केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River Development and Ganga Rejuvenation

Government of India

Report

on

AQUIFER MAPPING AND MANAGEMENT PLAN

UT of Lakshadweep, Kerala

केरल क्षेत्र, त्रिवेन्द्गम

Kerala Region, Thiruvananthapuram

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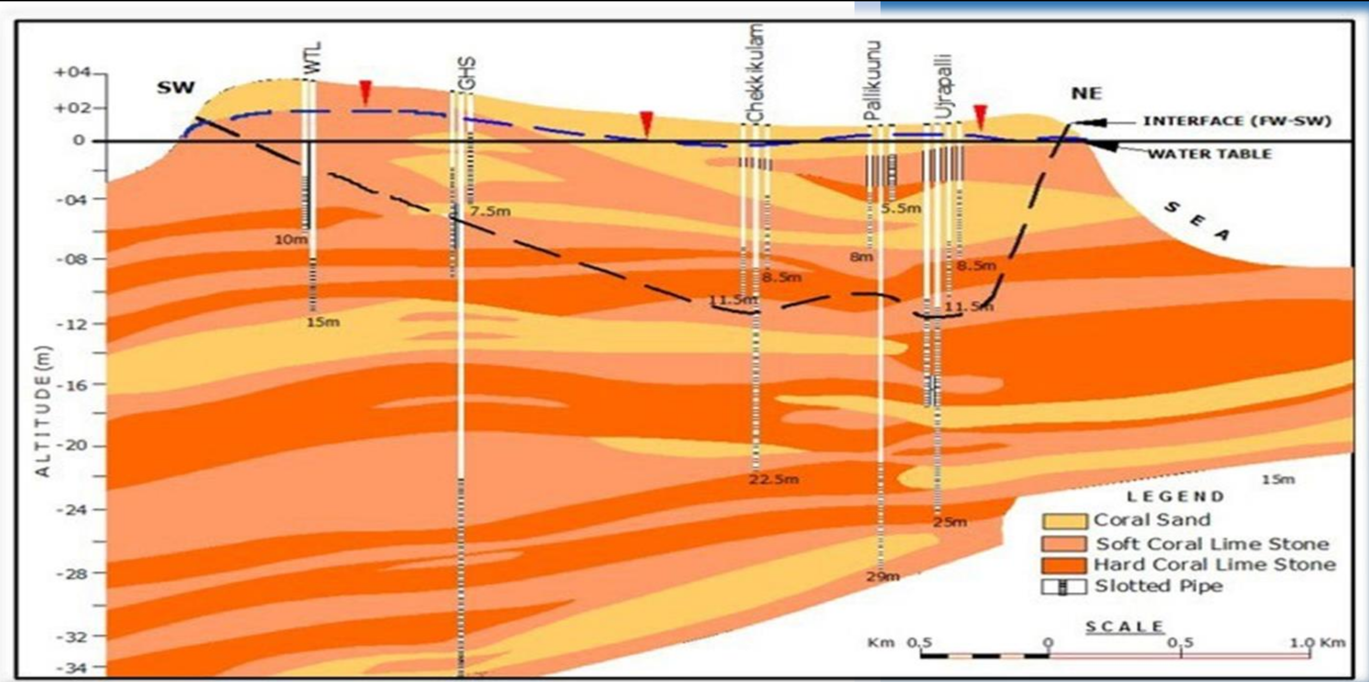
केन्द्रीय भूमिजल बोर्ड
CENTRAL GROUND WATER BOARD

AQUIFER MAPING AND MANAGEMENT PLAN: UNION TERRITORY OF LAKSHADWEEP



केरल क्षेत्र
KERALA REGION
तिरुवनन्तपुरम
THIRUVANANTHAPURAM

फरवरी २०१९
FEBRUARY 2019

AQUIFER MAPPING AND MANAGEMENT PLAN: UNION TERRITORY OF LAKSHADWEEP

K. BALAKRISHNAN, Sci D, G. SREENATH, Sci B, A.D. ANIL CHAND, AHG

भारत सरकार
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डॉ. ई. सम्पत कुमार
सदस्य (दक्षिण)
Dr. E. Sampath Kumar
Member (South)

सत्यमेव जयते

केन्द्रीय भूमि जल बोर्ड
भारत सरकार
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FOREWORD

The Lakshadweep Islands located off the western coast of India, have hydrogeological settings characteristically different from that of the mainland. These islands are almost entirely devoid of surface water resources, making ground water the only natural source of fresh water for all uses. Ground water occurs in the top few meters of the coral sands as thin lenses floating over the denser sea water and in hydraulic continuity with it in a delicate hydrodynamic equilibrium. The fresh water lens gets replenished every year through rainfall and is also influenced by tides. The absence of surplus monsoon run off narrows down the options for water management to limiting extraction to sustainable levels and enhancing water use efficiency, apart from desalination of sea water.

Increasing demands of fresh water for a growing population have put the limited ground water resources in many of the islands under increasing stress. Unsustainable extraction of ground water, mainly to cater to the needs of increasing urbanization and life style changes and improper sanitation have made the aquifers vulnerable to quality deterioration and sea water ingress, at least in some of the islands. The anticipated impact of climate change is expected to have serious implications to the fresh water resources in these low-lying tiny islands. Proper management of the precious ground water resources in these islands is of paramount importance to ensure their long-term sustainability.

The report entitled 'Aquifer Mapping and Management Plan: Union Territory of Lakshadweep' is an attempt to unravel the sub-surface Aquifer configuration and bring out the aquifer geometry, its quantity and quality. Hydrogeological characteristics of individual islands and spatial/temporal variations in water levels/ water quality have been described in detail. Strategies for management of the limited ground water resources under the limitations of island conditions for ensuring their long-term sustainability have also been recommended.

I appreciate the efforts of Sh. V. Kunhambu, Regional Director, Kerala Region, Thiruvananthapuram and his team of officers for bringing out this report. I hope, this report will be of immense use to planners, policy makers and professionals engaged in activities related to scientific management of ground water in the Union Territory of Lakshadweep. I also place in record the support rendered by the Lakshadweep PWD which was crucial for conducting the study.

31/10/18

(Dr.E.Sampath Kumar)

भारत सर्कार

GOVERNMENT OF INDIA

जल संसाधन, नदी विकास एवं गंगा जीर्णोद्धार मंत्रालय

MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

केंद्रीय भूमिजल बोर्ड, केरल क्षेत्र

CENTRAL GROUND WATER BOARD, KERALA REGION

Phone: 0471-2442191/2442175
Fax : 0471-2442191/2555026
E-mail: *rdkr-cgwb@nic.in*

KEDARAM,
Kesavadasapuram
Thiruvananthapuram
Kerala – 695 004

PREFACE

Islands are unique in many ways, having their characteristic physical, demographic and economic features. Shortage of natural resources and vulnerability to natural disasters often result in serious hydrological and water resource management problems in such islands. The threat of sea level rise due to the impact of climate change has added another dimension to the problems faced by the islands in recent years. Like many islands, Lakshadweep islands are also densely populated and pose considerable stress on the limited fresh water resources. In the absence of surface water resources, ground water is the only natural source of fresh water to cater to the drinking and domestic requirements. In recent years, rain water harvesting and desalination of sea water are being resorted for supplementing the available ground water resources.

The management strategy suitable for aquifer in the continental area is not appropriate for the tiny islands like Lakshadweep. Since surface run off is totally absent and recharge of rainfall is taking place naturally, the need for artificial recharge is ruled out. As the full requirement of fresh water in the islands cannot be met with from the limited ground water resources, water supply schemes in all islands must resort to a combination of limited ground water withdrawal, desalinated water and rainwater harvesting . The people should be educated about the danger of over exploitation of the precious resource and about the limitations of island conditions.

The report entitled 'Aquifer Mapping and Management Plan: Union Territory of Lakshadweep' is based on findings of the scientific studies carried out by Central Ground Water Board under the National Aquifer Mapping Programme during the period between 2014-2017, supplemented by the data from LPWD . It attempts to characterize the hydrogeology of the aquifers and the quality of ground water using the data generated through such studies, with a view to suggest suitable management plans to ensure the long term sustainability of the limited ground water resources in the islands. The report has been placed before the U.T level coordination committee of NAQUIM on 23.3 2018 and finalised accordingly.

I sincerely acknowledge the guidance and support received from Sh.K.C.Naik, Chairman and Dr.E.Sampath Kumar, Member (South), Central Ground Water Board, Faridabad during the course of study and preparation of the report. The support and co-operation from the Lakshadweep Public Works Department (LPWD) is sincerely acknowledged. The efforts of Sh.K.Balakrishnan, Scientist 'D' in supervising the study and efforts of Sh.G.Sreenath, Scientist 'B'and Late Sh.Anil Chand, Asstt,.Hydrogeologist are gratefully acknowledged. Help and co-operation received from the officers and staff of Central Ground Water Board, Kerala Region is also gratefully acknowledged.

I am hopeful that planners, policy makers and professionals in the field of ground water will find this report useful for a better understanding of the delicate and fragile ground water regime in Lakshadweep Islands and in finding ways and means to ensure their long-term sustainability.

V.Kunhambu

Regional Director

Thiruvananthapuram

31.10.2018

1. INTRODUCTION

Oceanic islands have been divided in to small and large Islands depending on the size and their hydrological set up. Large islands have surface drainage systems and their hydrogeology and other features are similar to that of the mainland, whereas the hydrogeological environment of small islands is quite different. It is very difficult to draw a clear line differentiating the small islands from the larger ones by any discrete parameter or size factor. However, from water resources point of view, the presence or otherwise of a perennial surface water system is considered a factor good enough to differentiate between the two. The absence of surface drainage makes the small islands quite distinct from other oceanic islands. These oceanic islands are very small in areal extent and ground water is the only perennial source of freshwater.

The Indian peninsula is girdled by about 2500 islands, of which about 1300, including 200 inhabited islands, belong to the neighbouring Maldives. Indian Territory includes more than 600 oceanic islands falling in two major groups viz. the Andaman and Nicobar Islands in the Bay of Bengal and the Lakshadweep group of islands in the Arabian Sea. The sea between the Indian coast and Lakshadweep islands is known as Lakshadweep Sea after these islands.

1.1 Location and extent

The Union Territory of Lakshadweep islands are scattered in the Arabian Sea between north latitude 8^{0} 00' and 12^{0} 13'N and east longitude 71^{0} 00' and 74^{0} 00'E. The Inhabited islands, Chetlat, Kiltan and Kadmat are closely spaced and are on the northern part of the archipelago, whereas Kalpeni is on the east central part of the group and the Minicoy Island located in the southernmost part of the group and far away from the other islands. The islands Agatti, Kavaratti, Minicoy and Androth are bigger in size compared to others. The Bitra island is the smallest one and the residence of tourist staff. The notional map showing the locations of inhabited islands is given in Fig.1.

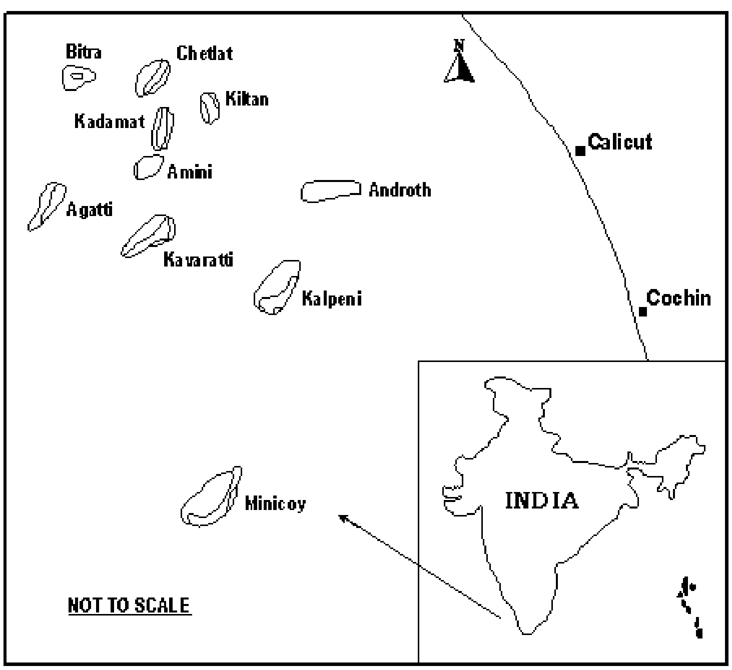


Fig. 1.1. Location of inhabited islands of Lakshadweep

The Lakshadweep group consists of a string of 36 tiny islands of which only ten islands are inhabited. These islands are very tiny, each having an area varying from 0.1 to 4.8 sq. km. The rest comprise seventeen uninhabited islands, four newly formed islets, and five submerged reefs. The total area of these islands is 32 sq.km. Apart from the ten inhabited islands, Bangaram, the only island open to international tourists, is seasonally inhabited. Though the land area is limited, Lakshadweep is one of the country's largest territories considering its lagoon area of about 4200 sq.km, territorial waters of 20000 sq km. and an 'Exclusive Economic Zone' of about 400,000 sq.km (UNI, 2002). The details of area of inhabited islands, reefs and submerged sand banks are given in Tables 1.1a to 1.1c.

Table 1.1a: Area of inhabited Islands of Lakshadweep

Sl No	Name	Area (sq km.)		Total	Location	
		Island	Lagoon		Latitude	Longitude
1	Minicoy	4.80	30.60	35.40	8° 16´	73° 03´
2	Kalpeni	2.79	25.60	28.20	10° 04´	73° 36´
3	Andrott	4.90	-	4.90	10° 48´.5	73° 40´
4	Agatti	3.84	17.50	20.10	10° 51´	72° 11´
5	Kavaratti	4.22	4.96	8.66	10° 35´.5	72° 30´
6	Amini	2.60	1.50	4.10	11° 07´	72° 44´
7	Kadmat	3.20	37.50	40.71	11° 13´	72° 46´
8	Kiltan	2.20	1.76	3.96	11° 29´	73° 00´
9	Chetlat	1.40	1.60	3.00	11° 41´	72° 41´
10	Bitra	0.10	45.61	45.71	11° 35´.5	72° 09´.5

Table 1.1b: Area of reefs in U.T of Lakshadweep

Sl No	Name	Area (sq km.)		Total	Location	
		land	Lagoon		Latitude	Longitude
1	Beliapani	-	57.46`	57.46	12°17´	71°52´
2	Cheriapani	-	172.59	172.59	11°49´	71°43´´
3	Perumalpar	-	83.02	83.02	11°7´	71°59´

Table 1.1c: Area of submerged sand banks in U.T of Lakshadweep

Sl No	Name	Area (sq km.)		Total	Location	
		land	Lagoon		Latitude	Longitude
1	Bassas de Pedro	-	2474.33	2474.33	12° 30´	72° 14´
2	Sesostris	-	388.53	388.53	13° 00´	71° 51
3	Corahdiv	-	339.45	339.45	13° 34´	72° 04´
4	Amini-Pitti	-	155.09	155.09	10° 44´	72° 28´
5	Elikalpeni	-	95.91	95.91	11° 7´	73° 59´
6	Investigator Bank	-	141.78	141.78	8° 33´	73° 25´

The entire Lakshadweep group of islands lies on the northern edge of the 2500 km long North-South aligned submarine Lakshadweep-Chagos ridge. The Lakshadweep Sea separates this ridge from the west coast of India. The ridge rises from a depth of 2000-2700 m along the eastern side and 400 m along the western side. The eastern flanks of this ridge appear to be steeper compared to the western portion. It has a number of gaps, the prominent being the nine degree channel. Generally in the islands, the atolls are widest on the southwestern side. The growth of the reef might have been facilitated by the continuous supply of nutrients. Echo-sounding on the reefs of these atolls show that the first break in the profile of the reefs occurs at a depth of about 4-8 m, which extends to about 12 m on the southwest windward reef representing a wave-cut platform of recent origin. The depth falls off steeply to about 50 m and in several islands before the depth is reached, well-marked submerged terraces are observed at varying depths. It is considered that these terraces were cut during the Pleistocene period when the sea level was lower.

1.2 Administrative set up

The Lakshadweep Islands constitute a uni-district territory with 4 *Tehsils* (Amini, Andrott, Kavaratti & Minicoy) and 9 Sub-divisions (Agatti, Amini, Andrott, Chetlat (Bitra), Kadmat, Kalpeni, Kavaratti, Kiltan & Minicoy). There are 5 Community Development Blocks namely
Amini - (Amini & Kadmat), Andrott - (Andrott & Kalpeni), Kavaratti - (Agatti & Kavaratti), Kiltan - (Bitra, Chetlat & Kiltan) & Minicoy.

The Island Councils and Pradesh Councils were originally set up under the Lakshadweep Island Councils Regulation, 1988, and the Lakshadweep (Administration) Regulation, 1988. These have been repealed under Section 88 of Lakshadweep Panchayat Regulation,1994, promulgated by the President of India on 23rd April 1994 consequent on the Constitution (73rd amendment) Act, 1992. The Island Councils came to an end after the expiry of its terms on 5.4.1995. According to the new Panchayat Regulation, there will be a two tier system of Panchayats in Lakshadweep, consisting of Dweep Panchayats and District Panchayat and no intermediary panchayat in this territory. Each of the ten inhabited Islands will have a *Dweep Panchayat*. The District Panchayat has its Headquarter at Kavaratti.

1.3 Population

According to the Survey of India, the geographical area of Lakshadweep is 32 sq. km, whereas as per revenue records the area is only 28.5 sq km., which represents only the land use area. As per the 2011 census, the total population is 64473, with 33123 males and 31350 females. The density of population is high and stands at 2015 per sq km. The population of the islands as per 2011 census is given in Table 1.2. Percentage of decadal growth of population in U.T. of Lakshadweep is given in Fig 1.2 and Population growth of Lakshadweep (1901-2011) is given in Fig 1.3

Table: 1.2. Island-wise area and population (2011 Census)

Sl. No	Island	Population (2011			Island area (Sq.Km)	Population Density (No./Sq.km)
		Total	Male	Female		
1	Agatti	7566	3894	3672	2.71	2792
2	Amini	7661	3829	3832	2.59	2958
3	Androth	11191	5500	5691	4.84	2312
4	Bangaram	45	44	1	0.58	78
5	Bitra	271	154	117	0.1	2710
6	Chetlat	2347	1172	1175	1.04	2257
7	Kadmat	5404	2690	2714	3.12	1732
8	Kalpeni	4419	2324	2095	2.28	1938
9	Kavaratti	11221	6182	5039	3.63	3091
10	Kiltan	3946	2012	1934	2.59	1524
11	Minicoy	10447	5366	5081	4.37	2391

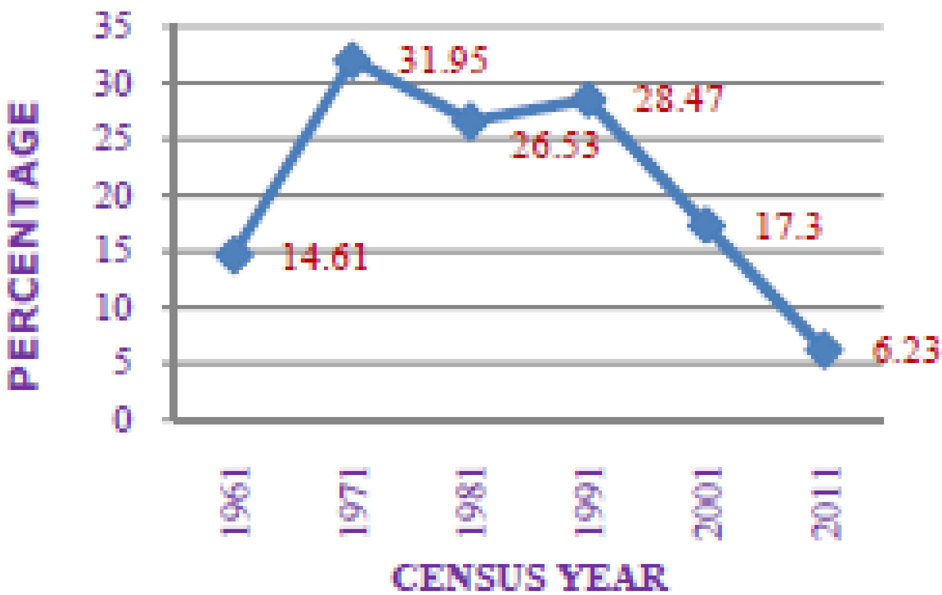


Fig 1.2 Percentage of decadal growth of population in U.T. of lakshadweep

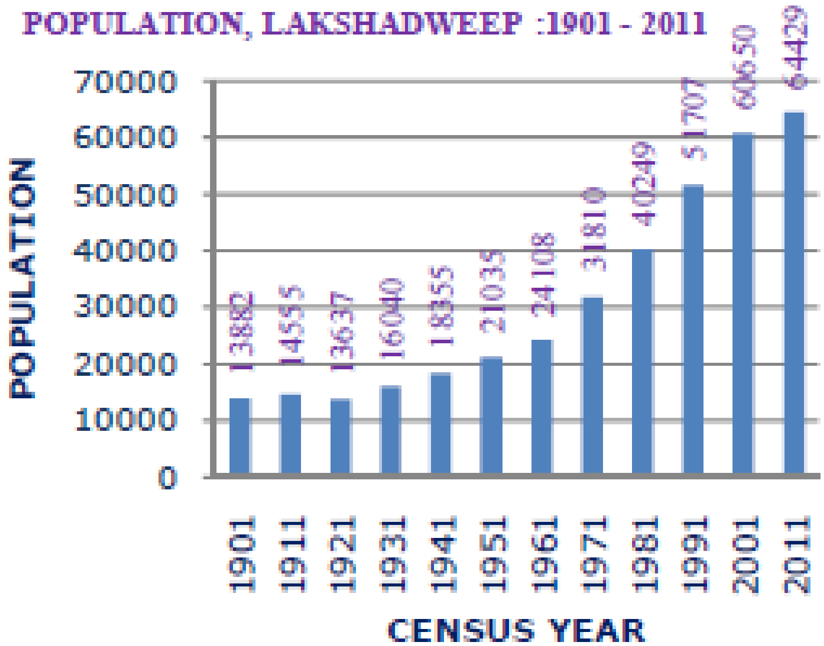


Fig 1.3 Population growth of Lakshadweep (1901-2011)

1.4 Climate

Lying well within the tropics and extending to the equatorial belt, these islands have a tropical humid, warm and generally pleasant climate, becoming more equatorial in the southern islands of the territory. The climate is equable and no distinct and well-marked seasons are experienced. Southwest monsoon period is the chief rainy season which lasts from late May to early October. The mean daily temperatures ranges between 22 to 33º C. while the humidity ranges between 72 to 85%.

