +2 (rise) to -2 (fall) m as recorded by 91.7 % of GWMW. However fall in water level is predominant mainly in central and northern parts of the state as represented by 51.8% of monitoring wells. Rise in water level is confined to Trivandrum, Kollam, Alappuzha, Kottayam and Ernakulam districts.

The frequency of wells showing rise and fall in different ranges (0-2m, 2-4m, 4m ) when compared with decade mean water level is given in Table 6.3. Figure 6.3 shows the water level fluctuation in the state for November 2015 with respect to Decadal mean (2005-2014).

### **Fluctuation between Mean January (2006-2015) and January 2016**

The change in water level over the last ten years period is brought out by the comparison of water level with the mean value of January measurements of the period 2006-2015. This analysis indicates that the change in water level is mostly restricted to +2 (rise) to -2 (fall) m as recorded by 93.1 % of GWMW. However fall in water level is predominant in Kollam, Palakkad, Thiruvananthapuram, Malappuram districts as represented by 43.93 % of monitoring wells. Rise in water level is predominant in Ernakulam, Thrissur, and Wayanad districts. In addition to these districts, rise is predominantly seen in central part of Kannur, coastal belt of Kozhikkod and northern part of Kottayam.

The frequency of wells showing rise and fall in different ranges (0-2m, 2-4m, 4m ) when compared with decade mean water level is given in Table 6.4. Figure 6.4 shows the water level fluctuation in the state for January 2016 with respect to Decadal mean (2006-2015).



Figure 6.1

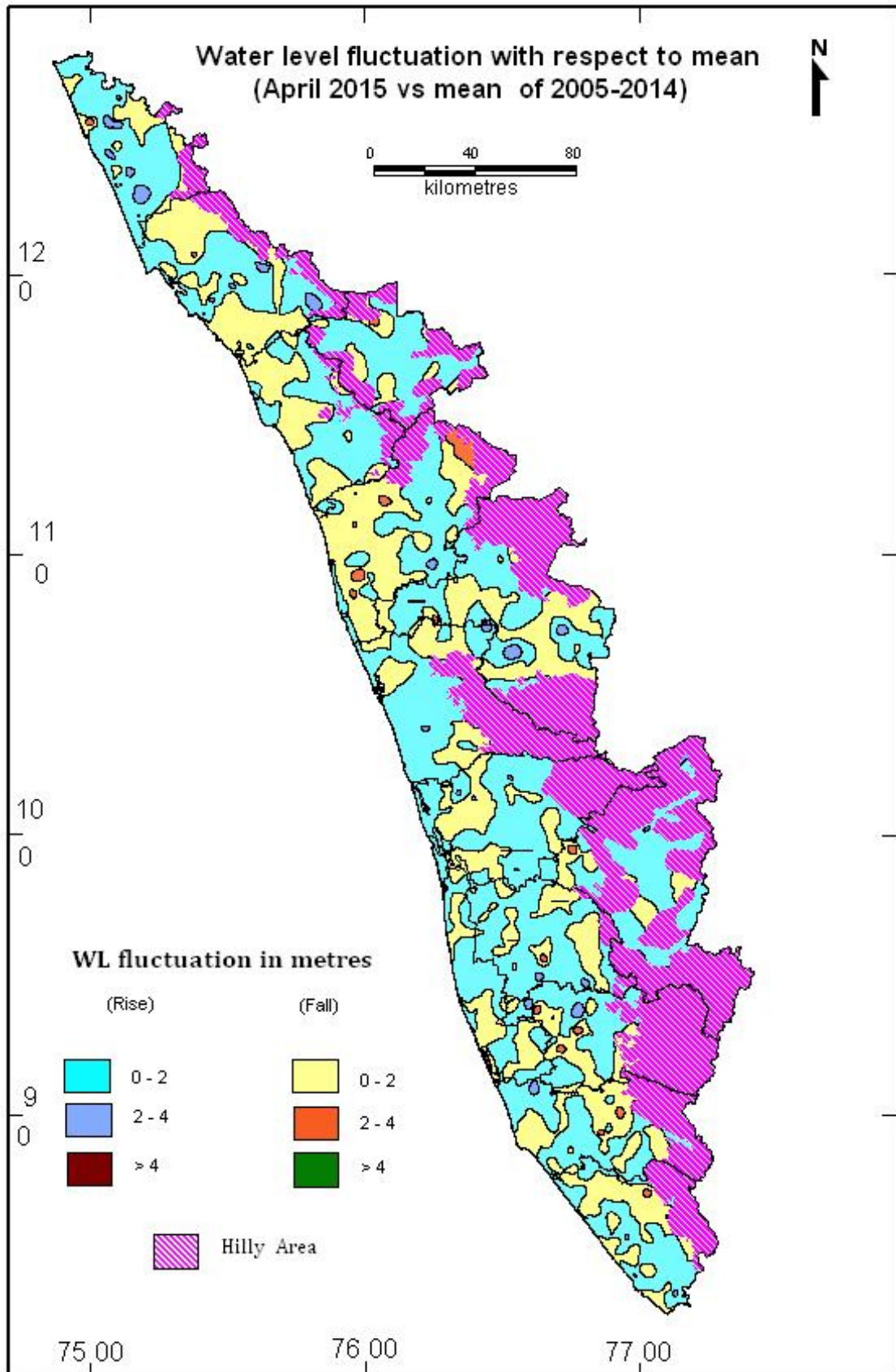


Figure 6.2

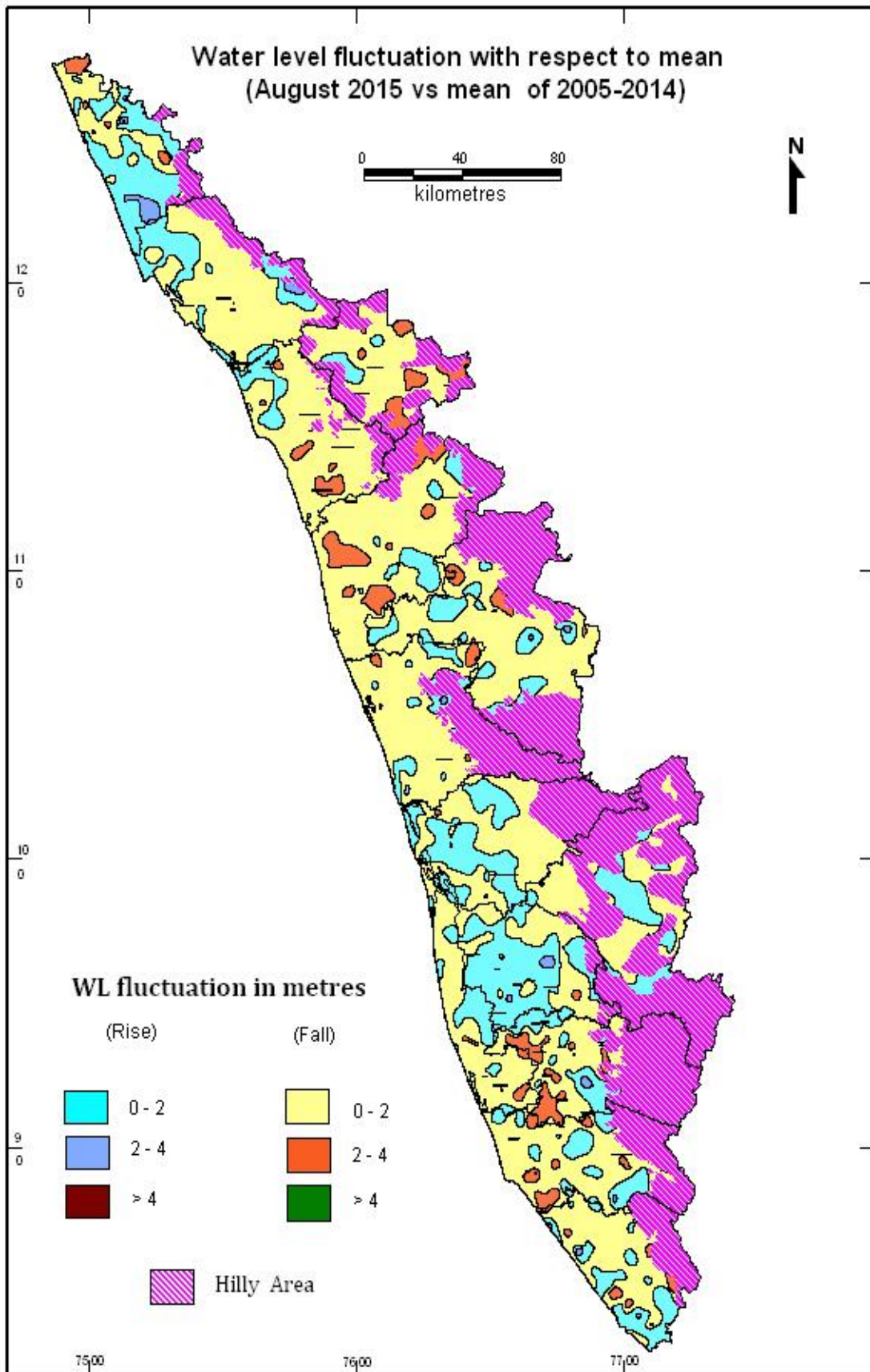




Figure 6.3

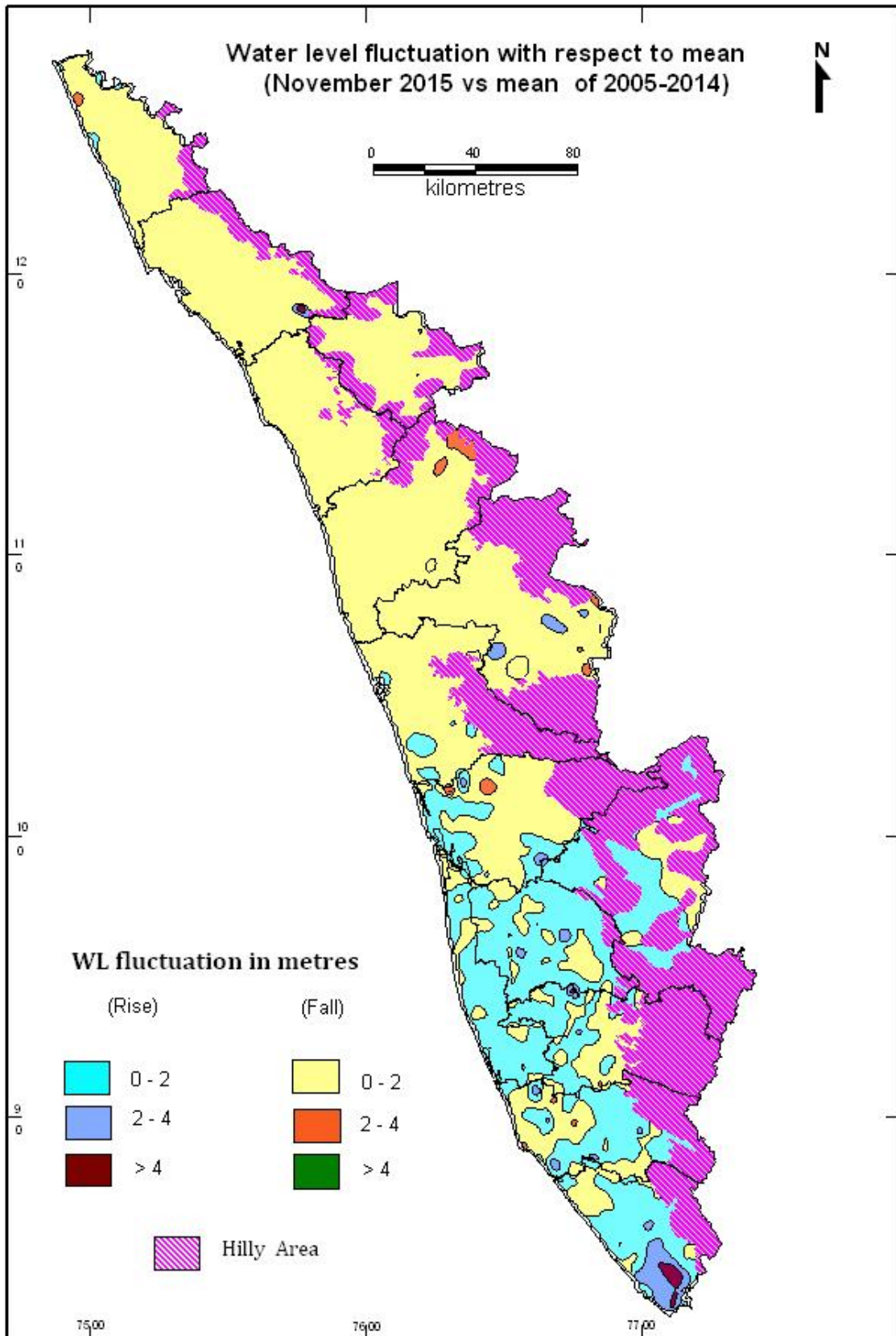
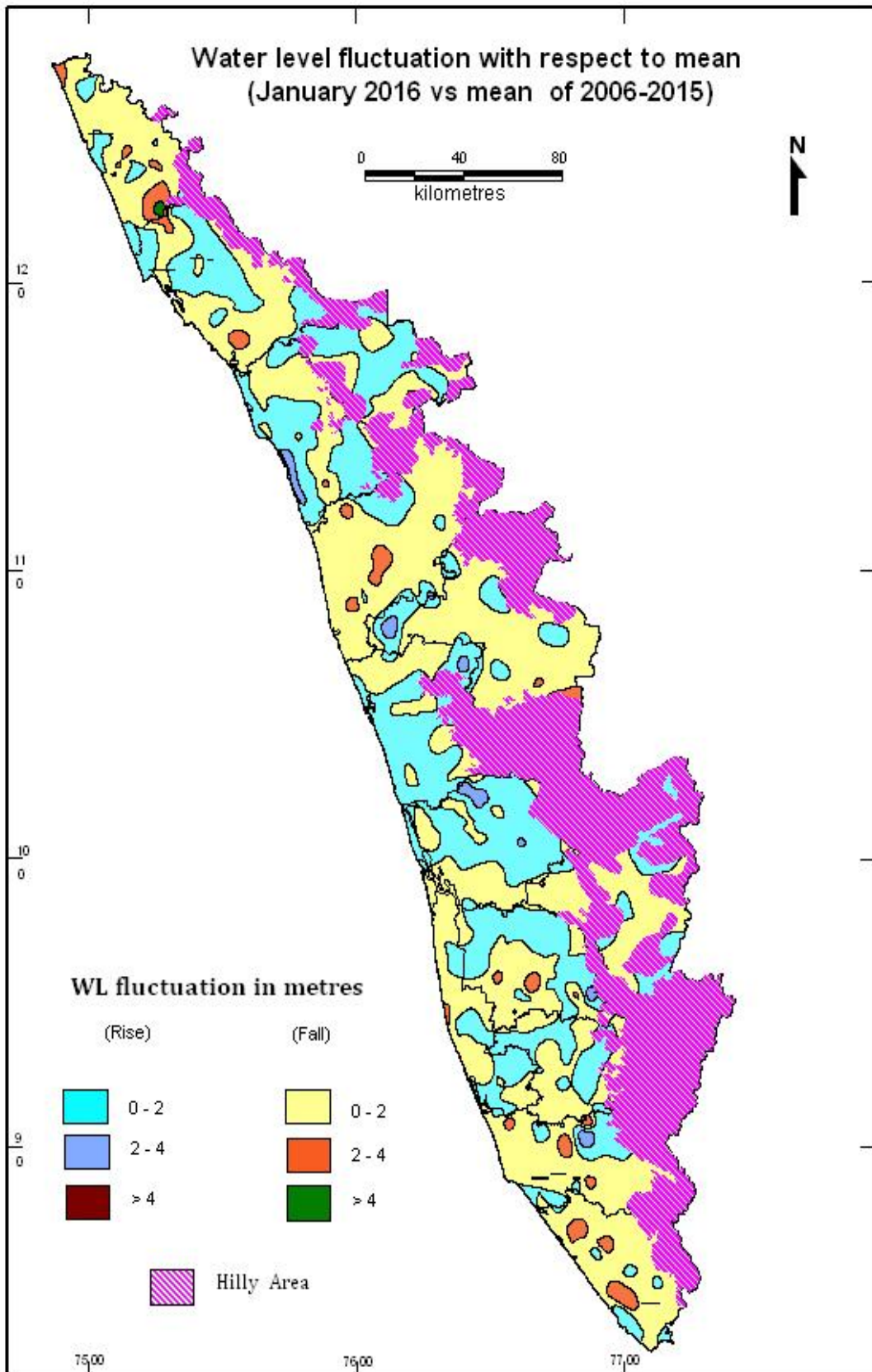


Figure 6.4



**Table 6.1: District wise Well Frequency for Different Ranges of Water Level Fluctuation (April 2015 – Decadal mean (April 2005-2014))**

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells /Percentage Showing Fluctuation							Total No. of Wells	
		Rise		Fall		Rise			Fall			No fluctuation	Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4			
ALAPPUZHA	78	0.03	1.61	0.02	3.85	41 46.99%	0	0	33 42.31%	4 5.13%	0		41	37
ERNAKULAM	97	0.01	3.04	0.00	3.25	54 55.32%	4 4.12%	0	38 39.18%	1 1.03%	0		58	39
IDUKKI	62	0.01	4.26	0.02	2.91	40 46.03%	3 4.84%	1 1.61%	17 27.42%	1 1.61%	0		44	18
KANNUR	64	0.01	2.98	0.01	5.17	23 47.54%	8 12.5%	0	29 45.31%	3 4.69%	1 1.56%		31	33
KASARGOD	109	0.01	5.31	0.03	7.62	66 22.54%	11 10.09%	3 2.75%	26 23.85%	2 1.83%	1 0.92%		80	29
KOLLAM	98	0.01	9.44	0.00	3.71	49 26.44%	2 2.04%	4 4.08%	39 39.8%	4 4.08%	0		55	43
KOTTAYAM	85	0.02	2.68	0.02	2.68	47 59.52%	5 5.88%	0	31 36.47%	2 2.35%	0		52	33
KOZHIKODE	72	0.04	1.85	0.00	2.53	37 63.16%	0	0	34 47.22%	1 1.39%	0		37	35
MALAPPURAM	97	0.00	3.09	0.02	4.77	38 24.1%	1 1.03%	0	48 49.48%	8 8.25%	2 2.06%		39	58
PALAKKAD	92	0.00	8.67	0.04	4.2	52 52.48%	4 4.35%	1 1.09%	32 34.78%	2 2.17%	1 1.09%		57	35
PATHANAMTHITTA	80	0.01	3.27	0.00	4.41	47 48.1%	2 2.5%	0	26 32.5%	4 5.00%	1 1.25%		49	31
THIRUVANANTHAPURAM	110	0.01	8.55	0.02	3.08	56 57.89%	3 42.73%	4 3.64%	38 34.55%	8 7.27%	0	1 0.08%	63	46
THRISSUR	99	0.01	2.16	0.01	1.76	60 65.98%	1 1.01%	0	37 37.37%	0	0	1 0.08%	61	37
WAYANAD	56	0.04	2.2	0.05	2.87	38 63.16%	1 1.79%	0	14 25.00%	1 1.79%	0	2 0.18%	39	15
<b>TOTAL</b>	<b>1199</b>	<b>1.61</b>	<b>0.04</b>	<b>0.00</b>	<b>7.62</b>	<b>648</b> 54.04%	<b>45</b> 3.75%	<b>13</b> 1.08%	<b>442</b> 36.86%	<b>41</b> 3.41%	<b>6</b> 0.50%	<b>4</b> 0.35%	<b>706</b> 58.88%	<b>489</b> 40.78%

Table 6.2: District wise Well Frequency for Different Ranges of Water Level Fluctuation (August 2015-Decadal mean (August 2005-2014))

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells /Percentage Showing Fluctuation							Total No. of Wells	
		Rise		Fall		Rise			Fall			No fluctuation	Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4			
ALAPPUZHA	77	0.05	1.21	0.02	7.7	14 18.18%	0	0	51 66.23%	8 10.39%	3 3.9%	1 1.29%	14	62
ERNAKULAM	99	0.01	2.04	0.00	4.9	44 44.44%	1 1.01%	0	49 49.49%	1 1.01%	1 1.01%	3 3.03%	45	51
IDUKKI	63	0.02	0.57	0.04	1.92	21 33.33%	0	0	42 66.67%	0	0	0	21	42
KANNUR	82	0.01	2.68	0.01	4.73	21 25.61%	1 1.22%	0	57 69.51%	2 2.44%	1 1.22%	0	22	60
KASARGOD	114	0.01	4.07	0.06	5.75	58 50.88%	5 4.39%	1 0.88%	40 35.09%	8 7.02%	1 1.75%	0	64	50
KOLLAM	101	0.08	10.08	0.01	4.96	17 16.83%	1 0.99%	2 0.98%	60 59.41%	17 16.83%	3 2.97%	1 0.99%	20	80
KOTTAYAM	83	0.01	2.61	0.01	3.08	47 56.63%	2 2.41%	0	32 38.55%	2 2.41%	0	0	49	34
KOZHIKODE	72	0.05	2.32	0.16	4.7	13 18.06%	2 2.78%	0	46 63.89%	9 12.5%	1 1.39%	1 1.38%	15	56
MALAPPURAM	91	0.08	3.51	0.01	3.82	12 13.19%	1 1.10%	0	59 64.84%	18 19.78%	0	1 1.09%	13	77
PALAKKAD	105	0.01	2.58	0.04	8.58	25 23.81%	3 2.86%	0	65 61.90%	6 5.71%	6 5.71%	0	28	77
PATHANAMTHITTA	79	0.01	2.31	0.04	5.68	21 26.58%	1 1.27%	0	37 46.84%	17 21.52%	2 2.53%	1 1.26%	22	56
THIRUVANANTHAPURAM	115	0.03	10.79	0.03	8.41	38 33.04%	4 3.48%	3 2.61%	55 47.83%	12 10.43%	3 2.61%	0	45	70
THRISSUR	108	0.30	2.44	0.01	4.26	24 22.22%	1 0.93%	0	76 70.37%	5 4.63%	2 1.85%	0	25	83
WAYANAD	52	0.30	1.93	0.05	4.75	3 5.77%	0	0	35 67.31%	13 25%	1 1.92%	0	3	49
<b>TOTAL</b>	<b>1241</b>	<b>1.61</b>	<b>0.30</b>	<b>0.00</b>	<b>8.58</b>	<b>358</b> 28.84%	<b>22</b> 1.77%	<b>6</b> 0.48%	<b>704</b> 56.73%	<b>118</b> 9.5%	<b>25</b> 2.01%	<b>8</b> 0.65%	<b>386</b> 31.10%	<b>847</b> 68.25%

**Table 6.3: District wise Well Frequency for Different Ranges of Water Level Fluctuation (November 2015 – Decadal mean (November 2005-2014))**

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells / Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
ALAPPUZHA	75	0	3.37	0.05	7.56	45 60.00%	4 5.33%	0	23 30.67%	0	1 1.33%	49	24
ERNAKULAM	99	0.06	3.10	0.01	4.37	32 32.32%	1 1.01%	0	61 61.62%	3 3.03%	1 1.01%	33	65
IDUKKI	70	0.02	3.15	0.03	1.92	49 70.00%	1 1.43%	0	20 28.57%	0	0	50	20
KANNUR	80	0.03	6.91	0.02	3.95	26 32.50%	1 1.25%	2 2.50%	45 56.25%	5 6.25%	0	29	50
KASARGOD	109	0.02	4.59	0.01	4.10	30 27.52%	0	1 0.92%	74 67.89%	2 1.83%	1 0.92%	31	77
KOLLAM	94	0.02	14.15	0.01	4.37	43 45.74%	6 6.38%	1 1.06%	40 42.55%	3 3.19%	1 1.06%	50	44
KOTTAYAM	95	0.01	2.60	0.03	2.41	64 67.37%	3 3.16%	0	26 27.37%	1 1.05%	0	67	27
KOZHIKODE	78	0.01	0.89	0.02	3.30	34 43.59%	0	0	43 55.13%	1 1.28%	0	34	44
MALAPPURAM	102	0.02	3.05	0.00	5.22	42 41.18%	3 2.94%	0	50 49.02%	6 5.88%	1 0.98%	45	57
PALAKKAD	104	0.06	9.20	0.01	3.53	42 40.38%	4 3.85%	1 0.96%	52 50.00%	5 4.81%	0	47	57
PATHANAMTHITTA	80	0.02	8.30	0.04	3.65	38 47.5%	4 5.00%	1 1.25%	34 42.50%	3 3.75%	0	43	37
THIRUVANANTHAPURAM	110	0.01	6.24	0.04	2.08	60 54.55%	15 13.64%	9 8.18%	25 22.73%	1 0.91%	0	84	26
THRISSUR	110	0.02	1.85	0.02	2.57	26 23.64%	0	0	81 73.64%	2 1.82%	0	26	83
WAYANAD	60	0.01	1.16	0.01	7.58	20 32.26%	0	0	37 59.68%	3 4.84%	2 3.23%	20	42
<b>TOTAL</b>	<b>1268</b>	<b>0.89</b>	<b>0.06</b>	<b>0.00</b>	<b>7.58</b>	<b>551 90.63%</b>	<b>42 6.91%</b>	<b>15 2.47%</b>	<b>611 93.57%</b>	<b>35 5.36%</b>	<b>7 1.07%</b>	<b>608 48.2%</b>	<b>653 51.8%</b>

**Table 6. 4: District wise Well Frequency for Different Ranges of Water Level Fluctuation (January 2016 – Decadal mean (January 2006-2015))**

District	No. of Wells	Range of Fluctuation (m)				No. & Percentage of Wells / Percentage Showing Fluctuation						Total No. of Wells	
		Rise		Fall		Rise			Fall			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
ALAPPUZHA	79	0.00	15.31	0.01	2.43	61 77.22%	0	1 1.27%	15 18.99%	2 2.53%	0	62	17
ERNAKULAM	114	0.00	2.15	0.01	2.53	67 58.77%	1 0.88%	0	41 35.96%	2 1.75%	0	68	43
IDUKKI	72	0.02	1.5	0.01	1.98	44 41.11%	0	0	28 38.89%	0	0	44	28
KANNUR	93	0.01	2.93	0.02	3.4	49 52.69%	2 2.15%	0	39 41.94%	2 2.15%	0	51	41
KASARGOD	112	0.00	6.41	0.01	5.06	47 41.96%	1 0.89%	2 1.79%	54 48.21%	5 4.46%	3 2.68%	50	62
KOLLAM	98	0.01	14.6	0.02	4.52	48 48.98%	3 3.06%	2 2.04%	38 38.78%	5 5.1%	1 1.02%	53	44
KOTTAYAM	97	0.01	2.89	0.01	1.84	58 59.79%	5 5.15%	0	32 32.99%	0	0	63	32
KOZHIKODE	88	0.01	1.67	0.00	1.83	29 32.95%	0	0	58 65.91%	0	0	29	58
MALAPPURAM	108	0.00	4.7	0.02	7.37	78 72.22%	3 2.78%	1 0.93%	22 20.37%	2 2.78%	1 0.93%	82	26
PALAKKAD	121	0.01	8.79	0.02	4.71	42 34.71%	4 3.31%	2 1.65%	64 52.89%	5 4.13%	4 3.31%	48	73
PATHANAMTHITTA	88	0.04	2.49	0.03	3.88	63 71.59%	2 2.27%	0	20 22.73%	2 2.27%	0	65	22
THIRUVANANTHA PURAM	114	0.02	12.73	0.01	7.35	64 56.14%	6 5.26%	7 6.14%	34 29.82%	1 0.88%	2 1.75%	77	37
THRISSUR	112	0.01	1.74	0.01	3.74	49 43.75%	0	0	61 54.46%	2 2.79%	0	49	63
WAYANAD	67	0.03	0.84	0.04	4.56	12 17.91%	0	0	52 77.61%	2 2.99%	1 1.49%	12	55
<b>TOTAL</b>	<b>1363</b>	<b>0.04</b>	<b>0.84</b>	<b>0.00</b>	<b>7.37</b>	<b>711</b> 52.16%	<b>27</b> 1.98%	<b>15</b> 1.09%	<b>558</b> 40.78%	<b>31</b> 2.26%	<b>12</b> 0.87%	<b>583</b> 51.54%	<b>601</b> 43.93%

## VII. LONG TERM GROUND WATER LEVEL TREND

The long-term water level data was analysed for the period of 2006-2015. The analysis of pre-monsoon water level trend for the last decadal period (i.e during 2006– 2015) indicates that only 43% of GWMWs have recorded negligible change in water level in the range of +0.05 to –0.05 m/year. 14.9 % of monitoring wells have recorded declining trend in the range of 0.05 to 0.2 m/year and 6.3 % of monitoring wells have recorded declining trend above 0.2 m/year while 10.5% of of monitoring wells have recorded rising trend above 0.2 m/year. 25.2% of monitoring wells show rise in the range of 0.05 to 0.2 m/year. From the above data, it is clear that the long term trend for the pre-monsoon period indicates a overall fall in water level. The maps showing pre-monsoon water level trend for the period 2006-2015 is shown in Figure 7.1

The analysis of post-monsoon water level trend for the last decadal period (i.e during 2006– 2015) indicates that 46.1 % of GWMWs have recorded negligible change in water level in the range of +0.05 to –0.05 m/year. The 23.2 % of monitoring wells have recorded declining trend in the range of 0.05 to 0.2 m/year and 7.9 % of monitoring wells have recorded declining trend above 0.2 m/year. 17 % of monitoring wells have recorded rising trend in the range of 0.05 to 0.2 m/year and 5.9 % of monitoring wells have recorded rising trend above 0.2 m/year. The data analysis indicates that the long-term ground water level trend shows a rising trend in major portions of the state when compared to postmonsoon period. The maps showing pre-monsoon water level trend for the period 2006-2015 is shown in Figure 7.2.

Typical hydrographs showing the negligible change in water level are depicted in Figures 7.3 & 7.4. Many of the monitoring wells which are showing declining pre-monsoon water level, have a rising or a steady post monsoon water level trend, indicating the enhanced ground water recharge to recoup to the original level (Figure 7.5 & 7.6). A few monitoring wells like Palakkad and Mannanthala have shown falling trend of both pre-monsoon and post-monsoon water levels (Figure 7.7 & 7.8).



Figure 7.1

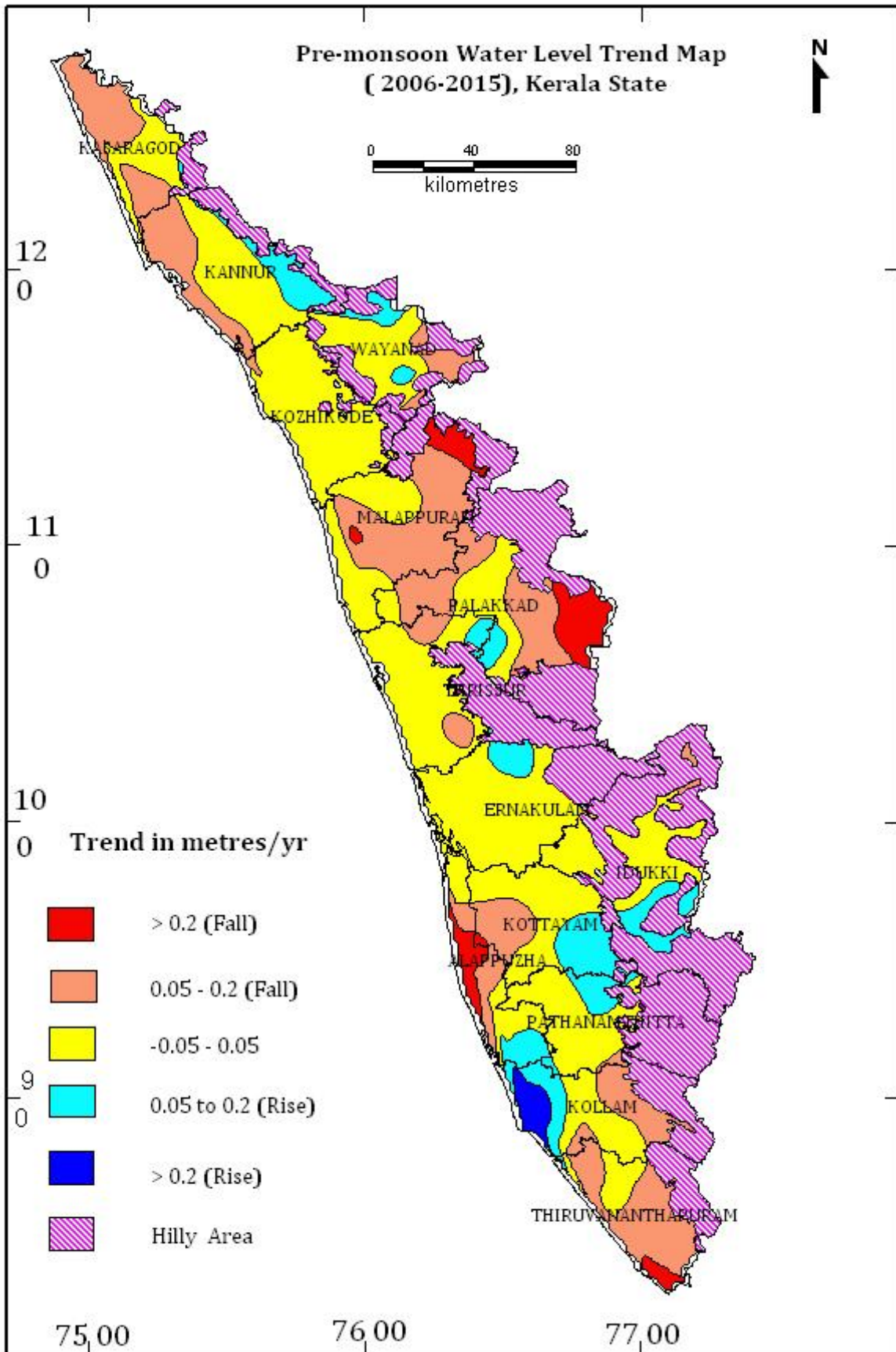




Figure 7.2

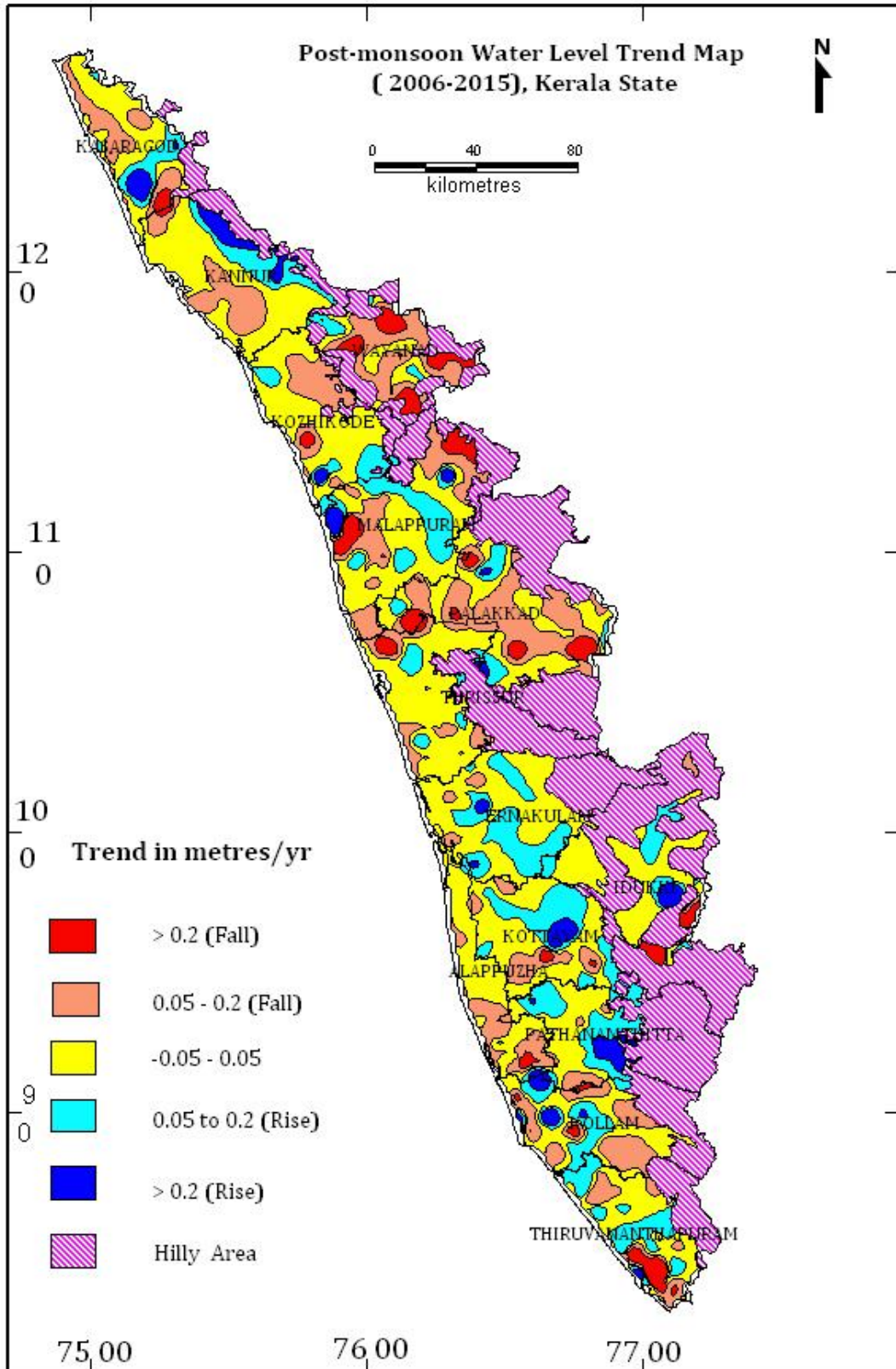


Figure 7.3

**Hydrograph of GWMWs tapping phreatic aquifer in laterites at Kommeri,  
Kannur District**

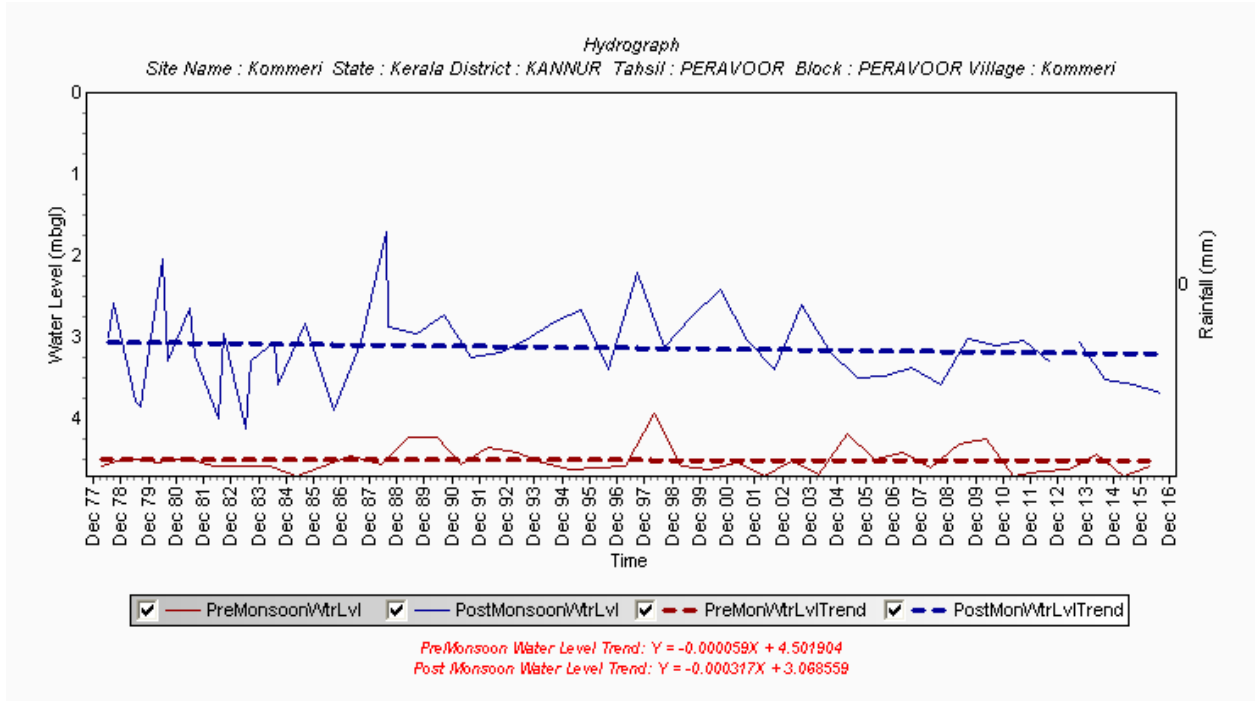


Figure 7.4

**Hydrograph of GWMW tapping phreatic aquifer in laterites at Madavur,  
Thiruvananthapuram District**

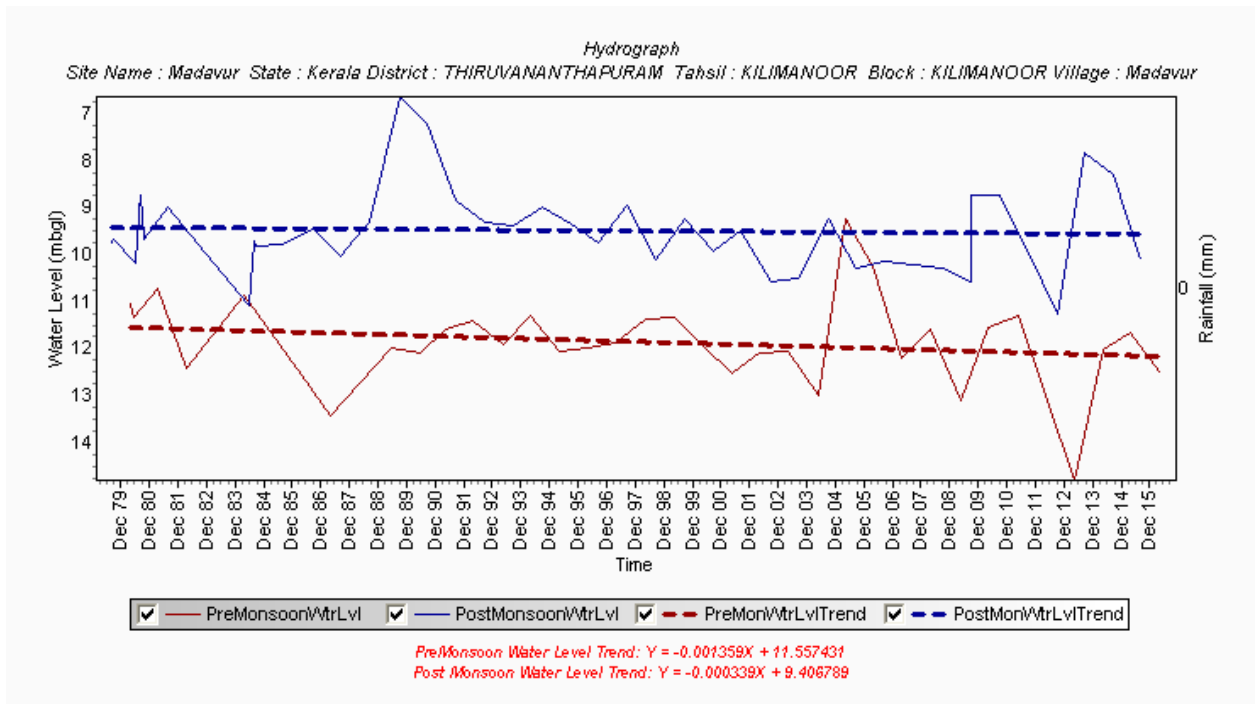


Figure 7.5

**Hydrograph of GWMW tapping phreatic aquifer in laterites at Kottiyur,  
Kannur District**

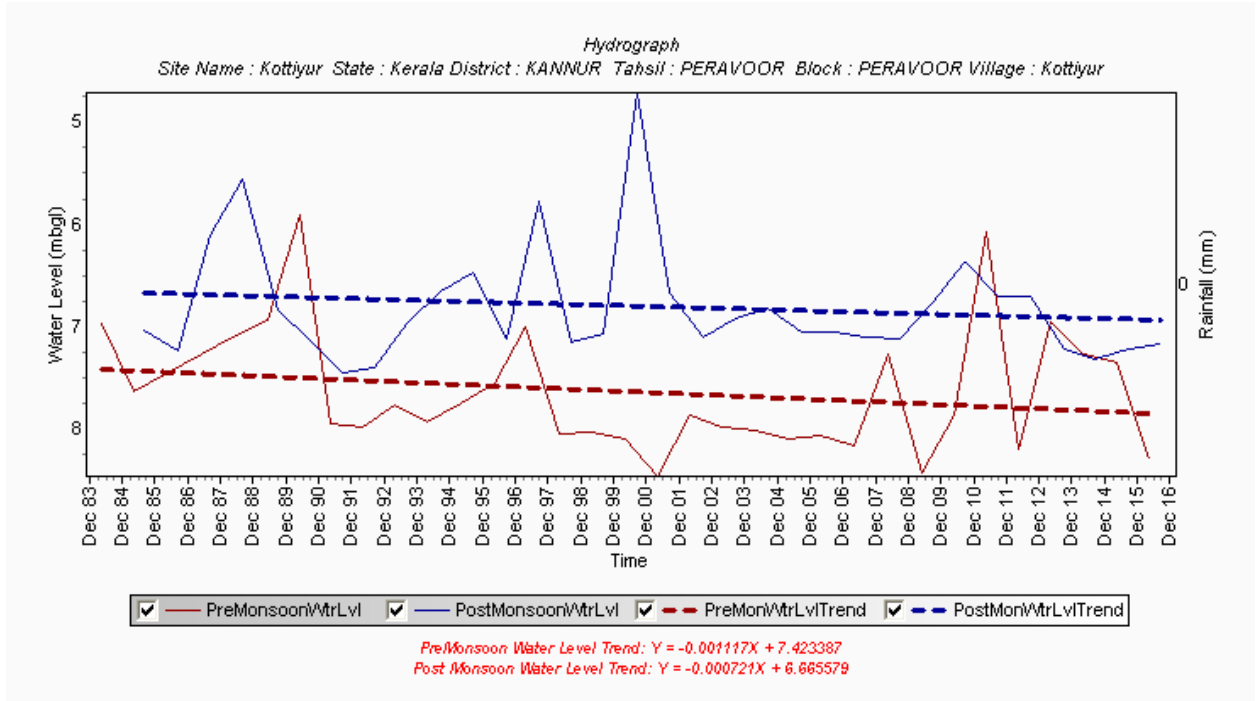
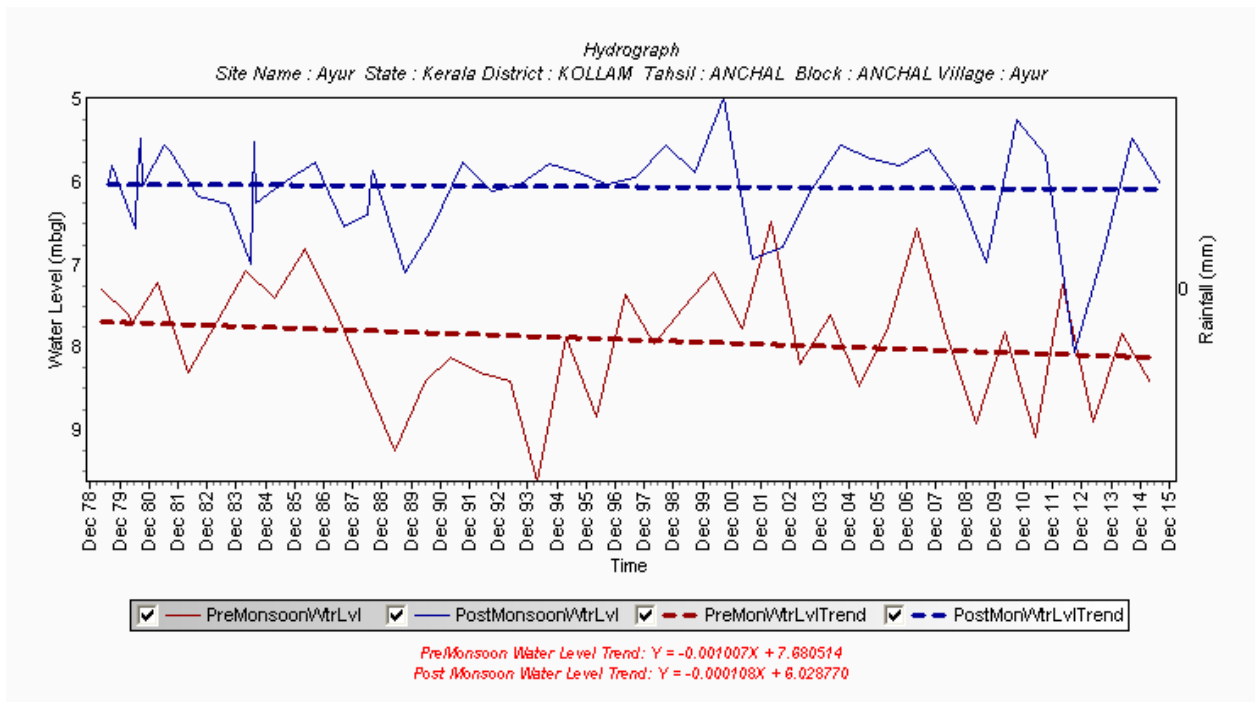


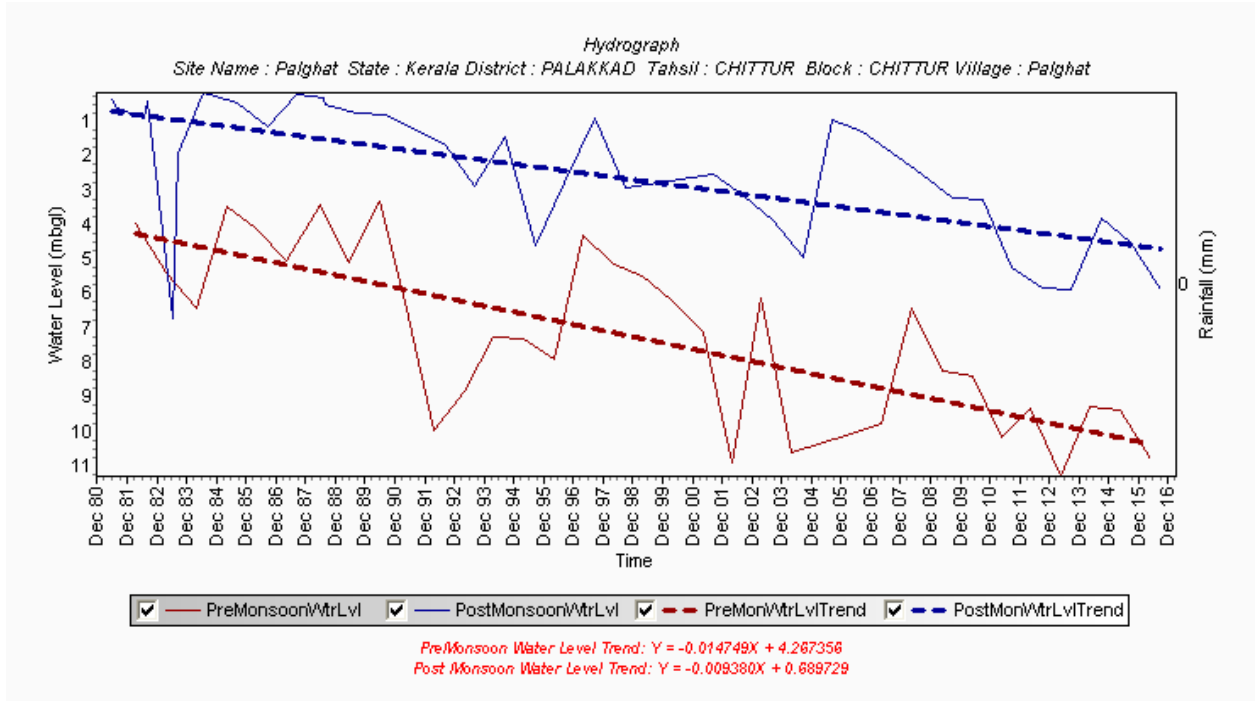
Figure 7.6

**Hydrograph of GWMW tapping phreatic aquifer in laterites at Ayur,  
Kollam District**



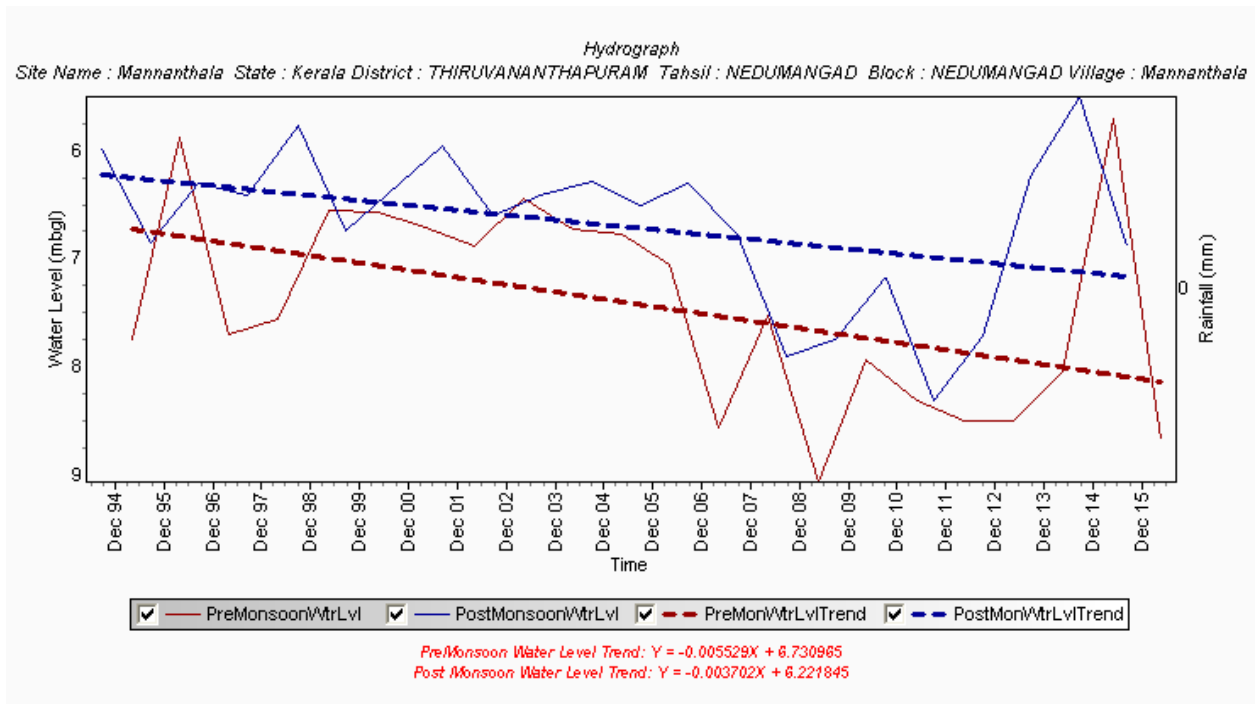
**Figure 7.7**

**Hydrograph of GWMW tapping phreatic aquifer in weathered crystallines at Palghat, Palakkad District**



**Figure 7.8**

**Hydrograph of GWMW tapping phreatic aquifer in laterites at Mannanthala, Thiruvananthapuram District**



## **VIII. BEHAVIOUR OF PIEZOMETRIC HEADS IN DEEP AQUIFERS OF CONFINED/SEMICONFINED NATURE DURING THE YEAR 2015-2016**

A total of 268 piezometers constructed by CGWB in various districts of the State are being monitored four times a year. Out of these 51 piezometers (Tube wells) are constructed in sedimentary areas. The depth range of these piezometers is from 10 m. to 450 m. The remaining 117 piezometers (Bore wells) are in hard rock areas and the depth range of these wells is from 10 m. to 300 m. About 44% of these borewells are tapping shallow fracture zones within 30 metres depth. These wells were manually monitored for water level during the months of April, August, November 2015 and January 2016. The analysis of the data acquired from these piezometers is discussed below.

### **Sedimentary area:**

In the deeper aquifers of Tertiary age, ground water occurs under confined / semi-confined conditions. In the shallow aquifers in Tertiary formation in northern Kerala and in Recent alluvial formations in coastal plains, ground water occurs under unconfined to semi-confined condition. The piezometric heads in these aquifers is at about 18 m.amsl in the eastern boundary of recharge areas of Tertiary beds and reduced to near MSL in coastal areas. The depth to piezometric heads in deep tube wells tapping confined aquifers ranges from 0.83 to 19.7 mbgl during April 2015 (premonsoon). The annual fluctuation of the piezometric head in the year 2015 – 16 is mostly restricted to 3 metres. Free flowing wells are also encountered in some places and the decline in head with time is inferred from the reduction in free flow. Analysis of the long term piezometric head data of deeper aquifers at Karthikapally tapping Quilon and Warkali formations are showing a declining trend in both during pre-monsoon and post-monsoon. Hydrographs of piezometers at Karthikapally (Alleppey District) tapping Warkali and Quilon aquifers are shown in Figs 8.1 & 8.2.

**Crystalline area:**

In hard rock areas, groundwater occurs under confined / semi-confined conditions in the deep fracture zones and unconfined to semi-confined conditions in shallow fractured zones. The depth to piezometric heads in bore wells range from 0.7 to 49.4 m bgl during pre-monsoon period (April 2015). About 88.7 % of the borewells in the hard rock areas are showing piezometric head of less than 10 mbgl. The annual fluctuation of piezometric head (between April and November months) is in the range of 0.3 – 10 metres. The hydrograph of the hard rock piezometers are given in Figs. 8.3 & 8.4.

Fig 8.1 Hydrograph of Piezometer tapping Warkalai aquifer at Karthikapally, Alappuzha District

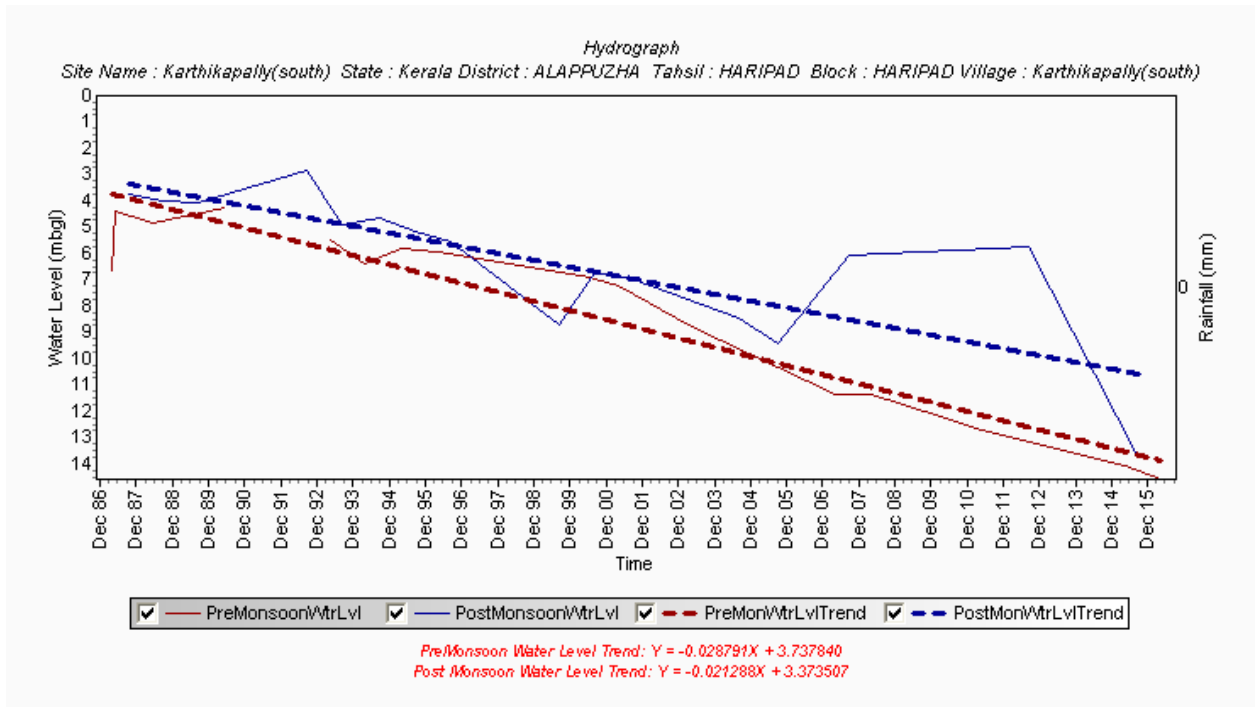


Fig 8.2 Hydrograph of Piezometer tapping Quilon aquifer at Karthikapally, Alappuzha District

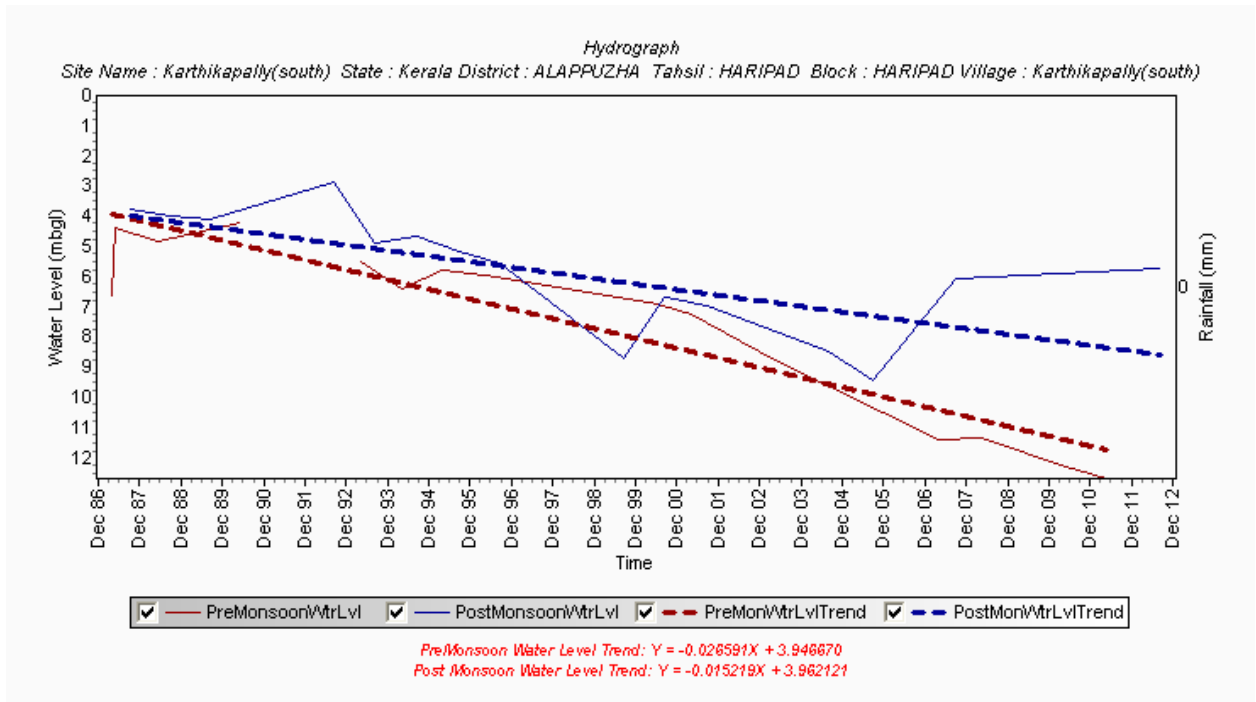


Fig 8.3 Hydrograph of Piezometer tapping fractured aquifers at Vadakkancherry, Palakkad District