1.4.1 Rainfall

Rainfall distribution, including its quantity and its spatial and temporal variation and evapotranspiration are the major components controlling the availability of freshwater resources. The temporal variation is usually high in small islands whereas the spatial variation is a function of the islands physiography. The inter-annual variability of rainfall is often high in Lakshadweep islands. The normal rainfall distribution of the islands is given in Table 1.3. Monthly average rainfall (2005-2015), long term rainfall trend in U.T. of Lakshadweep and percentage departure from normal rainfall in Amini island are given in Fig 1.4, Fig 1.5 and Fig 1.6 respectively.

Table1.3 Distribution of Normal Rain fall in Lakshadweep Islands

Station	No of Years		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Minicoy	50	A	43.2	22.3	20.8	51.3	179.6	309	238	209	158.2	179	143	85.9	1640
		B	2.6	1.3	1.4	2.9	8.7	17.4	13.9	12.4	10.1	10.6	8.1	4.7	94.1
Amini	50	A	20.6	2.0	4.3	25.4	125.2	381	312	217	150	141	85.6	40.9	1504
		B	1.3	0.3	0.3	1.4	5.2	17.3	16.5	12.3	10.2	8.4	5.0	2.2	80.4

(A) Normal rainfall in mm (B) Average no. of rainy days (days with rain more than 2.5mm)

Table 1.4a Rainfall Data of Minicoy Island (in mm)

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2002	20.5	29	12.9	39.8	138.7	367.5	55.8	89.1	20.3	214.9	81.9	52.6	1123
2003	17.7	51.3	106.5	50	285.4	327.1	263.8	63.3	54.1	94.2	330	17.2	1660.6
2004	24.5	3.4	4.5	18.6	215.7	228.7	402.7	165.4	208.9	361	106.2	5.9	1745.5
2005	30.4	0.7	0	39.4	39.2	409.1	247.9	17.4	221.3	123.5	206.8	13.1	1348.8
2006	50.6	0	68.9	0	400	23.6	233.7	172.4	340.3	198.2			
2007							111.3	92.7	228.5	83.7	22.4	52.2	
2008	2.2	46.8	129.5	4.1	41.7	172.5	202.9	212	38.1	115.9	56.6	74.3	1096.6
2009	6.4	4.9	0	19.3	138.6	174.6	110.8	98.9	68.4	44.2	124.3	73.5	863.9
2010	9.7	0	3.2	93.3	64.1	204.6	154	178.7	122.2	78.9	113.6	92.7	1115
2011	7.4	6.4	5.2	188.3	91.6	54.3	169	87.5	142.7	58.9	107.8	41.3	960.4
2012	32.4	0	0	65.3	35.9	189.4	103.9	147.5	113.7	127	19.8	12	846.9
2013	72	5	39.7	0	93.1	420.8	219.4	263.1	202.8	52	96	46	1509.9
2014	12.6	59.2	17.2	147.8	13.1	121	99	199	140.3	121.2	55	84.9	1070.3
2015	0	0	0	82.5	102.3	227.5	280.1	197.1	207	101.5	308.3	196.8	1703.1
2016	45	43	0	6	173.2	171.1	181.4	132	48.8	74.6	33.6	6	914.7
2017	52.6	1.8	142	6.4	57.8	100	201.6	179.2	333.1	139.8	93.3	325	1632.6

Table 1.4b. Rain fall Data of Kalpeni island in mm)

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2010	0	0	0	0	84.4	386.2	401.2	347.3	165.4	186.8	240.9	56.4	1868.6
2011	0		1.2	8.6	106.2	245.8	447.4	319.3	484.6	132	172	0	1917.1
2012	6.4	6.4	22.6	8	0	302.9	269	390.7	141.7	145.8	18.4	23	1334.9
2013	18	79.4	22.6	23.2	98.8	467.8	290.6	196.9	338.8	99.9	114.3	25.2	1775.5
2014	10.2	0	0	2.2	129.8	186	190.7	708.6	159.2	227.8	110.2	53.6	1778.3
2015	5.6	0	10.2	72.6	130.8	373.8	219.1	264.6	131.4	190.8	237.5	142.9	1779.3
2016	17.8	1.4	0	0	202.4	420.4	462.5	104.2	80.4	24.4	69.4	53	1435.9
2017	9.4	8.2	52	0	215.6	480.8	152.2	314.8	213	178.4	68.6	72.4	1765.4

Table 1.4c. Rain fall data of Amini Island (in mm)

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2005	1.2	11.4	0	35.2	70	156.6	364.2	126.6	236	75.2	106.4	7.2	1190
2006	11	0	19.4	0	458.8	245.2	93	9.2	323.1	58.5	40.2	0	1258.4
2007	8.6	9.2	0	0	206.8	546.8	386.4	282.1	270	260	91	73	2133.9
2008	0	0	54.6	0	49.3	333.3	412.5	178.45	95.1	269.9	22.3	189.6	1605.05
2009	0	0	0	0	56.1	290.3	340.8	286.4	152.8	76.8	150.4	98	1451.6
2010	52	0	0	27.4	101.6	276	299.2	302.8	71.4	241.6	128.2	33.6	1533.8
2011	0	0	0	54.8	68.8	102.2	188.4	176.2	167.8	125	50.8	2.4	936.4
2012	12.4	0	0	25	0	304.6	140.8	306.6	88.8	176.5	10.6	0	1065.3
2013	0	22.2	0	0	76.4	437.3		.	.	55.8	110.4	0	
2014	62.5	0	0	0	107.2	129.6	59.6	271.3	74.9	183.4	91.6	99.2	1079.3
2015	0	0	3.8	48.8	81.8	285.4	138.4	147.8	105	133.4	205.6	144.2	1294.2
2016	53	0	0	0	16	263.1	139	55.1	0	45.3	94.8	0	666.3
2017	0	0	0	40	81.6	303.2	113.4	247.6	188.2	68	74	120	1236

Table 1.4d. Rain fall data of of Androth Island (in mm)

Year	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
2009	0	0	0	5	174	297.3	372.2	274.4	167.6	157.3	253	151.2	1852
2010	6.4	0	0	43.4	108.6	523.2	571	478.4	184	279.2	156	85.4	2435.6
2011	0	0	0.6	111.6	146.8	448.4	477.4	321.6	239.4	334.8	130.2	20.2	2231
2012	1.8	0	0	54	10.8	445.2	233.4	481.9	212.9	125.9	73.2	88.6	1727.7
2013	0	70.8	42.2	14	89.4	717	388.6	183	35.4	142.8	92	10.2	1785.4
2014	0	0	0	13	172.6	128.4	281.8	351.9	196.8	166.4	54.8	28	1393.7
2015	0	0	0	37.6	250.8	349.2	446.9	108.2	115.8	147.9	201.7	81.1	1739.2
2016	20.8	0	0	0	31.2	339.7	410	109.7	145	58.8	5.6	120.4	1241.2
2017	1.2	0	44.2	0.8	206.4	488.8	163.9	433.2	198.7	144.2	66.6	154.2	1902.2

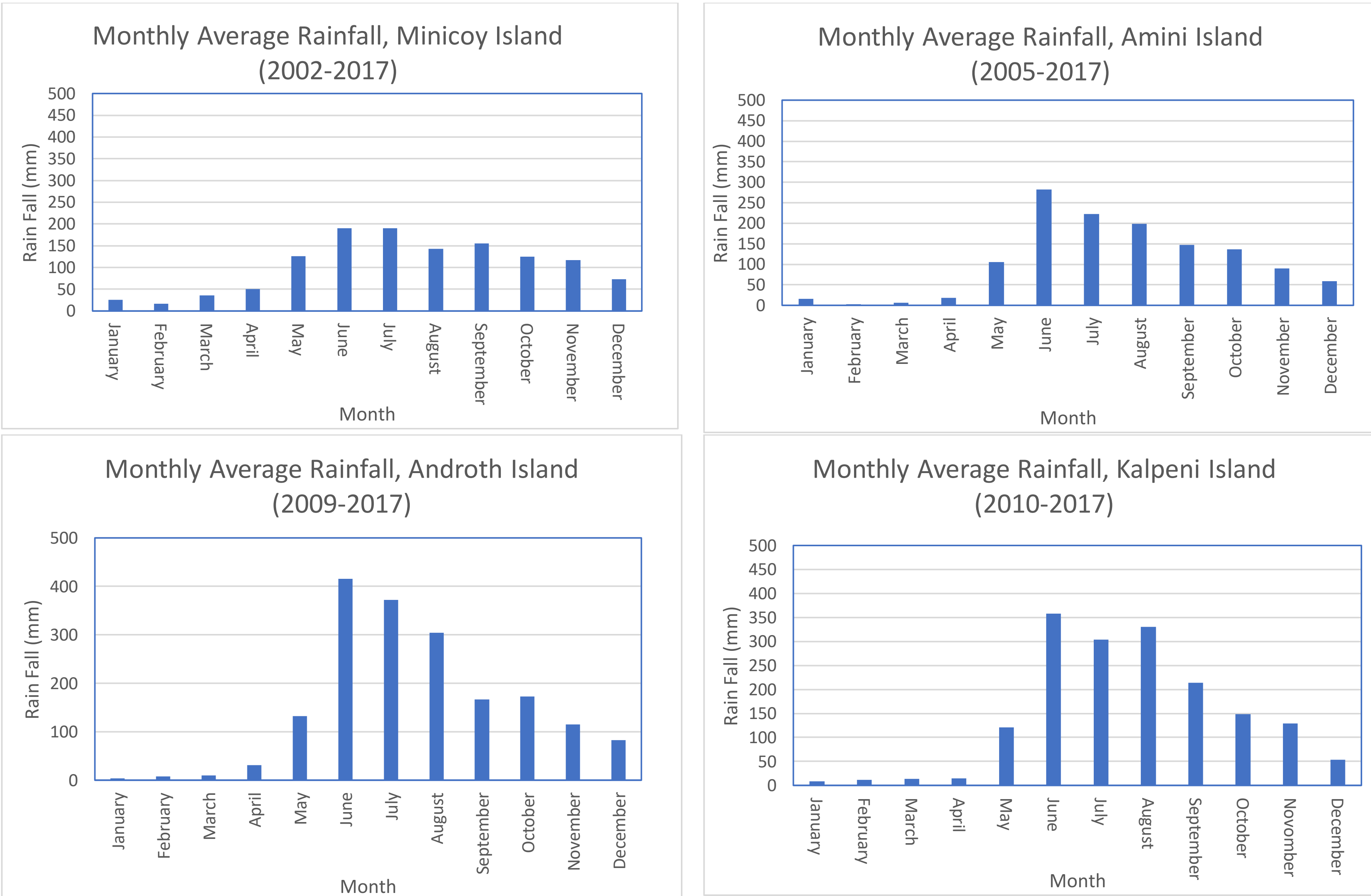


Fig 1.4 Monthly average rainfall

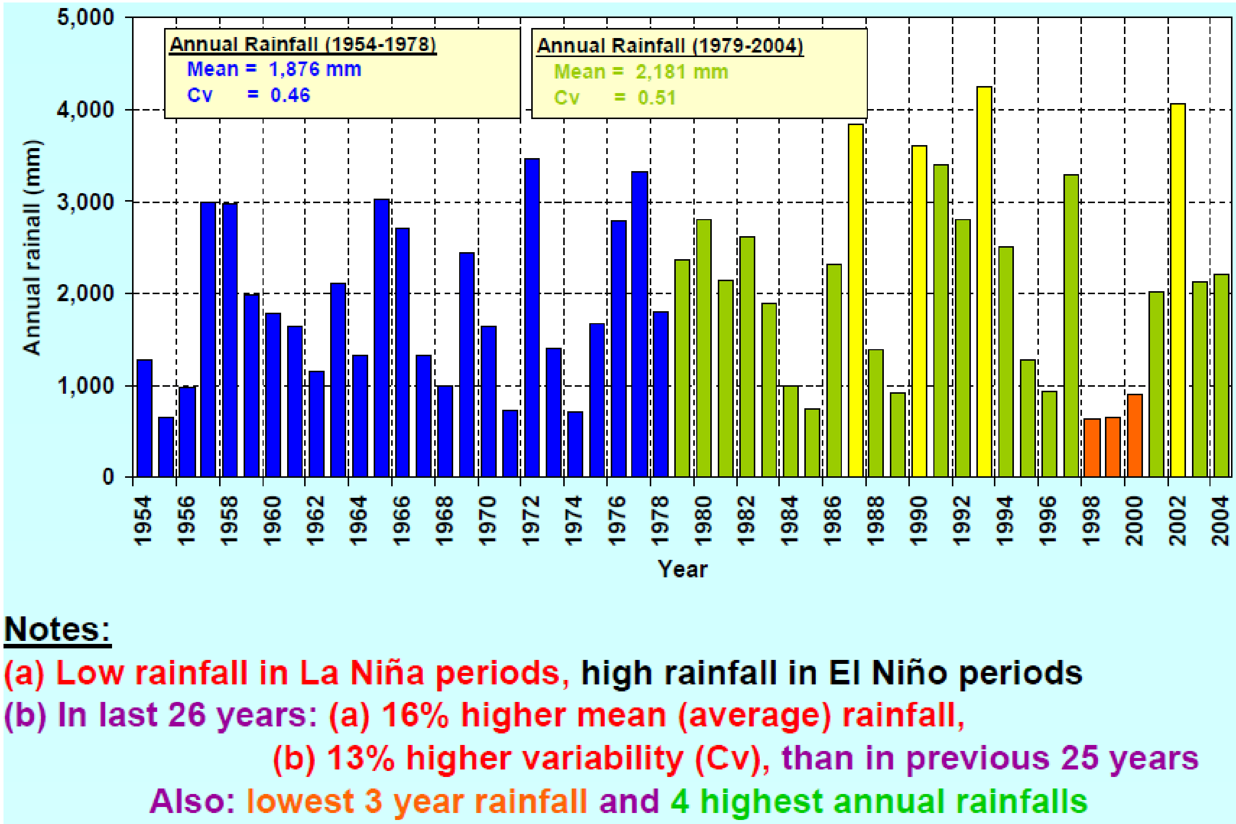


Fig 1.5 Long term rainfall trend in U.T. of Lakshadweep

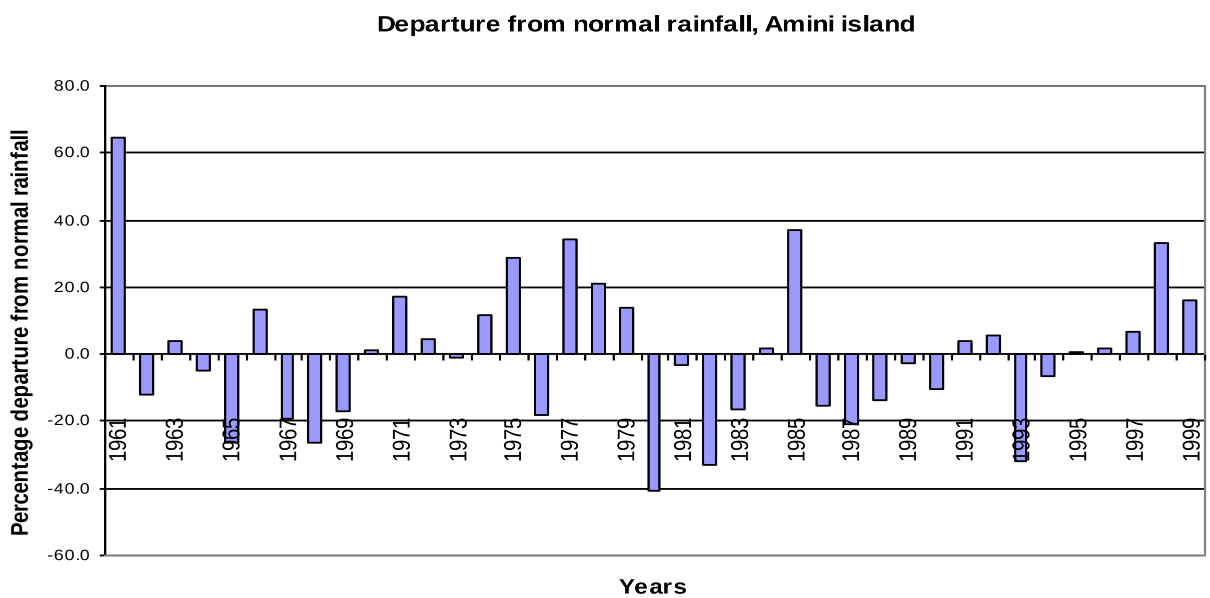


Fig 1.6 percentage departure from normal rainfall

1.4.2 Humidity: The Humidity is high throughout the year and is generally higher in the morning hours compared to the evening hours. It is lower during January to April when it is between 75 and 78% in the morning hours and 66 to 69% in the evening hours. It is higher during June to August when it ranges from 85 to 87% in the morning hours and 83 to 86% in the evening hours.

1.4.3 Temperature: April and May months are the hottest with the mean minimum and minimum temperatures of 26.8$_o$C. and 33.1$_o$C respectively. December and January are the coldest months with the mean minimum and maximum temperatures of 24$_o$C and 31.1$_o$C respectively.

1.4.4 Evapotranspiration: has a vital role on the hydrological cycle of tropical small islands. This is very high and most of the months except in high rainfall season it exceed the rainfall making the water surplus on the negative side.

1.4.5 Special weather phenomena: A few cyclonic depressions and storms, which form in the south Arabian Sea during April and May, affect the weather over the territory. During the post monsoon months of October to December also, a few of such systems originating in the Bay of Bengal and travelling westwards emerge into the south Arabian sea, and occasionally affect these islands. In association with these, strong winds and heavy rains are common. The cyclonic storms are believed to be responsible for the deposition of coral debris around the islands forming coral beach and the lagoons.

1.5 Soils

Most of the islands of Lakshadweep have a soil layer overlying coral limestone. The soils are mainly derived from coral limestone and include coral sands, lagoonal sands and mud. From a ground water resources perspective, the relevant soil characteristics are: the rate of infiltration, the thickness and the moisture contents at both field capacity and wilting point. The soils over most of the island are highly permeable and allow rainfall to readily infiltrate, with the result that surface run-off does not occur except in local areas of compacted soils. In some areas of the islands of Lakshadweep, such as along the coast and around the lagoon, the soils are far less permeable and ponded water is often found after rainfall. These less permeable soils cover a small proportion only of the islands and it can reasonably be assumed from a water resources viewpoint that surface runoff into the sea or lagoon is nil.

1.6 Vegetation

From a water balance viewpoint, the vegetation in Lakshadweep Islands can be classified as either shallow rooted or deep rooted. The shallow rooted vegetation which includes grasses, crops and shrubs obtain their moisture requirements from the soil moisture zone. The deep rooted vegetation consists of those trees whose roots can, where conditions are favourable, penetrate below the soil moisture zone and through the unsaturated zone to the water table. Coconut trees are a typical example of deep rooted vegetation in the islands of Lakshadweep. In relatively shallow areas, coconut trees typically have some roots within the soil moisture zone and some which penetrate to the water table.

The significance of roots which can reach the water table is that transpiration can occur directly from the freshwater lens, even during drought periods. Vegetation of this type is referred to as phreatophytes and is common on coral atolls where the depth to the water table is typically 2 to 3 m. below ground level. Coconut trees have been reported to extend their roots to a depth of at least 5.5 m. There is no direct evidence to substantiate the rooting depth of coconut trees in Lakshadweep islands but it could reasonably be assumed that a proportion of the roots of coconut trees growing on areas of the islands where the depth to water table is 5 m or less can reach the water table.

1.7. Studies Carried out by Central Ground Water Board

- Hydrogeological studies by Central Ground Water Board in Lakshadweep Islands dates back to 1978, when a reconnaissance investigation on the ground water resources of the Islands was carried out.
- In 1987, scientific investigations were taken up by the Board in Kavaratti Island to study the feasibility of water supply schemes as per directions of the Hon'ble High Court of Kerala. Based on detailed studies, it was suggested that extraction of large quantities of ground water from point sources was not feasible in view of the risk of up coning of saline water.
- All the inhabited islands except Bitra (0.1 sq.km) have been studied by Central Ground Water Board through systematic hydrogeological surveys and subsequently by micro level studies.
- Ground water exploration was carried out at five locations in Kavaratti island down to the depth of 30 m below ground level through construction of zone wells tapping different aquifer zones at each site.
- Central Ground Water Board has also taken up implementation of three demonstrative rainwater harvesting schemes in Kavaratti Island through the Lakshadweep PWD under the Central Sector Scheme to popularize cost-effective techniques for water harvesting suitable for island conditions.
- As part of the IEC activities of the Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India, U.T Level Painting Competitions on Water Conservation for school students are being organized in U.T of Lakshadweep since 2012.
- Detailed mapping of aquifers of nine islands of the U.T of Lakshadweep is being taken up as part of the National Aquifer Mapping Programme of the Board during the XII Plan. This activity envisages delineation and characterization of aquifer zones and formulation of strategies for sustainable development of ground water for the islands.
- A U.T level workshop on Water Management for Sustainable Development was held at Kavaratti under the '*Hamara Jal, Hamara Jeevan'* campaign of Government of India during January 2015.
- A number of reports have been published on various aspects of ground water resources in Lakshadweep Islands based on the studies, as listed below:
- A preliminary note on the ground water resources of Union Territory of Laccadives, Minicoy and Aminidivi. (1978).
- Hydrogeological and Hydrochemical studies in Kavaratti Island, Union Territory of Lakshadweep. (1994).
- Ground water Resources and Management in the Union Territory of Lakshadweep (Kavaratti, Agatti and Amini Islands), 1994.
- Ground water Resources and Management in the Union Territory of Lakshadweep (Androth and Minicoy Islands), 1995.
- Ground water Resources and Management in the Union Territory of Lakshadweep (1997).
- Impact of ground water development and tidal influence on freshwater lens of Kavaratti Island –FSP 1997-98. (2004).
- Ground water exploration in the Union Territory of Lakshadweep (2001).
- Basic data report of Exploratory wells drilled in Kavaratti Island of Lakshadweep. (2001).
- Hydrogeological Atlas of Lakshadweep Islands. (2004).
- Report on the Dynamic Ground Water Resources in Lakshadweep Islands, U.T of Lakshadweep as in March 2009 (2011), March 2011 (2014)
- Report on the Dynamic Ground Water Resources in Lakshadweep Islands, U.T of Lakshadweep as in March 2013 (2017)

2. GEOMORPHOLOGY

The Lakshadweep Ridge, approximately 800 km long and 170 km wide, is a fascinating and conspicuous feature of Arabian Sea. It is inclined southerly (1/715-gradient) with a narrow strip (10 km) near Goa and widens to 170 km west of Cape Comorin, This domain is distinct with scores of islands, banks, and shoals, topographic rises, and mounts, inter mount valleys and sea knolls.