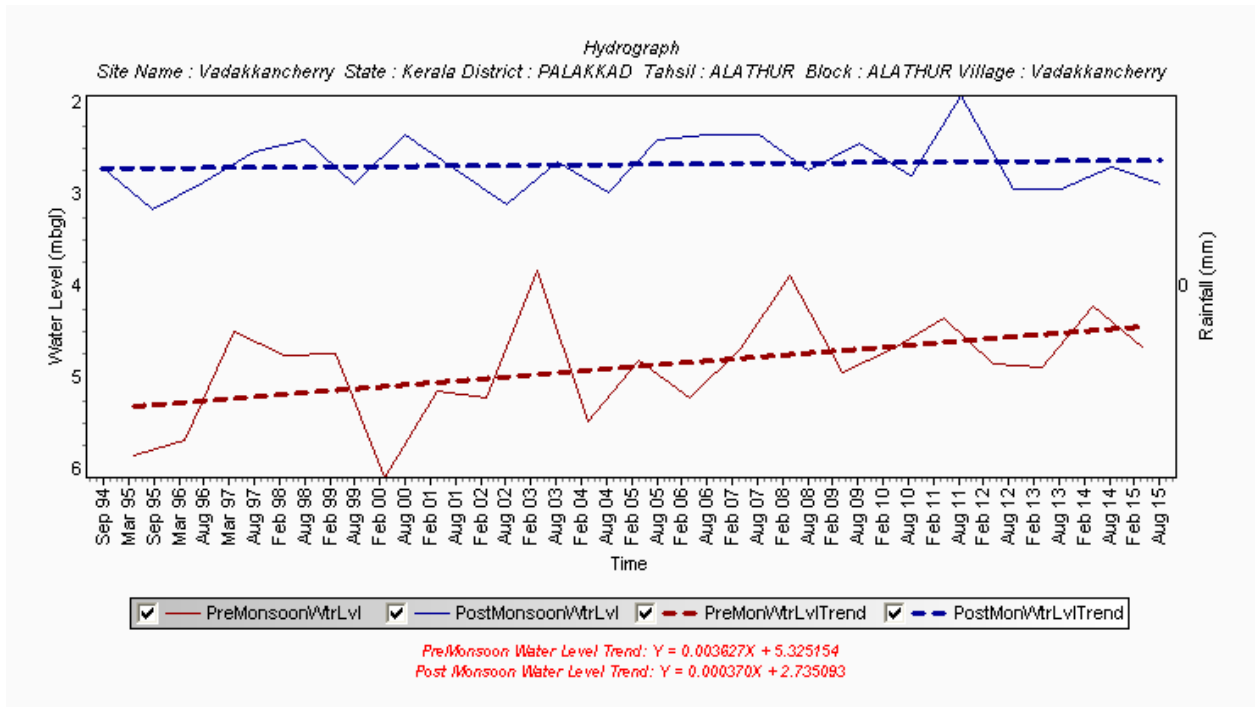
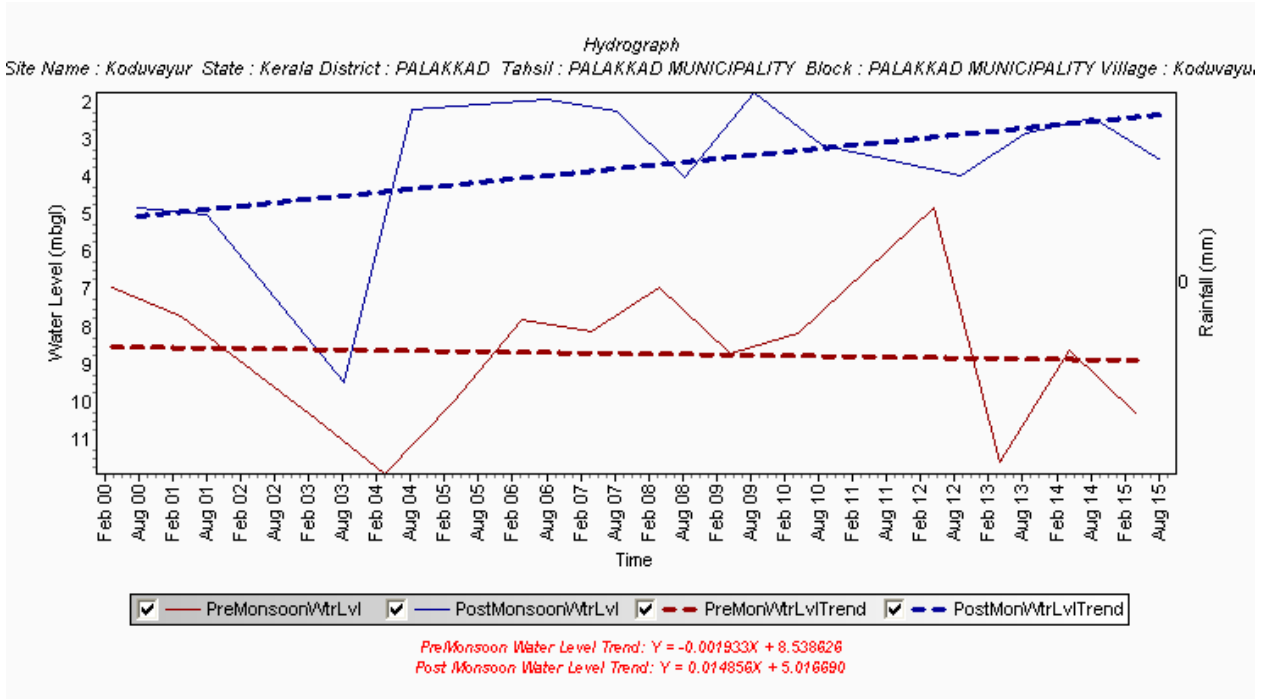


Fig. 8.4: Hydrograph of Piezometer tapping fractured aquifers at Koduvayur, Palakkad District





## XI HYDROCHEMISTRY

The chemical quality of shallow groundwater in Kerala State has been evaluated by sampling and analysing the water samples from National Hydrograph Monitoring Wells. 744 water samples were collected and analysed for pH, electrical conductivity, total hardness, calcium, magnesium, chloride, fluoride and nitrate concentrations. The analysis data is presented in Annexure II . The frequency distribution of electrical conductivity data of National Hydrograph Monitoring Wells is presented for the entire state as well as district-wise in Tables 9.1 and 9.2

The shallow groundwater in Kerala State is generally of good quality, as per Table 2. The highest electrical conductivity value of 3400 Microsiemens/cm at 25<sup>0</sup>C and 3080 Microsiemens/cm at 25<sup>0</sup>C are registered in the well of Cheriya Kadavu and Chellanum of Ernakulam district

Locations where the values of parameters like electrical conductivity more than 1000 Microsiemens/cm at 25<sup>0</sup>C, chloride more than 250 Milligram per litre and nitrate more than 45 Milligram per litre are tabulated in Table 3

On perusal of the data presented in the Appendix it is understood that the locations where the electrical conductivity value had exceeded 1000 Microsiemens/cm at 25<sup>0</sup>C in districts other than Palghat district are all in Coastal plains. Due to Closeness to sea and backwaters a marginal increase of dissolved solids in groundwater is observed during the summer months. In Palghat district all the locations where the electrical conductivity had exceeded 1000 Microsiemens/cm at 25<sup>0</sup>C are situated in the eastern and southern part of the district. The eastern part of Palghat district is more mineralised where the values of calcium and magnesium concentrations are slightly more when compared to other districts of Kerala State. This is evident from the Geological Map of Kerala State.

The wells which had shown nitrate concentration above 45mg/L are distributed sporadically over the state and are not confined to any area. These stations are most likely to represent the levels of localized pollution.

The wells which had shown chloride concentration more than 250 mg/L are situated in coastal plains except in Palghat district.

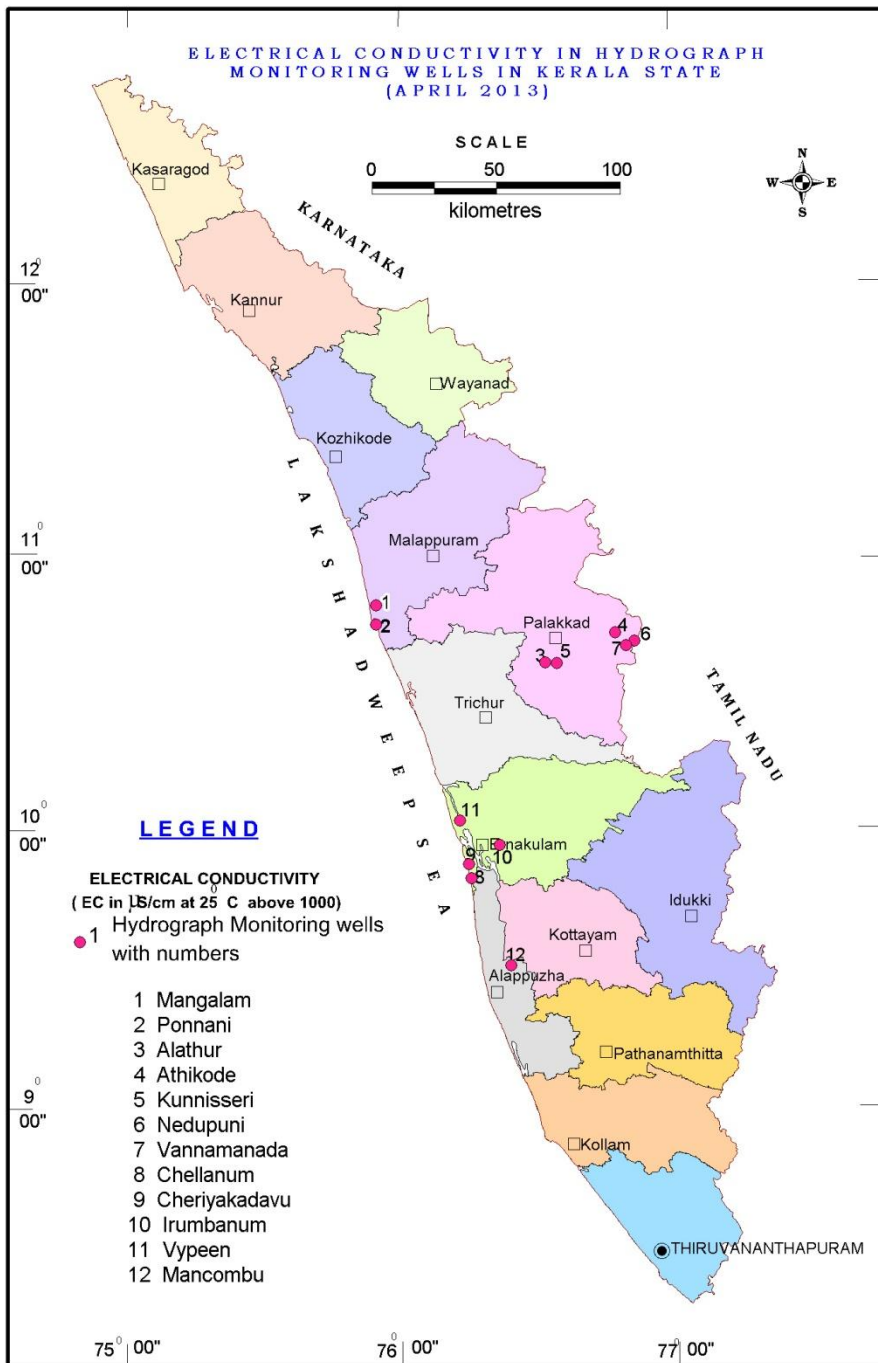
The locations where the electrical conductivity value is more than 1000 Microsiemens/cm at 25<sup>0</sup>C and nitrate value is more than 45 Milligram per litre are indicated in the Figures 9.1 and 9.2.

Table –9.1 Frequency Distribution of Electrical Conductivity (Microsiemens/cm at 25<sup>0</sup>C) in the National Hydrograph Monitoring Wells in Kerala State during April 2013- Statewise

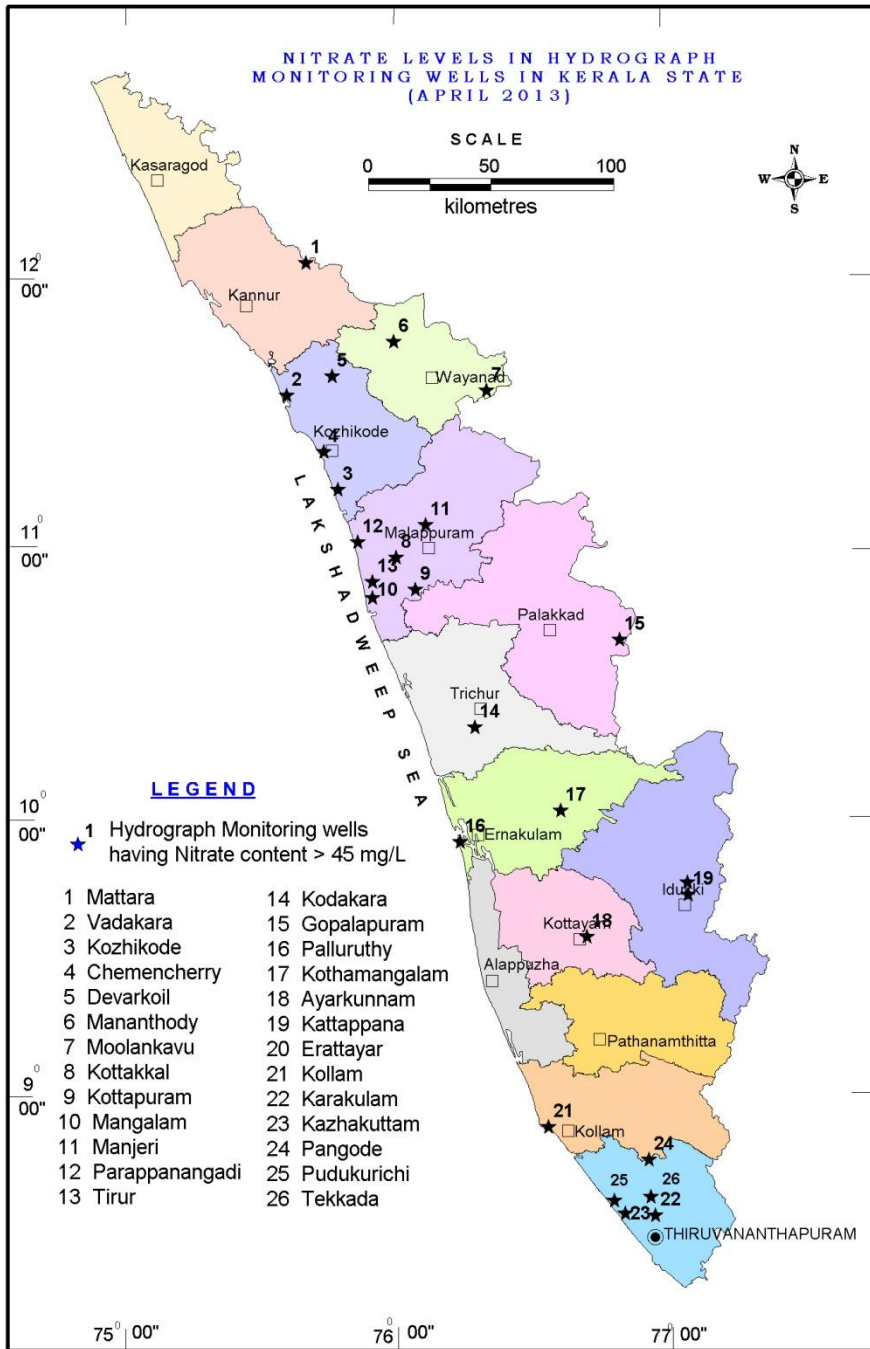
<b>Electrical Conductivity Range (Microsiemens/cm at 25<sup>0</sup>C)</b>	<b>No. of Monitoring Wells</b>	<b>%</b>
0-500	685	92.1
501-1000	47	6.3
>1000	12	1.6

Table 9.2: Frequency Distribution of Electrical Conductivity (Microsiemens/cm at 25<sup>0</sup>C) in National Hydrograph Monitoring Wells during April 2013- Districtwise

<b>Sl. No.</b>	<b>Name of the district</b>	<b>Total No. of Samples</b>	<b>Electrical Conductivity (Microsiemens/cm at 25<sup>0</sup>C)</b>					
			<b>0-500</b>		<b>501-1000</b>		<b>&gt;1000</b>	
			<b>No. of Samples</b>	<b>%</b>	<b>No. of Samples</b>	<b>%</b>	<b>No. of Samples</b>	<b>%</b>
1	Kasargod	29	29	100	0	0	0	0
2	Kannur	50	50	100	0	0	0	0
3	Kozhikode	47	47	100	0	0	0	0
4	Wyanad	45	44	97.8	1	2.2	0	0
5	Malappuram	74	68	91.9	4	5.4	2	2.7
6	Thrissur	74	73	98.6	1	1.4	0	0
7	Palakkad	79	51	64.6	23	29.1	5	6.3
8	Ernakulam	76	66	86.8	6	7.9	4	5.3
9	Kottayam	47	47	100	0	0	0	0
10	Idukki	41	39	95.1	2	4.9	0	0
11	Alleppey	30	26	86.7	3	10	1	3.3
12	Pathanamthitta	53	52	98.1	1	1.9	0	0
13	Kollam	50	49	98	1	2	0	0
14	Thiruvananthapuram	49	44	89.8	5	10.2	0	0



9.1 Location Map where the electrical conductivity value is more than 1000 Microsiemens/cm at 25°C



9.2 Location Map where nitrate value is more than 45 Milligram per

**Table9. 3 Location where Electrical conductivity >1000 $\mu$  S/cm at 25<sup>0</sup>C, Chloride >250 mg/L, Fluoride>1.5 mg/L and Nitrate>45mg/L**

Sl. No.	District	Block	Location	Latitude	Longitude	Electrical Conductivity in $\mu$ S/cm at 25 <sup>0</sup> C >750	Chloride in mg/L >250	Fluoride in mg/L >1.5	Nitrate in mg/L >45
1	2	3	4	5	6	7	8	9	10
1	Kannur	Iritty	Mattara	12°5'24" N	75°40'12" E	-	-	-	52
2	Kozhikode	Vadakara	Vadakara	11°35'60" N	75°34'48" E	-	-	-	48
		CalicutCorporation	Calicut	11°15'0" N	75°47'24" E	-	-	-	63
		Quilandi	Chemencherry	11°23'24" N	75°43'12" E	-	-	-	57
		Kuttiyadi	Devarkoil	11°40'12" N	75°46'12" E	-	-	-	55
3	Wayanad	Mananthavadi	Mananthody	11°48'0" N	76°0'0" E	-	-	-	49
		Sulthanbatheri	Moolankavu	10°40'21" N	76°17'17" E	-	-	-	64
	Malappuram	Vengara	Kottakkal	11°0'0" N	76°0'36" E	-	-	-	79
		Tirurangadi	Kottapuram	10°52'54" N	76°4'52" E	-	-	-	49
		Edapal	Mangalam	10°50'60" N	75°55'12" E	1040	-	-	203
		Malappuram	Manjeri	11°7'12" N	76°7'12" E	-	-	-	46
		Edapal	Ponnani	10°46'48" N	75°55'12" E	1200	316	-	-
		Tirurangadi	Parappanangadi	11°3'0" N	75°51'36" E	-	-	-	46
Tirur	Tirur	10°54'36" N	75°55'12" E	-	-	-	48		
5	Thrissur	Kodakara	Kodakara	10°22'17" N	76°18'20" E	-	-	-	72
6	Palakkad	Alathur	Alathur	10°38'24" N	76°32'60" E	1250	298	-	-
		Chittur	Athikode	10°45'0" N	76°48'36" E	1880	320	-	-
		Chittoor	Gopalapuram	10°41'24" N	76°52'12" E	-	-	-	197
		Nemmara	Kunnisseri	10°38'17" N	76°35'32" E	1680	440	-	-
		Chittur	Nedupuni	10°43'12" N	76°52'48" E	1160	-	1.5	-
		Chittoor	Vannamanada	10°42'17" N	76°50'59" E	1400	-	-	-
7	Ernakulam	Palluruthy	Chellanum	9°48'0" N	76°16'48" E	3080	508	-	-
		Palluruthy	Cheriyakadavu	9°53'38" N	76°15'33" E	3400	1173	-	-
		Irumbanum	Irumbanum	9°58'12" N	76°22'48" E	1290	331	-	-
		Palluruthy	Palluruthy	9°54'46" N	76°16'43" E	-	-	-	78
		Vypeen	Vypeen	10°3'59" N	76°12'45" E	1580	383	-	-
		Kothamangalam	Kothamangalam	10°3'48" N	76°37'45" E	-	-	-	79
8	Kottayam	Pambadi	Ayarkunnam	9°37'37" N	76°56'19" E	-	-	-	80

9	Idukki	Kattappana	Kattappana	9°45'8" N	77°6'22" E	-	-	-	111
		Kattappana	Erattayar	9°47'51" N	77°6'17" E	-	-	-	72
10	Alappuzha	Veliyanad	Mancombu	9°26'1.7" N	77°25'40.21" E	2200	664	-	-
11	Kollam	Kollam Corporation	Kollam	8°53'24" N	76°35'0" E	-	-	-	131
12	Thiruvanantha puram	Thiruvananthapuram	Karakulam	8°33'50" N	76°359'8.6" E	-	-	-	54
		Kazhakuttam	Kazhakuttam	8°34'12" N	76°52'12" E	-	-	-	137
		Kilimanoor	Pangode	8°46'12" N	76°57'36" E	-	-	-	46
		Chirayinkeezhu	Pudukurichi	8°35'60" N	76°47'60" E	-	-	-	46
		Vamanapuram	Tekkada	8°37'50" N	76°57'21.64" E	-	-	-	48

## SUM UP

1. The total number of Ground Water Monitoring Wells (GWMW) in Kerala State as on 01.04.2013 was 1203. These monitoring wells include 911 dug-wells tapping phreatic aquifers and 292 piezometers tapping phreatic zones and deeper aquifers in sedimentary as well as hard rock terrains. The water level monitoring was carried out in the months of April, August and November 2012 and January 2013. Water sampling was carried out in 542 GWMWs (dug-wells) during the month of April 2010.
2. The monitoring wells are spread over in all the physiographic regions of the State. 62 % of which fall in the midland region, 18 % in coastal plains, 15 % in high lands and 5 % in plateau region.
3. Out of the monitoring wells tapping phreatic aquifer, 65% of the well are tapping lateritic aquifer which is the widely distributed aquifer in the state, 17 % tapping weathered and fractured crystallines followed by coastal alluvium and river alluvium represented by 15 % and 3 % respectively.
4. The total rainfall ranged from 1957 to 2964 mm during the period from April 2015 to March 2016. The maximum rainfall was recorded in Kannur district and the minimum in Palakkad district. During the southwest monsoon season, Trivandrum district recorded 798 mm and Kannur district recorded 2169 mm, which are the lowest and highest rainfall respectively. During the northeast monsoon season, Palakkad district recorded the lowest rainfall of 326 mm and Pathanamthitta district recorded the highest rainfall of 884 mm.
5. During the southwest monsoon season from June to September 2015, the departure of rainfall in the districts varied from – 11% to 19%. The maximum deficit rainfall recorded in Wayanad and Alapuzha districts out of the total eleven deficient rainfall districts. Only three districts namely Kannur, Kottayam and Trivandrum districts received normal rainfall during this season.
6. During the northeast monsoon season from October to December 2015, the departure of rainfall varied from – 24% to 46 % in different districts. The maximum departure

towards deficient rainfall recorded in Palakkad district. Only two districts recorded rainfall during this season. Normal rainfall is recorded in seven districts and excess rainfall in five districts. There is no scanty rainfall observed during the period.

7. During the months of January to March 2016, the departure of rainfall varied from -93 to 48%. Three districts recorded excess rainfall, six districts have recorded scanty rainfall, one district normal rainfall and four districts recorded deficient rainfall during the winter season.
8. The depth of water level varies from place to place according to the topographical conditions and is widely in the range of near ground level to 55 m bgl. However water level is in the range of 1 – 10 mbgl in major parts of Kerala State. In the coastal plains of the Kerala State and in certain areas in high ranges of Idukki and Pathanamthitta districts shallow water level in the range of 1 – 6 m bgl is seen. In mid land region water level is generally in the range of 2 – 15 m bgl. However deep water level in the range of 10 – 30 m bgl is seen in certain areas of Kasaragod, Wayanad, Palakkad, Kollam and Thiruvananthapuram districts where thick lateritic overburden occurs.
9. During April 2012 about 82.77% of monitoring wells was showing water level within the depth range of 0.10 to 10 mbgl. Whereas about 92% of monitoring wells were showing water level of less than 10 mbgl during August 2012.
10. The water level fluctuation in phreatic aquifers due to the monsoon recharge is mostly restricted to 4 metres rise in water level as recorded by 85% of GWMWs.
11. Comparison of water level data of the year 2015 – 2016 with the decadal mean value of the period 2005 – 2014 and 2006-2015 indicates that majority of monitoring wells (90.9%-April, 85.57%-August, 91.7%- November, 93.1%-January) have recorded either rise or fall in water level with the magnitude of less than 2 m. indicating insignificant change in water level over the past decade.
12. Long term ground water level trend for the pre-monsoon period indicate a fall in water level in the range of 0.05-0.2 m/year is more predominant.



13. Long term ground water level trend for the post-monsoon period indicate that majority of the state shows a rising trend.
14. The chemical quality of shallow groundwater in Kerala State has been evaluated by sampling and analysing the water samples collected from Ground Water Monitoring Wells established in various physiographic divisions tapping different aquifers. During April 2013, 744 water samples have been collected which represents the premonsoon ground water quality and are subjected to physical and chemical analysis.
15. Majority of the water samples show electrical conductivity within 500  $\mu\text{S}/\text{cm}$ . The low conductivity of water samples can be attributed to the peculiar physiographic setting of the state. 92.1% of the wells had registered electrical conductivity below 500  $\mu\text{S}/\text{cm}$  at  $25^{\circ}\text{C}$ , 6.3% of the wells had recorded electrical conductivity in the range 501-1000  $\mu\text{S}/\text{cm}$  at  $25^{\circ}\text{C}$  and 1.6% had recorded electrical conductivity above 1000  $\mu\text{S}/\text{cm}$  at  $25^{\circ}\text{C}$  which is local in nature.
16. The chemical analysis data shows that in some of the water samples concentration of chloride, fluoride and nitrate are above the permissible limit. In the case of fluoride, concentration in excess of 1.5 m/l is observed only in the eastern part of Palakkad district tapping shallow dug wells. While nitrate concentration above 45 mg/l is noticed in 26 wells in the entire state which are sporadically distributed over the state and are not confined to any area represents the local pollution.

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## Annexure I

## Ground Water Level Data of GWMW's in Kerala State during 2015-16

DISTRICT_NAME	SITE_NAME	SITE_TYPE	Apr-16	Aug-16	Nov-16	Jan-16
ALAPPUZHA	Adikattukulangara	Dug Well	6.2	4.2	2.94	4.41
	Alapuzha Town		3.4	3.6	3	3.61
	Alleppey		2.11	1.86	2.51	1.96
	Ambalapuzha		2.15	0.8	1.14	1.35
	Aranootimangalam		10.3	6	5.74	7.11
	Arukutti		2.62	1.42	1.82	2.04
	Arur		2.2	0.9	0.65	0.8
	Champakulam		2.4	1.78	0.9	0.88
	Chandirur (R1)		2.29	1.14	2.01	1.69
	Charummoodu		6.45	8.9	8.31	6.47
	Chelakkad		0.9	1.3	0.63	0.98
	Chengannur		7.75	5.6	5.71	8.51
	Chennithala South		3	1.3	0.83	NA
	Cherthalai		0.91	0.9	0.84	0.73
	Cheruvaranam		2.65	1.45	1.34	1.7
	Chettikulangara		1.85	0.85	0.79	1.15
	Edathua(R2)		1.3	0.5	0.5	0.89
	Eramallur		2.5	1.35	2.79	1.76
	Haripad		2.22	1.22	0.44	0.94
	Idakunnam		13.2	11.7	9.4	10.91
	Kadaikadu (Cheriyanaad )		5.06	3.7	4.2	4.62
	Kaidavana-R1		NA	NA	0.4	0.73
	Kalavamkodam		2.35	1.55	1.46	1.71
	Kalavur		1.6	0.6	0.68	1.03
	Kallissery		3.7	NA	2.32	3.47
	Kandiyur (R1)		NA	NA	1.47	2.22
	Kanichukulangara		2.7	1.85	1.79	2.11
	Karumancherry		1.5	0.85	0.62	0.93
	Karuvatta (R1)		2	0.8	0.55	NA
	Kattanam		12.15	11.85	10.85	11.56
	Kattoor (R1)		1.91	0.85	0.96	1.6
	Kavungal		2.8	1.2	NA	NA
	Kayamkulam		0.8	0.4	NA	0.33
	Kayippuram (Muhamma)		2.29	2.15	NA	1.76
	Kokkothamangalam		2.7	2	1.8	1.85
	Kudassanad		6	4.6	2.42	4.82
	Kunnamkari		0.9	0.4	NA	1.55
	Kuttitheruvu (Kayamkulam)		2.9	1.6	1.12	NA
	Kuzhamathu		13.45	10.8	7.39	11.31
	Mahadevikad		0.8	0.5	0.43	1.42
Mancombu		0.3	1.3	1.2	1.5	
Mannanchery		NA	2	1.6	2.09	
Mannar		5.1	5.07	4.83	5.03	
Mavelikara		2.99	1.74	1.54	2.04	
Mulakuzha1		4.85	3.5	1.45	4.71	
Muthukulam		2.2	1.6	0.76		
Muttam		2.5	0.55	0.59	1.09	
Muttar		NA	0.7	NA	1.4	
Naduvattom		2.3	2.3	1.23	1.04	
Nangiarkulangara		1.95	0.55	0.81	NA	
Nedumudi (pupalli)		0	0.05	0.05	0.38	

ALAPPUZHA	Neerkunnam(R1)	Dug Well	1.97	0.7	0.81	1.14
	Nooranad		5.2	9.1	8.54	9.06
	Oachira1 (Krishnapuram)		4.71	2.81	NA	NA
	Oachira1 (Krishnapuram) (R1)		NA	NA	2.22	2.63
	Ottappunna			1.35	1.02	2.09
	Pacha (R3)		2.85	2.45	0.39	1.61
	Pallarimangalam		2	0.75	0.75	1.02
	Panavally		1.85	1	0.6	1.2
	Panavally		1.85	1	0.6	1.2
	Pandanad		5.4	3.4	3	3.3
	Pandanad		5.4	3.4	3	3.3
	Panurkara		1.9	1.2	0.9	1.1
	Parayakkad		2.2	1.5	1.3	1.78
	Parumala (R1)		6.5	4.9	5.47	5.96
	Pathiyur (R1)		1.4	1.4	NA	0.54
	Pathiyur (R1)		1.4	1.4	NA	0.54
	Pattanakad		1.55	0.7	0.59	0.91
	Punnapra		2.8	1.25	NA	NA
	Punnapra		2.8	1.25	NA	NA
	Punnapra (R1)		NA	NA	1.03	1.35
	Purakkad (R1)		1.91	1.71	1.84	2.31
	Ramankari (R1)		0.4	0	0.14	1.1
	Thaikattusseri (R1)		2	0.9	1.05	1.67
	Thakazhi		1.75	2.65	1.5	0
	Thalavadi (R1)		2.05	2.75	NA	1.4
	Thamarakulam		1.8	3.1	2.98	
	Thaneermukkam		0.8	1	1.09	1.07
	Thevery		1.8	1.8	0.72	1.45
	Thottapally		0.85	0.6	0.22	0.98
	Thuravur		2.55	2	1.53	2.04
	Thyckal Beach		NA	NA	NA	1.11
	Trikkunnapuzha (R1)		1	0.5	0.6	NA
	Trikkunnapuzha (R2)		NA	NA	NA	1.1
	Valavanad		1.8	1.6	0.42	0.84
	Vallikunnam		3.2	1.2	1.21	1.69
	Vanaswargam		0.92	0.9	0.98	1.26
	Vandanam		3	1.15	1.66	NA
	Veeyapuram (R1)		NA	NA	1.02	1.43
	Venmani (R1)		NA	1.9	1.06	2
	Chettikulangara Pz	Tube Well	3.1	NA	1.1	NA
	Ezhupunna		1.7	1.1	0.8	1.32
	Haripad(c)		9.45	10.35	9.75	9.97
	Haripad(e)		11.28	10.08	10.11	10.28
	Haripad(n)		11.4	9.4	5.23	9.52
	Haripad(s)		12.3	NA	NA	NA
	Haripad(w)		10.9	9.7	2.8	NA
	Kalarkode(e)		2.8	4.18	9.83	2.8
	Kalarkode(s)		2.5	1.4	1	1.4
	Kalarkode(w)		19.7	4.6	17.7	17.58
	Karthikapally(south)		14.1	13.8	13.2	NA
	Karumady		2.81	2.89	1.71	NA
	Kattanam1		12.3	15.3	NA	10.32
	Kidangara		NA	NA	NA	1.45
	Krishnapuram(n)		15.9	14.85	15.23	15.21
	Krishnapuram(s)		6.8	5.4	5.75	5.55
	Mannar		6.17	5.07	4.83	5.03

ALAPPUZHA	Muthukulam Pz	Tube Well	4.02	1.8	NA	0.53
	Muttam(south)		5.02	3.62	3.47	4.02
	Preethigulangara-centre		NA	NA	16.64	13.69
ERNAKULAM	Edakkattuvoyal PZ	Bore Well	9.75	9.35	9.4	10.35
	Aikaranad1		3.25	3.05	NA	2.65
	Arakuzha Pz		4.9	4.4	4.8	4.9
	Illithode		5.52	5.32	6.72	7.02
	Irumbanam2		3.48	1.68	0.58	2.08
	Kanjiramattom		14.1	13.05	14.1	13.65
	Kizhakombu		4.6	2.3	NA	4.9
	Kodussery		7.87	7.67	4.67	7.62
	Koovappady		NA	5.25	5.55	6.05
	Malayattur1		NA	9	9.1	9
	Mullankunnu		16.2	8.6	9.1	9.4
	Namakuzhi		8.25	6.53	7.25	9.95
	Poothrikka Pz		9.75	8.25	NA	NA
	Punnakad		2.15	1.35	1.85	2.55
	Thirumaradi		4.25	2.35	3.5	3.98
	Vazhakam Pz		4.57	4.22	5.47	5.02
	Veliyanad		4.45	3.7	3.25	3.93
	Aikaranad	Dug Well	6.3	6.95	7.25	6
	Alwaye			10.07	9.8	11.23
	Anchalpetty-R1		5.9	5.97	6.05	5.9
	Angamali (R1)		6.7	5.8	6.65	7.05
	Anicadu		2.9	1.82	1.6	2.1
	Arakunnam		11.9	8.95	9.25	9.45
	Arakuzha		6.45	4.97	5.8	6.25
	Attara		7.2	6.7	7.25	7.05
	Chalacka		2.68	2.18	2.18	2.18
	Chellanum		0.96	0.66	0.39	1.01
	Chengamanad		8.08	8.28	8.18	9.18
	Cherai		1.5	0.32	1.2	2.08
	Cheria Kadavu		0.45	0.4	0.15	0.7
	Cherukadapuram		NA	1.3	1.55	1.75
	Chettikad		7.8	6.12	6.21	6.91
	Chowara (R1)		6.35	7.2	6.77	8.05
	Chulli (R1)		3.4	2.15	3.53	4.16
	Chullikkal		1.87	0.93	1.55	1.5
	East Marady		6.1	4.55	5.5	6.1
	Edakkatuvayal		11.47	10.07	9.47	11.1
	Edapally		2.62	1.12	1.37	1.6
	Edavanakad		0.7	0.33	0.06	0.72
	Elur North (R1)		1.95	1.55	1.35	1.6
	Eranakulam South		NA	0.7	0.64	0.85
	Fort cochin		2.05	1.85	NA	2.13
	Ilanji		7.3	4.4	5.2	7.04
	Illithode 1		4.9	4.45	6.2	6.75
	Irumbanam (R1)		3.4	1	0.9	1.6
	Jaikeralam		8.1	NA	NA	NA
	Kadavoor		6	4.5	4.08	5.52
	Kadungallur		1.95	1.38	0.85	1.8
	Kakkanad Civil Station.		10.66	5.98	8	7.5
	Kakur		3.55	1.3	NA	NA
	Kalady (R1)		7.25	4.8	6.59	4.5
	Kallorkad		3	3.15	2.5	2.8
	Kalur		6.9	4.3	4.4	5.8
	Kandakadavu		1.15	0.95	0.65	1.07

ERNAKULAM	Kandanadu	Dug Well	7.9	3.97	5.74	7.25
	Kanjiramattom		7.2	13.05	14.1	13.65
	Kanjur		7.5	6.2	6.85	7.25
	Kapparassery		2.52	0.77	2.22	1.72
	Karukadam		NA	4.3	3.63	4.55
	Karukutti (R2)		8.75	8.35	7.35	8.05
	Karumalloor		4.05	1.55	NA	NA
	Kattapada		8.78	4.11	5.76	6.7
	Keerampara		3.2	3.2	3.15	3
	Keezhillam		6.8	7.85	7.3	6.45
	Kizhakkambalam		NA	NA	5.9	6.25
	Kizhakombu		4.3	2.3		4.9
	Kodanad		2.35	2.05	2.65	3.23
	Kodussery		7.33	NA	NA	NA
	Kodussery (R1)		7.1	8.65	7.85	8.72
	Koothattukulam (R1)		4.22	2.52	3.6	5.02
	Koovapady		6.55	5.15	6	6.25
	Kothamangalam (R3)		NA	4.2	3.8	3.9
	Kottapadi		4.23	2.23	2.43	3.68
	Kottapuram (Alangadu)		2.65	1.45	1.18	2.1
	Kottapuram (Veliyanad)		6.1	6.1	6.1	6
	Kottayathupara		4	3.35	3.5	3.6
	Kumbalangi (R1)		0.9	NA	NA	NA
	Kumbalangi (R2)		NA	1.45	1.2	1.95
	Kundannur (R1)		1.15	NA	0.03	0.47
	Kunnukara		4.98	7.98	7.43	8.28
	Kurumassery		8.5	8.05	7.9	7.85
	Kuruppampady		7.15	4.23	4.4	5.85
	Kuthukuzhi		4.45	2.72	2.4	4.35
	Malayattur		7.8	5.9	6.82	7.42
	Malipuram		0.8	0.8	0.1	0.8
	Mallussery		4.4	3.43	3.95	4.4
	Mamala		NA	4	3.85	4.3
	Mamallassery		5.25	1.5	4.75	4.85
	Manjapara		3.63	4.08	7.5	4.33
	Mannur		4.05	3.95	4.13	4.85
	Maradu		1.75	0.5	0.1	1.05
	Monapalli		7.54	3.98	6.12	6.24
	Mulanthuruthi		8.8	5.2	5.4	8.7
	Mullankunnu		10.3	8.6	9.1	9.4
	Munambam (R1)		1	0.36		0.92
	Muvattupuzha		6.6	4.86	4.15	5.57
	Nallimolam		6.74	NA	NA	NA
	Nallimolam (R1)		6.5	5.7	6.18	
	Namakuzhi		6.7	6.53	7.25	9.95
	Nayarambalam		1.3	1	0.55	1.12
	Nellikuzhi		3.3	2.8	2.85	NA
	Neriyamangalam		4.12	NA	NA	NA
	Neriyamangalam (R1)		NA	6.55	5.92	7.72
	Njarakkal		0.75	0.65	0.25	0.95
	Nochima		4.64	2.45	NA	3.5
	North Parur		0.6	0.3	1	0.75
	Okkal		3.1	2.4	3.1	3.6
	Oonnukal		7.3	4.75	5.5	6
	Paingottur		5.4	4.32	3.82	5.2
	Palakuzha North		6.83	3.05	4.63	6.18
	Pallikara-Chittanadu		8.3	7.4	7.85	8.2

ERNAKULAM	Palluruthy	Dug Well	NA	1.1	0.85	1.4
	Pambakuda		5	4	4.7	5.7
	Parakkadavu		2.5	1.7	1.8	2.48
	Paravur		1.2	0.82	0.1	2
	Pattimattom		5.8	NA	NA	NA
	Pattimattom (R1)		NA	NA	4.15	3.9
	Payyal		4.45	2.5	2.87	3.85
	Peechanikad (R1)		NA	6.3	6.1	5.5
	Perumbadavam		7.6	5.4	5.72	6.25
	Perumbavoor (R2)		NA	3.6	4.05	5.7
	Perumpalli		9.5	6.32	6.98	7.12
	Pezhakkapallil		NA	3.8	3.95	6.4
	Pindimana		4.65	0.45	0.77	2.3
	Piravom		5.9	5	4.82	5.3
	Poothotta		3.48	2.28	1.88	2.28
	Poothrikka		8.6	7.7	8.2	8.5
	Pothanikad (R1)		NA	1.62	1.2	3.65
	Pulluvazhi		5.4	4.5	4.95	5.3
	Punithura		2.45	1.1	0.45	0.95
	Punnakad1		1.1	0.6	0.9	1.66
	Puthankurissu (Neriyamangalam Road)		NA	3.1	2.98	3.35
	Puthankurisu		3.03	NA	NA	NA
	Puthankurisu (R1) (Kolencherry)		5.2	3.6	4.6	4.7
	Ramamangalam		6.7	5.9	6.2	6.8
	Randar		4.73	4.13	3.63	4.53
	Sreemoolanagaram		NA	NA	8.3	8.8
	Thabore		5.2	5.8	5.45	5.85
	Thaikkattukara		NA	1.6	1.18	2.05
	Thalakode		NA	3.8	3.78	3.95
	Thattekad (R1)		1.55	3.65	4.05	1.95
	Thirumaradi		4.4	2.35	3.5	3.98
	Thiurvaniyoor		6.25	2.25	4.9	5.5
	Thiurvankulam		4.2	2.15	3.84	3.5
	Thrikalathur		5.04	4.5	4.75	5.35
	Thuruthi		2.81	2.43	2.92	3.3
	Trikkakara		NA	8.95	9.1	9.55
	Tripunithura		3.15	2.1	2.1	2.25
	Udayamperoor		NA	2.7	2.4	3.1
	Vadavucode (Kolencherry)		1.35	1.28	1.45	1.05
	Valakam		NA	6.75	6.65	5.35
	Valayanchirangara		7.82	7.47	7.27	6.82
	Vallom (R1)		7.43	6.33	6.45	6.73
	Varapuzha		2.27	0.7	0.4	1.32
	Vazhakkulam North		6.65	4.1	5.9	6.75
	Vazhappilly		NA	NA	1.2	0.9
	Veliyanad		6.8	5.55	5.45	5.8
	Vypeen		0.45	0.3	0.15	0.46
	Vytila		2.35	1.67	1.35	1.93
	Kadavanthara	Tube Well	6	6.1	3.3	6.2
IDUKKI	Alakode	Bore Well	4.33	3.78	3.73	3.83
	Anakkara		49.4	6.38	6.12	6.7
	Karimkunnam2		2.95	1.96	1.5	2.9
	Karumannur		4.46	2.91	2.56	4.02
	Kattappana		8.74	5.01	6.84	9.34
	Mundieruma		NA	4.25	4.62	4.6

IDUKKI	Santhanpara	Bore Well	NA	NA	2.4	NA
	Thankamoni		1.9	1.07	2	2.9
	Adimali	Dug Well	5.62	4.08	4.59	5.43
	Alakkode1		4.48	3.7	3.5	4.04
	Ambazhachal		3.9	4.4	4.2	2.66
	Amravathi		3.46	2.6	2.4	2.76
	Anakkara		3.1	6.38	6.12	6.7
	Anavilasam		6.52	4.49	5.16	5.56
	Arikuzha		5.25	3.98	1.55	3.56
	Balagram ( Third camp)		3.65	3.12	3.19	3.1
	Byson Valley		10	9.18	9.46	9.8
	Carady Goody Estate		2.85	1.21	1	1.9
	Chathurangapara		0.47	0.4	0.3	0.35
	Cheenikuzhi		1.92	1.13	0.9	2.1
	Cheriyar		2.5	2.35	2.5	2.4
	Chittoor		4.06	3.58	3.2	3.8
	Churuli		2.45	1.93	1.88	2.09
	Cumbummettu		4.85	3.19	3.35	2.95
	Devikulam		3.2	2.78	2.99	3.05
	Elamdesom		6.58	5.04	4.74	5.56
	Elappara		1.57	1.4	1.57	1.52
	Idukki		3.61	3.12	3.25	3.55
	Irattayar (R1)		2.9	2.3	2.46	2.95
	Kaliyar		4.95	4.44	4.1	5.3
	Kanchiyar		10.05	7.75	6.9	8.9
	Karimkunnam (R1)		3.5	3.34	2.8	2.8
	Karumanoor		4.3	2.79	2.1	3.63
	Kattapana		2.76	2.01	2.4	2.98
	Kochera		3.11	2.18	2.11	1.95
	Kodikulam east		8.2	3.55	3.1	4.52
	Kolani		4	2.24	1.35	3.05
	Kolapra		5.35	4.05	4.1	4.2
	Kulamavu		7.88	4.85	4.8	6.4
	Kumaramangalam		4.7	3.44	3.2	3.8
	Kumili		2.95	2.1	1.75	2.9
	Kuttikanam (R1)		7.1	3.3	3.75	6
	Machiplavu		8.65	6.25	5.7	7.62
	Manjappara		2.25	1	0.8	1.52
	Marykulam		5.7	2.63	2.82	4.5
	Memala		6.2	3.55	3.96	4
	Moolamattam		5.45	4.97	4.5	5.2
	Mundiyeeruma			4.27	4.54	4.45
	Munnar		1.1	0.55	0.97	1.28
	Murikkassery		10.7	9.48	9.7	10.28
	Murukkady		NA	NA	NA	2
	Nedumkandam		5.45	2.98	2.76	4.1
	Nirmala City		2.95	0.6	0.7	0.9
	Njarukutty		3.45	1.57	0.8	2.1
	Pachakanam		NA	2.55	NA	NA
	Pambadumpara		4.79	2.06	2.26	2.55
	Pampanar		2.5	0.92	0.88	1.15
	Pannimattom		4	2.9	3.02	3.46
	Peerumedu		4.05	2.68	2.68	2.7
	Perumuttom		4.05	4.09	3.91	5.45
	Peruvanthanam		2.82	1.46	1.2	2.5
	Poopara		0.8	0.71	0.7	0.8
	Rajakkad		8.9	8.26	8.8	10.5



IDUKKI	Rajakumary	Dug Well	11.15	9.95	10.7	10.35
	Thankamani		1.1	0.97	1.2	1.4
	Thodupuzha		7.6	7.02	6.24	9.2
	Thopramkudi		0.85	0.82	0.85	2.25
	Thumbachi		4.64	3.27	3.69	3.6
	Udumbanchola		8.95	6.11	6.55	6.89
	Udumbannur		7.89	3.43	3.29	5.73
	Valara (R2)		9.67	7.15	6.68	9.02
	Vallakadavu		4.6	2.62	2.8	3
	Vandanmedu (R1)		2.8	2.08	2.07	2.08
	Vandiperiyar		6.5	5.77	5.6	6.45
	Vazhithala		5.28	0.68	0.98	3.83
	Vellathooval		2.55	1.83	2.3	2.5
	Vellilamkandam		5.6	3.87	2.07	4.95
KANNUR	Anthoor	Bore Well	7.76	7.85	9.9	9.67
	Kakkeyamkadu		7.64	NA	2.48	3.18
	Kankole1		11.33	4.85	7.45	8.18
	Kelakkam		8.47	NA	NA	NA
	Kizhallur		3.24	2.66	4.2	5.4
	Kolacheri		10.12	6.75	8	8.18
	Kommery		4.39	2.9	3.75	4.15
	Kottayampoyil		8.69	5.15	6.15	7.09
	Kurumathur		7.15	4.35	6.65	7.12
	Manathana		3.51	5	6.5	7.12
	Munderi		3.06	3.2	4.3	4.48
	Oduvallithattu		17.76	NA	NA	NA
	Panoor		5.26	NA	3.03	2.93
	Parassinikadavu		19.36	20.45	13.6	NA
	Pulingome1		7.76	6.25	6.8	7.46
	Alacode (R1)	Dug Well	11.02	7.4	10	10.75
	Alavil		7.67	4.2	4.9	6.18
	Ambilad		NA	NA	14.5	13.65
	Andoor		7.92	5.9	7.2	8.61
	Anjarakandi		9.39	5.7	6.9	7.81
	Chakkarakkale		11.81	7.45	7.6	9.11
	Chala		10.27	7.4	8.7	9.97
	Chalad		7.51	2.95	3.85	5.89
	Chavassery		5.18	3.75	3.8	4.14
	Cheleri		15.14	9.15	10.3	11.7
	Chepparapadavu		4.01	2.6	3.1	3.2
	Cherupuzha		5.38	4.28	4.6	5.13
	Cheruthazam		9.85	6.6	7.85	8.58
	Chundaparambu		7.12	6.5	6.57	6.74
	Chural		8.57	3.48	6.35	6.68
	Dharmadam		3.81	4.6	1.75	2.42
	Echilamvayal		3.71	1.15	3	4.37
	Edakkad		2.95	0.86	0.86	1.68
	Edayannur		5.52	4.9	4.5	4.56
	Edoor		4.16	2.5	3.55	4.05
	Elambara		5.01	3.25	4.05	4.41
	Ettikkulam		10.96	7.05	8.7	9.73
	Ezhilode		13.09	9.25	12.8	12.75
	Irikkur		6.93	3.5	4.65	5.28
	Kadannapally		12.13	9.4	10.95	11.43
	Kakkathodu		4.16	3.48	3.8	3.07
	Kalliassery		9.02	8.5	6.9	7.61
	Kallumutty		7.51	6.38	6.71	4.15

KANNUR	Kanhirangad	Dug Well	11.91	10.9	9.9	12.5
	Kannapuram		2.87	1.45	1.95	2.33
	Kannavam		5.52	4.27	4.8	5.25
	Kannur		9.93	7.85	7.9	8.61
	Kannur-Thana		NA	8.7	9.15	9.42
	Karikottakari		8.22	NA	6.65	6.34
	Kelakam		9.82	7.5	9.83	10.79
	Kizhpalli		6.34	5.25	5.3	5.8
	Kolachery		10.72	7.85	7.8	8.32
	Kolakkad		9.87	8.8	3.35	9.4
	Kolayad		7.39	5.95	6.71	7.28
	Kommeri		4.72	3.6	3.7	4.5
	Koothuparamba		9.62	5.95	8.5	9.6
	Koottummukham		6.41	5.4	5.45	5.71
	Kottayampoil		9.17	5.8	6.1	7.5
	Kottiyur		7.35	7.23	7.1	7.11
	Kotty		2.85	1.35	1.81	2.68
	Kozhichal		7.01	4.85	4.9	5.56
	Kunnaru		2.44	0.48	1.3	1.96
	Kunnoth		5.67	1.4	6.91	5.21
	Kuppam		2.46	1.8	2.1	2
	Kuyilur		5.59	2.48	3.65	5.6
	Mahe (R1)		1.79	1.29	1.25	1.63
	Manantheri		8.96	5.85	6.45	7.26
	Manattana		3.57	2.28	2.35	3.4
	Mathamangalam (R1)		NA	0.03	3.2	6.26
	Mathil		9.14	5.95	8	9.1
	Mattanur		7.76	5.45	7.1	8.73
	Mayyil		12.11	11.2	10.25	10.55
	Mekunnu		6.92	5.55	4.95	4.95
	Mele Chovva		7.96	8.1	8.6	8.1
	Melepukkom		9.37	6.75	7.55	8.03
	Melur			3.2	2.7	3.89
	Meruvambayi		7.16	5.65	4.51	3.2
	Mokeri		11.29	7.45	8.45	9.35
	Munderi		8.02	3.2	4.3	4.48
	Muzhakunnu		4.72	3.53	4.25	4.51
	Nayattupara		11.72	7.95	9.55	9.43
	Nellunni		4.27	3.3	3	3.84
	Neruvambram		NA	17.3	17	15.1
	Nuchiyad		8.58	5.6	7.6	8.08
	Oduvalli		17.46	15.75	16.4	16.3
	Palleri		9.41	5.43	5.65	7.4
	Pallikkuni		4.12	1.75	3.37	3.62
	Palloor (Mahe)		8.27	7.35	8	9.06
	Pannoor		4.81	NA	3.05	4.24
	Panunda		15.38	10.35	10.5	12.95
	Pappinissery West		2.61	1	1.2	2.6
	Parassinikadavu DW		15.27	13.6	13.6	14.24
	Pariyaram		13.82	11.45	12.6	13.11
	Pathiriyad		8.72	6.31	NA	7.63
	Pattiyam		5.56	3.25	4.2	5.62
	Pattuvam		NA	14.2	15.8	1.55
	Payyannur		6.71	3.2	4.7	5.4
	Pazhayangadi		2.22	1.15	1.1	0.9
	Peravoor		5.42	4.45	4.73	5.24
	Peringome		7.96	NA	NA	NA

KANNUR	Peringome ( R1)	Dug Well	NA	5.85	7.85	8.2
	Pinarayi		NA	10.1	10.25	11.2
	Pukkundu		12.21	8.05	9.3	9.77
	Pulingome		6.31	4.9	5.4	6.31
	Puthiyatheru		9.56	4.35	6	7.45
	Ramantalai		9.29	3.75	8.1	9.16
	Sreekandapuram		8.14	NA	NA	7.25
	Taliparamba		13.04	8.6	9.55	9.81
	Thalassery		5.87	2.67	3.35	4.97
	ThazheChovva		2.01	0.4	0.4	1.2
	Ulikkal (R1)		6.68	2.35	4.75	5.77
	Valakkai		5.57	4.13	4.75	5.02
	Valapattanam		10.16	8.25	8.7	9.33
	Varam		6.12	3.57	4.45	NA
	Vattiyamthodu		7.54	4.55	4.5	6.1
	Vayyakara		20.21	19.47	19.45	19.61
	Vengad		17.28	13.24	14.6	15.94
	Cannanore1	Tube Well	11.42	9.6	NA	NA
KASARAGOD	Bella	Bore Well	10.66	8.3	NA	NA
	Bovikkanam		8.87	9.3	11.6	15.37
	Chalingal Pz		10.46	4.8	8	13.75
	Chamundikunnu		10.63	8.8	9.8	9.95
	Chattanchal		14.18	10.95	13.9	14.37
	Cherkala		NA	5.95	8.55	NA
	Karindalam		21.02	18	19.2	21.58
	Kumbala		11.46	4.66	9.71	11.9
	Kundamkuzhi		6.17	NA	NA	NA
	Kuniya		7.64	4	NA	NA
	Madhur		6.14	3.28	5.4	6.96
	Mangad		13.22	2.8	7.6	11.47
	Manjeshwar		9.73	8.92	NA	9.82
	Mylatti		3.71	1.27	NA	6.22
	Pachakkad CPCRI		12.32	NA	8.2	8.83
	Pallikkara		7.11	NA	8.8	10.41
	Periye Pz		10.7	4.73		9.17
	Seethamgulli		7.78	6.02	6.41	7.97
	Vidyanagar		9.18	6.82	8.15	9.12
	Adhuru (R1)	Dug Well	9.89	4.55	7.3	8.07
	Adkasthala		11.72	8.4	10.3	10.94
	Adoor		12.86	5.3	11.25	11.72
	Ajannur DW		NA	NA	NA	11.16
	Ambalathara		4.26	1	3.45	4.3
	Anangoor		13.71	8.97	12.9	10.04
	Angadimogar		10.67	5.45	9.35	11.55
	Arladuka		15.52	13.07	13.3	14.23
	Badiadka-R1		16.37	11.52	12.57	13.27
	Bandadka		9.41	11.1	11.05	6.46
	Bangathadka		17.62	14.65	15.35	15.37
	Banputhadka		8.44	6.9	7.4	7.7
	Bayar		12.88	8.95	7.76	9.42
	Bedadka-R1		14.06	11.7	12.65	13.05
	Bedradka		13.94	8.78	9.96	11.57
	Bedrampalla		NA	NA	4.05	NA
	Bedrampalla (R1)		7.64	2.1	4.05	10.97
	Bekal		9.68	5.25	7.7	8.87
	Bela (R1)		NA	10.57	10.55	10.67
	Bethoorpara		11.45	8.07	8.65	8.47

KASARAGOD	Bhimanadi (R1)	Dug Well	9.05	6.88	8.63	9.02
	Bhimanadi-II		5.39	2.6	3.5	5
	Chalingal		8.62	4.12	7	8.67
	Chamundikunnu DW		10.06	9.2	9.8	10.13
	Chattanchal DW			11.35	NA	NA
	Cheemeni		8.12	2.75	6.9	7.35
	Cherkala		10.8	6.62	8.5	9.42
	Chittarikal		5.99	4.65	4.8	5.52
	Choyankod (R1)		5.19	2.73	6.9	8.76
	Dharmathadka		9.26	8.05	9.45	9.99
	Elambachi		5.1	1.6	2.95	3.89
	Iriyani		10.32	8.83	8.96	9.57
	Jodukallu		10.91	6.1	8.27	9.13
	Kadambar		13.26	9.95	13.05	10.87
	Kadappallam		14	9.25	9.6	11.69
	Kakkadavu (R1)			11.45	11.8	12.1
	Kalathur		14.8	9.4	9.7	11.04
	Kalichanadukkam		5.29	11	5.1	5.45
	Kalikadavu		6.36	1.63	4.3	5.17
	Kanhangad Coast (R1)		3.39	1.85	2.4	2.7
	Kanhangad Town		9.33	5.85	8.15	9.26
	Kaniyala		6.2	2.85	4.5	5.21
	Kannadipara		12.05	7.47	10	11.3
	Karinthalam		10.81	7.22	9.7	11.25
	Kasaragod		10	8	NA	9.77
	Kinningar		7.94	2.5	5.06	7.49
	Kolichal		4.9	4.4	6.2	4.68
	Koliyarpadavu (R1)		11.95	11.08	8.85	10.34
	Koolom Road		8.48	3.87	8.5	9.12
	Kottiyadi		9.57	5.36	7.9	8.27
	Kovval		7.68	3.65	6.1	7.43
	Kudlu		10.36	4.2	7.45	9.27
	Kumbadaje		10.26	11.88	8.8	NA
	Kumbla (R1)		13.36	6.91	9.51	11.37
	Kundamkuzhy		6.25	1.78	3.85	5.4
	Kuttikol		15.15	14.55	14.55	14.74
	Madhur		15.4	8.92	NA	6.14
	Mandecap		7.74	5	6.25	6.81
	Mangad		12.2	5.85	9.6	10.57
	Mangalpady (R1)		12.85	8.55	10.9	11.47
	Manjeswar		6.88	3.25	3.8	4.17
	Mavinakatta		25.75	22.45	22.85	23.07
	Mavungal		8.28	2.08	5.73	5.97
	Melparamba		15.22	9.35	10.95	13.42
	Miyapadavu		13.44	11.32	10.75	11.19
	Mogral (R1)		10.82	2.85	8.1	10.72
	Mogral Puthur		12.19	6.75	8.65	10.55
	Movvar		14.41	10.25	13.85	14.1
	Muligadde		9.3	5.39	8.7	8.86
	Muliyar		6.78	4.1	7.8	5.97
	Mulleria		18.76	16.9	17.15	17.87
	Munnad		10.39	9.07	10	10.23
	Naimarmoola		8.27	9.15	8.2	8.21
	Nattakkal		12.55	11.85	12.3	13.21
	Nellikatta		7.52	7.1	7.5	8.07
	Nileshwar		5.7	1.65	4	4.71
	Odayanchal		3.05	1.7	2.6	2.97

KASARAGOD	Pachambla	Dug Well	10.61	7.12	8.35	8.74
	Padiyathadka		9.55	5.46	7.28	7.57
	Paivalike		9.93	7.55	8.65	9.37
	Pallam		8.87	4.95	7.1	9.5
	Panathur		11.09	7.35	10.9	11
	Parappa north		9.37	7.4	8.5	8.77
	Peraladkam		6.46	6.25	6.25	8.59
	Periyattadukkam		10.01	3.98	7.5	9.14
	Periye		10.22	6.4	NA	9.27
	Perla		8.04	6	7.1	7.39
	Poinachi-R1		13.8	13.55	12.5	14.11
	Pookatta		11.35	9.45	12.95	14.54
	Povval		12.2	12.4	11.9	12.87
	Pullur		8.68	5.8	7	7.96
	Putheriyadukkam		10.32	9.85	10.61	11.2
	Puthige		9.53	6.8	8.25	10.69
	Rajapuram		5.37	4.9	5.45	7.05
	Ramdas Nagar		NA	11.5	10.95	11.88
	Sasthangode (Sastha Nagar)		25	19.65	20.9	21.4
	Sorga		9.82	3.7	7.1	7.17
	Thachangad		11.03	4.8	8.37	9.94
	Thaniyadi		5.25	4.1	4.45	4.82
	Thoyammel		11.95	8.4	9.3	9.4
	Trikaripur		3.85	0.7	2	2.94
	Udinur Central		3.5	1.4	2.45	3.36
	Ukkinadka		5.42	5.08	5.01	5.33
	Uppla		14.33	8.84	10.65	12.87
	Vorkady		13.72	10.7	12.1	12.97
	Yethadka		5.58	4.75	5.4	5.2
	Ajannur(s2)	Tube Well	2.27	0.5	0.65	1.99
	Ajannur(s3)		2.99	0.55	0.55	NA
	Ajannur(s4)		2.07	0.65	0.65	NA
KOLLAM	Anchal	Bore Well	8.04	7	5.53	7.62
	Chadayamangalam Pz		1.08	0.32	0.78	0.33
	Kalluvathukkal		5.16	4.6	7.55	7.77
	Koovakad		5.6	2.36	1.4	2.78
	Kulathupuzha1		4.52	NA	NA	NA
	Nellikunnam Pz New		0.7	1.52	1.43	1.8
	Pathanapuram		0.85	0.04	0.02	0.22
	Ummannur		NA	6.9	8.38	NA
	Vazhathopu		8.42	4.76	3.08	4.74
	Yeroor1		5.12	5.11	3.61	5.67
	Achenkovil (R1)	Dug Well	7.1	5.15	3.48	NA
	Adichanallur		1.99	2.56	2.52	NA
	Aerom -Panayancheri		6.29	NA	NA	NA
	Ailara		2.75	2.06	1.65	2.35
	Akkal		9.54	8.79	6.03	9.04
	Alayamon		NA	NA	NA	7.93
	Alumoodu		8.9	6.2	6.4	8.2
	Amabalamkunnu		7.87	8.07	7.07	NA
	Anayadi		13.2	9.45	9.25	10.14
	Anchal DW		12.55	9.34	8	12.46
	Anchalamud (R1)		9.18	8.22	8.25	8.71
	Ariyankavu		6.75	6.15	2.16	5.58
	Ashtamudiseri		1.2	2.25	1.86	NA
	Avaneswaram		8.65	4.14	3.88	NA
	Ayathil		8.4	6.66	6	7.71