Notable feature of the individual island of the ridge is that the relief of all the islands above MSL is uniformly low (4-5 m). However, height of the submerged banks and shoals varies considerably. Based on the structural features, trends of the individual islands, geophysical anomalies and related faults/ dislocations, Lakshadweep islands are classified into northern, central and southern blocks. All the important islands fall in the central block separated by Bassas de Pedro fracture in the north and a NNE- SSW trending valley in the south. The northern block is dominated by coral banks and southern by few islands and small banks.

The islands are flat, rarely rising more than two meters, and consist of fine coral sand and boulders compacted into sandstone. Most atolls have a northeast- southwest orientation with an island on the east, a broad well developed reef on the west and a lagoon in between. All Lakshadweep islands are of coral origin and some of them like Minicoy, Kalpeni, Kadmat, Kiltan and Chetlat are typical atolls. The coral reefs of the islands are mainly atolls except one platform reef of Androth.

The islands on these atolls are invariably situated on the eastern reef margin except Bangaram and Cheriyakara which lie in the centre of the lagoon. On Bitra, the island is on the northern edge of the lagoon. The atolls show various stages of development of the islands, the reefs at Cheriya Panniyam, Perumalpar and Suheli represent the earliest stage while Kalpeni, Kavaratti, Agatti and Kadmat are in intermediate stage and Chetlat and Kiltan are in an advanced or mature stage of development. The development and growth of the islands on eastern reef margin has been controlled by a number of factors. The cyclones from the east have piled up coral debris on the eastern reef while the very high waves generated annually during the southwest monsoon have pounded the reef and broken this into coarse and subsequently to fine sediments which was then transported and deposited on the eastern side behind the coral boulders and pebbles on the eastern reef.

The Lakshadweep islands are of coral origin which developed around volcanic peaks. It seems that they first rose to the surface in the form of shallow oval basins and under the protection of the reef, the eastern rim gradually developing towards the center, forming the islands. The process of development towards the center of the lagoon is still going on in some of the islands. Identical in structure and formation, the islands rise no more than 5 m above MSL and are of varied size. The islands are typical atolls, elongated reefs of organic limestone that are partly, intermittently or completely covered by water. They form a ring around a shallow basin of water, the lagoon. The reef varies in width at their surface, reaching a maximum width between lagoon and ocean of over 5 km.

Geomorphologically, the islands have lagoonal beaches, storm beaches, beach ridges, sand dunes and hinterlands. The islands are generally flat with localized depressions and sand mounds, which are largely man-made.

3. GEOLOGICAL SETTING

There are no conclusive theories about the formation of these coral atolls. The most accepted theory is the one proposed by the English Evolutionist Sir Charles Darwin. He concluded in 1842 that the subsidence of a volcanic island resulted in the formation of a fringing reef and the continual subsidence allowed this to grow upwards.

The islands are of coral origin which developed around volcanic peaks. It seems that they first rose to the surface in the form of shallow oval basins and under the protection of the reef, with the eastern rim gradually developing towards the center, forming the islands. The process of development towards the center of the lagoon is still going on in some of the islands. Identical in structure and formation, the islands rise no more than 5 m above MSL and are of varied size. The islands are typical atolls, elongated reefs of organic limestone that are partly, intermittently or completely covered by water. They form a ring around a shallow basin of water, the lagoon. The reef varies in width at their surface with a maximum width between lagoon and ocean of over 5 km.

Beneath a thin layer of vegetal humus there is fine coral sand extending over the surface of all the islands. Below this is a compact crust of fine conglomerate looking like coarse oolitic limestone with embedded bits and shell, and beneath this crust there is another layer of sand.

The Lakshadweep Group of atolls lie on the prominent N-S Lakshadweep ridge and the alignment appears to be a continuation of the Aravalli strike of Rajasthan. Based on this, many geologists have speculated that the islands are a buried continuation of the Aravalli mountain chain and that the Deccan Traps have been faulted down in the sea along the West coast of India. A great thickness of traps and associated sediments occur to the west. Based on seismic study (Ermenko and Datta, 1968), it is inferred that the Indian shield (continental crust) extends as far as to the Lakshadweep. The transition zone separating the continental and oceanic crust occurs to the west of the Lakshadweep. Further, using seismic refraction measurements (Francis and Shor, 1966), it was postulated that 1.5 km to 2 km thick volcanic rocks lie below the sea floor on the Lakshadweep ridge.

The islands are composed mainly of coral reefs and material derived from them. The litho-units identified include calcareous sand of the beach facies, strand line facies, dune facies and anthropogenically modified varieties identified on the basis of base morphometric units, grain size and other physical characteristics. Coralline grit and gritty conglomerates, coralline limestones and shingles are of submerged reef facies. While the lagoonal beach is made up of fine to medium grade calcareous sand, the berm portions consist of slightly coarser sand and the dune portion, coarse, unsorted sand. The interior parts of the island have anthropogenically reworked calcareous sand. The sand ridge portions consist of assorted sand, which is somewhat compact. The coral limestone, gritty limestone and gritty conglomerates are exposed on the beaches in the form of wave-cut terraces. The sediments of the lagoon consist chiefly of gravel and sand-sized material, composed mainly of various types of dead corals produced by the breaking up of reefs by the waves.

4. GEOPHYSICAL INVESTIGATION

4.1. Geophysical investigations in Amini

Among the geophysical methods, resistivity method (Vertical Electrical Sounding) was used to know the thickness of different geoelectrical layers. At 16 locations (shown in figure 5.1), vertical electrical sounding (VES) studies with Schlumberger array were carried out for a spreading of 40–60 m. The field data was plotted on log-log sheet (figure 9). All the field curves represent 3–4 layers geoelectric sections. 'Q' type curves (ρ)are seen in the VES sites which are nearer to coast and 'HQ' type curves ρ1>ρ2<ρ31>ρ>ρcentre of the island. The apparent resistivity values show a decreasing trend with depth. Typical outputs of interpreted VES data are shown in figure 5.2. The details of sub-surface lithology, as observed from the nearby existing dug wells and the water quality of the surrounding wells have also considered during the interpretation of the VES data. The results show three to four layers situation (table 5.1). The table shows top coral sandy soil having a resistivity range of 36.70–1084.10 Ohm-m. The second layer comprising of fresh groundwater shows a resistivity range of 20.0–69.0 Ohm-m. The third and fourth layers at few places comprise of brackish water shown minimum resistivity of 2.6 Ohm-m. The ranges of resistivity values of the subsurface strata are as follows: 36–1084 Ohm-m Top sandy soil with corals 20–69 Om Hard coral limestone with cavities 15–123 Ohm-m Loose coral sand < 15 Ohm-m Loose sand with brackish water Using the true resistivities at different depths (1.0, 2.5, 5.0, 10.0, 20.0, and 30.0 m) contours are drawn. The true resistivity varies from 36.70 to 1084.10 Ohm-m at 1.0 m depth and from 20.0 to 802.0 Ohm-m, 24.50 to 94.60 Ohm-m, 4.10 to 122.60 Ohm-m, 2.60 to 65.10 Ohm-m, 2.60 to 37.90 Ohm-m at depths 2.5, 5.0, 10.0, 20.0, 30.0 m respectively. The contours show that at 5.0 m depth the true resistivity varied between 50 and 100 Ohm-m, whereas at 10.0 m depth resistivity decreased up to 5.0–15.0 Ohm-m in the eastern part of the island.

The geophysical survey was conducted using an ABEM terrameter from ABEM Instrument's AB, Sweden, with a 5m electrode spacing and a maximum AB spacing of 120 m. Measurements were taken with Wenner-Schlumberger array (a=5-30m; n=1-3) which has good signal-noise ratio (Dahlin & Zhou, 2004) and was sufficiently sensitive to the geometrical features of sea water intrusion in the coastal groundwater (Comte &Banton, 2007, Comte et al., 2010, Lambert Join et al., 2011). The maximum investigation depth achievable with this protocol was 40m below ground level. Measured resistivity were spatially extrapolated using MAPINFO.

The first geoelectric layer resistivity was varying in the range of 20-5483 ohm-m, and the thickness of this geoelectric layer is varying in the range of 0.4-3.4 m. The second geoelectric layer resistivity was varying in the range of 4-788 ohm-m, and the thickness of this geoelectric layer is varying in the range of 0.8-8.3 m., at about 1 VES (Amini10) the geoelectric layer was extending in nature. The third geoelectric layer resistivity was varying in the range of 1-122 ohm-m and the thickness of this geoelectric layer is varying in the range of 1.2-3.3 m., at about 11 VES the geoelectric layer was extending in nature. The fourth geoelectric layer resistivity was varying in the range of 3-5 ohm-m, at about 3 VES the geoelectric layer was extending in nature. The interpreted results were presented in Table-4.1.

By considering the type of VES curves, resistivity, thickness of the geoelectric layers, Amini1, Amini6, Amini7, Amini8, Amini10, Amini14 & Amini 15 sites are represented that those are showing the Resistivity of <=22 ohm-m. up to a depth of 3m below ground level. The Location map of Vertical Electrical Soundings have been shown in the below Fig.5.1 Some of the examples of field curves at Amini-9 & Amini-13 has been shown in the below figures 5.2 & 5.3. The

Resistivity of the curves in the entire area is showing that it is decreasing with increasing a-separation between adjacent Electrodes. The interpreted results of VES in Amini Island is presented in table 4.1

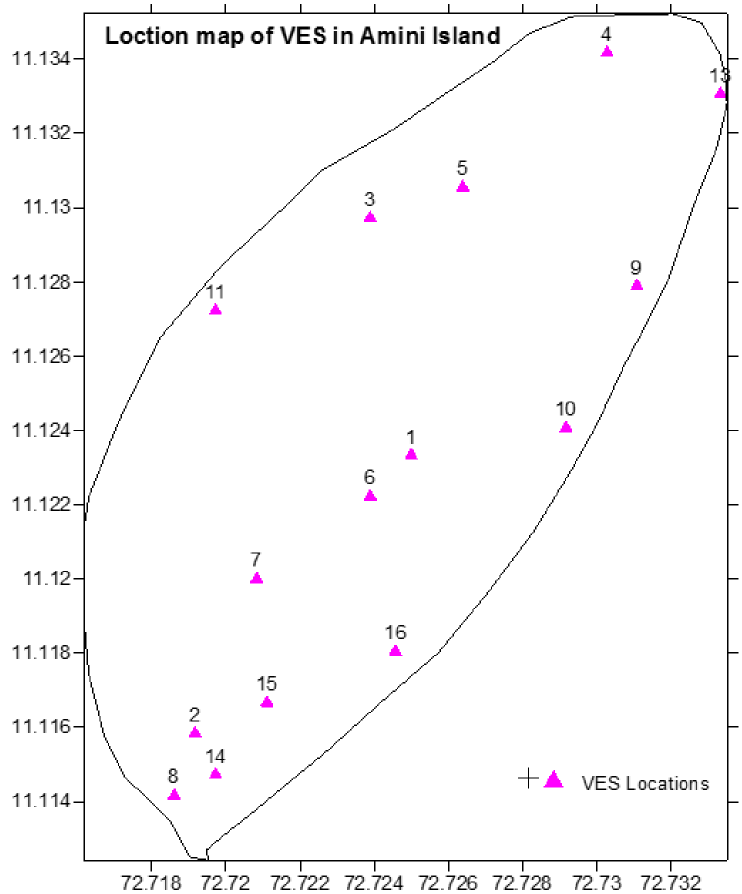


Fig.4.1 Location map of VES at Amini Island

Table 4.1 Interpreted results of VES in Amini island

Sl No.	Village Name.	Ves no.	Interpreted Results.								AB in m.	Depth to Water level below ground level,(m)
			Resistivity (Ohm.m.)				Thickness (m.)					
			r_1	r_2	r_3	r_4	h_1	h_2	h_3	Total(H)		
1	Amini	1	29	9	4	-	0.8	3.3	Ext.	4.1	60	1.60
2		2	3866	788	122	3	0.8	1.9	1.2	4.0	60	1.87
3		3	5483	574	74	4	1.6	1.3	3.3	6.1	60	3.31
4		4	982	250	23	5	1.7	0.8	1.7	4.2	60	2.56
5		5	2075	62	5	-	2.1	1.8	Ext.	3.9	60	2.90
6		6	20	8	3	-	0.9	5.7	Ext.	6.7	60	0.64
7		7	1035	22	5	-	1.5	8.3	Ext.	9.9	60	1.88
8		8	953	10	2	-	1.6	1.5	Ext.	3.1	80	2.75
9		9	1588	94	4	-	1.8	4.8	Ext.	6.6	90	2.28
10		10	1212	4	-	-	2.3		Ext.	2.3	90	2.55
11		11	920	75	4	-	3.4	4.5	Ext.	7.9	90	3.05
12		12	Not Interpretable								90	
13		13	1961	33	2	-	1.5	4.9	Ext.	6.4	90	2.10
14		14	532	13	1	-	1.1	4.9	Ext.	6.0	60	1.86
15		15	146	19	2	-	0.4	3.2	Ext.	3.5	60	1.74
16		16	1354	40	3	-	1.2	2.9	Ext.	4.1	60	2.10

ρ_1 - First layer resistivity in ohm.m.

Ext. - Extending with depth.

h_1 - First layer thickness in m.

VH - Very High.

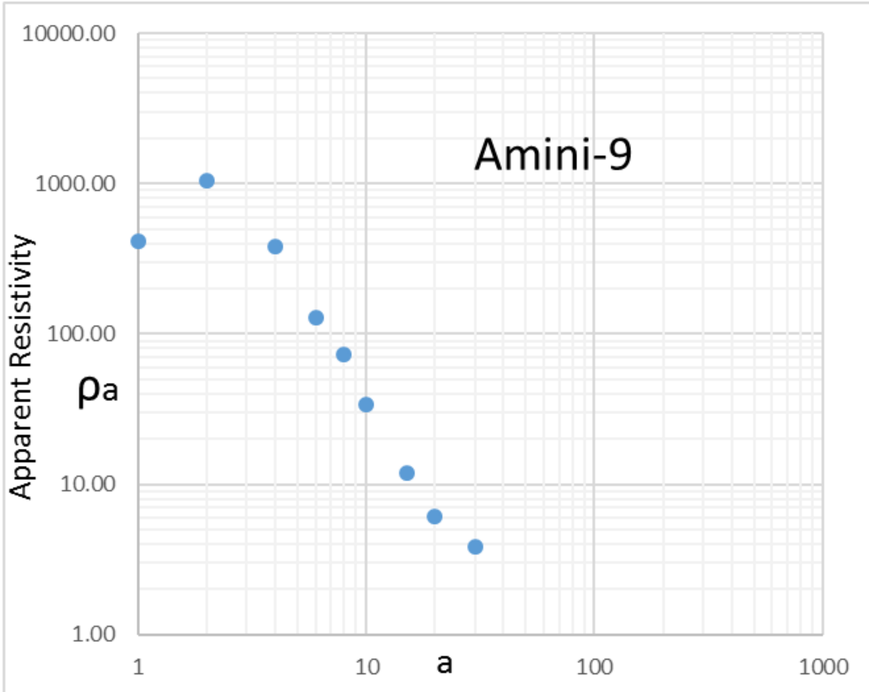


Fig.4.2 Representation of field curve at location Amini-9

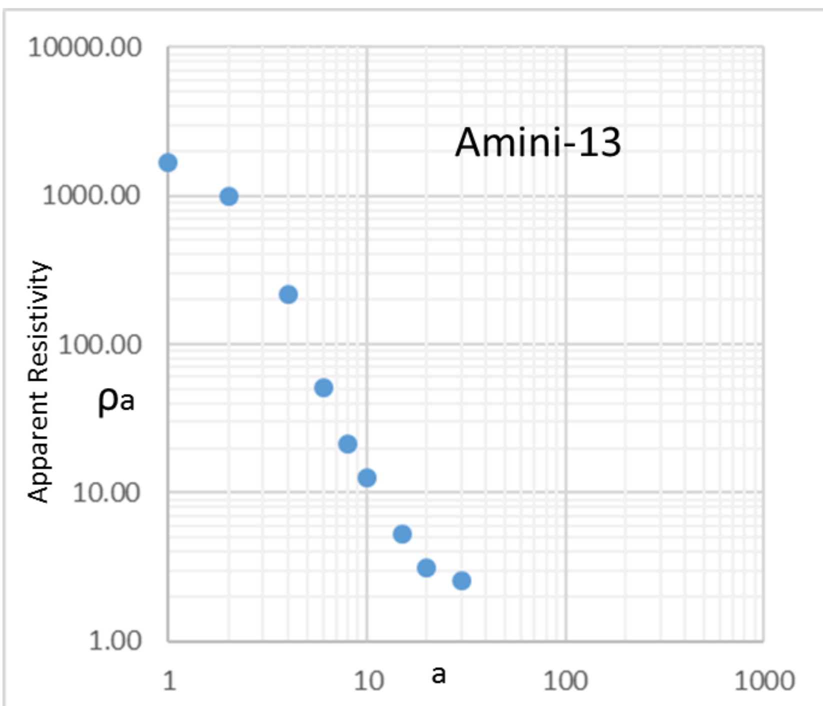


Fig.4.3 Representation of field curve at location Amini-13

Apparent resistivity distribution maps for different electrode separations (AB/2) has been prepared with the field data. The maps were prepared with AB/2 distance of 1, 2,4,6,8,10 and 20 m and are shown in fig. 4.4,4.5, 4.6, 4.7, 4.8,4.9 & 4.10 respectively. Resistivity reduces with increasing current electrode separation. In fig 8, the variations in apparent resistivity obtained using half current electrode separation as 2 m, it was observed that the values were very high at almost all the locations, except locations 1, 6 and 15. The interpreted 1st layer thickness is less than 1 m in these locations and depth to water level is very shallow, less than 1 m bgl at location 6. The result indicates dry coral sand or rock present at the surface and the variations are due to the moisture content of the sand and also presence water table in different pockets. The apparent resistivity valve is low where water level is shallow, and the formation is sandy and loose soil. The resistance will be more where hard strata is available at the depth even though the water is available. The resistivity reduces considerably when there is sea water mixing which is observed about 8 to 10 meters depth. In the western part of Island since the strata is hard shows more resistance even at 10 meters depth.

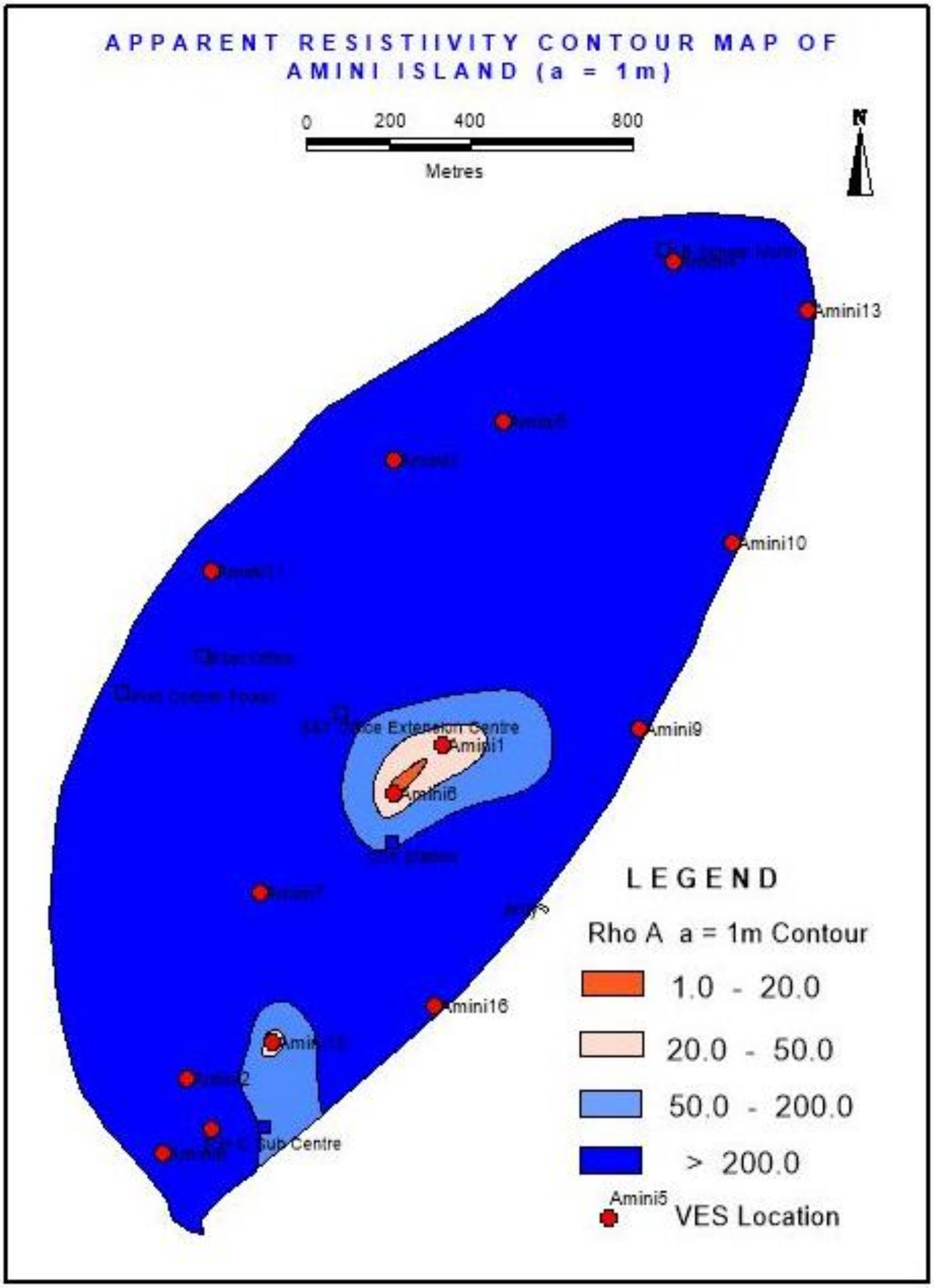


Figure 4.4. Distribution of apparent resistivity at depth of 1 m below ground level

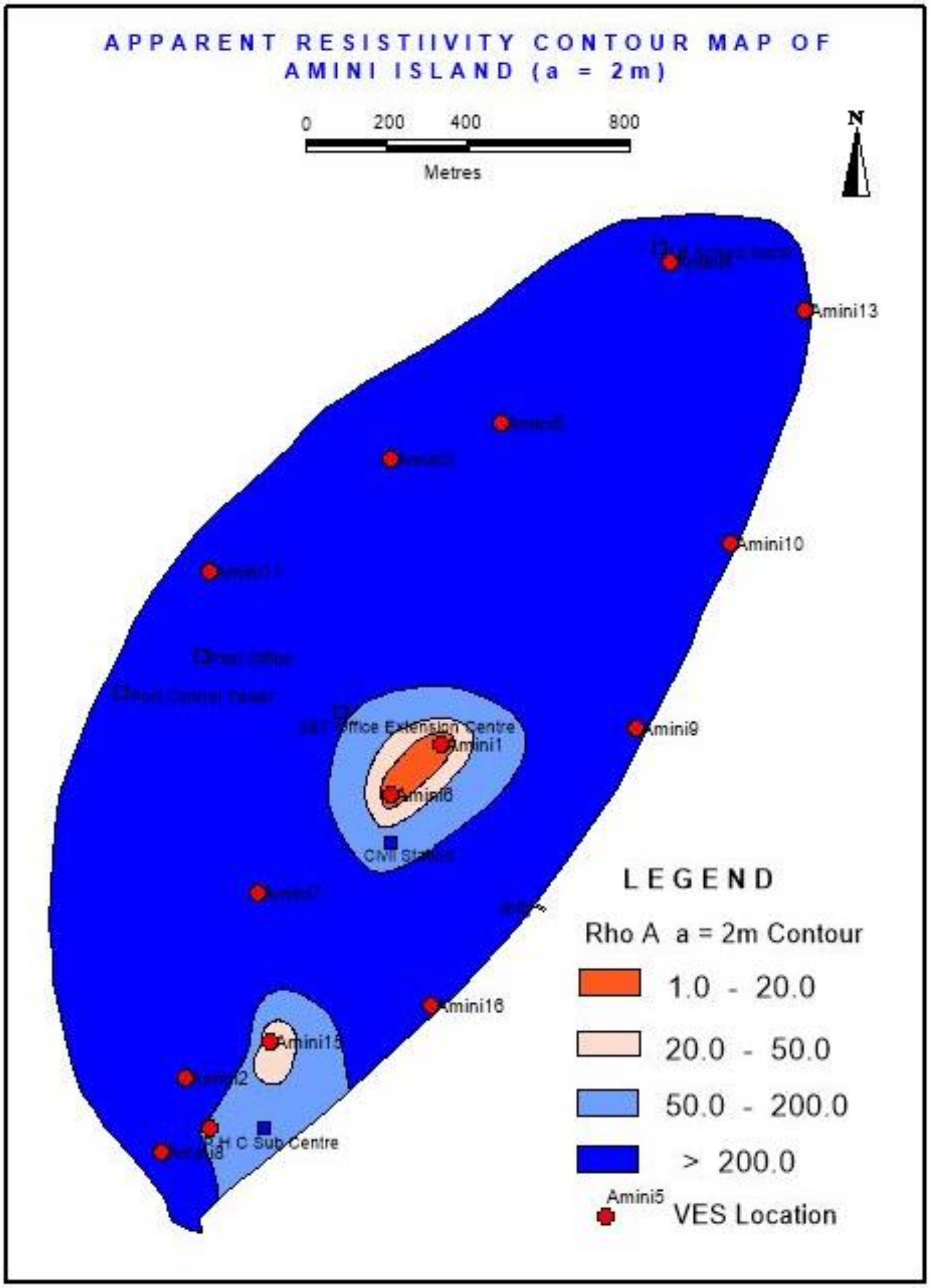


Figure 4.5. Distribution of apparent resistivity at depth of 2 m below ground level

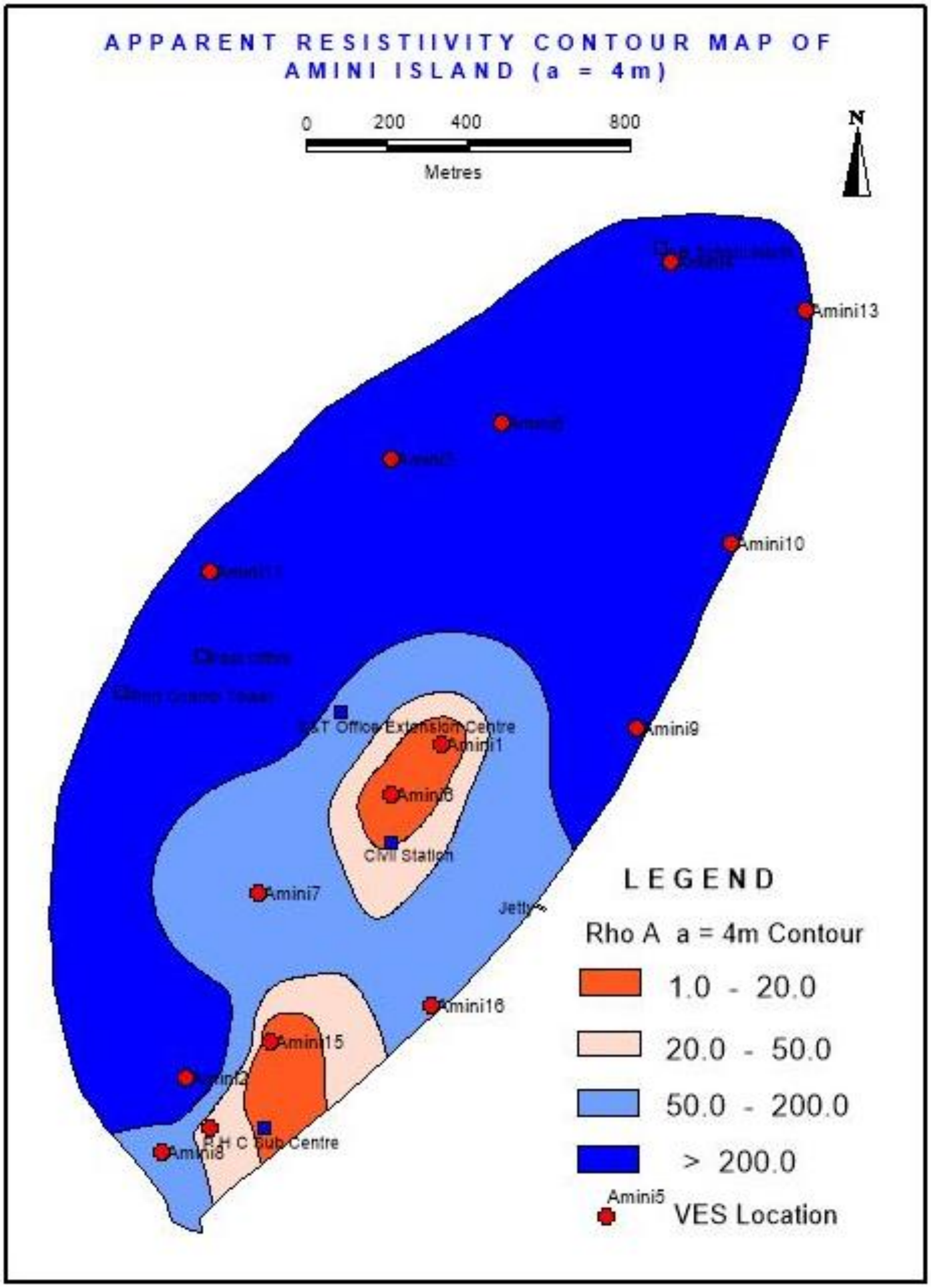


Figure 4.6. Distribution of apparent resistivity at depth of 4 m below ground level

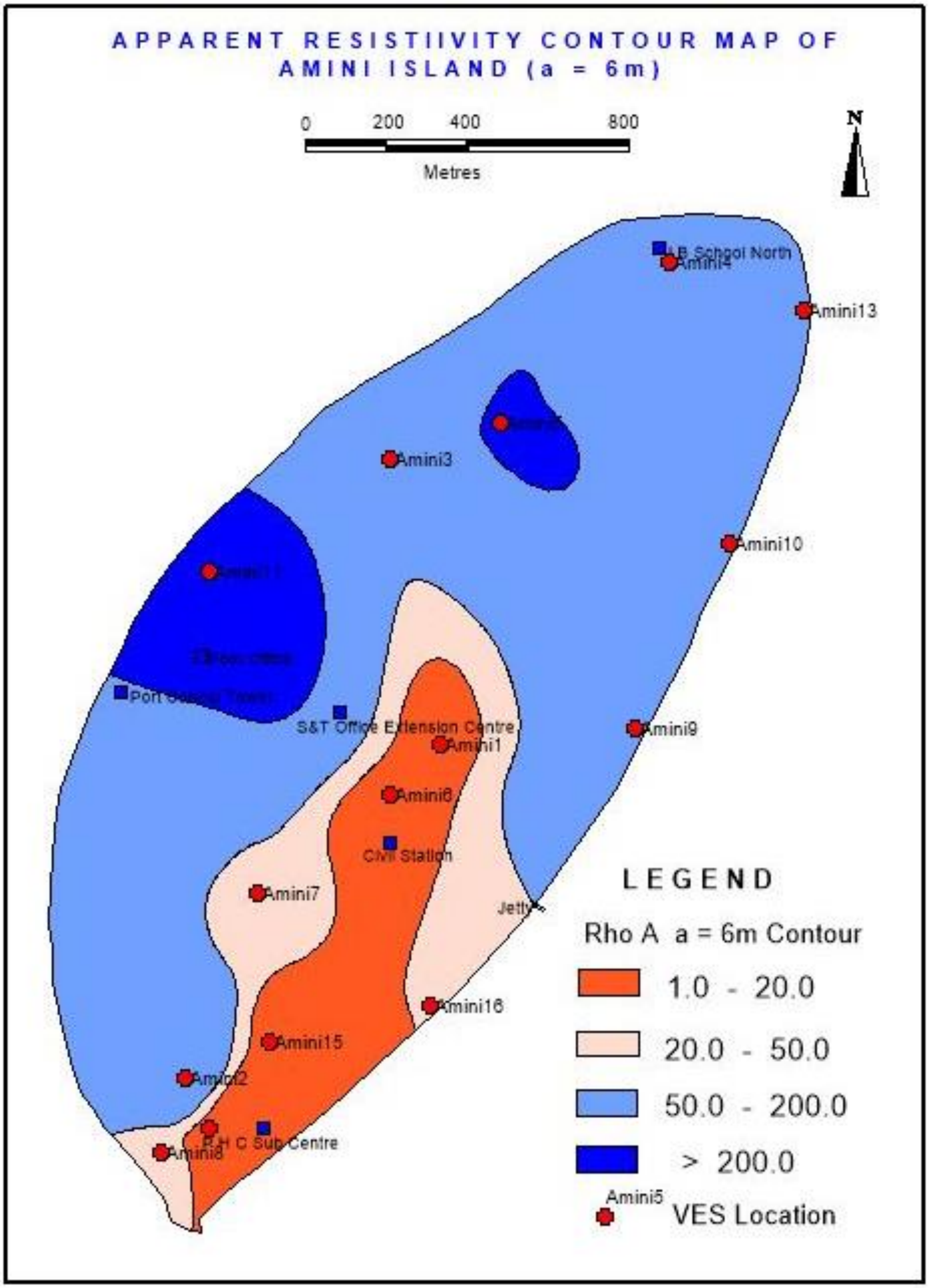


Figure 4.7. Distribution of apparent resistivity at depth of 6 m below ground level

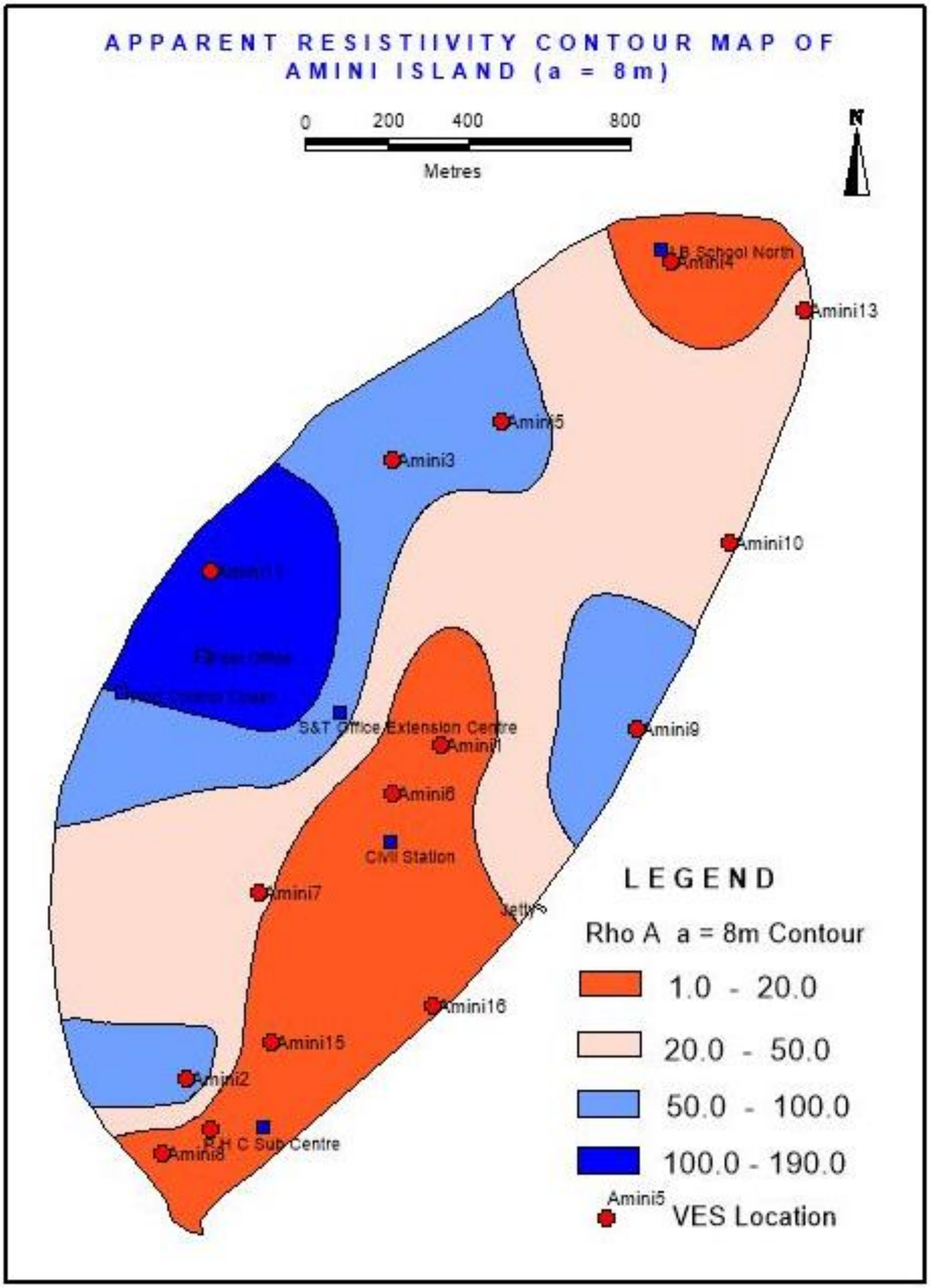


Figure 4.8. Distribution of apparent resistivity at depth of 8 m below ground level

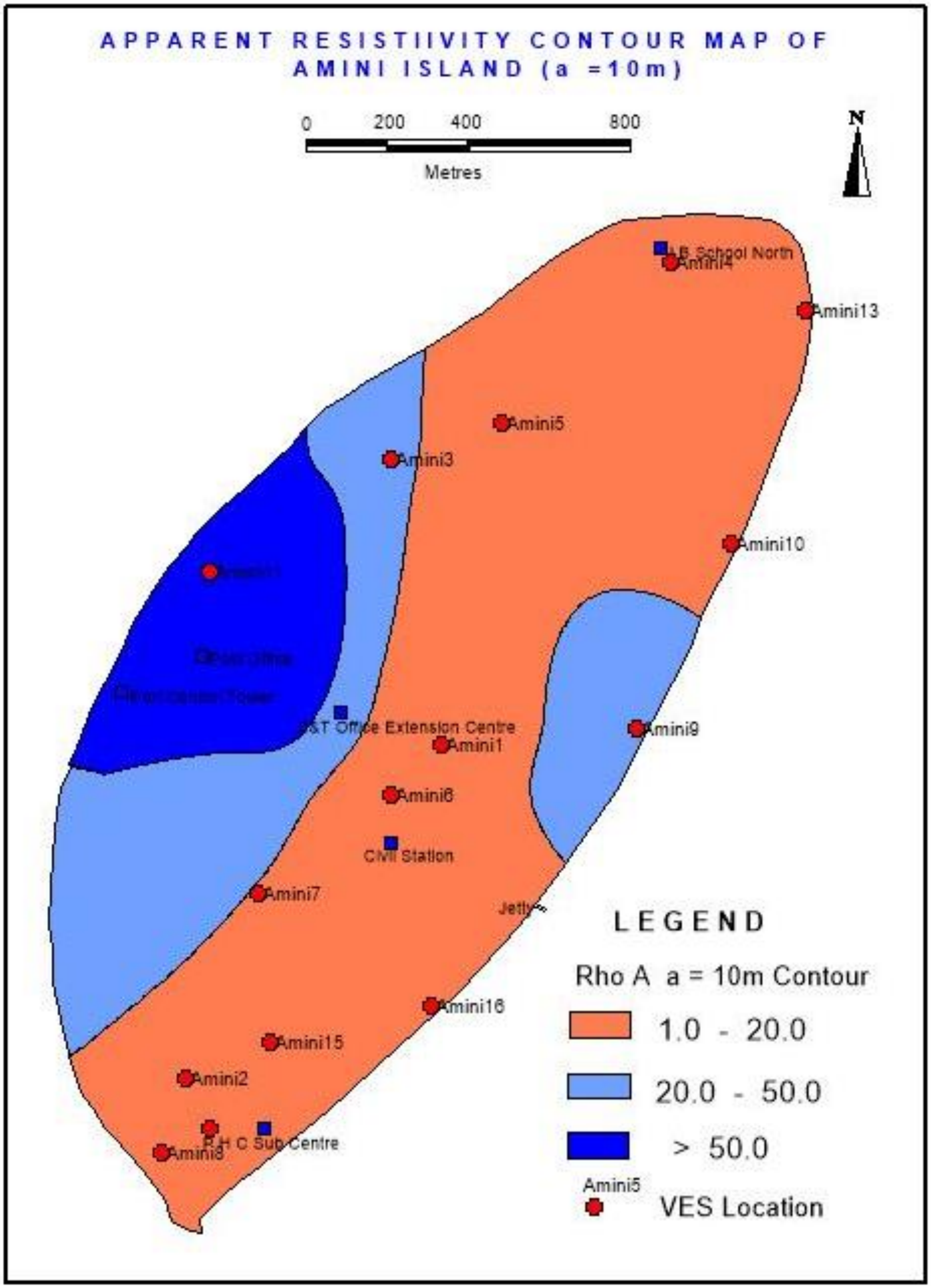


Figure 4.9. Distribution of apparent resistivity at depth of 10 m below ground level

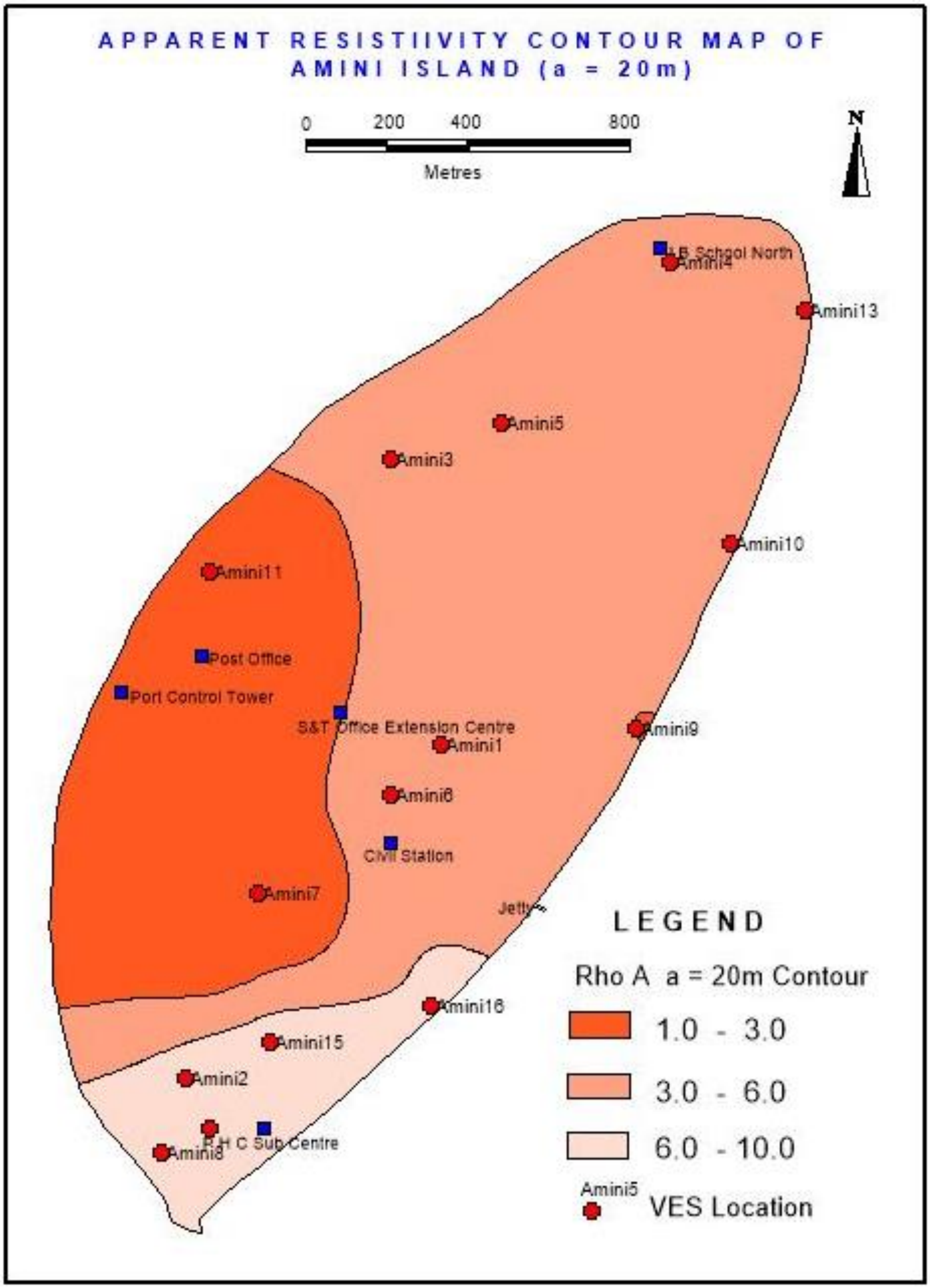


Figure 4.10. Distribution of apparent resistivity at depth of 20 m below ground level

4.1.1.Structural characteristics of the aquifer

The geo-electrical imaging yielded resistance ranging from <5 ohm m to >300 ohm m. Resistance >50 ohm m corresponds to unsaturated coral sand above the aquifer water table. Two zones of brackish water with resistance ranging from 2-50 ohm m appear on each side of the island. In the middle part of the island the unsaturated zone contains brackish water. Resistane Pleistocene limestone was also identified at ~35 m below ground level. These resistance values are consistent with previous studies on similar atolls (Lloyd et al., 1981; Ajaykumar and Ramachandran, 1996; Comte et al., 2010; Narasimha Prasad 2011)

4.1.2 Spatial pattern of groundwater table

Groundwater levels were measured in the open dugwells. The measurements taken during February 2017 were used for the spatial interpolation studies by contouring the water level at 2 m intervals.