KOLLAM	Ayur	Dug Well	8.43	6.02	5.67	7.33
	Bharathipuram		9.38	8.87	6.8	9.3
	Bhoothakulam		11.13	10.81	10.14	10.94
	Chadayamangalam (R1)		8.65	9.87	8.17	10.77
	Chakkuvalli		8.55	7.55	6.25	7.86
	Channapetta		13	11.18	9.33	11.26
	Chathannur		13.9	10.74	9.24	11.21
	Chavara (R1)		1.37	0.92	0.62	1.19
	Chenkulam		5.53	4.29	4.29	4.98
	Chithara		8.28	4.3	6.1	7.75
	Choorakulam Jn		7.29	6.43	5.06	6.48
	Cinemaparambu (R1)		9.63	10.09	9.28	11.48
	East Kallada		2.5	3.25	3.75	NA
	Edamon		9.6	9.52	7.32	7.24
	Edamulakkal		5.95	4.67	5.98	5.9
	Edayam		12.85	11.05	9.01	11.34
	Elavakode		9.3	NA	NA	NA
	Ezhamkulam		9.2	8.02	5.21	8.63
	Ezhukone (R1)		4.59	3.16	3.09	4.14
	Iravipuram (R1)		3.33	2.12	1.63	2.14
	Ithikara		16	15.94	15.14	15.95
	Kadakkal		7.25	7.36	6.66	7.82
	Kadapuzha		2.4	2.44	2.25	2.41
	Kallumthazham		4.83	NA	NA	NA
	Kalluvadakkal		4.36	7.93	7.48	NA
	Kalluvathukkal		8.88	4.6	7.55	7.77
	Kalluvettumkuzhi		8.18	8.59	8.36	9.03
	Kamukanchery		9.38	8.38	8.17	7.68
	Kandanchira		6.82	NA	NA	6.7
	Kangathumukku		6.89	5.43	5.37	6.22
	Kanjiramkode		6.75	4.72	5.02	5.72
	Kanjiramvila		8.46	7.3	7.04	8.15
	Karamkode		12.36	12.15	10.85	10.92
	Karavaloor		NA	5.3	4.5	6.87
	Karippira		5.37	7.89	7.71	NA
	Karukone		7.65	6.35	3.58	7
	Karunagapally		4.6	3.6	2.36	3.29
	Karunthalakode		0.3	NA	NA	NA
	karuvel		8.04	9.63	9.13	NA
	Killikallur		5.63	8.5	8.46	NA
	KILLOOR		3.3	5.07	4.47	NA
	Koovakad DW		NA	3.61	1.66	4.96
	Kottakayam		8.9	7.9	NA	7.71
	Kottamkulangara		2.08	1.4	0.9	1.68
	Kottarakara (R1)		15.52	14.32	15.13	15.38
	Kottathala		NA	6.2	NA	7.13
	Kottiyam		10.76	8.27	7.93	10.15
	Koyivila		7.35	5.9	4.97	NA
	Kulakada		7.38	6.3	4.3	7.21
	Kulapadam		7.46	6.6	5.71	8.1
	Kulathupuzha		6.45	5.48	3.8	5.28
	Kumbalam (R1)		19.27	21.26	20.24	19.94
	Kundara		13.98	13.87	13.72	NA
	Kunnada		11.47	10.5	7.5	3.91
	Kunnathur		18.32	8.18	18.26	18.07
	Kuripalli		8.55	7.77	8.19	8.4
	Kurungapalli		1.89	1.31	0.9	NA

KOLLAM	Kutavettur	Dug Well	6.7	8.75	6.55	6.69
	Madathara		4.64	NA	5.24	6.37
	Mampuzha		4.02	6.07	6.07	NA
	Manapalli		NA	5.01	4.85	NA
	Mayyanad		NA	5.03	4.28	NA
	Meenad		NA	4.49	4.32	5.09
	Meenkulam		8.28	7.88	7.14	8.05
	Minambalam		7.64	11.63	9.71	NA
	Miyannur		10.91	9.49	8.33	NA
	Mukhathala - Kaniyamthodu		0.46	1.42	1.3	NA
	mukkunnapuram		2.57	2.94	2.15	NA
	Mulavana		11	9.9	9.4	10.3
	Muthukumel		6.24	5.84	4.29	NA
	Mynagapalli		10.19	7.76	7.81	8.54
	Nallila		5.86	5.7	5.6	5.78
	Nedungolam		12.45	9.7	4.27	11.19
	Nedungulam		5.5	10.65	7.48	NA
	Neduvankavu		1.62	2.85	2.43	NA
	Neendakara (R1)		0.9	0.59	1.56	0.5
	Nellikunnam		0.96	2.51	1.68	NA
	Nellikunnam DW		1.04	1.08	0.94	1.53
	Nilamel		4.08	3.73	3.27	3.27
	Nindakara		0.13	0.8	0.48	NA
	Oachira1		1.12	1.26	1.9	2.3
	Odanavattom		7.03	4.86	5.17	7.39
	Ottakkal		7.11	4.34	4.3	5.26
	Oyur		8.1	6.22	6.2	8.2
	Palamoodu		10.31	9.39	6.25	NA
	Pallickal		6.54	5.42		6.5
	Panaveli		0.17	0.55	0.47	NA
	Pangalukadu		6.02	6.49	6.18	6.63
	Panmana-Manayil		1.76	1.88	1.77	NA
	Paravur		8.57	0.82	0.1	2
	Paravur- Tekkumbhagam		3.59	3.94	4.16	NA
	Paripally1		10.81	9.6	8.97	10.2
	Pattanapuram		10.39	8.11	6.92	8.75
	Pavitreswaram		5	3.86	3.8	4.07
	Perinad		8.39	6.32	5.95	7.21
	Perumkulam		7.41	6.13	NA	6.43
	Perumpuzha		8.49	11.86	9.66	NA
	Pozhikara		6	5.1	4.32	5.59
	Pudakulam		1.83	2.47	2.2	NA
	Punalur-I (R1)		13.04	10.3	7.08	12.03
	Punnala (R1)		8.1	5.9	6.38	6.97
	Puthiyathura		5.11	NA	NA	NA
	Puthoor		NA	NA	5.17	8.14
	Quilon (Kollam)		4.02	7.51	7.32	8
	Roaduvilla		9.24	7.3	5.65	NA
	Roduvila		8.1	6.72	5.49	6.96
	sankaramangalam		0.68	1.28	0.95	NA
	Sasthamkottah (R1)		5.18	4.56	4.72	5.14
	Sooranadu		5.91	4.7	4.66	5.27
	Tadicaud (R1)		8.51	7.14	6	7.3
	Tanni		1.8	2.42	1.79	NA
	Tekkumbhagam		6.36	7.18	6.57	NA
	Tevalakara		8.31	7.28	5.97	7.79
	Thattamala		3.24	1.97	1.97	NA



KOLLAM	Thenmala	Dug Well	7.05	6.7	NA	6.82
	Thirumullavaram church		2.12	2.6	2.41	NA
	Thodiyur		NA	1.2	1.15	2.06
	Ummannur		9.1	7.55	6.69	8.09
	Vadakkumthala west		2.71	NA	NA	NA
	Valiyam		1.81	4.8	3.35	NA
	Vallikavu		1.42	0.65	0.45	1
	Vallikeezhu		4.8	4.15	3.52	NA
	Vavvakkavu		2.04	1.87	1.9	NA
	Vazhathoppu		8.18	6.08	4.72	5.19
	Velamanur		7.11	7.52	7.17	NA
	Veliyam		10.18	7.96	7.16	8.64
	Vilakkupara		11.72	10.92	4.9	7.76
	Yeroor		2.69	1.58	1.34	2.06
	Chavara-e	Tube Well	16.7	13.37	8.9	7.85
	Chavara-n1		NA	NA	1.77	1.75
	Chavara-n2		NA	0.9	1.67	0.95
	Chavara-west		1.91	1.6	1.36	NA
	Manappalli		NA	17.14	17.7	NA
	Nallila1		7.8	6.95	NA	7.01
	Perinad1		NA	NA	35	NA
	Trikkadavur		14.58	11.36	6.33	11.84
	Vayyankara		14.83	14.8	16.1	16.26
KOTTAYAM	Ettumannur	Bore Well	1.4	0.51	0.82	0.8
	Kidangoor		7.4	4.62	4	6.4
	Kuravilangad		6.13	1.55	1.53	2.39
	Poonjar		4.96	2.89	2.73	5.23
	Thrikodithanam		13.25	10.63	9.51	11.25
	Anandasram	Dug Well	8.2	6.92	7.3	7.56
	Arunuttimangalam		6.67	5.83	6.21	5.87
	Ayamkudi		12.4	6.79	7.44	9.5
	Ayarkunnam		5.06	2.95	2.81	3.65
	Brahmamangalam		9.25	6.31	6.2	7.9
	Chamampathal		3.1	3.08	3.3	3.4
	Changanasserry		2.96	1.53	1.37	2.06
	Chempu		3.2	1.66	1.5	2.05
	Chengalam South		2.2	0.66	0.66	1.35
	Cheruthikara		5.42	1.44	1.6	4.22
	Cheruvalli		5.6	5.6	5.3	6.1
	Chotti		4.77	3	3.53	5.25
	Chungam		4.87	2.7	2.97	3.57
	Edakadathy		9.05	9	8.4	9
	Edamaruku		4.5	2.51	2.33	3.45
	Edinjillam		3.45	1.6	1.58	2.31
	Elamkulam		3.82	1.89	3.22	4.42
	Erumeli		4.78	2.87	2.82	4.02
	Ethakuzhy ( Kallara)		3.11	2.07	1.43	2.95
	Ettumannur East		NA	NA	2.85	NA
	Ettumannur East (R1)		7.25	2.98		4.45
	Iykarakunnam		10.42	7.31	6.72	8.12
	Kadaplamattom		5.47	5.06	5.07	5.45
	Kaduthuruthi		6.67	5.15	5.27	5.07
	Kalakatty		5.99	3.91	4.34	5.44
	Kalathipady		8.85	6.17	6.05	9.3
	Kalathur		7.35	9.4	9.7	11.04
	Kangazha		4.7	4.6	4	6
	Kanjirapally		8.75	NA	0	9.4

KOTTAYAM	Kidangur-R1	Dug Well	5.15	1.44	1.7	3.6
	Kollappally		3.35	2.17	1.65	3.05
	Kooroppada		4.75	2.07	3	NA
	Koothrappally		3.5	3.2	3.63	5.1
	Kottayam (R1)		12.53	9.39	10.6	11.24
	Kozha		2.3	4.7	3.92	4.1
	Kozhuvanal		4.63	2.46	4.48	
	Kudavechur		2.57	1.38	1.3	2.1
	Kumarakom		1.05	0.2	0.15	1.2
	Kummannur		7.2	5.09	5.3	5
	Kuravilangad1		6.3	2.14	1.8	4.5
	Kurichy (Sachivothamapuram)		8.8	5.82	5.38	7.3
	Kuruppanthara		1.5	1.08	1.33	1.5
	Kuttikal-R1		3.15	2.65	2.56	3.35
	Kuvapalli		6.21	4.87	5.45	6.25
	Madapally		2.87	1.29	1.4	1.85
	Manimala		4.5	4.25	3.3	5
	Mannanam		9.7	4.11	3.76	7.7
	Marangattupalli		3.1	2.42	2.68	3.02
	Melukavu Mattom		6.82	4.12	3.53	5.4
	Mevellur		3.45	2.74	2.7	3
	Monipalli		1.37	0.94	0.86	2.03
	Mukkada		5.1	4.25	4.4	6.4
	Mukkoottuthara		2.08	2.24	2.2	3.63
	Mundakayam		6	3.46	3.54	4.5
	Mundukuzhi		10.7	6.22	6.1	7.2
	Mutholi		6.5	5.6	4.5	5.67
	Narianganam		4.95	2.51	2.37	4.75
	Nedumkunnam		4.9	4.32	4.2	5.5
	Neendur		3.9	1.46	1.95	1.8
	Paippad		7.3	6.24	5.65	7.7
	Palai		5.67	4.57	4.12	5.47
	Palamkadavu		2.8	1.79	1.9	2
	Pallikkathodu (R1)		5.62	3.05	3.9	5.65
	Pallom (nattagam)		7.25	4.45	4.71	7.45
	Pambadi		8.7	5.55	4.65	6.3
	Panackapalam Jn		5.4	4.84	4.2	5.2
	Paruthumpara		7.31	6.27	7.17	8.39
	Plakkalpadi		6.07	4.68	4.2	5.4
	Ponad		10.15	6.24	5.74	6.8
	Ponkunnam		6.85	NA	NA	NA
	Ponthanpuzha		5.15	4	3.76	4.5
	Poovathilappu		3.58	2.22	3.42	3.5
	Pravithanam		7.75	3.25	3.4	5.57
	Pulikkal Kavala		3.55	2.75	3.3	4.1
	Pulikuttisseri		1.4	0.35	0.4	1.25
	Punjar		1.4	0.15	0.25	1.5
	Punnaveli		5.1	3.92	4.2	4.8
	Puthupally		6.78	2.2	NA	7.15
	Ramapuram (R1)		4.8	3.4	3	4.52
	Teekoy		4.6	3.9	3.9	4.25
	Thalayolaparambu (R1)		3.1	2.14	2.68	3.1
	Thazhathangadi		2.4	1.17	1	1.7
	Thekethukavala		4.4	5.04	5.2	NA
	Thidanad		4.58	3.68	3.98	4.78
	Thiruvanchoor		3.9	2.28	2.55	3.92

KOTTAYAM	Thiruvarpu	Dug Well	1.54	0.75	0.65	1.7
	Thottakam		2	0.7	0.6	1.8
	Thottakkad		4.75	4.62	4.45	6.1
	Trikodithanam		13.87	NA	NA	NA
	Udayanapuram		1.9	0.8	0.65	1.2
	Urulikunnam		4.38	0.85	1.12	3.88
	Uzhavoor		3.7	NA	NA	NA
	Uzhavoor (R1)		3.6	1.94	1.8	2.9
	Vaikom		1.53	1.55	1.31	2.25
	Vakathanam		5.6	3.03	3.56	7.1
	Vazhur		4.9	3.3	3.45	3.97
	Vechur		2.58	1.07	0.87	1.7
	Vellur-III		4	2.75	3.3	3.2
	Vempalle		2.36	1.5	1.4	2.18
	Veyilnanampara (Kondur)		7.8	3.95	4.25	4.75
	Chempu - I(East)	Tube Well	2.3	2	1.84	2.2
	Chempu- West		1.31	1.53	1.51	0.91
	Kumarakom Pz		1.9	1.71	1.7	1.9
KOZHIKODE	Atholi pz	Bore Well	5.32	NA	NA	NA
	Balussery pz		7.99	6.35	2.25	7.49
	Cheruvannur pz		8.39	5	4.65	6.24
	Chevayur pz		24.94	18.17	24.93	25.2
	Feroke pz		10.48	NA	NA	NA
	Kalikadavu pz		3.56	NA	3.01	3.4
	Karuvannur pz		1.55	0.55	0.27	0.82
	Kokallur pz		7.34	7.1	6.65	7.01
	Mavoor pz		NA	NA	4.85	5.22
	Thodannur(west)		6.51	6	5.47	5.85
	Thuneri pz		4.75	2.75	3.33	4.25
	Vellimadakunnu pz		19.6	19.66	19.54	21.36
	Atholi	Dug Well	NA	2.7	3.42	4.55
	Azhinjilam		NA	1.46	1.95	0.92
	Badagara		NA	4.49	4.54	5.54
	Balusseri		NA	5.88	4.31	7.19
	Beypore		4.3	1.45	1.35	2.67
	Bhumivathukkal		6.72	3.6	6.44	6.9
	Calicut Beach		2.93	2	2.17	2.82
	Chaliyam		3.51	1.7	2	2.79
	Chelavur		9.47	8.3	8.59	9.21
	Chemencheri		4.08	1.58	1.63	2.83
	Cheruvannur West		5.4	3	3.65	4.24
	Chevayur		12.78	9.51	11.6	11.31
	Chiulavi (Niravamal)		8.37	6	6.82	7.63
	Chulur		5.88	5.2	5.26	5.63
	Devarkoil		6.6	6.7	7.21	8.54
	Elattur		3.66	1.9	1.33	2.71
	Feroke DW		12.8	11.2	12.08	12.45
	Iringallur		NA	2.5	2.18	3.26
	Kakkayam		3.35	3.25	3.33	3.2
	Kakkur		6.3	3.73	3.42	5.5
	Kallachi		1.8	0.1	1.6	1.79
	Kallai		NA	3.25	3.43	4.35
	Kannankara (Chelannur)		1.8	NA	0.2	1.5
	Kannoor		5.35	4.5	3.68	4.66
	Karaparamba		2.68	2.5	2.48	2.92
	Kariyathumpara		2.83	2.7	2.7	2.93
	Karuvannur		4.18	3.15	2.72	3.36

KOZHIKODE	Kayapanachi	Dug Well	4.96	2.9	3.83	4.63
	Kodencherry		1.2	3.9	0.78	0.97
	Koduvalli		7.62	7.15	6.9	8.5
	Koduvalli North		5.85	1.4	1.28	4.62
	Koothali		4.46	3.95	4.3	4.5
	Kottakadavu		NA	13	12.8	15.45
	Kozhikode		16.52	11.4	14.2	14.55
	Kunnamangalam		11.22	8.99	9.02	10.55
	Kunnumakkara		2.62	1.15	1.05	1.99
	Kurachund		3.87	5.15	5.09	5.51
	Kuttiyadi		7.82	6.1	7.48	7.14
	Malayamma		4.6	2.6	3.75	5.22
	Manassery		2.9	2.8	2.73	3.51
	Mattanodu		9.06	7.98	8.05	8.74
	Mavoor-i		5.58	6.32	4.64	5.33
	Mavoor-ii		9.54	7.73	8.25	9.73
	Melady 1		2.02	0.94	1.02	1.58
	Meppayur		4.33	3.5	2.89	4.47
	Moodali		3.74	0.75	0.54	2.09
	Mukkali		5.25	2.6	3.42	4.67
	Muliyangal		2.3	1.3	0.95	2.12
	Mullankunnu		1.64	8.6	9.1	9.4
	Murampathy		5.72	3.4	5.41	5.77
	Nadapuram		4.15	0.47	2.09	3.19
	Naduvannur		7.68	7.25	5.28	8.25
	Nallalam		3.87	0.8	1.15	2.8
	Nanminda		6.92	4.7	3.8	6.11
	Narikuni		3.18	2.03	1.86	4.22
	Nayarkuzhi		6.54	6	6	6.5
	Orkattery		3.31	1.25	1.8	3.18
	Pathimangalam		11.37	7.1	9.69	9.94
	Pavangad		3.43	1.65	0.93	2.5
	Perambra		3.48	2.32	1.98	3.04
	Perumpally		4.12	2.8	2.65	3.68
	Peruvayal		6.69	5.6	5.78	6.6
	Pudukayam		8.99	6.65	7.4	8.36
	Pidupadi		2.47	2.35	2.19	2.3
	Pudupanam		5.84	4.3	4.33	5.25
	Punnasseri		8.17	5.9	5.97	7.44
	Puthur		8.22	7.1	6.86	7.87
	Quilandy		6.83	4.43	4.41	5.71
	Ramanattukara (R2)		4.16	1.4	1.64	2.17
	Tamarasseri		1.77	0.99	1.04	1.25
	Thenamkuzhi		4.41	2.25	1.75	3.63
	Thikkodi		6.48	3.85	4.22	7.02
	Thiruvallur		1.81	0.6	0.6	1.23
	Thiruvambady		4.48	5.5	3.02	4.02
	Thodannur		6.48	6.19	6.1	6.22
	Thuner1		4.6	2.4	3.4	4.08
	Ulliyeri		3.56	2.55	1.97	3.22
	Unnikulam		2.42	2.15	1.9	2.33
	Valayam		7.5	4.15	6.27	8.17
	Vattoli		4.88	2.5	4.3	5
	Vellimadakunnu		13.01	13.3	13.98	12.94
	Villyapalli		7.49	6.2	6.23	6.67
	West Pudupadi		2.68	2.55	2.52	2.82
	Chombala(pz)	Tube Well	5.4	2.88	3.47	4.79

KOZHIKODE	Chombala(w1)	Tube Well	5.05	1.71	2.8	4.32
	Chombala(w2)		5.02	1.87	NA	4.28
	Chombala(w3)		5.27	2.01	NA	NA
	Chombala(w4)		5.29	1.93	NA	NA
	Meladi		1.96	1.47	0.93	1.53
MALAPPURAM	Cherukulam	Bore Well	11.94	9.2	10.1	11.3
	Edakkara		17.59	15.7	15.7	11.1
	Kaladi1		8.25	6.79	7.89	7.19
	Karavarakundu Pz		12.78	8.73	11.5	11.5
	Karulayi		3.72	1.91	2.21	2.73
	Mankeri Pz		NA	NA	NA	6.7
	Nediyirippu Pz		NA	NA	1.5	1.8
	Othukkungal		NA	NA	NA	30.3
	Pandalur		8.56	5.85	8.2	8.1
	Pandalur		7.94	5.85	8.2	8.1
	Pangh		15.12	9	9.2	NA
	Parambilpeedika		NA	35	31.29	29.69
	Ponmala		15.97	NA	NA	6.51
	Puzhakkattkiri		9.24	4	5	5.8
	Thelakkad		13.28	3.72	4.12	9.92
	Thiruvalli		6.56	NA	4.8	6.1
	Thuvur		9.95	NA	8.69	9.29
	Akkaparambu	Dug Well	9.46	7.4	7.6	9.2
	Amminikad		4.89	3	3.8	2.4
	Anakkayam		8.62	7.1	7.3	8.2
	Angadipuram		8.25	5.94	5.94	8.64
	Anjuvadi		NA	2.7	2.05	NA
	Arikode		9.42	6.7	7.1	8.1
	Ariyallur		4.42	1.85	1.5	2.5
	Athanikal- Vallikunnu		13.76	11.66	11.96	12.76
	Athanikkal		5.34	3.4	3.6	4.7
	Athirumada		14.54	12	11.9	12.8
	Beeranchira		9.98	7.1	6.9	7.6
	Buliyampadam (Velumbiampadam)		5.88	6.8	4.4	NA
	Buliyampadam (Velumbiampadam) (R1)		NA	NA	NA	10.55
	Chamravattom		1.98	0.9	0.6	0.68
	Chemmalassery		5.72	2.95	3.8	5.3
	Cherani		7.06	4.3	4.7	5.7
	Cherukara		7.03	6.2	5.9	6.55
	Cherukode		7.12	5.5	5.7	5.9
	Cherukulam		11.82	9.2	10.1	11.3
	Chokkad		4.61	2.55	2.9	3.4
	Chungathara1		3.87	1.85	5.45	2.75
	Edappal		14.13	11.8	11.3	12.3
	Edavanna1		9.82	7.9	9.5	10.1
	Edayur		NA	NA	6.6	7.1
	Eriyad		4.28	2.6	2.9	3.4
	Iswaramangalam		3.61	1.3	0.8	2.3
	Kadalundi		4.78	3.7	3.4	4.4
	Kadampuzha		12.12	9.7	9.5	NA
	Kadannamanna		6.62	3.3	4.8	6
	Kadungapuram		9.38	7.6	7.4	7.9
	Kalikavu		5.52	3.7	3.85	4.5
	Kanjiramukku		6.82	4.85	3.9	4.6
	Kariavattam		7.97	5.8	7.2	7.4

MALAPPURAM	Karipol	Dug Well	10.53	11.25	9.65	10.25
	Karulai		9.17	7.75	8.15	8.4
	Karumbil		14.94	12.3	12.5	13.5
	Karunechi		19.24	16.23	17.15	16.33
	Karuvankallu		8.92	8.3	7.7	8.2
	Karuvarakundu		4.05	2.3	2.45	2.85
	Kattumunda		NA	9.1	10.6	11.4
	Kavanur1		12.06	8.85	9.5	10.3
	Kizhumuri		11.74	11.4	10.1	11.5
	Kondotty		4.28	1.8	1.4	2.4
	Kottakkal		8.52	7.9	8.1	8.2
	Kottapuram		6.96	5	4.8	5.1
	Krishnapuram Puthentheru		3.97	1.95	1.65	2.5
	Kulattur		5.18	3	1.6	4.7
	Kunnumpuram		NA	NA	12.65	13.05
	Kuruva (Padaparamba)		13.47	10.3	10.2	11.2
	Kuttiapuram		4.75	1.1	6.3	2.15
	Malappuram		10.11	7.1	7.3	7.8
	Mangalam		3.12	1.85	1.55	
	Manjeri		4.26	3.2	4.5	5.8
	Mankeri		7.42	4.65	4.2	5.5
	Marancheri		7.98	5.4	5.3	6.1
	Maruda		9.44	6.8	7.3	8.12
	Meenedathur			2.4	1.1	2.05
	Melattur		6.47	6.25	6.25	6.55
	Moochikkal ( Clari Moochikkal)		NA	1.7	0.55	1.9
	Moothedam		4.12	2.3	2.8	3.25
	Mudikode		5.63	2.2	5	5.1
	Narokavu		16.22	12.1	12.3	13.1
	Nediyirippu		4.61	2.55	2.3	3.45
	Nellikuth		6.58	5.8	5.9	4.9
	Nilambur (R1)		NA	4.45	4.15	4.15
	Olavattur		10.02	7.3	6.35	9.1
	Othukkungal DW		15.52	8.7	8.4	12.2
	Padikkal		9.8	8.9	8.5	9.5
	Pandalur DW		7.64	6.2	7.1	7.1
	Pandikkad (R1)		5.44	3.8	4.5	6.4
	Paral		6.07	4.05	3.45	6.45
	Parambilpeedika		NA		11.8	12.3
	Parappanangadi		3.49	1.05	0.85	1.7
	Paravana		NA	5.2	3.8	4.5
	Pathiriyal		7.62	5.3	7.1	7.3
	Payyanad		8.54	5.7	7.8	8.2
	Perinthalmanna		6.03	5.25	6.25	6.25
	Perumpadappu		6.54	2.8	NA	4.5
	Peruvakkad		6.78	5.2	5.85	6.1
	Ponnani1		1.71	1.6	1.42	1.7
	Pookottoor		2.22	0.55	0.65	NA
	Pookottumpadam		4.74	NA	4.2	3.3
	Pukattery		9.52	8.7	7.9	8.6
	Pukothu		7.87	5.7	6.2	6.6
	Pulamantol		8.94	8	7.2	8.5
	Purathur		1.88	1.7	3.5	1.75
	Puthenkulam		3.41	NA	2.1	3
	Puzhakkatteri		5.34	4.2	3.3	5.7
	Ramankulam		NA	NA	4.6	5.9

MALAPPURAM	Ramapuram	Dug Well	9.38	4.2	4.5	5.5
	Tachinganedam		8.26	2.8	4.95	5.7
	Tanur		5.24	3.3	3.7	3.75
	Tenjippalam (R1)		14.12	12.2	11.9	13.7
	Thavanur		11.68	9.2	8.5	9.7
	Thazhekod Kappumugham		8.21	2.18	3.98	6.78
	Thazhekode		7.38	6.5	6.7	6.8
	Thirunavaya		4.97	4.52	4.02	4.62
	ThiruvadiDW		2.69	0.95	1.15	2.05
	Thrikkalangode		4.56	2	2	2.6
	Thuvur DW		9.88		8.8	9.1
	Tirukkad		7.78	5.2	5.65	6.9
	Tirur		13.96	13.2	12.2	13.2
	Tirurangadi		13.08	11.9	12.5	13.7
	Tripanchi		11.42	9.4	9.3	10
	Uppada		3.52	1.5	1.35	1.9
	Vadakkemanna		8.87	5.65	6.35	7.15
	Valancheri (R1)		10.44	8.9	8.82	9.3
	Valavannur		14.62	9.5	9.6	10.4
	Valiyakunnu		7.71	7.7	6.9	6.6
	Vaniyambalam		7.77	4.85	4.75	5.4
	Vazhikadavu		7.23	3.85	6.37	3.15
	Vellila1		6.62	5.6	6.4	6
	Vengad		8.6	13.24	14.6	15.94
	Venniyur		9.74	8.3	8.4	8.7
	Vettom1		NA	NA	1.5	NA
	Vylattur (R1)		11.63	NA	5.8	9.15
	Vylattur (R1)		8.3	NA	5.8	9.15
	Wandur		9.78	NA	8.45	8.8
	Wandur		8.1	NA	8.45	8.8
	Vettom	Tube Well	NA	2.45	2.5	1.9
PALAKKAD	Annamthodu Pz	Bore Well	NA	8.13	7.2	7.75
	Cherpulassery Pz		23.3	6.46	9.7	NA
	Chullimada Pz		5.55	1.03	2.15	2.85
	Kadukkankunnu		4.13	1.06	1.8	3.2
	Kallepully		6.4	3.3	3.9	4.3
	Kanjikode(FCRI)		9.56	6.09	6.8	8.2
	Kannadi		4.95	0.58	1.3	4.45
	Karimpuzha		4.5	1.44	1.6	2.2
	Koduvayur		10.32	3.52	4.35	6.1
	Kongad		5.8	2.71	3.1	4.8
	Kozhipara Pz		5.3	1.91	3.3	4
	Kulapully Pz		26.3	15.14	9.15	NA
	Kunnamkattupathy Pz		8.05	7.53	6.3	9.15
	Kunnissery		9.3	5.48	8.3	6.5
	Lakkidi Thekkumangalam		8.9	13.61	13.9	17.9
	Malampuzha1		5.1	2.98	4.95	5.3
	Melarkode		23.7	4.97	6.5	7.8
	Moochangundu		10.9	15.82	10.3	11.5
	Mundur Pz		22.1	15.98	16.5	18
	Muttikulangara Pz		18.4	NA	NA	NA
	Nanniyodu Pz		18.76	17.58	12.9	21.3
	Nellikattiri Pz		NA	7.97	NA	11.3
	Nemmara1		3.8	NA	NA	2.45
	Padur		17.6	13.78	7.1	7.2
	Panayur(Athikodu) Pz		4.5	3.56	1.6	5.5
	Pattambi Pz		7	5.57	5.8	7