4.1.3 Spatial pattern of groundwater salinity

The ground water in the island is generally alkaline with a few exceptions. The Electrical Conductivity (EC) ranges from 500 to 15,000 µS /cm at 25 C. Higher concentrations of dissolved solids are generally seen along the periphery of the island and also close to pumping centres. The quality variation is vertical, temporal and also lateral. The quality is highly variable and reversible. It is also observed that the quality improves with rainfall. Other factors affecting the quality are tides, ground water recharge and draft. There is a vertical variation of quality due to the zone of interface and underlying sea water. Perforation created due to drilling or otherwise also affects the quality as it acts as a conduit for flow of sea water.

Wells manually operated retain more or less the same quality of ground water over longer time periods as compared to mechanized wells where, quality deterioration is observed in the form of increasing EC. Brackish water is present along topographic lows and in places where coarse pebbles and corals are present.

Another major threat to ground water in the islands is the pollution. The human and livestock wastes, oil spills are the main polluting agents with sewerage and other biological wastes contributing most.

The electric conductivity of groundwater samples was indicative of the presence of brackish water throughout the island, with values higher than standards for safe drinking water. The iso-conductivity contours clearly pointed to a decrease in salinity towards the center of the island .However this map manifested major difference from what would be expected in a Ghyben-Herzberg model. For example the northeast area showed a large inward saltwater intrusion and in the southern part there was a marked anomaly relative to depth to water level. In these sectors no correlation was evident between depth to water level and salinity of water**.**

4.2Discussion

The complexity of the spatial distribution of the groundwater was confirmed by geolelectric imaging of the substratum. Despite the apparent homogeneity of this island geophyisical prospecting revealed stratified structuring of the aquifer. This is related to the presence of limestone bedrock reef encountered in dug wells in shallow depths in the south. The specific conditions of groundwater flow in these karstic terrains can locally modify the presence of salt wedge intrusion. The geo-electric spatial pattern shown in fig confirms this substratum uplift in the south sector of the island.

Geo –electric spatial distribution shows resistances ranging from <0.1 ohm m to >800ohm m. Resistances >50 ohm m appear at the top and bottom of water table. On the surface they corresponds to unsaturated coral sands, whereas at the bottom high resistances are interpreted as originating from limestone bedrock. Despite the presence of salt water the low porosity of the carbonates increases resistance. Between these two layers the low resistences are associated with brackish waters with resistance ranging from 0.1-50 ohm m.

The hydrogeological interpretation of the spatial pattern of the geo-electrical values is consistent with the salinity values measured in the dug wells. In accordance with the iso-salinity map, the spatial pattern reveals a very wide brackish coastal area in the northern part. To the south the less salty groundwater is related to the apparent upraise of the bedrock (Reef rock). The geo-electrical pattern also suggests new elements in terms of the island’s geological structure. Vertical distribution of salinity shows much localized intrusions of salt water. The salt water interface is therefore far more complex than assumed in the theoretical model that is based on the assumption of a distinct interface between two immiscible liquids, freshwater of density 1 and sea water of density 1.25.

5. HYDROGEOLOGICAL FRAMEWORK

The Lakshadweep islands are made up of coral reefs and materials derived from them, generally enclosing a lagoon. Hard coral limestone is exposed along the beaches of islands during low tides and also in well sections. Hard pebbles of coral limestone along with coral sand are generally seen. Beneath a thin layer of vegetal humus there is fine coral sand extending over the surface of all the islands. Below this is a compact crust of fine conglomerate looking like coarse oolitic limestone with embedded bits and shell, and beneath this crust there is another layer of sand.

The coral sands and the coral limestone form the principal aquifer in all the islands. Ground water, existing under phreatic conditions at a depth of 2 – 3 m below ground level, is seen as a thin lens floating over and in hydraulic continuity with the sea water. Large diameter wells are the most common and traditional ground water abstraction structures. In almost all the wells, hard coral limestone is exposed near the bottom. The sand below this hard layer has caved in most of the wells.

5.1 Freshwater lens

The freshwater lens in the islands is formed due to the radial movement of the freshwater towards the coast, in a dynamic system in hydraulic continuity with seawater. There is a transition zone through which the salinity increases with depth as suggested by the line XY in Fig. 5.1 (Barker, 1984). The dispersion as well as the fluctuation causes continuous mixing of water of different salinities, creating the transition zone. The width of the transition zone depends on the geology, which controls the branching nature of the flow paths, resulting in dispersion and the fluctuation in water levels due to tides and in response to recharge and discharge. The higher the fluctuation, the thicker is the transition zone.

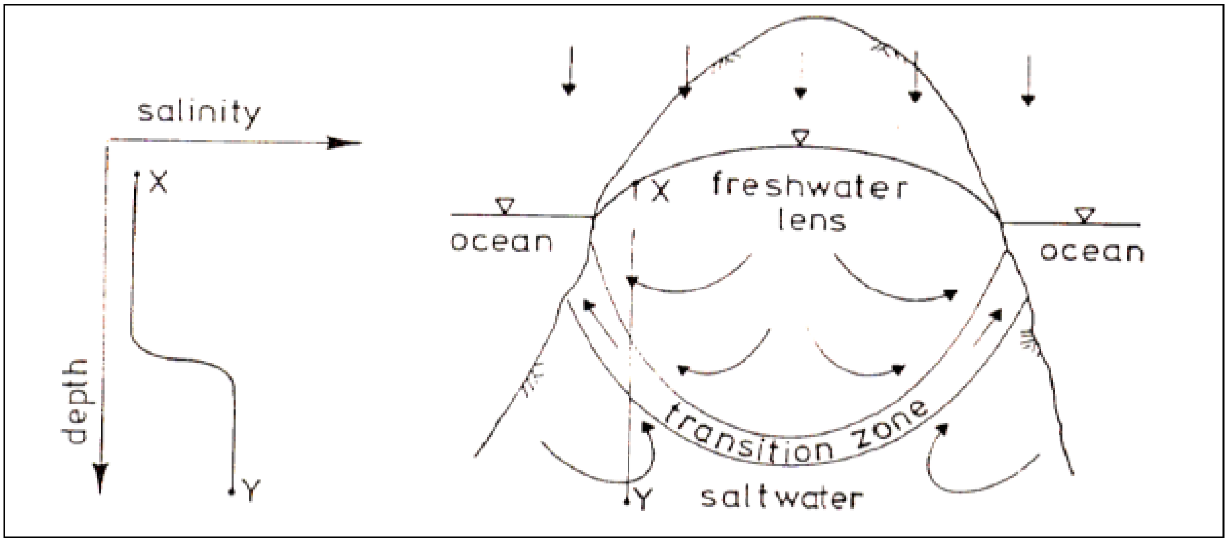


Fig. 5.1. Freshwater lens in Oceanic Islands- Schematic Diagram (Barker, 1984)
The occurrence of freshwater lens over saline water in island conditions was studied by Badon W Ghyben in the year 1888 in Netherlands and by Mike Herzberg in the year 1901, in the islands of North Sea off the German coast (Ghassemi. et al. 1990). Both these workers established the relation between the freshwater head above mean sea level (h_f) and the depth to freshwater - saltwater interface (h_s) to form a freshwater lens floating over saline water as shown in fig. 5.2. This is popularly known as the Ghyben-Herzberg (GH) approximation. In the simplified form of the GH approximation, the ratio of thickness of freshwater lens below and above mean sea level can be presented as

$$\mathbf{h} = \frac{\sigma f}{\sigma s - \sigma f}$$

where, h = ratio of thickness of the freshwater lens below msl to that above msl,
σ s = density of seawater (normally 1.025) and
σ f = density of freshwater (normally 1.000).
From the above, it is implied that under normal conditions, h = 40, which means that each meter thickness of freshwater lens above mean sea level is supported by a 40 m thick lens below mean sea level.
However, studies in small islands indicate that the ratio of thickness of freshwater above and below msl is highly variable. In the Cayman Islands it is 1: 20 while it is 1: 30 in Tarawa and 1: 20 in Christmas Island (Falkland, 1984).

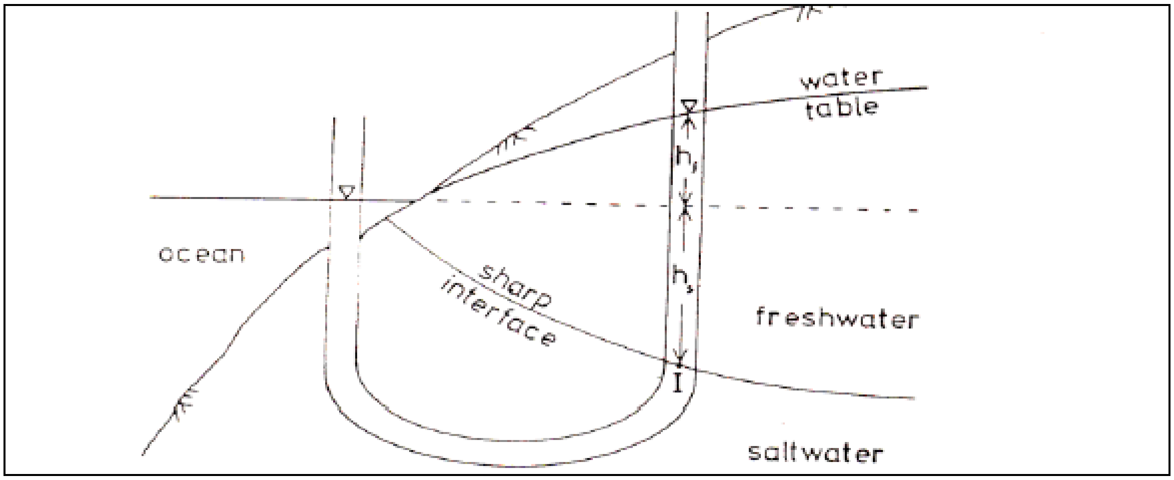


Fig 5.2. Ghyben-Herzberg approximation for oceanic islands

The basic assumptions for the applicability of Ghyben-Herzberg relation are

i) The water table lie above msl and

ii) Water table slope downward towards the Ocean.

In order to identify the role of the shape of the island in deciding the freshwater lens, the aspect ratio of the islands is made use of. Since the shape of the islands does not conform to any geometric form, the aspect ratio is computed taking into consideration the length, breadth and area of the island (Najeeb, 2003). The island area is divided by ratio of its length to breadth to get the aspect ratio. This ratio has been used to study the stability of the freshwater lens in these islands and the salient features are given in Table 5.1. Islands with aspect ratio greater than 0.5 are found to have stable fresh water lens, under identical geomorphological settings.

Table 5.1: Salient Features of the main islands of U.T of Lakshadweep

Location	Kavaratti	Agatti	Amini	Chetlat	Kadmat	Kiltan	Kalpeni	Androth	Minicoy
Area (sq. km)	3.63	2.70	2.59	1.04	3.13	1.63	2.28	4.80	4.40
Max.length (km)	5.5	7.6	2.89	2.5	8.0	3.36	5.0	4.6	10.66
Max.width (km)	1.4	0.9	1.25	0.65	0.55	0.60	1.25	1.5	0.94
Aspect ratio = A/(L/B)	0.9	0.3	1.1	0.3	0.2	0.3	0.6	1.6	0.4
Shape	Bottle gourd	Base ball stick	Oblong	Sole	Elongated	Elongated	Club	Elliptical to sole	Crescent
Trend of longer axis	NE-SW	NNE-SSW	NE-SW	NNE-SSW	NNE-SSW	N-S	NE-SW	E-W	N-S

5.2 Ground water exploration

The continuity, thickness and lateral extent of coral sands and hard coral limestone vary from place to place in each island. The role of these litho-units on the ground water quality and thickness of the fresh water lens is a matter of uncertainty. In order to have a better understanding of the hydrogeological framework of the islands, fifteen exploratory boreholes were drilled by the Central Ground Water Board at 5 locations in Kavaratti Island. The details of boreholes drilled are given in Table 5.2. The data generated during exploration indicated that there is no spatial continuity of the aquifers and the fresh/saline water interface in the island (Fig.5.3).

Table 5.2: Salient features of exploratory boreholes drilled by CGWB in Kavaratti Island.

Sl. No.	Location	Depth (m.bgl)	Zones screened (m.bgl)	DTW (m.bgl)	Sp. Elec. Conductance(EC) (µS/cm at 25°C)
Kavaratti South					
1	Near Govt. High school	12.0	6-12	1.9	5100
2	Near Govt. High school	38.0	26-38	1.75	>200000
3	Near Govt. High school	7.5	4.5-7.5	1.98	790
4	Water testing Lab	10.0	7-10	2.45	17300
5	Water testing Lab	15.0	11-15	2.06	11400
Kavaratti North					
6	Chekkikulam	22.5	10.5-22.5	1.26	12600
7	Chekkikulam	11.5	8.5-11.5	1.52	800
8	Chekkikulam	8.5	5.5-8.5	1.47	970
9	Ujrapalli	25.0	13-25	0.45	12400
10	Ujrapalli	15.0	9-15	0.95	6400
11	Ujrapalli	11.5	8.5-11.5	0.53	1010
12	Ujrapalli	8.5	5.5-8.5	0.73	810
13	Pallikunnu	29.0	23-29	0.45	>20000
14	Pallikunnu	8.5	5.5-8.5	0.63	1120
15	Pallikunnu	5.5	2.5-5.5	0.58	610

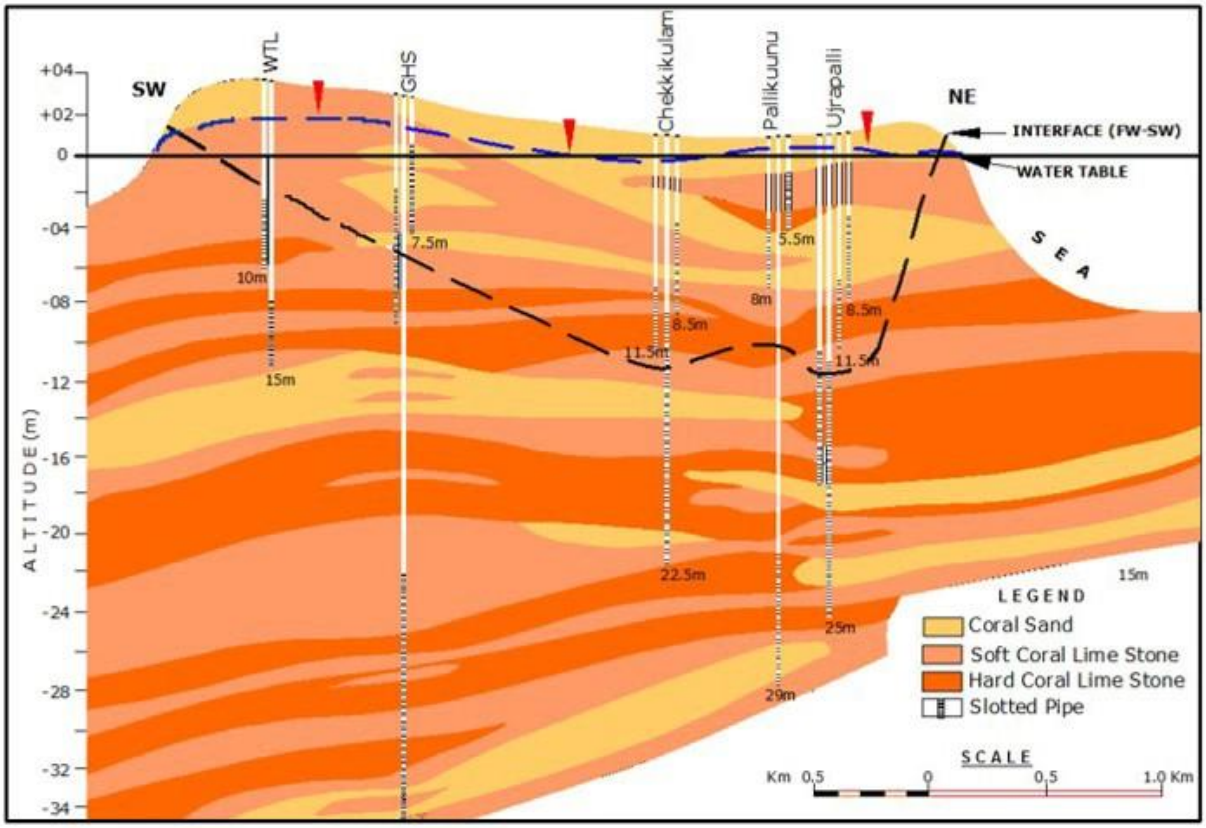


Fig. 5.3. Hydrogeological cross section of Kavaratti Island

5.3 Tidal influence

As the ground water is in hydraulic continuity with seawater, it is highly influenced by the diurnal tidal fluctuations of the sea. The magnitude of the tidal fluctuation is dependent on several factors amongst which the permeability of the aquifer material, the proximity of the site to the sea and the magnitude of tidal variation in the sea play significant roles. There is a time lag between tidal fluctuation in the sea and in the ground water levels, which is also dependent on the above factors.

5.4 Ground water scenario

The hydrogeological conditions of all the islands are almost similar, with fresh water floats over seawater in hydraulic continuity with it (Fig. 5.4).

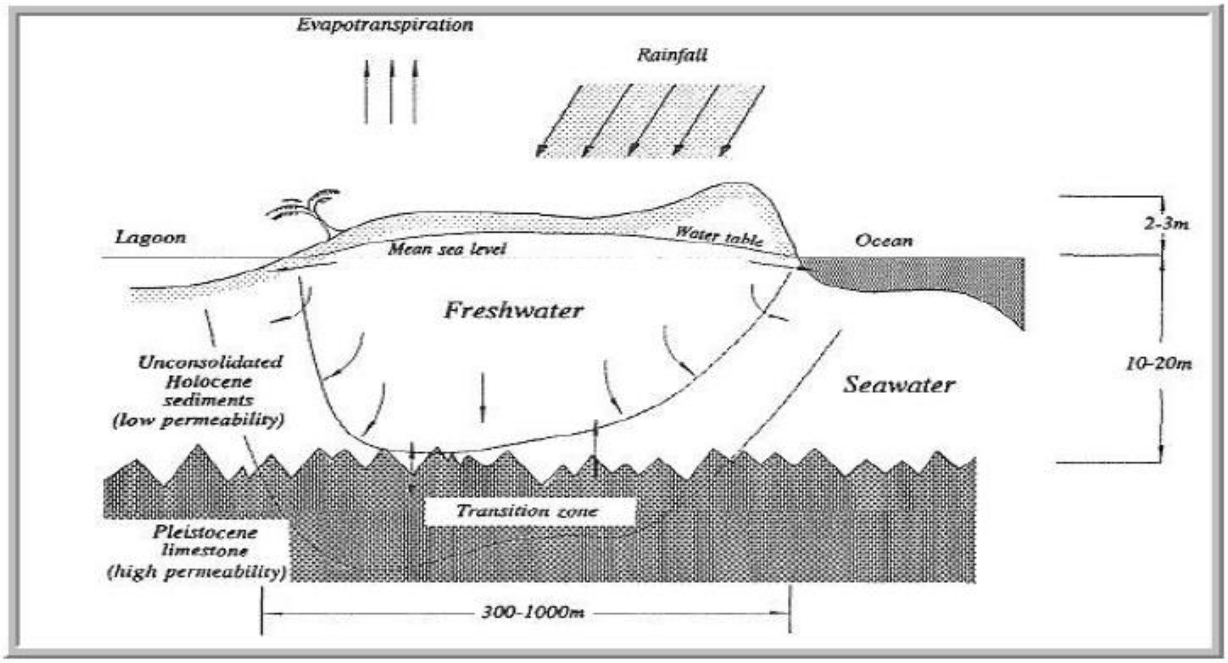


Fig.5.4. Freshwater lens in small Islands (Exaggerated vertical scale)

[Source: A.C.Falklands (1993): Hydrology and water management on small tropical islands- Hydrology of Warm Humid Regions (Proceedings of the Yokohama Symposium, July 1993). IAHS Publ. no. 216, 1993.]