PALAKKAD	Peringottukurissu	Bore Well	12.2	10.63	11.5	9.5
	Plachimada		17.4	7.94	10.5	11.1
	Pullundassery		5.3	2.38	2.7	2.9
	Thenkara		1.7	1.54	2.25	0.5
	Thirumittacode		9.2	NA	10.3	19
	Thiruveegapuram		NA	NA	11.4	10.5
	Trithala Pz		4.5	6.39	NA	4.5
	Vadakarapathy Pz		29.4	NA	18	21.4
	Vaniyamkulam1		8.92	NA	NA	NA
	Vannamada Pz		NA	4.38	NA	7.9
	Vennakara		15.96	14.89	14.4	14.4
	Villooni		11	14.11	17.7	24.5
	Adiparanda	Dug Well	7.2	2.42	3.8	7.3
	Alanallur		9.5	NA	7.8	8.65
	Alathur		3.61	7.29	2.06	2.66
	Ambalaparambu		NA	1.77	NA	NA
	Ambalappara		9	6.42	NA	NA
	Ariyur (R1)		10.71	10.46	9.72	10.62
	Athikode			3.4	4.2	5.7
	Athipetta		3.7	1.32	1.4	2.85
	Banglow Kunnu		9.55	7.07	7.05	8.05
	Chalisseri		10.3	7.13	7.1	8.6
	Chemmampathi		9.9	8.82	6	9.9
	Cherpulassery (R1)		10.05	7.98	8.65	9.35
	Chittoor		4.7	3.58	3.2	3.8
	Chulliar Dam		NA	NA	3.45	3.35
	Chullimada (R1)		3.4	0.98	1.7	2.8
	Chunangad		9	7.37	4.6	NA
	Chunnambuthara		NA	NA	2	3.15
	Dhoni		7.3	6.41	6.4	7.1
	Ellisseri		6.3	5.14	5.5	6.2
	Erattakulam		NA	1.1	1.38	1.73
	Eruthenpathi		5.6	3.08	2.95	4
	Gopalapuram		11.8	7.11	8.2	10.6
	Kadampazhipuram		3.9	3.45	3.85	4.35
	Kalladikode		9.2	9.24	7.8	9.2
	Kambilichungam		3.2	0.91	1.6	1.8
	Kanjikode		7.9	3.45	4.7	5.8
	Kanjirapuzha		NA	2.04	1.3	3.5
	Kannadi		6.65	0.58	1.3	4.45
	Kannimari		4.6	2.44	3.7	4.8
	Karimpuzha		2.6	1.44	1.6	2.2
	Kavassery		NA	1.12	1	1.85
	Kodumbu		5.35	1.39	1.75	2.95
	Kodunthirapalli		4.3	0.82	0.95	2.8
	Koduvayur		7	3.52	4.35	6.1
	Kollengode -I		NA	1.56	2.4	5.4
	Kollengode- II		NA	1.49	NA	3.4
	Kongad1		NA	2.97	3.4	4.3
	Koolimattom		4.4	3.56	0.2	1.4
	Koonathara		NA	1.4	3.3	2.51
	Koottanad		10.6	7.06	7.7	10.2
	Koppam (R1)		6	4.32	2.8	6.3
	Koppanur		4.62	1.95	2.32	2.92
	Kottapuram		9.78	5	4.8	5.1
	Kottassery (Vattassery)		4.3	2.07	2.4	3.8
	Kottayi		10	6.38	7.7	7.3

PALAKKAD	Kozhijampara-R1	Dug Well	7.8	5.04	6.2	7.1
	Kozhipara		NA	2.47	4.1	4.5
	Kudallur		7.65	4.66	4.6	6
	Kulakkad		NA	1.8	4.35	6.35
	Kumaramputtur		3.54	1.85	1.44	3.64
	Kumaranallur		10.7	8.01	8.4	9.5
	Kunisseri		4.5	1.02	1.8	2
	Kuzhalmannam		4.03	1.35	1.35	2.25
	Lakkidi		8.7	6.22	0.86	7.7
	Malampuzha		4.15	1.83	1.85	1.95
	Mankara		5.7	3.22	2.9	3.75
	Mannarkkad (R1)		4.5	3.08	3.3	2.6
	Mathur		4.62	2.04	2.6	3.55
	Mattumanda		3.2	1.98	2.2	3.9
	Meenakshipuram		6.6	3.78	5.3	6.4
	Meenkara		7.1	2.54	4.7	6.6
	Melarkode		5.6	4.97	6.5	7.8
	Moochankundu		7.85	6.96	8.25	8.25
	Mulayankavu		9.3	5.62	5.4	6.5
	Mundur		4.6	0.82	1.2	2.95
	Muthalamada1		6.68	4.07	5.68	6.28
	Naikarapadi		6.95	7.17	4	3.6
	Nalliapalli		NA	NA	2.2	3.5
	Nanniyode		5.2	3.19	4.2	4.4
	Nedupuni		NA	5.42	6	6.6
	Nellikatteri		NA	6.68	3.7	5.3
	Nemmara		2.42	1.2	1.52	2.32
	Noorani (Palakkad West)		NA	1.27	1.6	2.7
	Odannur		NA	3.3	3.74	5.24
	Ongallur		8.4	6.62	6.64	7.94
	Oothara		2.46	0.88	1.2	3.1
	Ottapalam		NA	6.78	7.9	7.4
	Padur DW		4.8	3.12	2.9	2.7
	Palamattom		8.3	6.89	NA	6.5
	Palappuram-ii		8.6	5.12	6.25	8.2
	Palghat		9.4	4.52	7.5	7.7
	Pallavur		NA	1.04	1.4	1.7
	Panayur ( Athikode)		3.45	2.11	1.35	2.5
	Parali (Chakkanthara)		NA	1.32	1.3	2.9
	Pattambi		5.7	3.09	3.95	6.15
	Pattanchery		3.35	2.76	1.4	2.1
	Peringode		9.55	8.37	8.35	8.95
	Peringottukurissu DW		5.76	3.4	3.2	4.2
	Perumatty1		4.6	2.52	2.4	3.1
	Pookkottukavu		7.4	5.19	5.6	NA
	Pudhunagaram		7.63	2.12	3.5	7.7
	Pudhupariyaram		5.3	2.64	3.2	4.9
	Pullundassery		3.05	2.38	2.7	2.9
	Pulpally		1.85	3.3	1.12	2.31
	Punchapadam		7.8	5.71	6.6	6.8
	RVP Pudhur		NA	NA	NA	7.85
	Shoranur		11.85	4.69	4.95	10.75
	Sreekrishnapuram		8.98	7.24	7.82	8.27
	Tannirkod		8.98	4.66	6.05	7.75
	Tenkara		1.95	1.17	1.25	1.75
	Thachanattukara		11.42	8	8.82	9.72
	Thachanpara		2.65	1.52	1.1	2.4

PALAKKAD	Thirumittamcode (Chathanur )	Dug Well	6.3	2.96		5.5
	Thiruvegapuram		8.84	7.56	7.74	7.84
	Tholanur		4.5	2.48	2.45	2.2
	Trittala		5.15	6.36	7.2	4.5
	Ummini		6.13	4.79	5.2	4.75
	Vadakkancherry		4.7	2.9	2.9	4.95
	Vadanamkkurissi		6.38	3.3	3	4.6
	Vallapuzha		5.8	2.56	2.5	4.6
	Vaniyamkulam		7.7	5.14	5.6	6.4
	Vannamada		6.8	4.29	5.2	6
	Velanthavalam		8.3	5.61	7.2	8.4
	Vilayur		6.16	4.11	NA	5.4
	Viyyakurissi			3.73	2.25	3.45
	Walayar		6.25	4.5	5.65	6.15
PATHANAMTHITTA	Chetheckal	Bore Well	1.85	1.75	1.28	2.25
	Elanthoor		1.7	1.3	1.6	1.97
	Ezhamkulam		6.95	8.02	5.21	8.63
	Kadumeenchira Pz		16	14.5	15.5	15.8
	Kalleli Pz		4.45	1.25	1.19	4.5
	Koipuram Pz		12.5	11.7	11.5	11.55
	Kottangal Pz		2.3	1	0.9	2.4
	Kunnamthanam		2.25	1.65	3.13	3.01
	Malayalapuzha Pz		18.85	13.5	14.35	17.13
	Manthanam		11.3	7.4	6.7	7.5
	Ottathekku		6.35	5.05	4.33	4.97
	Pandalam		7.95	3.55	3.41	2.13
	Thayattumala		9.25	8.25	9.05	8.8
	Vallicode		4.55	2.95	2.65	3.36
	Adoor (R2)	Dug Well	8.65	8.95	8.27	9.38
	Adoor Bypass		2.6	3.4	3.1	3.85
	Angadikkal North		10.6	8.6	7.68	8.7
	Angamuzhi		5.89	5.54	5.84	5.66
	Aranmula (R1)		8	4.92	NA	NA
	Aranmula (R2)		NA	NA	2.52	3.51
	Aruvapulam		4.1	2.7	2.8	3.24
	Athiringal (R1)		6.48	5.2	7	7.53
	Athumbukulam		NA	NA	3.05	3.61
	Chalappally		2.15	1.75	1.79	1.92
	Cherukolpuzha (Airoor)		5.4	4.6	5	6.1
	Chethekkal		2.7	1.85	1.49	2.81
	Chittar (R1)		9.1	7.7	8.44	8.48
	Churakkod		6.8	6.2	5.28	5.87
	Edakkulam		5.95	12	12.61	4.41
	Elanthur		3.5	2.4	0.77	2.94
	Elavumthitta		8.4	6.4	5	6.66
	Enathu		9.25	7.4	4.73	6.6
	Eraviperoor		7.41	7.55	2.03	2.65
	Ezhamkulam		6.71	8.02	5.21	8.63
	Ezhumattoor		4.3	4.3	2.11	4.5
	Kadambanad		3.75	5.75	5.55	6.78
	Kadammanitta		8.5	7.71	2.92	6.86
	Kadumeenchira		8.2	6.6	7.14	8.78
	Kaipattoor		7.96	6.4	5.7	6.86
	Kalanjoor		6.95	NA	6.22	9.25
	Kallooppara		NA	NA	1.97	2.47
	Karinkulam (R1)		4.45	2.45	2.09	2.26

PATHANAMTHITTA	Kaviyur (R1)	Dug Well	7.9	6.2	6.91	8.6
	Kidanganoor		5.2	3.3	2.15	8.7
	Kodumon		7.5	6.85	6.1	6.3
	Koipuram (R1)		7.86	6.3	6.18	6.65
	Konni		4.95	2.55	5.93	7.58
	Koodal		5.57	6.72	6.37	6.79
	Kottanadu		3.95	3.75	3.75	4.05
	Kottangal		1.6	1.3	0.65	1.69
	Kozhenchery		NA	2.05	NA	1.93
	Kudutha		7.25	7.25	6.41	7.25
	Kulanada		7.35	6.05	5.7	7.07
	Kumbanad		7.03	5.33	5.18	6.62
	Kumplampoika		2.4	2.1	2.25	2.36
	Kunnamthanam1		NA	9.6	12.17	12.6
	Kuttoor		4.2	2.7	NA	4.16
	Laha balawadi		2.4	2.1	2.45	2.58
	Laha peruman		10.1	9.7	9.44	9.6
	Malayalapuzha		5.5	5.7	5.1	5.8
	Mallappally		4	3.8	3.2	3.8
	Maniyar		5	5.3	5.07	5.36
	Mannadi		3.6	1.95	1.35	1.96
	Murani		2.65	1.8	2.38	2.78
	Muthoor		4.05	2.1	2.82	3.28
	Naduvathumuzhi		6.04	2.3	5.5	5.83
	Naranganam (R1)		2.1	1.9	2.05	2.9
	Nilakkal		5.7	4.92	6	NA
	Nilakkal New		NA	NA	NA	5.25
	Omallur(R1)		8.7	7.85	7.19	8.21
	Pandalam Town		2.35	0.6	0.62	0.66
	Pandalam-1		4.35	3.95	3.35	3.75
	Paranthal		6.5	4.95	5.24	5.07
	Pathanamthitta		2.57	3.15	NA	NA
	Pathanamthitta (R1)		NA	NA	2.98	3.1
	Peringara (R1)		3.2	1.35	1.4	1.72
	Plappally		2.46	1.36	1.26	1.78
	Podiyadi		2.5	1.3	1.4	1.9
	Poothangara		5.8	3.7	3.62	5.3
	Prakkanam		6.1	6.2	NA	NA
	Pulikeezh		3.45	3.75	2.65	3.05
	Pullad		7.8	6.2	5.14	5.57
	Ranni i		1.7	1.4	1.74	3.2
	Ranni Perunad		4.91	5.75	5.83	6.4
	Thadiyur		7.4	7.2	7.02	7.78
	Thannithodu		6.32	6.5	6.42	7.1
	Thatta (R1)		1.6	1.1	0.87	1.24
	Thelliyur		8.4	6.9	6.9	7.18
	Thiruvalla		5.1	6.1	6.62	8.01
	Thumpaman		8.3	7.3	10.51	7.82
	Ullannur		7	7	6.42	7.2
	V Kottayam		9	7.3	8.36	9.62
	Vadasserikara		2.55	3.15	3.75	4.44
	Vaipur		1.1	1.4	1.95	3.2
	Vakayar (Valiakavu)		2.4	1.05	2	2.33
	Vallamkulam		8.25	6.47	3.47	4.18
	Vallikod		5.8	3.8	3.84	4.43
	Vechoochira (R1)		NA	NA	4.42	4.55
	Vennikulam		3.55	3.15	3.06	3.15

THIRUVANANTHAPURAM	Ariyanadu Pz	Bore Well	NA	7.07	3.99	6.91
	Attingal Pz		6.4	5.66	5.9	6.1
	Chengal Pz		16.35	16.73	10.51	11.8
	Kariyavattom Pz		13.64	12.49	NA	NA
	Kulathoor pz			11.88	8.28	
	Manambur Pz		12.35	11.8	11.37	12.58
	Mangalapuram Pz		NA	16.23	20.73	18.79
	Mannanthala Pz		NA	5.23	6.73	6.17
	Nemom Pz		5.5	3.2	NA	NA
	Pattom Pz		NA	7.6	6.5	8.37
	Peringamala Pz		NA	11.37	10.12	10.82
	Perumkadavila Pz		8.35	8.22	6.12	5.45
	Sreekariyam Pz		12.96	11.85	11.6	11.77
	Thattattumala			5.96	6.88	5.82
	Udayankulangara Pz		13.3	10.25	NA	NA
	Vazhakkad Pz		10.94	8.9	10.5	9.8
	Vengod Pz		7.55	6.8	4.79	6.67
	Vilappilsala Pz		9.32	7.6	5.66	6.73
	Amboori	Dug Well	NA	9.83	7.2	8.81
	Anappara Valayanki		NA	5.77	4.36	6.29
	Anjengo		NA	0.83	0.4	1.3
	Aralumoodu		11.38	12.5	9.12	8.68
	Ariyanadu		NA	4.7	3.35	5.1
	Arukannukuzhi		NA	3.94	6.01	6.38
	Aruvikara		NA	3.2	1.4	2.8
	Athazhamangalam		18.47	16.1	13.92	14.45
	Attingal		12.47	9.17	8.45	9.1
	Ayyankode		7.94	7.36	5.27	7.03
	Azhoor		NA	10.8	7.55	11
	Balaramapuram(R1)		9.31	6.2	3.95	7.15
	Bharathanoor		NA	8.05	6.28	7.6
	Changa		NA	7.02	5.18	6.42
	Chaykottukonam		8.08	7.56	4.38	6.7
	Cheeranikara		NA	4.25	3.42	6.22
	Chembur		10.77	9.03	7.72	9.07
	Chennampara		NA	8.21	4.62	7.73
	Cherunniyur		NA	14.6	14.15	14.52
	Chirayinkeezh		NA	8.4	6.9	8.35
	Chittagode		6.43	6	5.25	5.88
	Chowara		NA	18.28	18.88	NA
	Chullimanoor		NA	6.05	2.85	6.05
	Edavai		NA	NA	7.15	NA
	Ithye		NA	7.45	5.75	7.37
	Kadakkavur(R1)		NA	2.94	2.3	3.25
	Kallambalam(R1)		NA	7.73	6.86	8.04
	Kallar		NA	3.91	3.31	3.98
	Kallikkad		NA	1.68	0.73	1.65
	Kandala		NA	10.36	5.72	9.88
	Kanjiramkulam		49.11			59.11
	Kanjiramkulam Church		23.45	20.92	20.36	28.71
	Kappil		NA	10.55	9.95	10.95
	Karakulam		NA	2.58	1.45	3.03
	Kariavattom		3.22	3.01	NA	2.4
	Karinga		NA	2.38	1.55	2.05
	Kattakkada		5.77	4.25	0.78	3.65
	Kazhakkuttom		NA	3.15	NA	2.55
	Kilimannor		NA	5.05	4.56	6.11

THIRUVANANTHAPURAM	Kochuveli(R1)	Dug Well	NA	1.88	1.63	1.95
	Korani		7.87	6.79	6.14	7.1
	Kulathur		11.96	10.21	5.87	8.65
	Madavur		NA	10.1	8.87	10.05
	Malayadi		NA	4.42	3	4.25
	Manambur		19.26	18.72	18.78	NA
	Mangalapuram		NA	15.1	18.38	18.42
	Mannanthala		5.7	6.89		7.28
	Maruthamala		NA	7.06	4.51	7.78
	Meenangal		NA	7.48	6.75	7.08
	Melvettoor		NA	38.75	34.18	34.13
	Mulloor		20.06	16.3	NA	8.78
	Murukumpuzha(R1)		4.11	2.14	2.18	NA
	Muttanam		1.72	2.82	2.37	NA
	Muzhi		3.61	3.53	2.65	3.08
	Nagapuram		14.28	6.46	11.69	10.91
	Navaikulam		NA	9.75	8.75	10.68
	Nedumangad		NA	7.4	5.62	6.85
	Nedumkanda		28	26.95	26.87	NA
	Nemom		NA	4.38	NA	NA
	Neyyattinkara		NA	12.15	8.35	10.58
	Ookod		NA	7.51	8	9.08
	Ottashekaramangalam		2.33	4.47	3.9	2.95
	Palayamkunnu		18.2	10.98	10.3	9.6
	Pallikkal		9.46	11.26	9.57	NA
	Palode		9	3.07	2.75	4.65
	Pangode		6.85	5.2	4.23	4.9
	Parandakuzhi		15.85	14.26	12.97	13.8
	Parandod		5.05	3.86	2.35	4.3
	Parassala		1.35	0.95	0.33	0.7
	Peringamala		NA	5.34	7.27	8.4
	Perumathura		NA	1.95	1.62	1.85
	Perumgulam		8.02	7.25	7.55	7.3
	Perumkuzhi		NA	3.19	2.43	3.22
	Perunkadavila		9.5	6.87	5.92	6.37
	Pirappankod		NA	5.21	3.43	5.55
	Ponganadu		NA	6.05	3.7	5.1
	Ponmudi(R1)		NA	3.8	3.58	NA
	Poonthura		NA	3.42	3.3	2.9
	Poovachal		12.8	11.9	9.67	10.64
	Poovar-ii		23.5	21.42	14.41	14.7
	Pothencod		11.28	9.98	2.63	8.06
	Pozhiyoor(R1)		7.65	3.9	2.05	3.8
	Pudukurichi		NA	3.14	NA	3.39
	Pulluvila		55.9	NA	NA	NA
	Puvar School		6.75	6.82	3.49	6.4
	Sasthanthala		4.67	4.82	1.99	4.92
	Sasthavattom		4.95	3.15	1.9	3.35
	Shankaramugham		6.36	5.65	4.23	5.98
	Tekkada		3.55	3.66	1.42	3.71
	Thalavilamukku		4.31	6.7	5.87	NA
	Tholicode		3.85	6.5	3.85	6.42
	Thonakkal		14.77	16.8	7.68	12.9
	Thumba		3.83	3.32	2.65	2.95
	Tirupuram		NA	25.63	22.32	27.44
	Tottakkadu		5.69	7.47	7.24	NA
	Trivandrum		16.02	16	13.32	11.27

THIRUVANANTHAPURAM	Udyankulangara	Dug Well	11.05	9.4	6.45	8.25
	Uzhamalakkal		NA	3.76	1.75	3.35
	Vadaserikonam		12.75	13.16	12.61	NA
	Vakkom		4.95	3.6	3.87	3.85
	Valakkad		10.81	9.81	9.16	9.9
	Vamanapuram		3.68	2.7	1.57	3.12
	Varkala		14.76	12.86	13.41	14.36
	Vattapara		9.65	8.67	4.9	6.5
	Vattavila		8.48	10.04	3.88	9.58
	Vattavila		9.4	10.04	3.88	9.58
	Vazhichal		5.7	4.25	4.85	5.42
	Veeranakavu		6.08	4.54	4.2	4.69
	Vellanad		6	5.85	1.58	5.17
	Vellarada(R1)		3.97	4.55	2.05	4.6
	Vellayani (Poonkulam)		NA	15.32	13.05	16.25
	Venganoor		NA	19.9	15.23	26.66
	Vengod		NA	6.8	5.69	9.38
	Venjaramoodu		9.95	9.64	7.18	8.68
	Venpakal		9.7	7.73	3.65	5.82
	Veyloor		26.39	26.72	25.82	25.3
	Vilapilshala		8.71	7.82	4.77	7.15
	Vithura		11.07	8.77	6.22	9.51
	Vizhinjam		NA	0.95	0.77	0.9
	Edava	Tube Well	NA	13.85	11.7	13.5
	Varkala Deep		NA	NA	18.35	20.1
	Varkala(shallow)		NA	13.55	16.3	16.37
THRISSUR	Anthikad	Bore Well	12.72	NA	NA	12.76
	Arimpur		7.95	5.01	5.32	6.18
	Ayyanthole Pz		NA	5.4	6.37	7.51
	Chelakara Pz		5.75	2.99	NA	NA
	Chowannur		25.15	8.13	8.22	9.27
	Keecheri		9.1	6.62	7.04	NA
	Kodakara Pz		11.89	11.98	12.89	12.84
	Madakkathara Pz		NA	6.79	11.06	11.22
	Mapranam Pz		12.2	12.12	12.8	12.46
	Palakal		11.42	7.78	8.46	NA
	Poyya (poopathy)		10.55	8.17	8.41	9.57
	Ramavarmapuram		26.6	14.27	16.54	22.14
	Varandarapalli		7.62	3.92	7.29	7.57
	Varavoor Pz		NA	3.86	5.32	7.04
	Velur		22.17	6.44	6.42	7.14
	Adatt	Dug Well	12.45	11.92	13.22	12.82
	Akalad		3.85	2.96	3.03	3.66
	Amballur		7.02	6.06	7.2	7.92
	Annamanada		4.9	3.23	3.31	4.31
	Arimpur1		4.4	2.92	3.16	3.44
	Aripalam		12.75	5.6	8.11	7.89
	Athani		7.95	3.66	7.21	7.83
	Athani Parambu		2.9	0.97	0.79	1.27
	Attoor		7.7	6.06	7.02	7.81
	Ayyanthole		11.7	7.77	11.1	11.62
	Azhikode (R1)		NA	1.45	1.32	1.56
	Chalakudi		9.3	7.47	8.69	9.01
	Chammannur		4.1	2.34	2.25	3.46
	Chandipuram		4.84	1.86	4.25	4.15
	Chavakkad		3.87	1.83	2.41	2.54
	Chelakara		5.65	2.07	2.21	3.88



THRISSUR	Chelakod	Dug Well	3.35	1.71	1.77	2.78
	Cherenkonam		5.14	3.84	4.96	6.43
	Cherpu		9.85	6.71	6.97	7.52
	Cherukunnu		5.2	2.27	3.49	4.19
	Cheruthuruthi (R1)		6.95	3.62	4.19	5.07
	Choondal		9.35	7.92	7.08	8.91
	Chowannur		11.9	8.13	8.22	9.27
	Deshamangalam		8.92	6.44	6.53	7.92
	East Fort		8.2	7.26	8.51	8.74
	Echipara		3.03	2.1	2.79	2.84
	Edamuttom		1.9	0.61	0.89	1.22
	Edathrinji		0.5	0.52	0.87	0.98
	Engandiyur-R1		3.75	2.01	2.3	3.03
	Eriyad (R1)		1.25	1.12	1.31	1.44
	Eriyad Village		NA	0.72	0.65	NA
	Erumapetty		8.38	5.95	6.4	7.26
	Eyyal Ambalam Jn		9.55	7.87	8.78	9.29
	Guruvayur		2.54	1.1	1.81	1.76
	Irinjalakuda -I		8.65	4.82	4.51	8.02
	Irinjalakuda-II		NA	7.46	6.42	NA
	Kaipamangalam		2.68	1.2	2.75	2.3
	Kallettumkara		NA	4.42	4.77	5.52
	Kallumpuram		9.35	7.56	7.18	7.92
	Kallur		8.35	7.07	7.71	8.16
	Kanjirapally (Dream World Park)		4.7	4.47	4.66	4.94
	Kannara		NA	3.21	5.87	6.37
	Karamuck ( Vadanappally)		NA	NA	1.6	2.58
	Karikkad		9.05	6.92	6.81	7.99
	Karuppadanna		2.36	0.8	0.8	1.67
	Kattakampala (R1)		NA	7.97	8.21	8.97
	Kattoor		6.85	4.05	4.32	5.28
	Keecheri (R1)		8.85	7.02	7.12	7.7
	Killimangalam		7.75	5.8	6.51	7.17
	Kizhakkumuri		7.55	6.16	7.02	7.66
	Kodacherry		1.6	3.37	2.42	2.56
	Kodakara		8.65	6.91	7.21	8.14
	Kodali		NA	4.97	4.12	6.62
	Kodungallur (R1)		3.6	3.16	3.02	3.3
	Konnakuzhi-i		6.3	7.46	7.78	NA
	Konnakuzhi-ii		5.44	5.36	5.48	4.9
	Konnakuzhi-iii		3	3.34	2.97	NA
	Koorkancheri		NA	8.36	9.37	NA
	Koratty		NA	NA	8.41	10.14
	Kottappadi		4.12	0.94	0.74	1.26
	Kundannur		7.4	0.61	0.57	1.41
	Kunnamkulam		7.2	7.11	7.04	7.62
	Kurancherry		6.48	2.42	4.3	5.7
	Kurunchikara		NA	8.02	9.92	9.51
	Kuttanellur		9.05	7.91	8.72	9.16
	Logamalleswaram		3.2	1.17	1.21	2.1
	Madakkathara		7	7.26	9.14	9.12
	Mala		9.44	7.31	7.5	8.86
	Manalur		3.25	0.82	1.2	1.76
	Manamangalam		5.1	4.82	5.62	4.92
	Mannuthy		7.25	1.49	4.55	5.97
	Mapranam		11.1	11.11	11.94	12.34

THRISSUR	Mathilakom (R1)	Dug Well	3.85	2.79	3.02	4.14
	Mattathur		8.6	6.17	7.61	8.82
	Methalapadam		1.6	0.94	0.72	NA
	Mulankunnathukavu		6.55	5.11	5.93	6.48
	Mullassery		6.8	0.55	0.88	1.44
	Mullurkara(Vazhathodu Jn)		6.6	2.49	2.87	4.39
	Mundur		8.31	0.82	1.2	2.95
	Mupliyam		7.1	4.45	5.73	6.48
	Muringur		8	6.72	6.14	8.16
	Muriyad		8.7	8.12	8.44	8.89
	Nandipulam		7.1	5.72	5.96	7.36
	Nellai		4.4	3.22	5.24	5.01
	Olarikara		10.05	8.07	8.27	8.89
	Ollur		8.7	7.31	7.54	8.22
	Orumanayur		NA	1.34	2.08	2.34
	Padakulam		3.5	1.97	2.07	2.58
	Palakkal		10.45	7.72	8.33	9.56
	Palayamthuruthu		NA	0.72	1	1.19
	Pallichira		5	3.62	4.2	5.02
	Pallikandam		1.72	2.22	3.17	3.22
	Pallikunnu		8.5	7.22	8.18	9.08
	Panamukku		NA	7.63	8.11	9.12
	Pappali		4.25	2.83	3.16	4.17
	Parappukara		5.35	3.77	4.23	4.32
	Parappur		11.75	8.52	11.95	12.15
	Pariyaram		6.55	11.45	12.6	13.11
	Pattikad (R1)		3.9	2.66	4.6	2.74
	Pavaratty1		4.75	1.02	1.04	2.08
	Pazhayannur		6.2	5.51	4.06	6.65
	Pazhuvil		10.1	8.98	9.86	9.92
	Peechi (R1)		6.55	4.87	5.66	6.16
	Perambra		6.64	2.32	1.98	3.04
	Perinjanam (R2)		1.8	0.83	0.94	2.31
	Perumpilavu Junction		9.62	9.42	9.92	10.31
	Potta		2.57	2.61	3.41	3.92
	Poyya		13.21	7.97	8.27	11.91
	Pudukad1		2.65	1.78	2.09	2.56
	Pullikanni		3.08	0.56	1.61	1.76
	Punnakkabazar		3.1	2.5	2.5	2.5
	Punnayoor		5.5	3.07	3.32	4.23
	Puthenchira		9.85	8.72	8.67	8.91
	Ramanchetty		5.5	3.36	4.01	5.39
	Rendamkallu		NA	7.15	8.22	8.52
	Tekkumkara		7.95	5.57	7.19	7.61
	Trichur		7.5	5.82	5.2	6.82
	Triprayar		4.45	3.02	3.71	3.49
	Vadanapalli		2.28	1.51	1.37	1.55
	Vaniyampara		NA	1.28	1.78	3.77
	Varavur		7.2	5.51	6.02	6.62
	Vellanikara		2.65	1.49	2.22	2.63
	Vellikulangara		5.9	5.84	5.84	6.17
	Velupadam		5.4	3.33	5.01	4.12
	Velur		7.42	6.44	6.42	7.14
	Vettikkattiri		7.25	6.28	6.52	6.79
	Viyyur		3.55	1.57	2.12	3.16
	Wadakkancherry		12.1	9.31	10.09	10.44
	Arattukadavu	Tube Well	0.83	NA	0.84	0.94

THRISSUR	Engandiyur Pz	Tube Well	NA	3.19	3.83	4.66
WAYANAD	Ambalavayal1	Bore Well	NA	0	NA	NA
	Kottathara		3.35	3.6	3.23	3.4
	Kuppadi(west)		17.12	NA	17.35	NA
	Pookode		2.45	2.1	1.94	2.54
	Poothady (Arimula)		NA	5.97	NA	NA
	Pozhutana1		2.73	3.4	2.57	2.75
	Thavinjal Pz		NA	3	2.77	2.6
	Ullissery(w)		1.3	0.4	0.6	1.27
	Valliyurkavu(e)		2.07	0.5	0.79	1.18
	Valliyurkavu(w)		1.98	0.7	0.85	1.23
	Ambalavayal	Dug Well	9.03	7.5	7.9	8.44
	Appapara		4.78	2.8	2.88	4.97
	Arimula		7.8	7.2	7.51	8.09
	Baveli		7.62	2.99	3.98	6.15
	Begur		8.86	8.4	8.94	9.22
	CC Junction		10.61	10.5	10.63	10.85
	Cheenkeri		7.5	7.33	7.65	8.07
	Chellakod		8.65	7.3	6.9	7.82
	Chenad		14.82	NA	14.21	14.95
	Cheyyambam		2.7	2.3	2.68	3.58
	Chulliyod		13.39	12.92	12.99	13.56
	Dasanakkara		3.92	3.91	3.95	4.78
	Kalpetta-R1		3.02	2.4	2.45	3.36
	Kamblakat		17.17	16.22	16.65	17.22
	Kanjirangad		2.09	1.06	1.6	1.93
	Kappiset		9.97	7.22	8.27	10.31
	Karani		6.91	2.2	5.9	8.08
	Kattikulam		7.35	NA	4.65	7.42
	Kavumandam		5.65	5.35	5.5	5.8
	Kellur -5th Mile		9.63	4.56	6.34	9.97
	Koliyadi		2.43	1.25	0.95	1.74
	Koodal Kadavu		15.33	11.15	15.15	15.32
	Koroth		3.34	2.05	2.14	3.57
	Kottathara		4	3.87	3.92	4.56
	Kottavayal		4.02	1.66	2.85	4.23
	Krishnagiri		4.96	4.75	4.65	5.25
	Kuppadi		16.5	17.17	16.53	17
	Lakkidi		0.99	6.22	0.86	7.7
	Mampayil		2.31	2.7	2.92	2.33
	Manjapara		8.53	4.08	7.5	4.33
	Mannanthody		7.6	6	6.95	7.84
	Melaputhenkunnu		13.31	13.68	13.77	14.07
	Meppady		17.71	17	17.37	17.6
	Minangadi		5.6	5.25	5.37	6.2
	Moolankavu		7.15	6.8	6.75	7.18
	Mullankolly		3.2	2.76	3	3.62
	Muthunga		2.87	4.15	3.15	NA
	Muthunga (R1)		NA	NA	NA	3.89
	Muttill		2.64	1.8	1.83	3.62
	Nadavayal		6.09	4.86	4.87	6
	Naykatti		5.07	4.77	11.74	5.35
	Nedugarana		8.39	7.4		8.05
	Neervaram		15.06	13.16	13.96	15.94
	Nenmeni Kunnu		2.35	2.3	1.94	2.03
	Noolpuzha (R1)		3.22	2.6	1.98	2.93
	Ondyangadi		10.57	8.9	9.68	10.82