The calcareous sands overlying these islands are highly porous and infiltrate bulk of the rainfall received. The infiltrating rainfall displaces the saline water to a freshwater lens due to density difference and the hydraulic continuity of ground water with seawater. There is no rejected recharge of ground water even during heavy rainfall. About 18 to 51 percent of the annual rainfall gets recharged into the ground water depending on the intensity, frequency and distribution of rainfall. However, the rise in water level due to recharge gets adjusted within the lens as per the Ghyben-Herzberg (GH) approximation and hence appreciable increment in the water level is not observed. Rainfall received in the Lakshadweep Islands are fully recharged and adjusted in the fresh water lens, as a result of which significant rise in water levels are not discernible in the wells even after the monsoon rains.

Coral atolls generally consist of a layer of recent (Holocene) sediments, comprising mainly coral sands and fragments or coral, on top of older limestone. An unconformity separates these two layers at typical depths of 10m to 20 m below mean sea level. Several deeper unconformities may exist due to fluctuations in sea level which results in alternate periods of emergence and submergence of the atoll. During periods of emergence, solution and erosion of the reef platform can occur, while further deposition of coral limestone can occur during periods of submergence. The upper sediments are of primary importance from a hydrogeological viewpoint as freshwater lenses occur solely or mainly within this layer. The occurrence of such lenses within this layer is due to its moderate permeability (Typically 5 to 10 m/day) compared with higher permeability of the older limestone (typically 50 to 100 m/day). Permeabilities greater than 1000 m/day occur in solution cavities within the limestone. These extremely high permeabilities allow almost unrestricted mixing of freshwater and sea water which is less likely to occur in the upper sediments.

The upper unconformity, therefore, is one of the main controlling features of the depth of freshwater lens.
The hydrogeological conditions of nine of the ten inhabited islands have been studied in detail by Central Ground Water Board. Each of the islands has freshwater lens and saline to brackish lens. There exists a high magnitude of temporal and spatial variations in thickness, shape as well as the ground water quality of these lenses. The exact geometry of these lenses, chemical quality, behaviour under various stresses and their potential are of great significance for planning and effective management of the freshwater resources in these islands. Ground water is developed by dug/open wells and to a limited extent through shallow filter point wells. The depth to water level in the islands vary from few centimetres to about 5 m. below ground level and the depth of the wells vary from less than a metre to about 6 m. The water levels in all the islands are highly influenced by tides. The geo-environmental conditions and hydrogeology of each of these islands are described below.
The Lakshadweep Public Works department had established Observation Wells in all the Islands for periodic quality monitoring and for the weekly monitoring of water levels of the dug wells. For the hydrogeological studies select wells from LPWD observation wells and other dug wells and filterpoint wells were studied.
The hydrogeological details of wells inventoried are presented in Appendix-I

5.4.1 Agatti Island

Agatti has the shape of a baseball stick, elongated in the NNE- SSW direction and has a vast Lagoon on its western side. There are 930 dug wells used for domestic purpose in the island. The depth of dug wells range from 2.95 to 4.40 m bgl. and the depth to water level ranges from 1.55 to 3.05 m. The elevation of water table ranges from 1.2 to 1.9 m amsl. The freshwater lens is almost a continuous body in the northern half of the island, with one or two minor lenses located in the southern half. Within the broadly fresh northern half, there are small patches of brackish lenses. The contact between the fresh and brackish water in the lens moves further north during severe summer and towards south during monsoon. Thus, the wells located in the peripheral area exhibit maximum fluctuation in ground water quality; whereas those located in the north central part do not show much variation in quality over time. The small freshwater lens in the broadly brackish southern zone disappears in extreme summer and it widens during monsoon. Similarly the small brackish water lens in the northern freshwater zone shrinks during monsoon, while in summer it widens. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.7, 5.13 and 5. 22 respectively.
The fortnightly Depth to water level of 20 Observation wells of CGWB are presented in Appendix-.II b

5.4.2 Kavaratti Island

Kavaratti has a roughly conical shape with an attachment on its pointed edge (Fig. 5.9). The narrowest part of the island is known as the ‘chicken neck’. The maximum length of the island is about 5.5 km and is oriented in a NE-SW direction. The Island has a vast lagoon towards its west, while in the eastern part the fringing reef is seen without a lagoon in between.

There are about 1500 dug wells/ filter points used for domestic purpose. The depth of the dug wells range from 1.20 to 4.66 m. and the depth to water ranges from 0.52 to 4.11 m bgl .The general DTW in the north central part of the island 1.5. to 2.50 m bgl.The maximum thickness of freshwater lens is in the north central part. In south of Pandarath Palli – Secretariat section, the ground water is generally saline during the summer months. However, in the extreme south, south of chicken neck area, it is fresh. The contact between the fresh / brackish water moves further north during severe summer and towards south during monsoon. Thus, the wells located in this peripheral area exhibit maximum fluctuation in ground water quality, whereas those located in the north central part show almost constant quality over time. The area south of the road and up to chicken neck shows wide variation in quality. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.9, 5.19 and 5. 23 respectively

The weekly water level of observation wells in Kavaratti Island are presented in Appendix-II a.