WAYANAD	Pachilakkad	Dug Well	7.75	7.26	7.43	7.88
	Padinjarattara		8.83	NA	8.6	7.83
	Pakkam		6.01	3.9	4.32	5.42
	Pallikunnu		9.23	7.22	8.18	9.08
	Panamaram		3	2.85	2.9	3.08
	Pattanikoopu		8.56	7.38	7.84	8.46
	Perikallur		12.71	NA	10.12	13.14
	Perya		5.41	4.82	5.4	5.51
	Pookode1		2.86	1.85	1.73	2.45
	Pozhutana		6.1	6	6.06	6.28
	Pulpally		1.92	3.3	1.12	2.31
	Punchvayal		9.91	7.8	7.77	9.13
	Sulthan Battery		7.61	5.02	4.88	6.69
	Talapuzha		1.67	1.3	0.96	1.25
	Taruvana		10.7	8.27	9	10
	Thetrode		11.12	8.85	9.73	10.73
	Thirunelly (R1)		7.32	3.92	3.55	4.04
	Tholpetty		6.54	5.43	5.54	6.5
	Thonichal		5.83	4.92	5.35	6.02
	Ullisseri		2.29	1.07	1.44	2.24
	Vaduvanchal		9.09	8.35	8.31	8.85
	Valad (R1)		10.74	7.3	9.8	10.45
	Vallathur		1.95	2.15	1.23	1.73
	Vallithodu (Periye)		NA	NA	7.67	7.69
	Valliyur kavu		NA	1.1	1.2	1.64
	Varayal		4.06	3.93	3.98	4.2
	Vellamunda		5.37	3.95	10.2	NA
	Vengapalli		14.75	13.35	13.6	14.61
	Vyittiri		7.79	6.7	6.76	7.54

## Annexure II

Chemical Analysis Data of Water Samples collected from Ground Water Monitoring Wells during April 2013									
<b>Alappuzha District</b>									
Sl. No.	Location	pH	EC in us/cm at 25 <sup>o</sup> C	TH as CaCO <sub>3</sub>	Ca	Mg	Cl	F	NO <sub>3</sub>
1	2	3	4	5	6	7	8	9	10
<-----Concentration in mg/L----->									
1	Alappuzha Town(new well)	7.78	510	144	53	2.9	55	0.25	24
2	Aranootimangalam	-	145	30	8.8	2	20	0.17	0.59
3	Charummud(new well)	6.55	51	12	3.2	0.97	5.7	0.02	5.7
4	Chengannur (new well)	-	85	22	6.4	1.5	7.1	0.14	2.7
5	Chennithala(new well)	7.97	128	36	12	1.5	13	0.17	0.4
6	Chettikulangara	-	185	66	22	2.9	8.5	0.08	0
7	Idakunnam	6.73	61	8	1.6	0.97	11	0	6
8	Kallissery	8.45	63	16	4.8	0.97	5.7	0.08	2.7
9	Kandyoor	7.87	210	-	-	-	36	0	12
10	Kangazha	7.26	114	24	8	0.97	17	0.14	12
11	Kattanam	6.28	32	10	2.4	0.97	7.1	0.04	2.2
12	Kayamkulam	8.07	250	96	31	4.4	17	0.11	0.87
13	Kudassanad	7.29	123	28	6.4	2.9	16	0.1	23
14	Kunnankari(new well)	8.21	580	170	46	13	88	0.2	0.71
15	Kuzhamathu	6.68	108	14	3.2	1.5	23	0.04	14
16	Mannar (new well)	7.45	360	94	32	3.4	31	0.15	24
17	Mancombu(new well)	8.88	2200	365	84	38	664	0.3	2.9
18	Mavelikara	7.66	210	80	26	3.4	19	0.01	12
19	Mulakuzha(new well)	-	76	14	4	0.97	8.5	0.23	0
20	Muthukulam(new well)	-	182	48	8	6.8	20	0.07	0.13
21	Naduvattam(new well)	7.97	310	94	27	6.3	34	0.2	0.1
22	Nooranad	6.59	27	4	traces	0.97	5.7	0	0.84
23	Oachira	8.17	173	52	17	2.4	14	0.06	0
24	Pallarimangalam	7.66	168	78	27	2.4	5.7	0.07	0.8
25	Parumala	6.77	48	10	1.6	1.5	5.7	0.05	6.4
26	Pathiyur	7.91	700	90	28	4.9	122	0.35	3.1
27	Thamarakulam	7.09	101	18	4	2	19	0	8.5
28	Thevery	8.43	340	100	22	11	34	0.22	1.4
29	Vallikunnam	7.89	260	80	30	1.5	11	0	12
30	Venmani(Thazhakam)	8.17	220	76	14	10	14	0.27	0
<b>Ernakulam District</b>									
1	Aikaranad	6.78	46	12	1.6	1.9	8.5	0.14	5.1
2	Aluva	7.12	69	16	4	1.5	7.1	0	2.4
3	Anchalpetty	6.9	74	20	4.8	1.9	9.9	0.19	7.9
4	Angamali	-	230	48	16	1.9	36	0	20
5	Attara	7.18	43	8	1.6	0.97	4.3	0	0.73
6	Chalakka	7.79	620	200	50	18	163	0.32	0
7	Chellanum	7.89	3080	392	127	18	508	-	3
8	Chengamanad	7.11	157	40	8	4.9	24	0	29
9	Cherai	7.81	154	60	21	1.9	8.5	0.04	0.31
10	Cheriyakadavu	7.99	3400	450	60	73	1173	0.24	8.8
11	Cherukadappuram	8.08	590	190	36	24	142	0.08	0
12	Chowara	7.47	148	46	16	1.5	11	0	6.8

1	2	3	4	5	6	7	8	9	10
13	Chulli	7.29	52	14	2.4	1.9	5.7	0	0.06
14	Edapally	8.01	410	146	50	4.9	17	0.06	3.3
15	Edakkattuvayal	6.98	69	20	4	2.4	11	0.14	6.1
16	Elur North	7.88	550	160	46	11	71	0.22	7
17	Fort Cochin	7.94	290	78	24	4.4	31	0.23	1.1
18	Ilanji	7.32	81	26	5.6	2.9	7.1	0.11	3.8
19	Irumbanam	8.15	1290	115	20	16	331	1.1	4.6
20	Kallookkad	7.2	133	36	11	1.9	14	0	14
21	Kakur	6.91	55	18	3.2	2.4	7.1	0.21	7.9
22	Kalur	7.56	187	44	11	3.9	18	0	49
23	Kanjiramattom	7.36	80	12	3.2	0.97	13	0.03	2.4
24	Kanjur	7.67	220	82	29	2.4	9.9	0	16
25	Kapparassery	7.46	153	52	14	4.4	16	0	0
26	Karukutty	7.31	220	40	11	2.9	31	0	42
27	Keerampara	7.02	111	20	3.2	2.9	8.5	0.07	0.46
28	Kizhakkombu	7.11	62	16	4	1.5	7.1	0.1	3.7
29	Kuttattukulam	7.56	210	56	14	4.9	26	0.15	25
30	Kothamangalam	7.15	390	112	34	6.3	51	0	79
31	Kottapuram	7.33	150	36	8	3.9	13	0.13	2.3
32	Koovapady	-	112	26	7.2	1.9	13	0.17	2.7
33	Kundannur	7.95	280	92	30	4.4	34	0.27	2.6
34	Kuruppampady	7.58	115	32	6.4	3.9	13	0	13
35	Kuthukuzhi	7.6	101	30	9.6	1.5	16	0.06	3.6
36	Malayattur	7.17	85	24	6.4	1.9	8.5	0	4.2
37	Malipuram	7.96	290	84	28	3.4	44	0.06	0.84
38	Mullassery	7.01	119	18	5.6	0.97	21	0	15
39	Mamallassery	6.9	65	18	4.8	1.5	8.5	0.22	6.4
40	Manjapara	7.22	103	22	6.4	1.5	9.9	0	9.4
41	Mannur	6.97	53	14	3.2	1.5	8.5	0	4.6
42	Maradu	7.82	530	170	30	23	68	0.1	11
43	Mulanthuruthi	7.48	137	34	11	1.5	20	0.04	4
44	Mullankunnu	7.01	98	14	4	0.97	9.9	0.1	14
45	Munambam	7.73	270	104	38	1.9	17	0.23	0.56
46	Muvattupuzha	7.45	220	80	22	6.3	17	0.04	10
47	Namakuzhi	7.32	119	44	8.8	5.4	8.5	0.18	10
48	Nellikuzhi	7.53	197	52	11	5.8	34	0	16
49	Neriyamangalam	-	79	30	9.6	1.5	5.7	0	0.93
50	North Parur	8.08	430	164	55	6.3	13	0.24	0.74
51	Oonnukal	7.22	102	26	8.8	0.97	16	0	9.4
52	Pambakuda	6.77	68	22	4	2.9	9.9	0.17	11
53	Palakuzha North	7.41	120	34	8.8	2.9	16	0.1	1
54	Pallipadi	7.35	161	44	12	3.4	23	0.12	18
55	Palluruthy	8.25	880	295	74	27	114	0.31	78
56	Parakkadavu	6.97	310	92	18	12	74	0.16	0
57	Pattimattom	6.9	46	12	3.2	0.97	5.7	0.24	3.1
58	Perumbadavam	7.31	53	22	1.6	4.4	7.1	0.21	0.04
59	Pothanikad	-	167	42	11	3.4	24	0.16	2.9
60	Pulluvazhi	6.87	52	10	1.6	1.5	8.5	0.15	5.6
61	Punithura	8.82	330	78	22	5.4	52	0.34	4.6
62	Punnakad	7.03	165	60	17	4.4	20	0	21
63	Puthankurisu	6.87	53	16	4	1.5	8.5	0.04	4.8

1	2	3	4	5	6	7	8	9	10
64	Puthotta	7.84	270	102	34	3.9	18	0.07	2.3
65	Ramamangalam	7.14	92	18	4	1.9	9.9	0.08	7.8
66	Thalakkod	8.73	84	24	7.2	1.5	8.5	0	3.2
67	Thattekkad	7.2	70	14	4	0.97	7.1	0	4.9
68	Thirumaradi	7.12	96	26	6.4	2.4	11	0.05	10
69	Trikkakkara	7.43	182	42	14	1.5	23	0.04	6.7
70	Tripunithura	7.71	520	170	56	7.3	51	0.04	22
71	Vallom	8.78	144	38	11	2.4	17	0	5.3
72	Valayanchirangara	6.93	143	22	5.6	1.9	23	0.16	28
73	Varapuzha	7.64	390	114	34	6.8	40	0.03	20
74	Vazhakkulam North	7.6	184	54	14	4.4	24	0.15	9.3
75	Vypeen	7.93	1580	215	28	35	383	0.31	15
76	Vyttila	7.67	270	58	21	1.5	23	0.1	0.31
	<b>Idukki District</b>								
1	Adimali	6.21	192	32	8.8	2.4	30	0.3	30
2	Alakkode	-	86	28	8	1.9	8.5	0.15	0.86
3	Ambazhachal	7.15	30	6	2.4	0	5.7	0.2	1.7
4	Anakkara	-	187	46	11	4.4	26	0	9.8
5	Carady Goody Estate	7.93	128	42	10	3.9	18	0.14	0
6	Cheenikuzhi	7.85	100	24	8	0.97	14	0.23	2.8
7	Chittur	8.41	57	16	4	1.5	4.3	0.19	2.4
8	Churuli	8.11	103	24	6.4	1.9	16	0.16	1
9	Elappara	-	123	30	9.6	1.5	17	0.25	12
10	Irattayar	8.81	580	90	16	12	121	0.05	72
11	Idukki	7.85	99	26	6.4	2.4	13	0	0.83
12	Kaliyar	7.51	196	42	10	3.9	27	0.2	27
13	Kanchiyar	-	178	62	18	4.4	37	0.93	7.8
14	Karimkunnam	-	200	40	12	2.4	34	0.2	7.9
15	Kattappana	7.06	550	120	22	16	110	0.26	111
16	Koilkadavu	-	250	44	10	4.4	34	0.32	16
17	Kolapra	7.55	70	24	5.6	2.4	7.1	0.12	0.28
18	Kulamavu	7.22	133	24	5.6	2.4	18	0.1	23
19	Kumaramangalam	7.36	77	18	4	1.9	13	0	8
20	Kumili	-	290	50	10	5.8	72	0.32	4.6
21	Kuttikanam	7.35	54	16	3.2	1.9	4.3	0.07	12
22	Machiplavu	8.29	106	36	12	1.5	18	0.16	8.8
23	Manjappara	7.38	52	14	4	0.97	12	0.24	1.2
24	Marykulam	7.9	113	36	9.6	2.9	14	0.27	0.35
25	Moolamattom	7.56	102	34	8	3.4	8.5	0	4.6
26	Munnar	7.44	76	18	5.6	0.97	11	0.36	0.54
27	Mundieruma	-	210	42	14	1.5	26	0.29	13
28	Nedumkandam	8.97	330	90	25	6.8	48	0.09	0.55
29	Nirmala City	8.24	76	18	4.8	1.5	8.5	0.32	1.8
30	Pambadumpara	-	123	20	5.6	1.5	17	0.09	1.9
31	Perumuttom	7.19	62	12	3.2	0.97	8.5	0.13	4.6
32	Peerumedu	7.36	54	18	4.8	1.5	8.5	0.21	0.07
33	Thumbachi	-	73	16	4.8	0.97	7.1	0.22	6.5
34	Udumbanchola	3.43	390	56	14	4.9	64	0.07	48
35	Valara	7.43	94	24	7.2	1.5	8.5	0	0.77
36	Vallakadavu	-	93	30	6.4	3.4	8.5	0.35	0.85

1	2	3	4	5	6	7	8	9	10
37	Vandanmedu	7.8	96	22	4.8	2.4	11	0	10
38	Vandiperiyar	7.8	360	50	10	5.8	52	0.35	50
39	Vellathooval	-	65	12	3.2	0.97	7.1	0.26	0.86
40	Vellilamkandam	7.77	75	16	4.8	0.97	14	0.06	0.06
41	Vazhithala	-	60	12	4	0.49	7.1	0	2.6
	<b>Kannur District</b>								
1	Anjarakandi	7.74	103	26	9.6	0.49	14	0.17	0
2	Kannur	8.16	380	140	47	5.4	40	0.23	3.3
3	Chakkarakkallu	7.06	174	24	5.6	2.4	28	0.09	24
4	Chavassery	7.87	115	32	9.6	1.9	14	0.11	1.4
5	Cheleri	6.92	42	8	2.4	0.49	7.1	0.31	3.6
6	Chepparapadavu	7.52	77	26	4.8	3.4	8.5	0.08	2.5
7	Cheruthazham	7.08	60	8	2.4	0.49	13	0.18	4.7
8	Chural	7.65	84	40	13	1.9	5.7	0.23	4.5
9	Dharmadam	7.64	116	32	10	1.5	18	0.29	1.3
10	Edakkad	7.81	176	56	18	2.4	20	0.1	0
11	Edayannur	7.36	50	10	3.2	0.49	7.1	0.18	0
12	Iritty	6.94	89	10	2.4	0.97	8.5	0.33	3.4
13	Kannapuram	8.13	250	118	42	3.4	13	0.17	2
14	Kannavam	7.54	92	28	8	1.9	9.9	0.18	4.3
15	Kommeri	7.46	53	18	4	1.9	4.3	0.2	0.67
16	Koothuparamba	7.37	330	86	20	8.8	41	0.25	76
17	kottayampoyil	6.48	62	6	2.4	0	11	0.2	7.5
18	Kottiyur	8.54	118	42	11	3.4	11	0.2	9.5
19	Kozhichal	-	63	20	6.4	0.97	4.3	0.31	1.3
20	Kunnaru	8.48	420	100	18	14	65	0.33	0.25
21	Mahe	8.46	430	114	23	14	58	0.05	13
22	Manantheri	7.87	112	38	7.2	4.9	8.5	0.19	0.76
23	Manathana	7.91	149	50	15	2.9	14	0.26	7.1
24	Mathamangalam	7.41	81	16	4	1.5	11	0.1	10
25	Mattannur	7.16	159	36	8	3.9	28	0.22	26
26	Mattara	7.59	65	18	4.8	1.5	8.5	0.2	52
27	Mathil	8.08	132	52	19	0.97	8.5	0.1	0
28	Mayyil	7.45	76	16	4.8	0.97	13	0.07	5.6
29	Melepukkom	7.38	91	20	3.2	2.9	14	0.03	9
30	(Peringalam)								
31	Meruvambayi	7.67	94	22	5.6	1.9	9.9	0.22	1.2
32	Mokeri	7.59	197	20	4.8	1.9	41	0.3	13
33	Muzhakkunnu	8.02	98	32	7.2	3.4	9.9	0.2	0.47
34	Pathiriyad	7.55	49	10	4	0	8.5	0.05	0.03
35	Pallikunnu	7.24	40	12	2.4	1.5	4.3	0.19	0.02
36	Palloor	7.62	270	48	11	4.9	45	0.17	14
37	Panunda	3.35	174	24	4	3.4	17	0.2	15
38	Pattiyam	7.98	124	38	13	1.5	16	0.11	0.89
39	Payyannur	7.03	230	64	18	4.9	48	0.05	12
40	Pukkundu	7.98	110	32	11	0.97	11	0.21	4.7
41	Ramanthali	7.03	39	10	2.4	0.97	8.5	0.07	1.2
42	Sreekandapuram	7.7	197	54	10	6.8	31	0.16	25
43	Taliparamba	-	127	36	9.6	2.9	14	0.16	4.6
44	Thalassery	8.13	370	104	31	6.3	43	0.28	13



1	2	3	4	5	6	7	8	9	10
45	ThazheChovva	7.71	196	32	8	2.9	30	0.11	4.5
46	Thillangeri	7.37	43	14	2.4	1.9	7.1	0.13	0
47	Ulikkal	7.8	52	14	4	0.97	5.7	0.3	0.61
48	Varam	7.73	74	12	3.2	0.97	14	0.11	1.4
49	Valapattanam	-	250	50	16	2.4	50	0.36	12
50	Vayyakara	-	116	28	8.8	1.5	5.7	0.3	0.39
	<b>Kasargod District</b>								
1	Ambalathara	7.5	74	20	5.6	1.5	8.5	0.29	1
2	Angadimogar	7.49	200	56	14	5.4	38	0.18	7.8
3	Bandadukka	6.93	59	12	4	0.49	9.9	0.17	8.2
4	Bekal	4.53	196	36	6.4	4.9	40	0.17	43
5	Bhimanadi	7.47	79	26	8	1.5	7.1	0.03	6.7
6	Chamundikunnu	7.72	143	42	8	5.4	24	0.08	3.7
7	Kakkadavu	7.66	102	38	14	0.97	9.9	0.03	6.4
8	Koliyarpadavu	8.37	88	26	8	1.5	13	0.04	0.86
9	Kumbala	8.21	210	92	25	7.3	13	0.47	0.7
10	Kanhangad town	7.33	112	22	5.6	1.9	23	0.03	6.6
11	Kuttikol	7.6	47	18	4.8	1.5	7.1	0.01	0.27
12	Madhur	7.39	90	28	7.2	2.4	14	0.09	8.2
13	Manjeshwar	7.72	128	46	14	2.4	16	0.07	2.3
14	Muliyar	7.42	90	16	4	1.5	17	0.07	2.5
15	Mulleria	7.09	113	24	5.6	2.4	20	0.11	20
16	Mulligadde	6.86	60	14	3.2	1.5	11	0.03	7.8
17	Nattakkal	7.9	128	56	9.6	7.8	13	0.1	5.6
18	Niyapadavu	7.62	73	26	8.8	0.97	8.5	0.17	2.6
19	Padiyathadka	7.43	82	26	8	1.5	9.9	0.1	2.4
20	Paivalike	7.3	86	16	5.6	0.49	16	0.09	5.6
21	Panathur	7.42	72	18	5.6	0.97	9.9	0.02	5.3
22	Parappa North	7.5	58	16	2.4	2.4	9.9	0.16	0.29
23	Peraladkam	6.75	56	10	2.4	0.97	13	0.03	4.3
24	Poinachi	7.1	53	12	3.2	0.97	9.9	0.26	5.9
25	Pullur	7.06	45	12	2.4	1.5	9.9	0.08	2.6
26	Rajapuram	7.19	90	24	4.8	2.9	17	0.06	11
27	Thaniyadi	7.6	84	26	7.2	1.9	9.9	0.2	3.4
28	Trikkarippur	6.45	91	14	2.4	1.9	8.5	0.16	3.9
29	Uppla	7.83	127	36	11	1.9	11	0.06	2.3
	<b>Kollam District</b>								
1	Achenkovil	-	260	50	10	6.1	37	0.3	7.6
2	Ailara	7.66	89	4	0.8	0.49	17	0.4	0.71
3	Akkal	7.5	103	18	3.2	2.4	13	0.2	13
4	Anchalummud	3.93	280	25	8	1.2	45	0.14	46
5	Ariyankavu	8.53	250	85	18	9.7	14	0.24	0
6	Avaneeswaram	7.63	97	20	4	2.4	11	0.2	4.2
7	Ayur	7.45	74	16	4	1.5	4.3	0.18	5.8
8	Ayathil	7.18	118	20	6.4	0.97	17	0.16	15
9	Chadayamangalam	8.48	167	16	4	1.5	33	0.12	3.4
10	Chakkuvalli	5.09	108	10	2.4	0.97	18	0.12	16
11	Channapetta	7.68	220	30	2	6.1	36	0.7	15
12	Chenkulam	7.39	77	12	3.2	0.97	11	0.14	2.7

1	2	3	4	5	6	7	8	9	10
13	Edamon	6.78	53	10	1.6	1.5	5.7	0.14	3.6
14	Kadakkal	7.51	199	54	17	2.9	23	0.26	14
15	Kadapuzha	7.93	290	75	20	6.1	50	0.18	12
16	Kanjiramkode	7.22	200	65	22	2.4	25	0.14	16
17	Karunagapally	8.06	490	175	54	9.7	71	0.1	36
18	Kollam	7.78	650	200	70	6.1	89	0.12	131
19	Kottakayam	7.36	53	10	1.6	1.5	5.7	0.1	1.3
20	Kottarakkara	7.63	190	30	7.2	2.9	37	0.06	15
21	Kottiyam	7.65	240	90	30	3.6	28	0.14	5
22	Kutavettur	7.8	210	55	14	4.9	24	0.16	15
23	Kulakkada	7.79	174	34	8.8	2.9	16	0.13	7.6
24	Kulathupuzha	4.73	260	15	4	1.2	46	0.42	37
25	Kunnada	7.6	86	10	3.2	0.49	13	0.16	2.2
26	Kuripally	6.58	200	25	6	2.4	39	0.1	39
27	Manapally	7.46	91	20	5.6	1.5	14	0.07	0
28	Muthukumel	7.52	155	24	4.8	2.9	26	0.18	41
29	Mylakadu	7.93	220	90	30	3.6	17	0.2	4.6
30	Mynagapalli	7.08	166	16	3.2	2	37	0.09	15
31	Nallila	3.01	230	15	traces	3.6	25	0.14	38
32	Neendakara	8.25	230	85	26	4.9	28	0.29	0
33	Nedungolam	7.75	118	8	1.6	0.97	24	0.1	6.4
34	Ottakal(Panchayath well)	7.58	113	14	4	0.97	11	0.24	5.3
35	Ottakal(School Compound)	8.12	200	70	20	4.9	28	0.18	0
36	Oyur	7.19	94	8	1.6	0.97	9.9	0.24	14
37	Palamoodu	7.61	97	26	7.2	2	8.5	0.1	1.1
38	Paripalli	7.42	72	18	4	2	8.5	0.14	0.69
39	Pavitreswaram	7	107	8	1.6	0.97	20	0.04	7.5
40	Perinad	7.44	133	18	4.8	1.5	33	0.16	6.9
41	Punalur	7.62	128	30	8	2.4	19	0.16	8
42	Punnala	7.52	98	16	1.6	2.9	11	0.22	8.4
43	Roduvilla	7.34	136	18	2.4	2.9	11	0.14	27
44	Sasthamkotta	8.27	310	95	32	3.6	43	0.27	3.9
45	Thattamala	7.41	370	90	24	7.3	57	0.14	24
46	Thevalakkara	7.3	110	22	7.2	0.97	19	0.07	1.8
47	Ummannur	7.9	220	50	10	6.1	26	0.11	15
48	Vayyankara	7.05	94	14	4	0.97	13	0	0
49	Vazhathoppu	8.24	430	140	42	8.5	89	0.57	15
50	Yeroor	7.43	71	14	3.2	1.5	9.9	0.09	1.7
	<b>Kottayam District</b>								
2	Arunuttimangalam	7.55	42	10	0.8	2	7.1	0.1	4
3	Ayarkunnam	3.21	290	26	5.6	2.9	34	0.18	80
4	Cheruthikara	-	125	30	10	0.97	20	0.16	3.6
5	(Ariparambu)								
6	Chotti	7.08	105	28	6.4	2.9	16	0.05	12
7	Elamkulam	-	90	36	11	2	5.7	0.2	0.63
8	Ettumanoor	7.32	92	16	4	1.5	13	0.07	8.4
9	Iykarakunnam	7.6	114	18	3.2	2.4	20	0.16	15
10	Kaduthuruthi	7.38	159	28	7.2	2.4	26	0.2	16
11	Kalakatty	7.73	130	40	12	2.4	13	0.14	15
12	Kalathur	7.02	48	12	2.4	1.5	8.5	0.15	8.2

1	2	3	4	5	6	7	8	9	10
13	Kangazha	7.26	114	24	8	0.97	17	0.14	12
14	Kanjirappally	7.73	129	48	10	5.4	9.9	0.19	15
15	Kidangur	7.52	76	14	3.2	1.5	13	0.2	9.7
16	Kottayam	6.95	45	8	1.6	0.97	9.9	0.16	5.5
17	Koothrappally(new well)	7.64	103	36	6.4	4.9	7.1	0.28	0
18	Kozha	7.31	60	14	3.2	1.5	9.9	0.16	7.3
19	Kozhuvanal	7.6	83	26	7.2	2	9.9	0.14	7.7
20	Kuravilangad	7.54	65	16	3.2	2	9.9	0.13	8.2
21	Kuttikkal	-	73	18	4.8	1.5	5.7	0.19	3.6
22	Kuvapalli	8.66	50	18	4.8	1.5	4.3	0.16	7.7
23	Manimala(new well)	7.27	141	28	7.2	2.4	21	0.16	10
24	Marangattupalli	-	74	20	5.6	1.5	8.5	0.16	3.5
25	Monipalli	-	154	44	9.6	4.9	26	0.12	13
26	Mukkada	8.49	75	18	4	2	9.9	0.08	5.3
27	Mundakkayam East	-	52	14	5.6	0	2.8	0.13	2.2
28	Mundukuzhi	7.28	46	8	1.6	0.97	7.1	0.26	2.3
29	Narianganam	7.5	27	6	1.6	0.49	4.3	0.14	1.7
30	Paippad	6.64	210	42	13	2.4	34	0.19	49
31	Pala	-	77	24	6.4	2	8.5	0.21	0.27
32	Pallikathodu	7.95	65	20	4	2.4	5.7	0.19	0
33	Pallom(Nattagam)	-	112	24	8	0.97	16	0.25	10
34	Pambady	8.42	46	10	3.2	0.49	8.5	0.08	1.8
35	Ponthanpuzha(new)	7.17	57	10	3.2	0.49	8.5	0.2	3.2
36	Panackapalaam	8.09	340	98	27	7.3	31	0.25	8
37	Paruthumpara	8.71	114	18	4	2	24	0.05	11
38	Plakkalpadi	7.26	160	18	3.2	2.4	31	0.07	9.6
39	Pulikkalkavala	7.27	63	12	3.2	0.97	9.9	0.16	13
40	Pulikuttisseri	8.29	97	38	12	2	8.5	0.11	2
41	Punjar	7.2	61	14	4	0.97	7.1	0.05	15
42	Ramapuram	7.12	53	14	2.4	2	5.7	0.08	13
43	Thekkethukavala	-	97	28	8.8	1.5	11	0.2	2.7
44	Thottakkad	7.36	68	18	4	2	5.7	0.16	4.1
45	Tiruvarpu	-	300	44	14	2	44	0.18	5.9
46	Vazhur	7.96	65	18	4	2	8.5	0.06	1.9
47	Vempalle	7.32	94	18	4	2	17	0.14	11
	<b>Kozhikode District</b>								
1	Vadakara	7.6	360	104	31	5.8	50	0.14	48
2	Balusseri	7.56	140	32	10	1.5	14	0	0.05
3	Kozhikode	7.62	390	144	51	3.9	54	0.14	63
4	Chemencheri	7.53	310	96	30	5.4	38	0.1	57
5	Devarkoil	6.77	230	46	13	3.4	34	0	55
6	Elattur	7.3	197	54	20	0.97	18	0	14
7	Feroke	7	112	26	8	1.5	17	0.27	14
8	Kakkayam	7.34	83	18	4.8	1.5	4.3	0.06	3
9	Kakkur	7.61	137	34	9.6	2.4	14	0.18	5.8
10	Kannankara	7.41	181	38	11	2.4	23	0.06	20
11	Karaparambu	7.7	240	84	30	2.4	24	0.61	1.2
12	Kariyathumpara	7.15	46	8	3.2	0	4.3	0.07	1.1
13	Karuvannur	3.69	200	40	4.8	6.8	8.5	0.16	3
14	Koduvalli	7.69	120	34	9.6	2.4	5.7	0.05	1.3