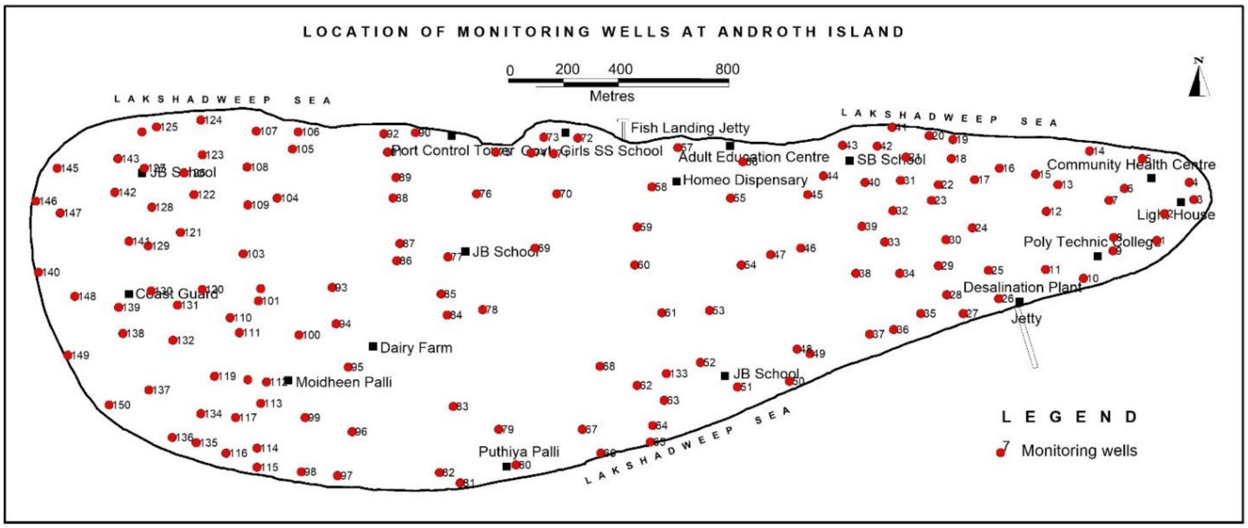


Fig. 5.5 Key well locations in Androth island

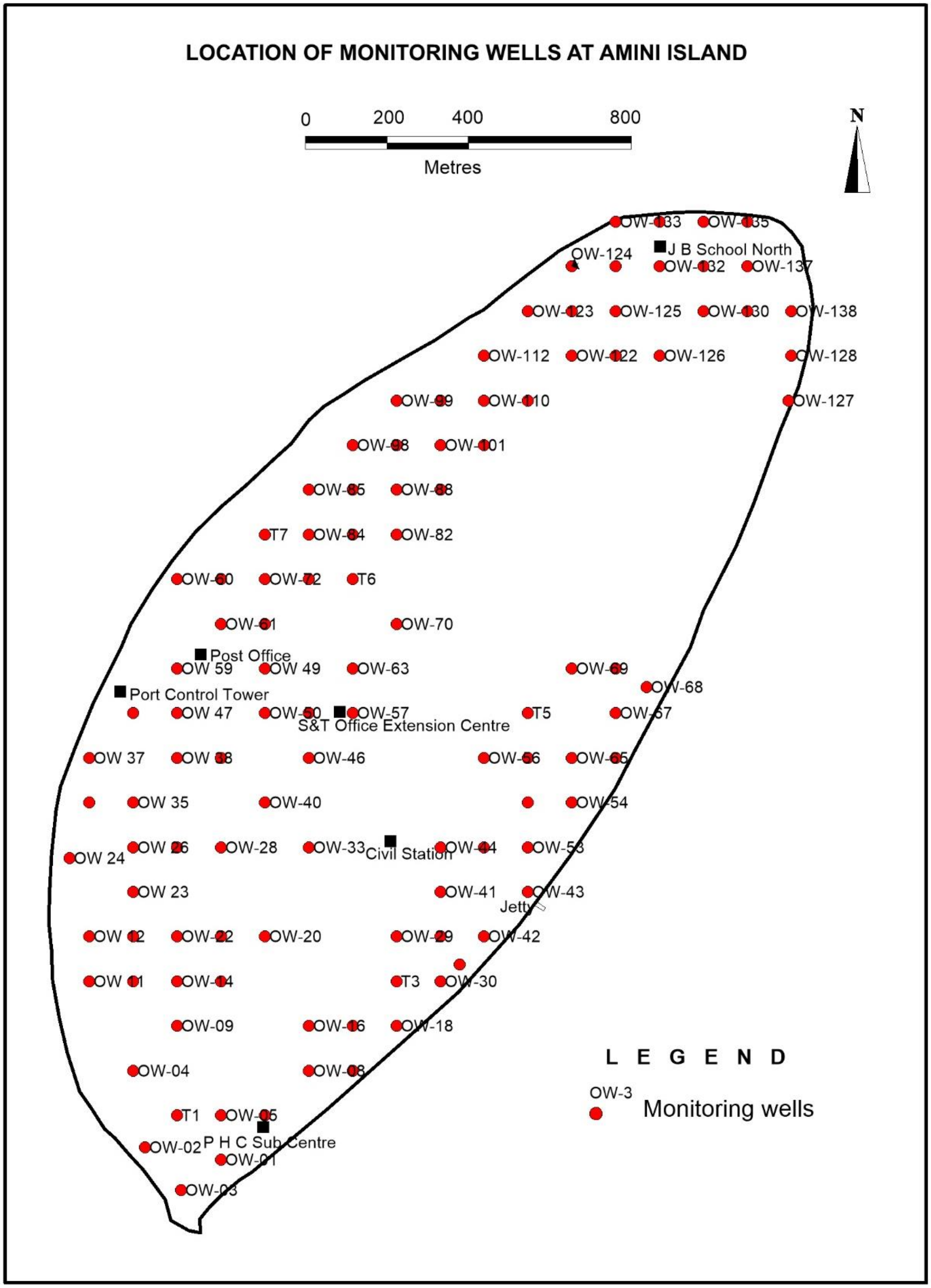


Fig 5.6 Key well locations in Amini island

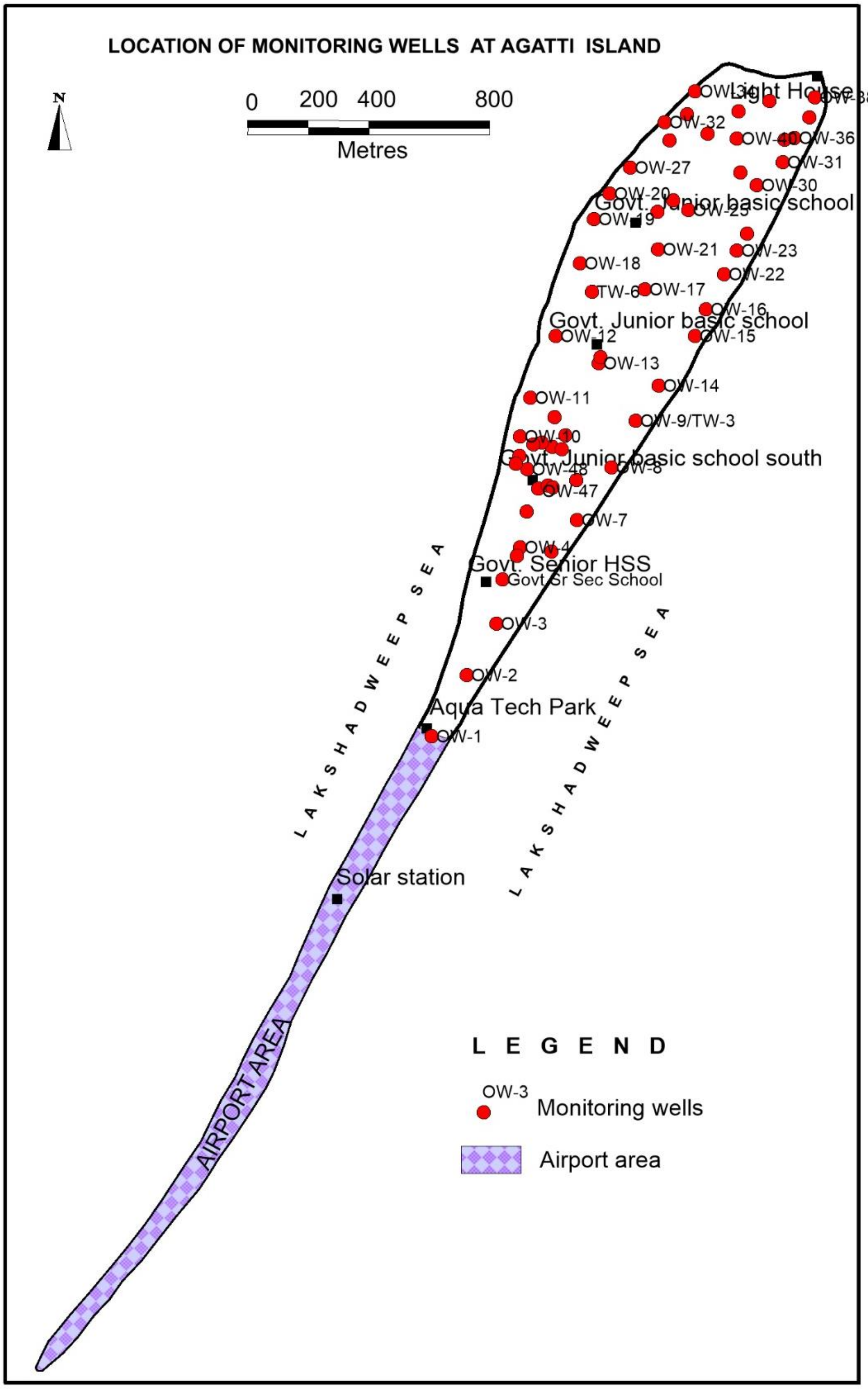


Fig 5.7 Key well locations in Agatti island

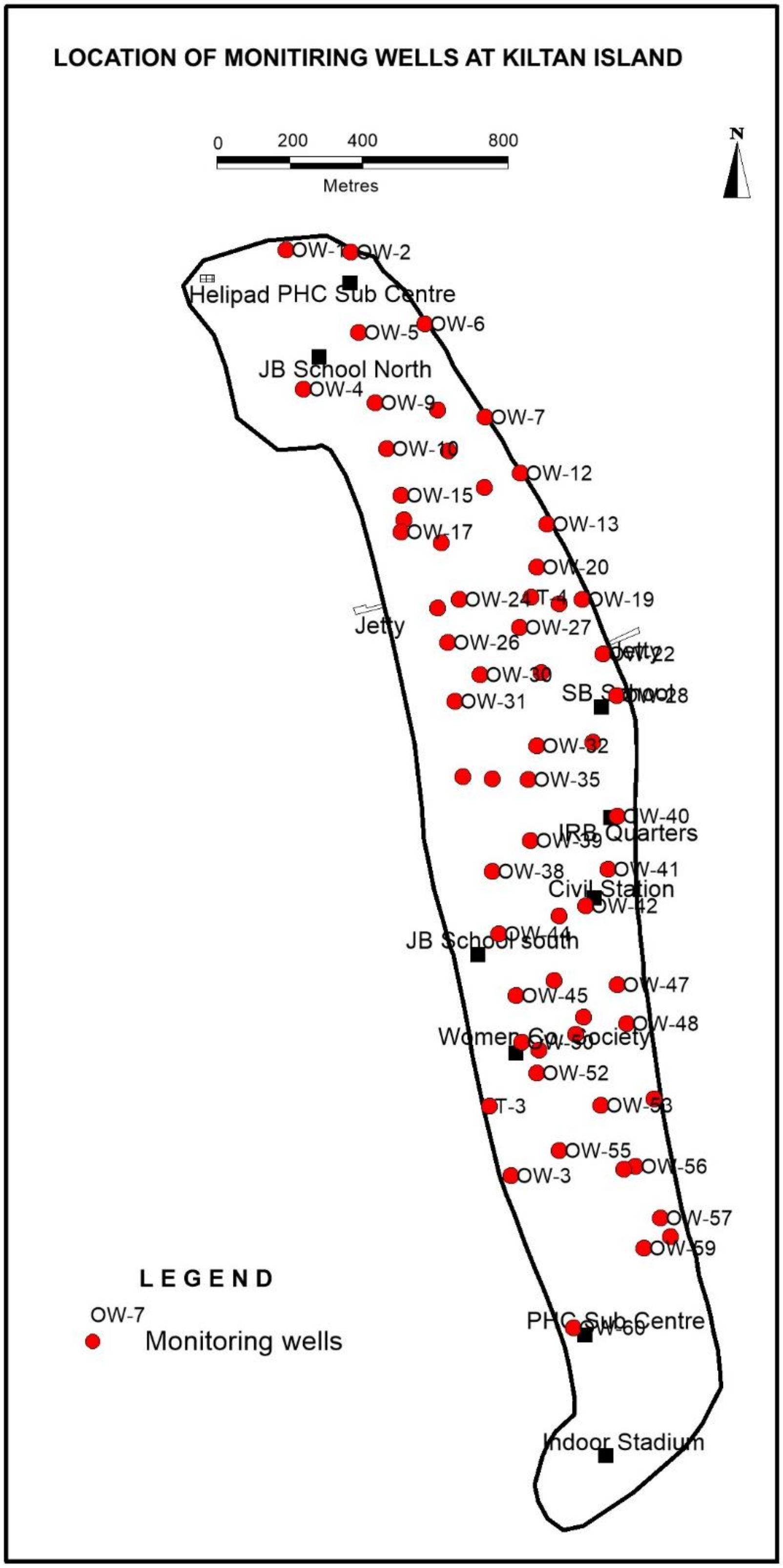


Fig 5.8 Key well locations in Kiltan island

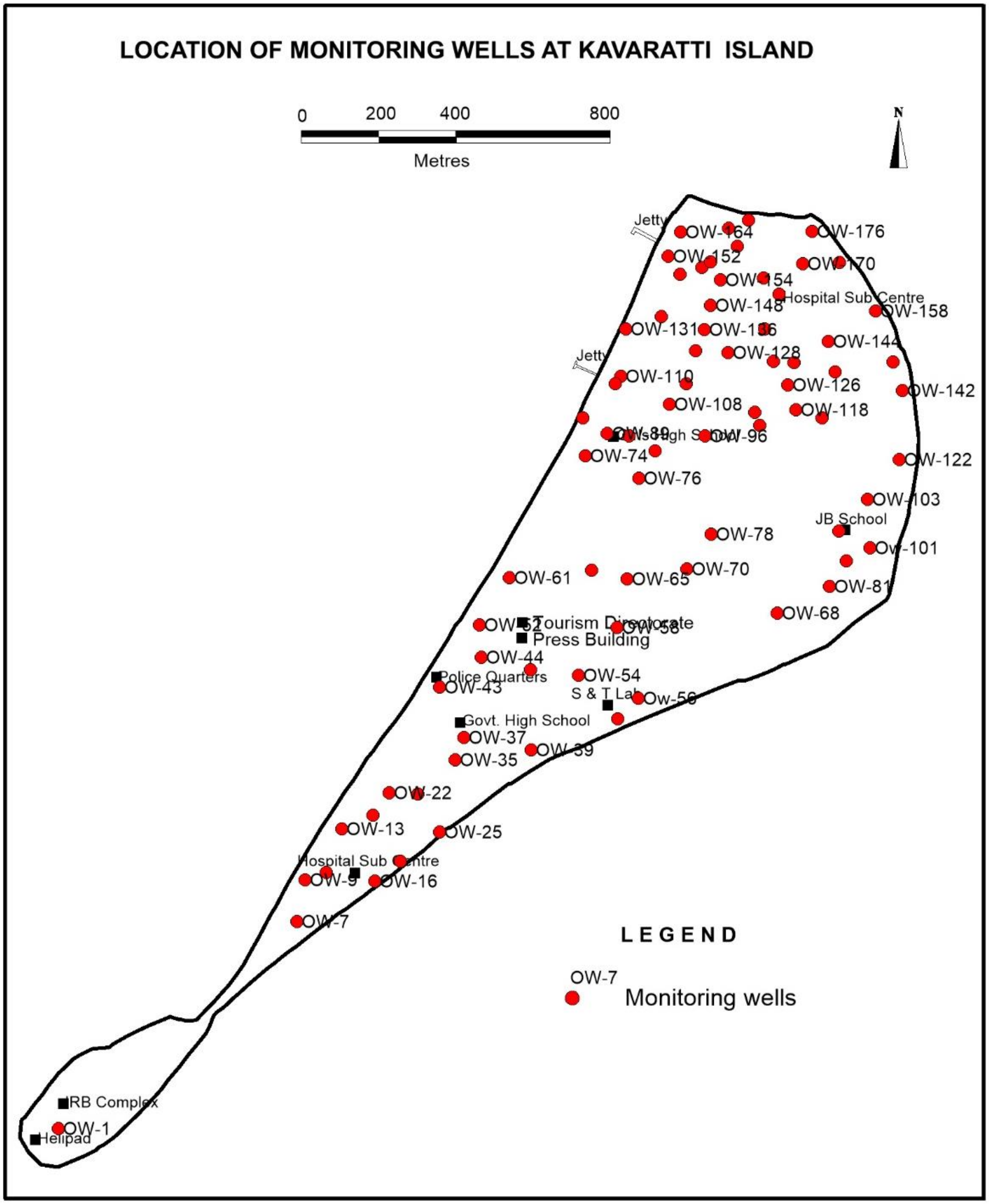


Fig 5.9 Key well locations in Kavaratti island

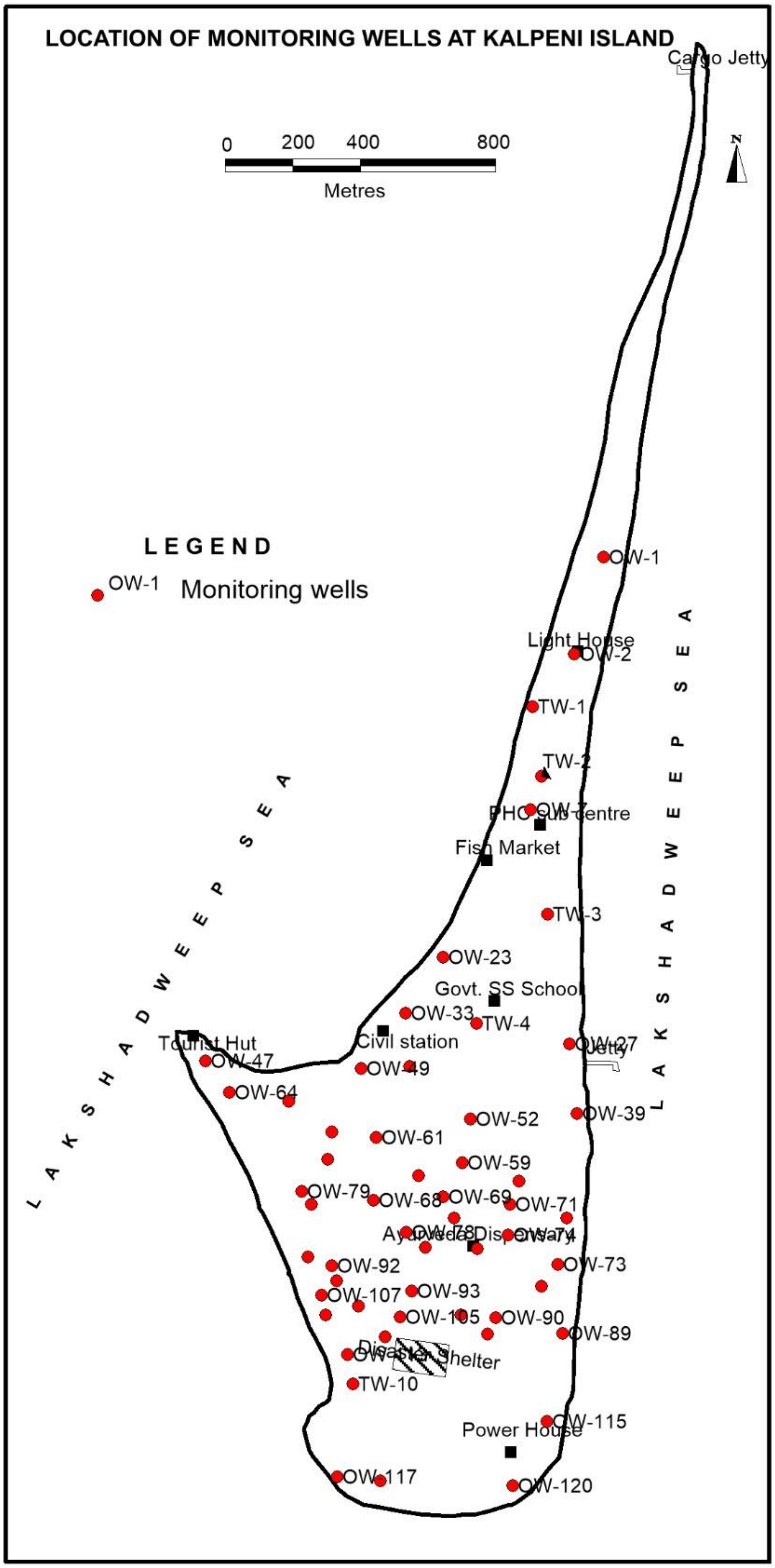


Fig 5.10 Key well locations in Kalpeni island

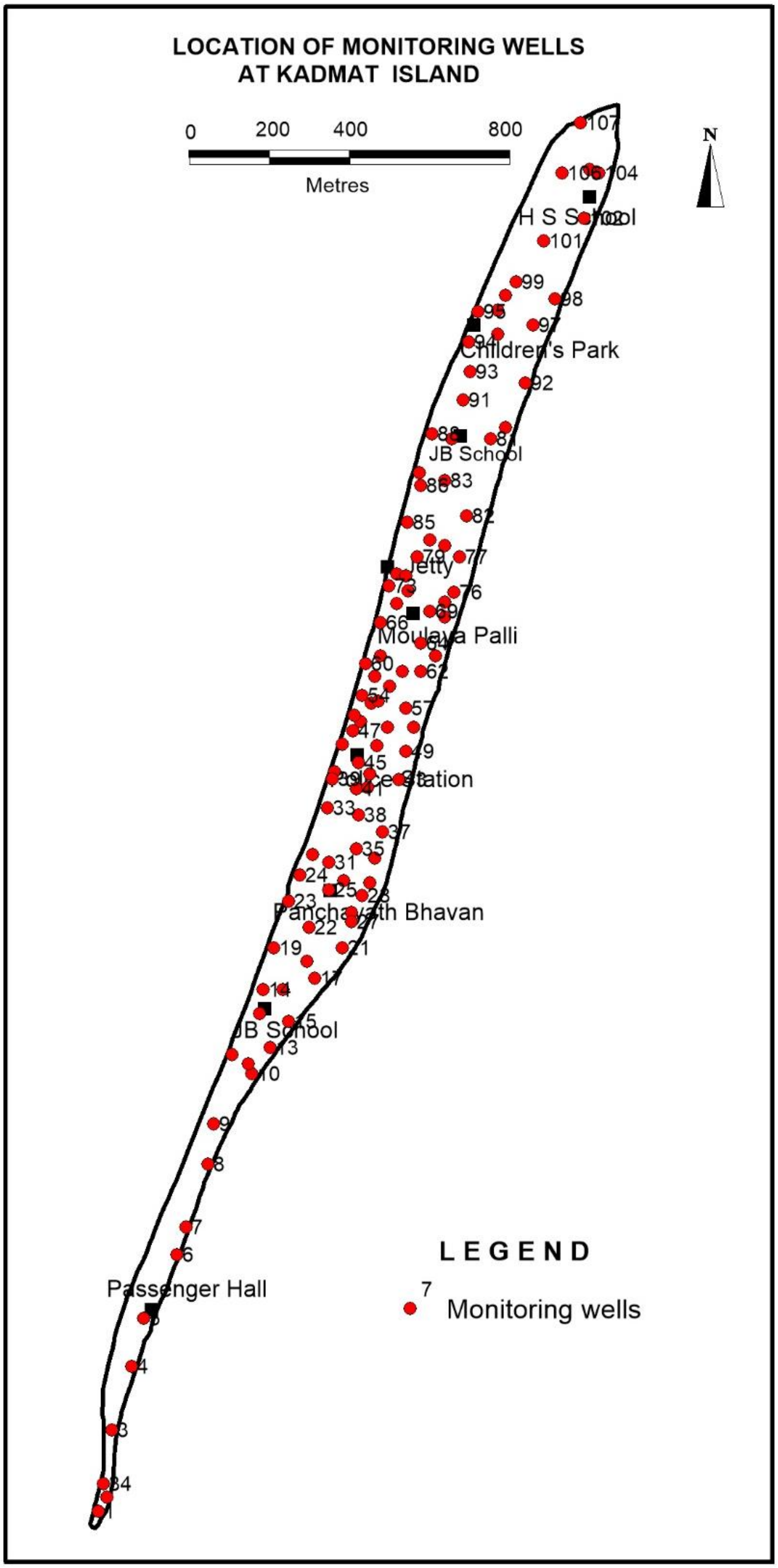


Fig 5.11 Key well locations in Kadmat island

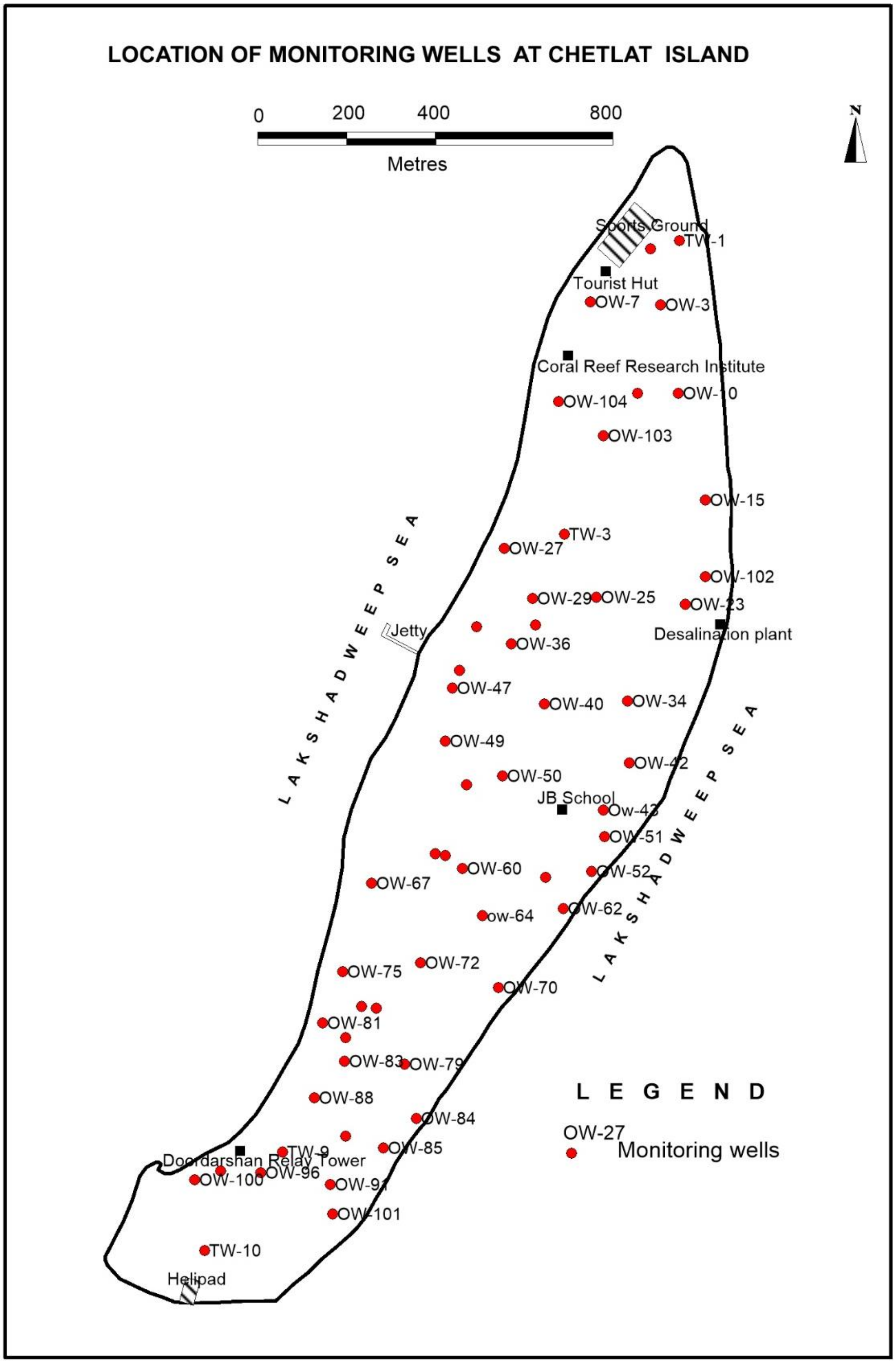


Fig 5.12 Key well locations in Chetlat

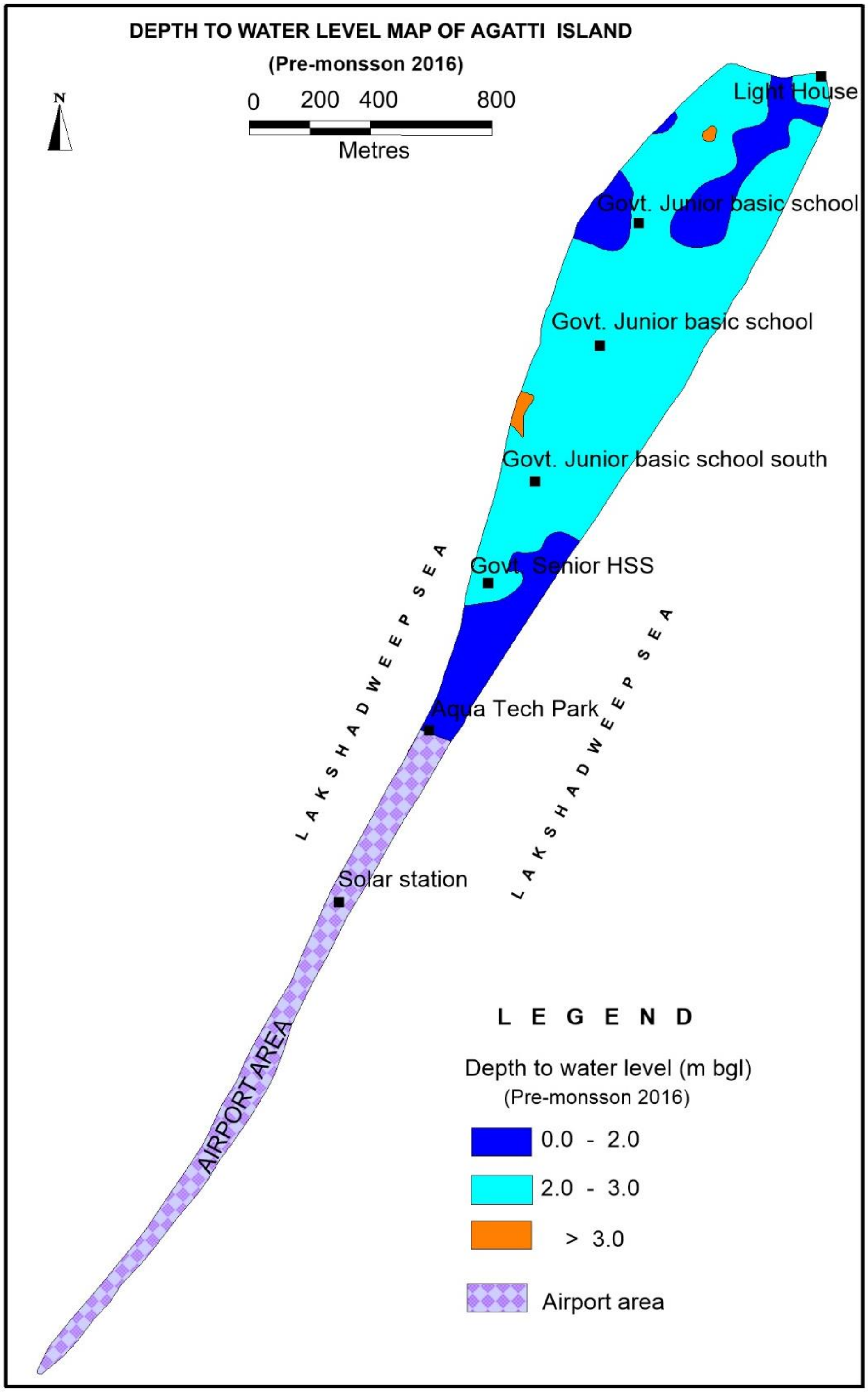


Fig 5.13 Depth to water level map of Agatti island