1	2	3	4	5	6	7	8	9	10
15	Koodathumpara	8.01	370	118	26	13	33	0.08	0.19
16	Koothali	7.21	63	16	3.2	1.9	8.5	0	8.2
17	Kozhikode	7.81	184	66	22	2.9	16	0.09	5.2
18	Kozhikode Beach	8.16	260	66	21	3.4	40	0.13	8
19	Kurachund	6.9	65	14	4	0.97	5.7	0	3.6
20	Kuttiyadi	7.15	83	18	6.4	0.49	8.5	0.07	1.8
21	Madura Bazaar	7.35	102	18	4.8	1.5	9.9	0.09	1.7
22	Malayamma	7.53	85	22	4.8	2.4	7.1	0.04	1.5
23	Mattanodu	7.25	89	18	6.4	0.49	11	0.03	9.5
24	Mavoor I	7.69	300	78	13	11	11	0	3.5
25	Mavoor II	7.21	135	24	8	0.97	18	0.01	1.8
26	Melady	7.68	310	116	36	6.3	31	0.01	8.2
27	Meppayyur	7.12	171	38	10	2.9	24	0	18
28	Modern Bazaar	6.87	149	14	3.2	1.5	33	0.13	13
29	Nadapuram	7.49	185	46	16	1.5	21	0.15	11
30	Naduvannur	7.17	67	8	2.4	0.49	8.5	0.04	5
31	Nanminda	7.62	108	24	8	0.97	8.5	0	3.1
32	Nayarkuzhi	7.59	120	46	14	2.4	5.7	0.08	1.6
33	Parannur	7.24	49	12	3.2	0.97	4.3	0.02	0.22
34	Perambra	7.39	110	24	8.8	0.49	11	0	6.2
35	Peruvayal	7.67	154	48	12	4.4	13	0.07	1.1
36	Pudupadi	7.15	96	20	5.6	1.5	13	0	7.8
37	Punnasserri	7.11	61	18	3.2	2.4	8.5	0	1.3
38	Koyilandi	7.29	168	54	20	0.97	18	0.06	15
39	Ramanattukara	6.86	111	8	3.2	0	13	0	8.3
40	Thamarasserri	7.36	111	28	10	0.49	13	0.13	0.7
41	Thiruvallur	7.21	89	22	6.4	1.5	9.9	0.09	4.8
42	Thuneri	6.75	95	12	2.4	1.5	23	0	5.8
43	Thikkodi	4.25	120	16	6.4	0	20	0.03	18
44	Ulliyeri	6.68	70	12	3.2	0.97	9.9	0.32	6.9
45	Unnikulam	6.63	69	14	3.2	1.5	9.9	0	9
46	Villiappally	7.22	99	24	5.6	2.4	14	0.16	9.5
47	West Pudupadi	7.05	144	20	4.8	1.9	14	0.11	19
	<b>Malappuram District</b>								
1	Arikode	8.48	177	48	11	4.9	21	0.08	16
2	Athani(new)	-	102	16	4.8	0.97	13	0.67	1.1
3	Athirumada	-	90	20	7.2	0.49	9.9	0.05	4
4	Velumbiampadam	-	430	35	12	1.2	32	0.32	21
5	Chamravattom	7.76	200	70	18	6.1	16	0.71	9.8
6	Cherukare	8.11	97	18	1.6	3.4	14	0.12	14
7	Cherukulam(new)	7.66	82	26	8.8	0.97	4.3	0.26	2
8	Chokkad	-	250	25	2	4.9	48	0.1	3.3
9	Chungathara	7.78	220	68	13	8.8	24	0.1	13
10	Edappal	7.39	124	36	7.2	4.4	14	0.12	12
11	Edavanna	8.46	160	38	8.8	3.9	23	0.02	13
12	Edavannappara(new)	7.58	133	34	7.2	3.9	20	0.57	4
13	Eriyad	7.12	75	14	4	0.97	11	0.11	7.2
14	Iswaramangalam	8.1	740	115	12	21	142	0.61	2.8
15	Kadalundi	-	1000	315	88	23	139	1.3	2.7
16	Kadannamanna	7.6	119	34	8.8	2.9	5.7	0.21	5.8

1	2	3	4	5	6	7	8	9	10
17	Kalikavu	7.77	270	50	14	3.7	45	0.12	83
18	Kanjiramukku	7.81	390	70	24	2.4	77	0.18	3.5
19	Kariavattam	7.72	157	38	8	4.4	23	0.15	5.1
20	Karimpuzha	7.8	76	10	2.4	0.97	13	0.14	6.4
21	Karulai	-	220	55	12	6.1	30	0.23	5.3
22	Karuvarakundu	8.65	120	18	3.2	2.4	19	0.4	20
23	Karuvarakundu(new)	8.95	73	12	2.4	1.5	11	0.16	2.3
24	Kattumunda	7.92	186	62	22	2	8.5	0.11	3.3
25	Kavanur(new)	7.19	130	18	3.2	2.4	27	0.04	14
26	Kizhumuri	-	200	30	6	3.7	23	0.35	2.8
27	Kizhissery	7.12	210	38	8.8	3.9	36	0.04	35
28	Kondotty	7.33	122	24	4.8	2.9	20	0.62	13
29	Kottakkal(nearby well)	8.8	480	65	20	3.7	89	0.25	79
30	Kottapuram	7.56	260	50	10	6.1	41	0.69	49
31	Krishnapuram Puthentheru	7.78	240	45	10	4.9	38	0.09	14
32	Kuruva	7.36	92	24	5.6	2.4	9.9	0.18	4.1
33	Malappuram	-	171	30	10	0.97	16	0.34	2.2
34	Mangalam	2.93	1040	130	36	9.7	131	0.34	203
35	Manjeri	7.11	81	16	4.8	0.97	11	0	6.8
36	Marancheri	7.11	81	16	4.8	0.97	11	0	6.8
37	Maruda	8.23	200	65	16	6.1	19	0.12	14
38	Melattur	-	290	30	6.4	3.4	63	0.22	9.6
39	Muchikkal	7.65	44	12	3.2	0.97	5.7	0.08	0.18
40	Mundamparamba	8.74	159	34	11	1.5	19	0.69	51
41	Nilambur	-	420	65	20	3.7	78	0.12	77
42	Olavattur	7.51	49	14	3.2	1.5	7.1	0.56	0.46
43	Pandikkad	-	280	45	2	9.7	44	0.22	20
44	Parrappanangadi	-	450	80	26	3.7	64	0.22	46
45	Perinthalmanna	-	280	55	16	3.7	48	0.14	13
46	Perumpadappu	6.95	270	40	14	1.5	48	0.1	31
47	Ponnani	7.87	1200	160	42	13	316	0.22	0.81
48	Pookotloor	8.79	142	32	8	2.9	19	0.67	2
49	Puthenkulam(new)	8.69	112	22	4.8	2.4	9.9	0.14	1.1
50	Ramapuram	8.08	550	125	36	8.5	85	0.29	98
51	Tachinganedam	7.98	155	56	16	3.9	4.3	0.24	1.3
52	Tanur	-	210	25	6	2.4	27	0.42	4.2
53	Tazhekode Karungalathani	-	154	30	9.6	1.5	30	0.2	7.1
54	Thazhekod Kappumugham	7.92	79	20	3.2	2.9	8.5	0.12	4.4
55	Tenjippalam	7.27	60	14	3.2	1.5	11	0.62	2.1
56	Thavanur	7.7	155	22	4.8	2.4	28	0.24	6.4
57	Thavanur(new)	7.96	320	150	48	7.3	14	0.19	14
58	Thazheenkozhichera	-	82	10	3.2	0.49	9.9	0.2	4.8
59	Thiruvalli	-	102	24	8	0.97	8.5	0.12	1.4
60	Thuvur	-	136	20	7.2	0.49	19	0.28	13
61	Thirunavaya	-	260	50	16	2.4	30	0.28	4.2
62	Tirur	7.35	230	45	10	4.9	34	0.2	48
63	Tirurkkad	8.14	134	46	8.8	5.8	11	0.22	3.7
64	Tirurangadi	-	200	35	12	1.2	34	0.22	15
65	Tripanchi	7.56	96	24	4	3.4	14	0.04	5.9
66	Vadakkemanna	-	210	35	8	3.7	43	0.3	19
67	Vakaloor(new)	7.63	88	24	4.8	2.9	8.5	0.1	3.3

1	2	3	4	5	6	7	8	9	10
68	Valambur(new)	8.72	109	28	5.6	3.4	13	0.15	0.32
69	Valacherry	-	600	90	30	3.7	104	0.4	15
70	Vazhikadavu	8.75	151	30	8.8	2	21	0.19	1.2
71	Vellila	-	310	30	6	3.7	68	0.1	5.5
72	Vettom(new)	7.29	156	40	7.2	5.4	13	0.1	1.1
73	Vylattur	-	175	20	5.6	1.5	28	0.57	25
74	Wandur	7.25	210	38	9.6	3.4	36	0.5	31
	<b>Palakkad District</b>								
1	Adiparanda	8.26	180	40	6	6.1	28	0.31	1.4
2	Agali	7.84	740	210	48	22	131	0.33	6.2
3	Alanallur	8.66	250	50	10	6.1	53	0.06	4.7
4	Alathur	8.28	1250	475	94	58	298	0.48	0.87
5	Ambalappara	8.43	156	50	6	8.5	32	0.15	1.2
6	Ariyur	7.98	47	10	1.6	1.5	7.1	0	0
7	Athikode	8.02	1880	280	28	51	320	1.2	1.8
8	Chakkanthara	8.03	320	90	20	9.7	39	0.3	5.9
9	Chalisseri	7.3	157	30	6	3.6	31	0.07	12
10	Chavadiyur	8.16	590	225	22	41	25	0.72	21
11	Chemmampathi	-	980	250	20	49	174	0.56	9.8
12	Cherpulassery	-	420	75	18	7.3	78	0.29	11
13	Chittoor	8.22	760	165	26	24	96	0.81	1.9
14	Chullimada	8.02	750	225	48	26	32	0.65	5.6
15	Erattakulam	7.87	400	155	40	13	28	0.46	0.56
16	Gopalapuram	-	800	195	64	8.5	131	0.36	197
17	Kakkupady	8.09	137	44	10	4.4	8.5	0.2	0.85
18	Kalladikode	7.18	106	10	1.6	1.5	21	0.03	5.7
19	Kambilichungam	8.31	950	280	56	34	85	1.5	2.8
20	Kanjikode	-	890	55	8	8.5	178	0.34	28
21	Kanjirapuzha	7.96	96	26	7.2	2	9.9	0.12	2.8
22	Kannadi	7.25	570	165	38	17	89	0.82	0.89
23	Kannimari	7.94	620	220	44	27	71	0.96	3.4
24	Karimpuzha	7.81	104	38	11	2.4	4.3	0.08	1.4
25	Kodavayur	7.88	270	60	10	8.5	32	1.5	4.5
26	Kollengode	7.98	880	280	30	50	146	0.59	2.5
27	Kongad	7.91	370	85	16	11	53	0.22	14
28	Koppam	7.5	192	38	8	4.4	37	0.16	12
29	Kootanad	7.58	158	36	6.4	4.9	23	0.12	2.7
30	Kottapuram	7.59	196	42	12	2.9	27	0.05	9.3
31	Kozhinjampara	8.03	710	240	64	20	94	0.42	11
32	Kozhipara	7.99	910	270	56	32	64	1.4	9.8
33	Kudallur	-	200	52	15	3.4	24	0.35	1.4
34	Kumaramputtur	7.53	68	10	1.6	1.5	9.9	0.04	3.1
35	Kumaranallur	-	136	24	5.6	2.4	24	0.1	0
36	Kunnisseri	7.95	1680	465	62	75	440	0.36	0.6
37	Kuzhalmannam	8.35	490	105	16	16	60	0.94	0
38	Malampuzha	7.99	250	65	14	7.3	38	0.19	0.97
39	Mankara	8.73	280	80	12	12	34	0.2	1.4
40	Mannarkkad	8.62	240	55	16	3.7	36	0.15	11
41	Mattumanda	7.53	300	75	12	11	57	0.04	4
42	Meenkara	8.37	890	330	88	27	95	-	4.1

1	2	3	4	5	6	7	8	9	10
43	Mundur	8.22	200	60	14	6.1	16	0.25	0.69
44	Muthalamada	8.21	430	175	36	21	28	1.1	4.4
45	Nadupeni	8.07	1160	280	40	44	135	1.5	1.9
46	Nellaya	7.57	210	28	4	4.4	40	0.2	2.3
47	Nemmara	8	430	170	52	9.7	34	0.47	14
48	Noorani	7.85	570	170	38	18	89	0.18	18
49	Ongallur	7.54	420	85	20	8.5	89	0.13	11
50	Oothara	7.96	940	205	30	32	110	1.2	1.7
51	Ottappalam	7.95	410	60	14	6.1	77	0.2	27
52	Palappuram	7.59	630	120	22	16	82	0.17	88
53	Palakkad	-	390	50	12	4.9	72	0.67	5.4
54	Panayur	8.53	640	240	42	33	60	0.68	1.5
55	Pattambi	8	270	60	12	7.3	40	0.15	11
56	Peringode	8.47	111	32	7.2	3.4	13	0.12	0.24
57	Perumatty	-	220	45	4	8.5	36	0.65	0.23
58	Pudhunagaram	8.83	920	140	22	21	149	0.58	0.95
59	Pudhupariyaram	8.66	330	60	12	7.3	57	0.05	12
60	Punchapadam	8.13	76	22	6.4	1.5	7.1	0.15	0.42
61	Shoranur	8.17	280	85	20	8.5	36	0.36	0.88
62	Sreekrishnapuram	7.35	130	24	5.6	2.4	21	traces	11
63	Thachanattukara	7.61	181	26	5.6	2.9	31	0.15	20
64	Tannirkod	7.5	99	18	3.2	2.4	17	0.32	4.9
65	Tavalam	7.96	300	102	23	11	27	0.18	15
66	Tenkara	7.53	132	38	8	4.4	13	0.13	1.7
67	Thachanpara	7.48	290	50	13	4.4	58	0.04	0
68	Thiruvegapuram	7.56	118	30	8	2.4	8.5	0.15	12
69	Tholanur	7.57	200	70	21	4.4	26	0.1	0
70	Trittala	8.03	620	240	60	22	71	0.19	0.76
71	Vadakkancherry	8	500	110	18	16	62	0.16	7.6
72	Vadanakurissi	7.78	360	85	18	9.7	60	0.33	7.5
73	Vallapuzha	7.74	153	38	7.2	4.9	23	0.05	0.81
74	Vaniyamkulam	7.45	760	120	28	12	181	0.1	17
75	Vannamada	8.29	1400	420	112	34	167	0.57	18
76	Vattassery(Kottassery)	7.6	111	32	6.4	3.9	14	0	1.3
77	Velanthavalam	8.01	820	215	34	32	96	0.66	8.3
78	Vilayur	7.44	113	22	4.8	2.4	11	0.04	2.9
79	Walayar	7.93	560	250	60	24	36	1	1.9
	<b>Pathanamthitta District</b>								
1	Adoor	6.2	91	6	1.6	0.49	11	0.1	7.6
2	Angadikkal North	7.35	48	12	4	0.49	8.5	0.16	3.6
3	Ankamuzhi	7.41	79	14	4	0.97	11	0.04	13
4	Aranmula	8.27	210	78	14	11	23	0.15	19
5	Athiringal	7.67	52	16	4.8	0.97	7.1	0.24	3
6	Airoor	7.77	144	54	13	5.4	16	0.17	11
7	Chalapally	7.05	72	14	4	0.97	11	0.21	10
8	Chethekkal	8.44	193	100	20	12	5.7	0.06	0.6
9	Chittar	-	131	12	3.2	0.97	11	0.36	5.1
10	Enathu	7.84	570	100	28	7.3	124	0.35	64
11	Eraviperoor	7.49	79	18	4.8	1.5	11	0.05	1.6
12	Ezhumattoor	7.29	91	16	5.6	0.49	14	0.02	10



1	2	3	4	5	6	7	8	9	10
13	Ezhamkulam	7.29	94	12	4	0.49	16	0.27	11
14	Elanthur	7.34	93	18	4.8	1.5	17	0.26	2.4
15	Kadumeenchira	-	170	46	11	4.4	27	0.16	9.8
16	Karinkulam	7.61	88	22	4.8	2.4	11	0.14	9.2
17	Kaviyur	7.47	70	6	2.4	0	11	0.22	3.7
18	Koipuram	7.42	58	8	1.6	0.97	8.5	0.23	1
19	Kozhenchery	7.62	160	50	14	3.9	16	0.24	14
20	Konni	7.65	116	20	4	2.4	13	0.31	0.24
21	Koodal	7.1	66	18	5.6	0.97	7.1	0.29	8.6
22	Kottanadu	7.15	133	22	5.6	1.9	23	0.18	22
23	Kottangal	7.64	160	22	4.8	2.4	28	0.05	1.2
24	Kumbanad	8.47	340	62	21	2.4	64	0.58	0.35
25	Kumplampoika	7.41	84	34	8	3.4	11	0.36	5.9
26	Kunnamthanam	7	59	12	3.2	0.97	9.9	0.13	9.3
27	Kuttoor	7.28	121	22	6.4	1.5	18	0.05	2.6
28	Laha Balawadi	7.13	97	26	8.8	0.97	11	0.03	23
29	Laha Perumon(new well)	8.24	48	10	4	0	5.7	0.16	0.88
30	Malayalapuzha	7.25	107	20	5.6	1.5	13	0.12	13
31	Mallapally	6.95	63	10	2.4	0.97	11	0.3	6.5
32	Maniyar	8.37	105	20	5.6	1.5	11	0.08	13
33	Murani	7.57	103	22	5.6	1.9	17	0.25	9
34	Muthoor	6.64	200	36	11	1.9	34	0.24	24
35	Naduvathumuzhi	-	62	18	6.4	0.49	7.1	0.25	1.5
36	Naranganam	7.53	94	16	5.6	0.49	13	0.23	9.3
37	Nilakkal	7.2	95	28	8	1.9	17	0.35	7.5
38	Pandalam	7.36	67	20	3.2	2.9	8.5	0.19	3.1
39	Pathanamthitta	5.44	220	42	13	2.4	36	0.25	62
40	Peringara	8.82	140	40	6.4	5.8	18	0.37	0.87
41	Plappally	8.94	44	16	4	1.5	4.3	0.02	1.2
42	Pulikeezh	8.45	179	78	30	0.97	8.5	0.29	0
43	Pullad	5.99	179	14	4	0.97	14	0.33	14
44	Ranni	7.07	59	16	3.2	1.9	7.1	0	9.9
45	Ranni Perunad	8.54	109	42	14	1.9	7.1	0	1
46	Thatta	7.49	79	18	6.4	0.49	9.9	0.25	0.7
47	Thelliyur	8.87	151	56	14	4.9	11	0.26	3.1
48	Ullannur	6.97	49	8	2.4	0.49	7.1	0.26	5.8
49	Vadasserikkara	-	124	44	14	2.4	8.5	0.44	9.7
50	Vallamkulam	8.13	210	74	12	11	18	0.15	14
51	V.Kottayam	7.44	66	12	4	0.49	13	0.23	2.3
52	Vechoochira	8.04	159	62	18	4.4	17	0.25	9.6
53	Vennikulam	6.74	169	34	9.6	2.4	23	0.17	30
	<b>Thiruvananthapuram District</b>								
1	Anjengo	-	290	58	22	0.97	51	0.17	5.5
2	Aruvikkara	7.65	64	10	3.2	0.49	7.1	0.15	0.51
3	Ariyanadu	7.76	176	22	6.4	1.5	28	1.18	4.8
4	Attingal	8.84	140	38	15	0	18	0.14	4.3
5	Bharathanoor	7.54	152	32	4.8	4.9	26	0.22	7
6	Chittagode	8.86	290	44	15	1.5	58	0.53	8.4
7	Kadakkavur	7.75	470	88	22	8.3	84	0.04	50
8	Kallar	7.54	55	16	4	1.5	4.3	0	0.56



1	2	3	4	5	6	7	8	9	10
9	Kallikkad	3.42	270	18	3.2	2.4	64	0.22	12
10	Karakulam	-	650	55	20	1.2	124	0.62	54
11	Kattakkada	5.21	260	38	8	4.4	54	0.3	39
12	Kazhakuttam	-	510	126	41	5.8	64	0.37	137
13	Kochuveli	-	193	62	22	1.5	18	0.24	7.6
14	Kulathur	7.66	111	16	5.6	0.49	18	0.19	0.84
15	Madavur	-	104	6	0.8	0.97	17	0.07	2.5
16	Mannanthala	7.06	280	30	6.4	3.4	50	0.1	30
17	Maruthamala	7.59	122	24	7.2	1.5	16	0.12	11
18	Melvettoor	7.83	86	18	4.8	1.5	14	0.09	3.4
19	Nanniyode	6.79	260	50	8.8	6.8	44	0.19	44
20	Navaikulam	8.04	310	46	12	3.9	57	0.1	15
21	Nemom	-	300	38	13	1.5	65	0.27	7.7
22	Neyyattinkara	7.89	146	28	7.2	2.4	24	0.15	13
23	Palayamkunnu	8.17	188	56	21	0.97	18	0.16	0
24	Pangode	7.12	260	32	5.6	4.4	47	0.13	46
25	Parandod	6.89	159	18	4.8	1.5	31	0.2	15
26	Parassala	7.84	320	42	11	3.4	64	0.23	24
27	Peringamala	6.64	98	18	3.2	2.4	17	0.1	15
28	Perumkadavila	8.91	79	8	2.4	0.49	16	0.3	1.3
29	Perumgulam	7.63	148	18	4	1.9	27	0.12	12
30	Perumkuzhi	-	310	88	24	6.8	38	0.11	28
31	Pirappankod	7.34	91	12	4	0.49	14	0.12	8.4
32	Pudukurichi	-	580	90	28	4.9	124	0.22	46
33	Ponmudi	7.14	57	14	3.2	1.5	8.5	0.22	8
34	Poonthura	-	510	142	46	6.8	71	0.12	39
35	Pothencod	7.24	188	18	3.2	2.4	30	0.06	36
36	Pozhiyoor	8.38	500	130	28	15	103	0.23	8.2
37	Puvar( School)	8.29	820	165	34	19	167	0.28	51
38	Sasthantala	7.35	118	12	4	0.49	21	0.08	8.9
39	Tekkada	7.35	290	44	8.8	5.4	50	0.21	48
40	Thumba	-	340	86	28	3.9	51	0.27	26
41	Vamanapuram	8.23	310	64	20	3.4	52	0.12	4.9
42	Vattappara	7.27	90	8	3.2	0	14	0.03	9
43	Vattavila	7.16	33	4	traces	0.49	4.3	0.26	1.5
44	Vellanad	7.56	57	12	3.2	0.97	9.9	0.06	1.2
45	Vellayani	8.93	240	72	26	1.5	31	0.3	6.2
46	Venpakal	-	123	28	8.8	1.5	9.9	0.37	0
47	Vithura	7.02	116	24	7.2	1.5	16	0.04	23
48	Vilapilshala	7.16	116	8	2.4	0.49	11	0.28	18
49	Vazhakkad	7.16	33	4	Tr	0.97	4.3	0.26	1.5
	<b>Thrissur District</b>								
1	Adatt	7.37	173	28	6.4	2.9	30	0.07	17
2	Amballur	7.49	320	48	12	4.4	23	0.05	7.8
3	Annamanada	8.14	172	22	6.4	1.5	26	0	25
4	Arimpur	7.15	141	18	4.8	1.5	24	0	0.29
5	Athani	8.06	470	92	21	9.7	102	0.14	56
6	Azhikode	-	106	34	12	0.97	13	0.12	2.7
7	Chalakudy	7.22	91	20	4	2.4	13	0.33	12
8	Chattikulam	6.9	52	12	1.6	1.9	5.7	0	2.7

1	2	3	4	5	6	7	8	9	10
9	Chavakkad	-	220	48	14	3.4	26	0.14	1
10	Chelakara	-	230	34	10	1.9	33	0.67	1.8
11	Chelakod	8.27	270	74	14	9.7	20	0.36	0
12	Cherpu	8.51	149	20	6.4	0.97	18	0.12	3.2
13	Cherenkonam	7.72	360	58	14	5.8	21	0	0.96
14	Cherukunnu	7.57	82	8	2.4	0.49	11	0.01	3.9
15	Cheruthuruthi	-	260	48	8.8	6.3	48	0.11	1.9
16	Chowannur(Kunnamkulam)	-	99	12	3.2	0.97	11	0	1.4
17	East Fort	8.82	280	60	19	2.9	33	0.17	45
18	Edathrinji	7.8	166	60	19	2.9	13	0.24	0.27
19	Echipara	8.22	117	24	8.8	0.49	11	0.16	0.9
20	Engandiyur	-	177	34	12	0.97	23	0.08	0.7
21	Erumapetty	7.96	136	22	6.4	1.5	14	0.06	0
22	Eriyad Village	-	117	30	9.6	1.5	14	0.21	2
23	Eriyad 1	-	250	50	18	1.5	43	0.16	2
24	Dyyal Ambalam	8.42	171	28	8.8	1.5	33	0.37	0.51
25	Guruvayur	7.84	230	60	20	2.4	33	0.03	0.17
26	Irinjalakuda	-	230	54	18	1.9	21	0.43	4.8
27	Kallur	8.84	148	30	10	0.97	24	0.12	0.43
28	Kattoor	7.43	99	26	8.8	0.97	5.7	0.12	0.27
29	Keecherl	7.73	350	70	13	9.2	60	0.02	75
30	Kallumpuram	8.1	220	48	12	4.4	40	0.29	23
31	Killimangalam	7.53	220	42	10	3.9	28	0.04	6.2
32	Kodakara	6.77	340	74	19	6.3	62	0.13	72
33	Kodungallur	-	600	130	38	8.5	124	0.25	38
34	Konnakuzhi I	6.98	45	10	2.4	0.97	5.7	0.08	0
35	Konnakuzhi ii	7.72	113	54	18	1.9	7.1	0	0.03
36	Konnakuzhi iii	7.03	42	16	3.2	1.9	5.7	0	0.98
37	Kundannur	8.21	340	90	15	13	71	0.36	1.7
38	Kuttanellur	7.58	136	18	6.4	0.49	24	0.03	0
39	Logamalleswaram	8.17	230	58	22	0.49	21	0.28	6.6
40	Mapranam	7.1	58	12	3.2	0.97	7.1	0.12	2.5
41	Mala	8.94	147	28	9.6	0.97	18	0.12	2.1
42	Manalur	6.92	58	6	1.6	0.49	5.7	0	0.25
43	Manamangalam	7.26	53	6	1.6	0.49	4.3	0.09	0
44	Mathilakam	-	300	62	18	4.4	31	0.15	9.4
45	Mattathur	7.16	55	10	3.2	0.49	13	0	1.5
46	Methalpadam	8.33	155	58	18	3.4	11	0.3	1.1
47	Mulankunnathukavu	8.37	210	38	14	0.97	28	0.29	13
48	Mullassery	-	135	36	10	2.4	14	0	0.9
49	Mupliyam	6.95	151	26	6.4	2.4	23	0.08	24
50	Muringur	7.71	220	62	13	7.3	17	0	1.8
51	Muriyad	-	210	24	6.4	1.9	47	0.26	2.4
52	Ollur	8.63	350	58	18	3.4	68	0.19	49
53	Padakulam	-	330	60	21	1.9	40	0.14	41
54	Pallikunnu	7.56	240	38	9.6	3.4	24	0.09	12
55	Parappur	8.44	160	18	4	1.9	21	0	0.5
56	Parappukara	7.58	230	50	12	4.9	31	0.11	17
57	Palayamthuruthu	7.97	210	70	15	7.8	27	0.04	0.59
58	Pattikkad	7.64	101	28	5.6	3.4	8.5	0.27	0
59	Pavaratty	7.79	171	78	26	3.4	7.1	0.01	0.01

1	2	3	4	5	6	7	8	9	10
60	Pazhuvil	7.12	99	24	7.2	1.5	18	0.11	4.1
61	Perinjanam	-	460	94	33	2.9	55	0.56	42
62	Perumpilavu	-	240	34	10	1.9	51	0.44	21
63	Potta	7.38	125	36	8	3.9	14	0.19	6.3
64	Pullikanni	7.54	122	24	5.6	2.4	14	0.03	0.59
65	Punnayoor	-	113	34	11	1.5	1.4	0	0.59
66	Puthenchira	8.34	90	28	7.2	2.4	11	1.2	1.2
67	Tekkumkara	7.36	58	18	3.2	2.4	7.1	0	0.15
68	Triprayar	7.54	410	126	45	3.4	47	0.15	70
69	Thrissur	7.45	100	20	5.6	1.5	11	0	3.7
70	Wadakkancherry	7.77	126	20	6.4	0.97	13	0.27	0
71	Vellanikkara	7.66	103	24	4.8	2.9	11	0.1	0
72	Vellikulangara	6.79	61	10	3.2	0.49	8.5	0.03	7
73	Vellur	-	156	18	6.4	0.49	23	0.14	0.7
74	Velupadam	6.95	199	22	6.4	1.5	37	0.15	27
	<b>Wayanad District</b>								
1	Ambalavayal	7.57	179	34	12	0.97	30	0.08	23
2	Appapara	7.58	76	22	7.2	0.97	5.7	0.16	6
3	Begur	8.21	240	120	42	3.9	7.1	0	1.4
4	Chenad	7.82	142	48	10	5.4	2.8	0.26	13
5	Cheyyambam	8.2	330	148	30	18	40	0.29	26
6	Dasanakkara	7.83	220	62	16	5.4	28	0	6
7	Kalpetta	8.42	430	140	43	7.8	37	0.49	4.7
8	Kamblakat	7.79	179	48	10	5.4	11	0.19	31
9	Kattikulam	8.17	260	94	27	6.3	16	0.25	19
10	Kellur	7.63	210	34	10	1.9	27	0.28	44
11	Koliyadi	7.96	240	68	16	6.8	27	0.28	1.6
12	Koodal Kadavu	7.5	120	34	10	1.9	13	0	0.63
13	Koroth	7.61	86	22	7.2	0.97	7.1	0.15	1.2
14	Krishnagiri	7.59	240	78	14	10	28	0	31
15	Kunnepettah	7.87	118	46	18	0.49	7.1	0.26	0.17
16	Mambayad	7.76	116	44	14	1.9	5.7	0	0.35
17	Mananthavadi	7.4	230	46	12	3.9	28	0.39	49
18	Manjapara	7.23	163	30	6.4	3.4	13	0.12	26
19	Meppady	7.55	128	24	6.4	1.9	24	0.25	1.6
20	Minangadi	8.26	300	88	22	7.8	41	0.33	22
21	Moolankavu	7.72	340	106	23	12	45	0	64
22	Muthunga	8.04	260	70	21	4.4	40	0.23	3.5
23	Nadavayal	7.75	199	48	14	2.9	23	0.1	27
24	Nayakatti	8.07	260	74	22	4.9	33	0.51	7.9
25	Nedugarana	7.73	490	102	22	12	52	0	52
26	Nenmenikunnu	7.91	240	78	20	6.8	23	0.12	1.9
27	Noolpuzha	8.09	159	52	9.6	6.8	7.1	0.36	0
28	Padinjarattara	7.91	230	60	13	6.8	31	0.36	14
29	Panamaram	7.61	350	82	21	7.3	24	0	11
30	Perikallur	8.1	580	190	44	19	96	0.17	36
31	Perya	7.34	88	14	4	0.97	5.7	0.01	2.2
32	Pozhutana	7.29	163	46	10	4.9	16	0	20
33	Pulpally(new well)	8.17	330	122	24	15	43	0	6.7
34	Punchavayal	7.78	146	46	15	1.9	14	0	3.4

1	2	3	4	5	6	7	8	9	10
35	Sulthan Bathery	8.11	430	94	18	12	60	0.29	8.1
36	Talapuzha	7.43	119	24	6.4	1.9	13	0	5
37	Taruvana	7.53	174	42	8.8	4.9	30	0.15	14
38	Thirunelly	8.07	240	76	20	6.3	30	0.17	2.9
39	Vaduvanchal	7.39	180	48	13	3.9	18	0.04	36
40	Vallathur	8	200	64	20	3.4	17	0.05	0.77
41	Valad	7.9	156	70	25	1.9	7.1	0.02	0.62
42	Varayal	7.6	98	28	8	1.9	5.7	0	2.6
43	Vellamunda	8.03	182	62	22	1.9	14	0.07	1.5
44	Vengapalli	7.79	164	62	14	6.8	16	0.21	14
45	Vayittiri	7.58	187	48	14	3.4	18	0	14

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