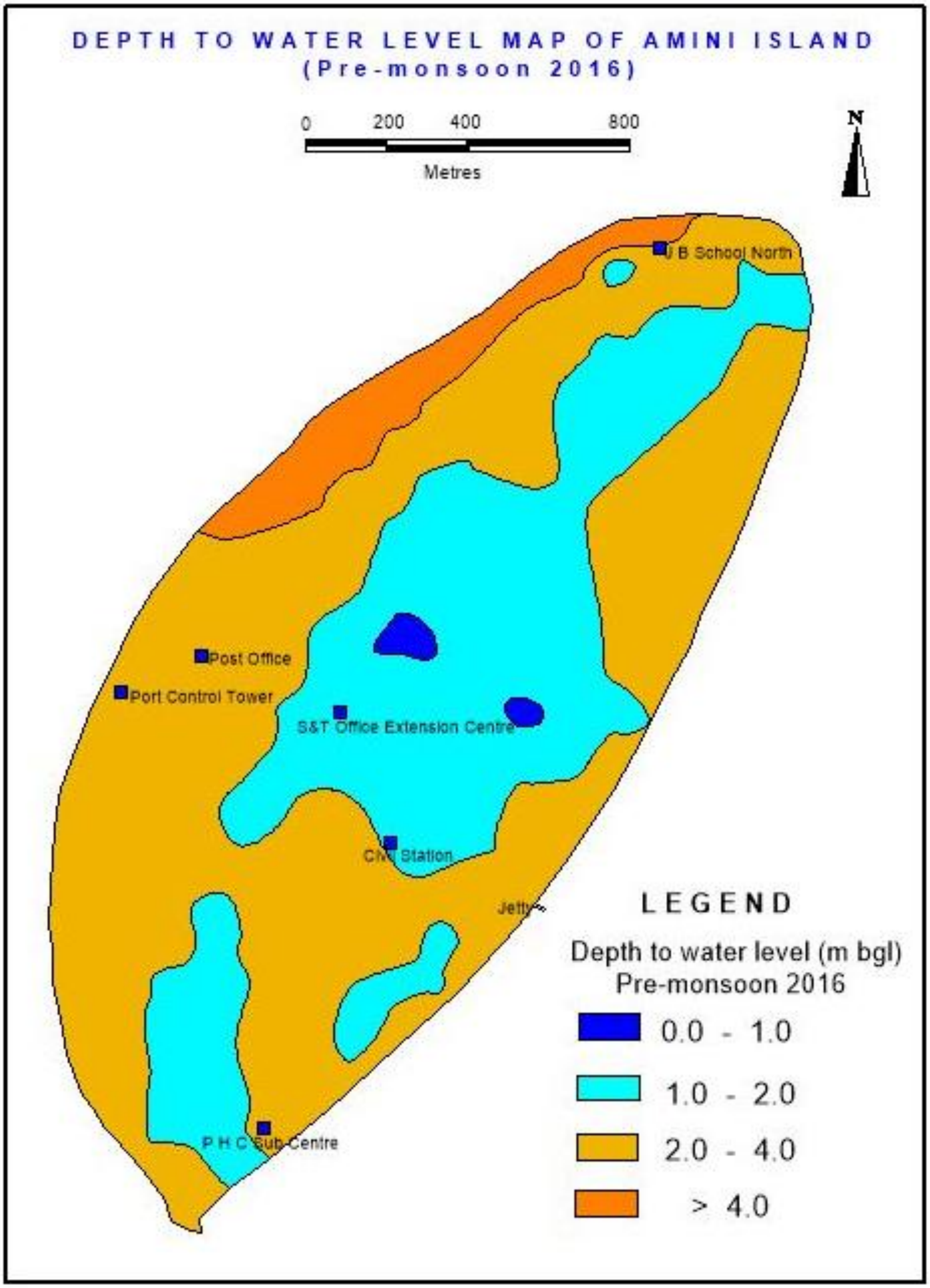


Fig 5.14 Depth to water level map of Amini island

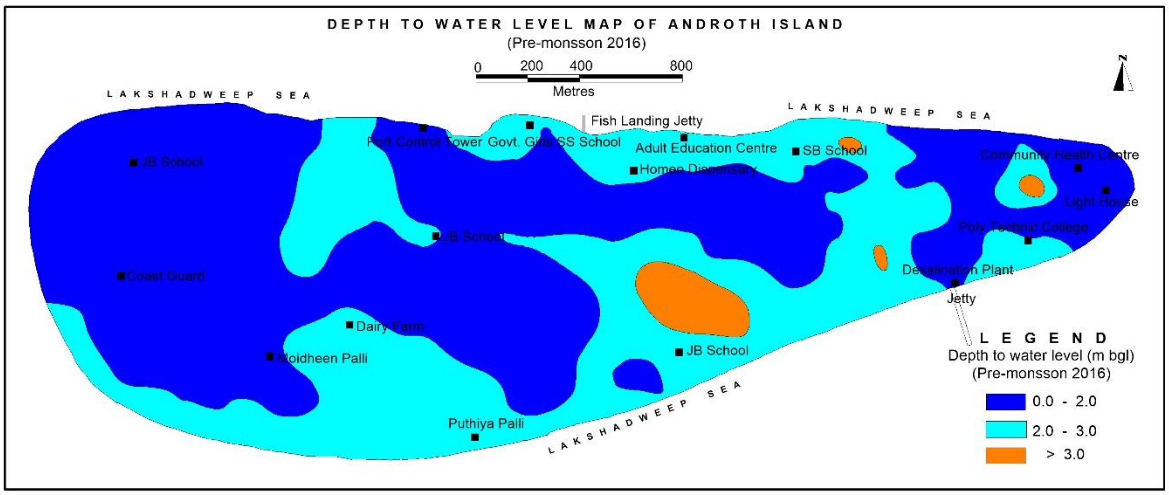


Fig 5.15 Depth to water level map of Andrott island

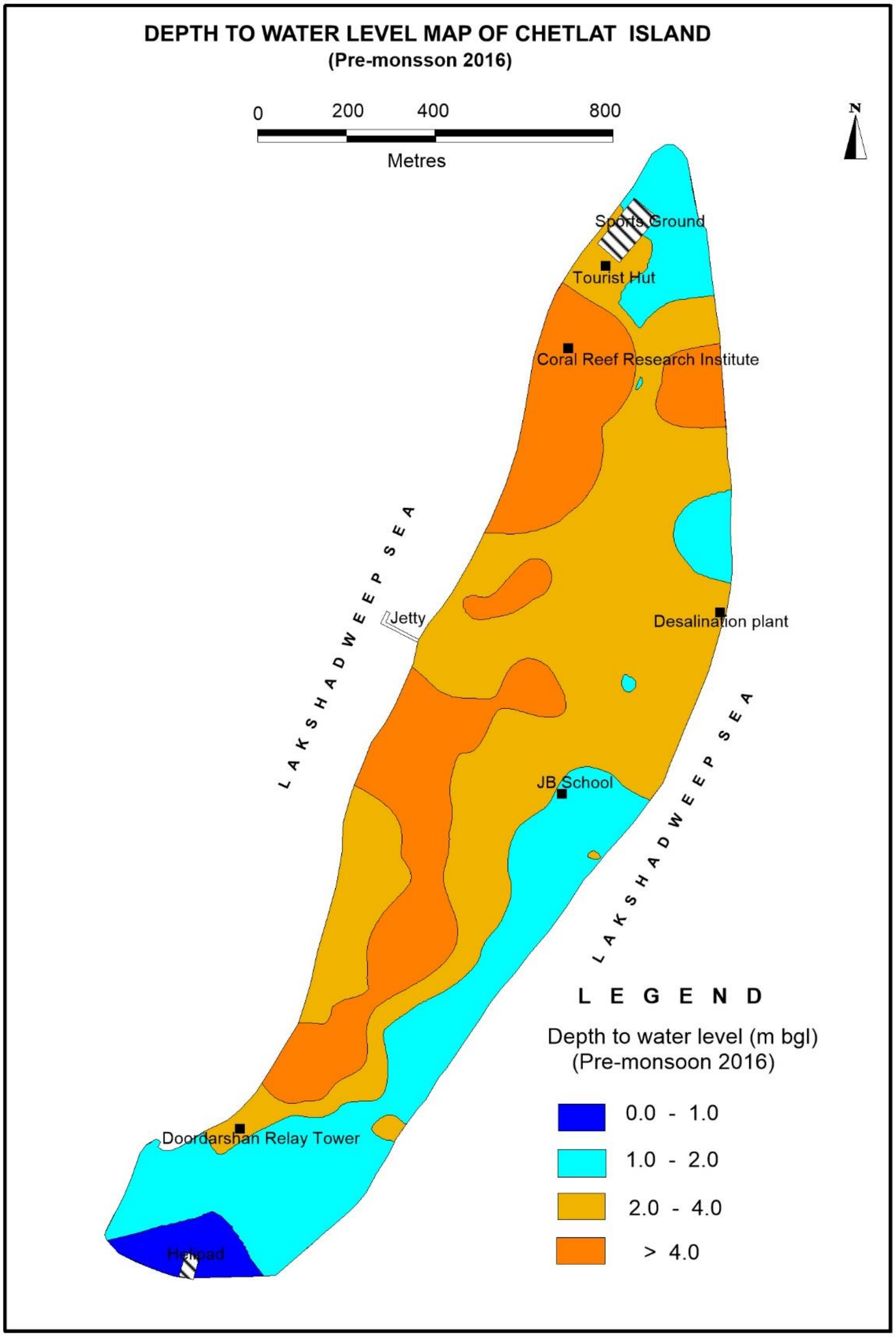


Fig 5.16 Depth to water level map of Chetlat island

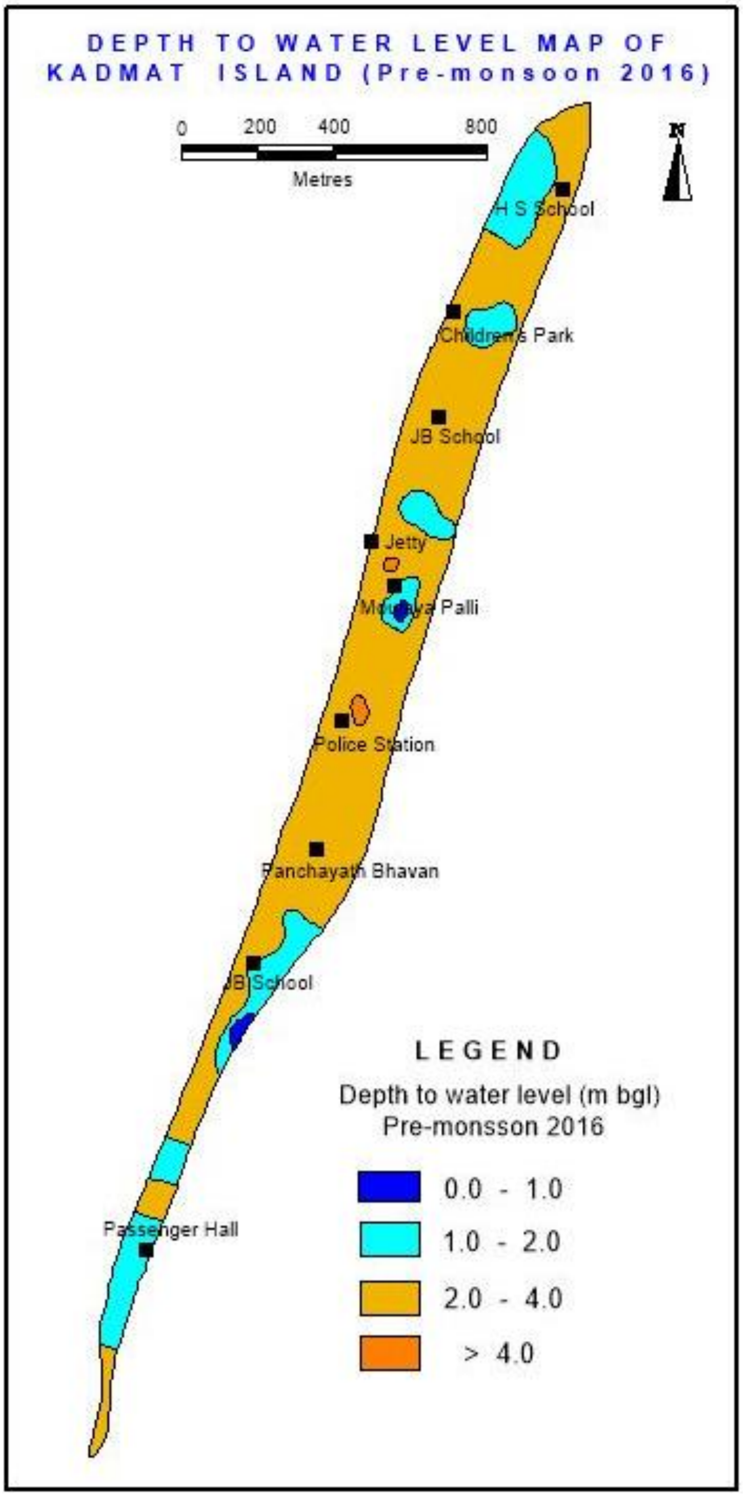


Fig 5.17 Depth to water level map of Kadmat island

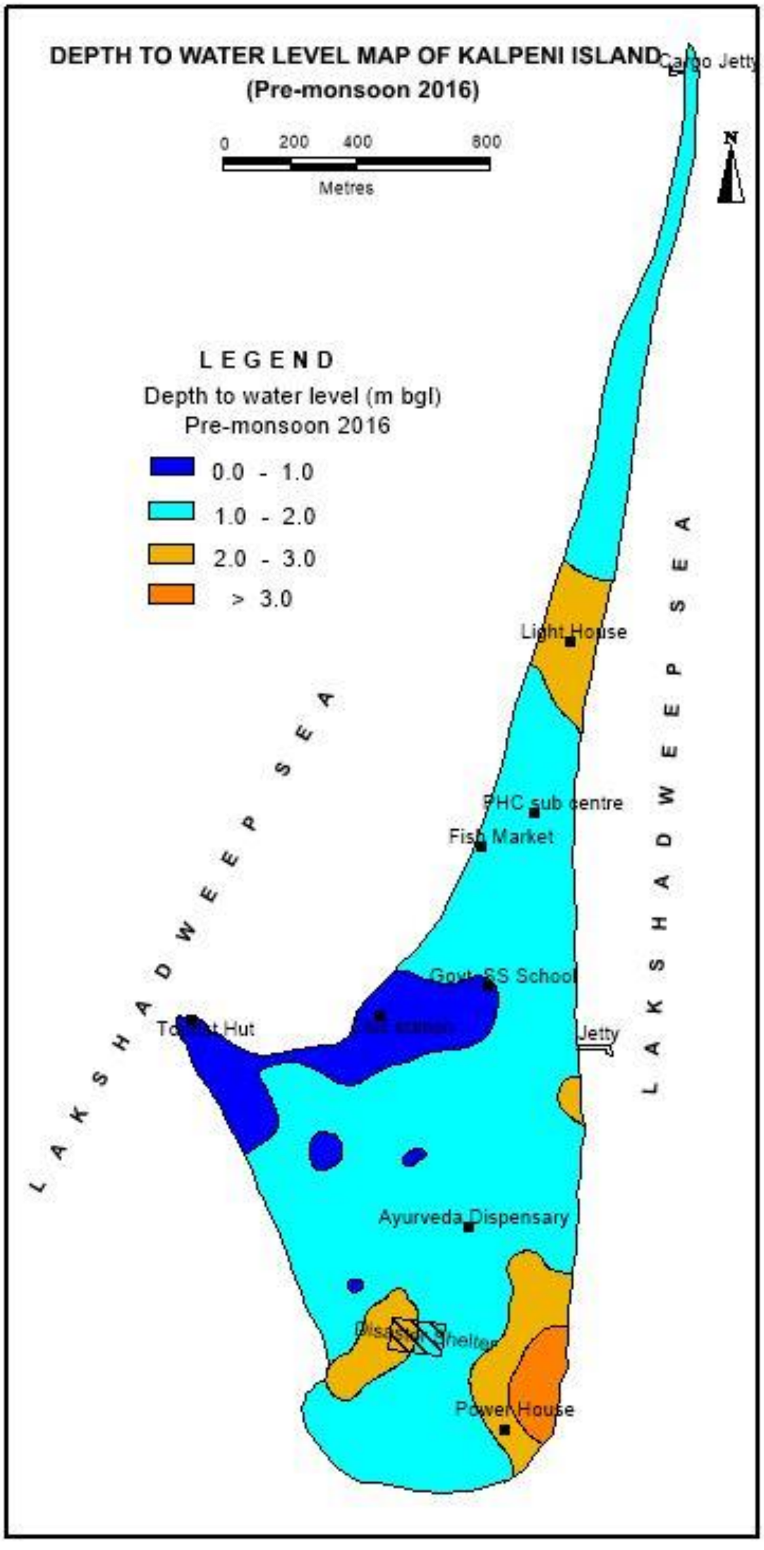


Fig 5.18 Depth to water level map of Kalpeni island

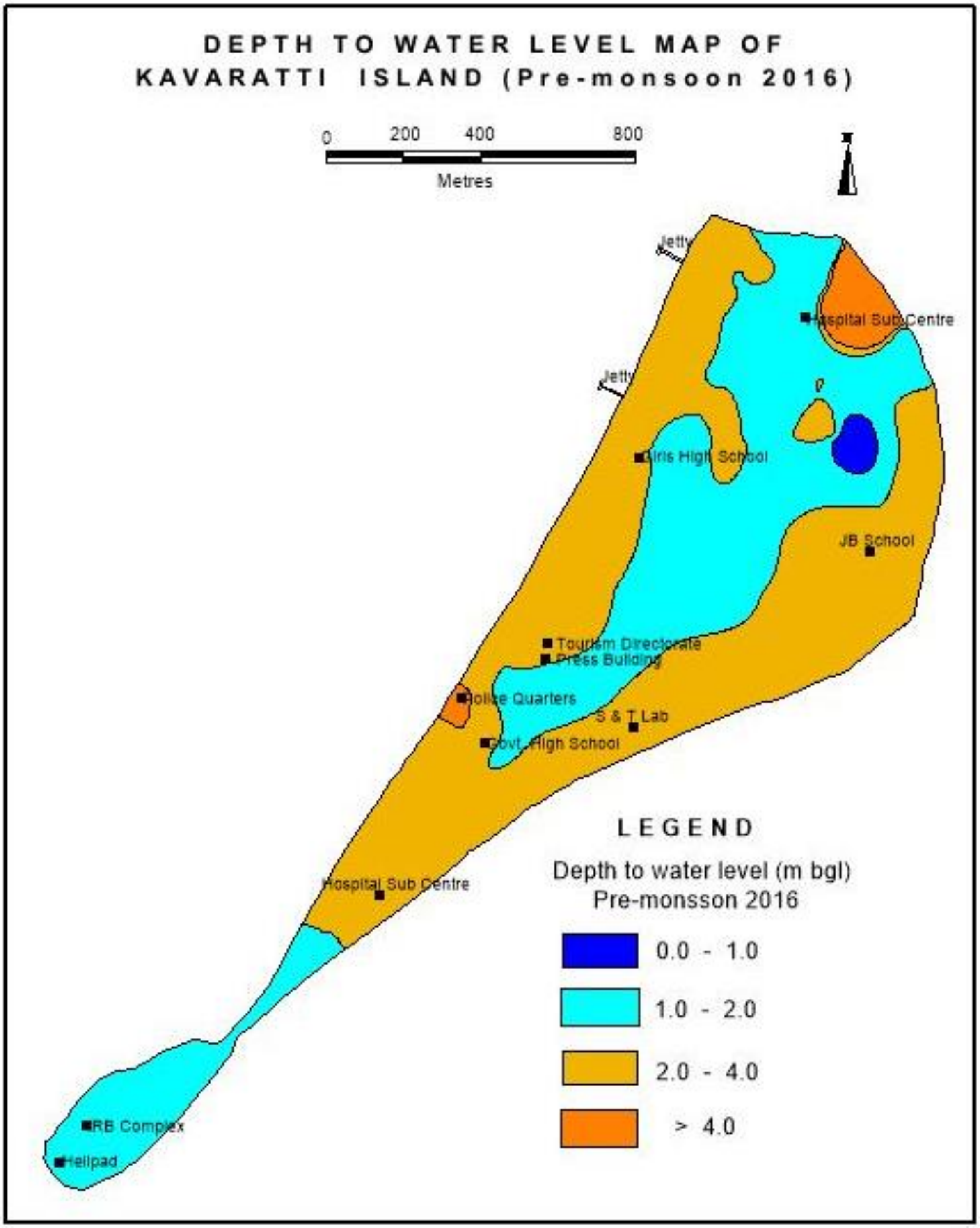


Fig 5.19 Depth to water level map of Kavaratti island

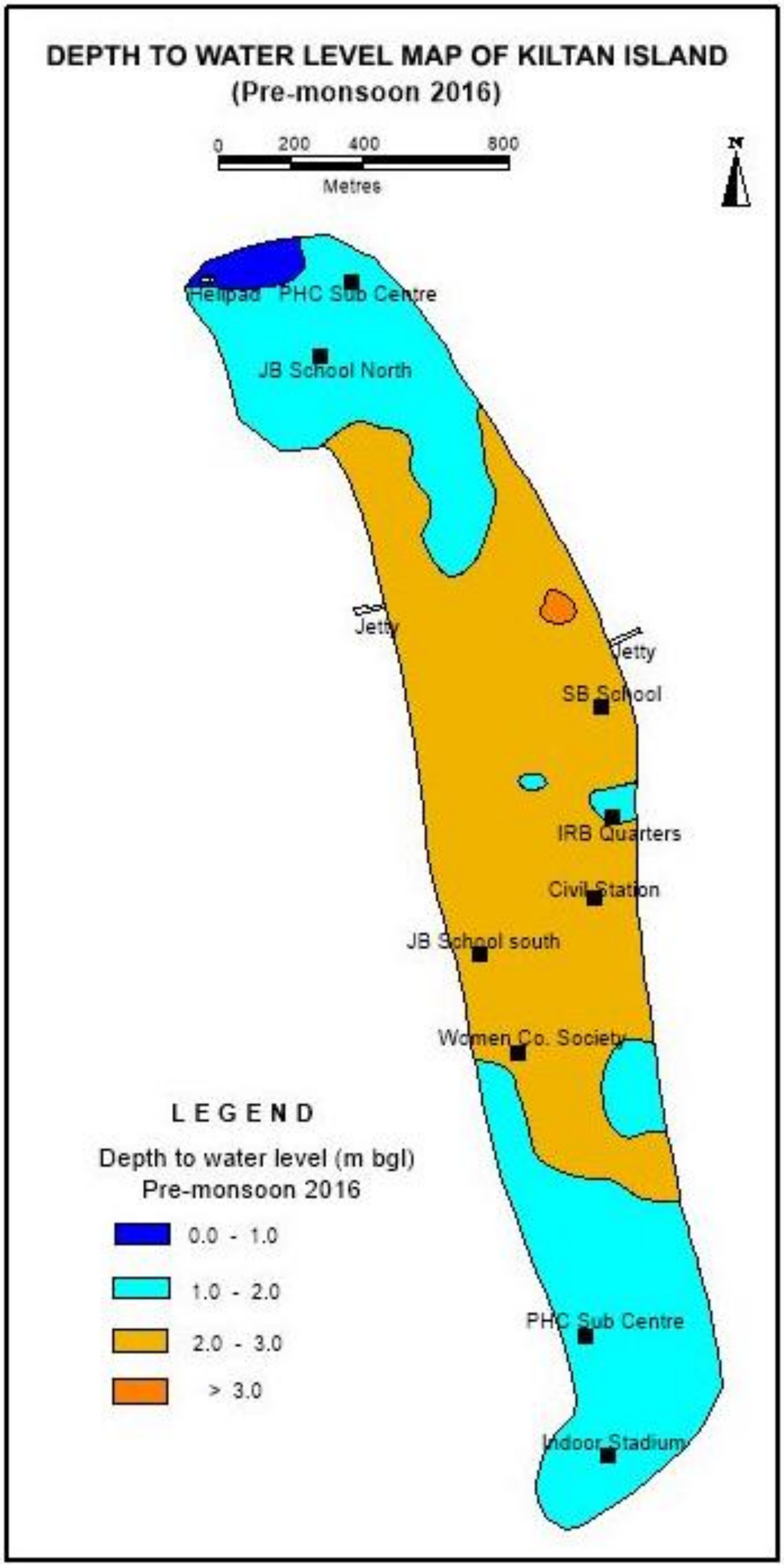


Fig 5.20 Depth to water level map of Kiltan island

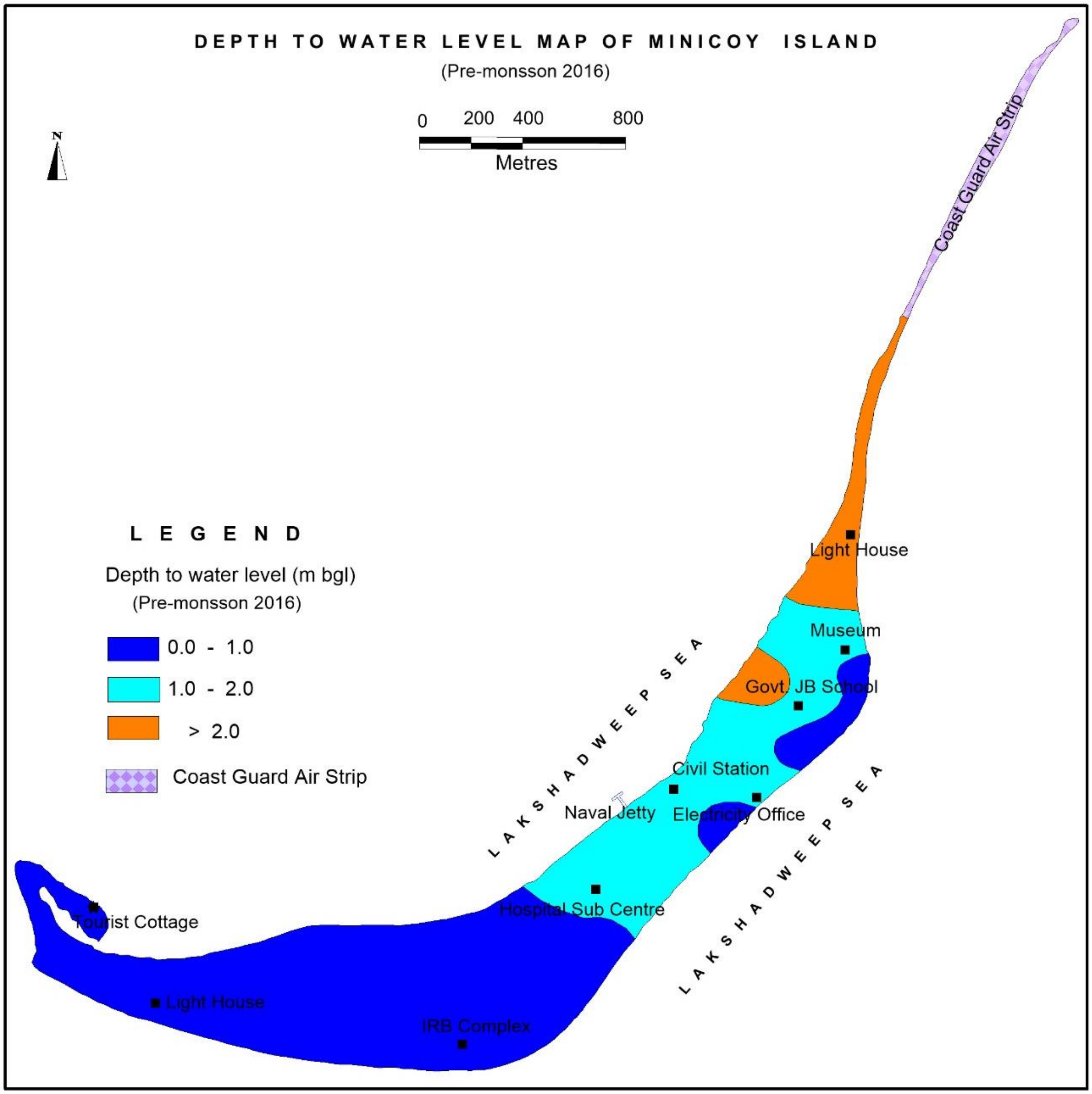


Fig 5.21 Depth to water level map of Minicoy island

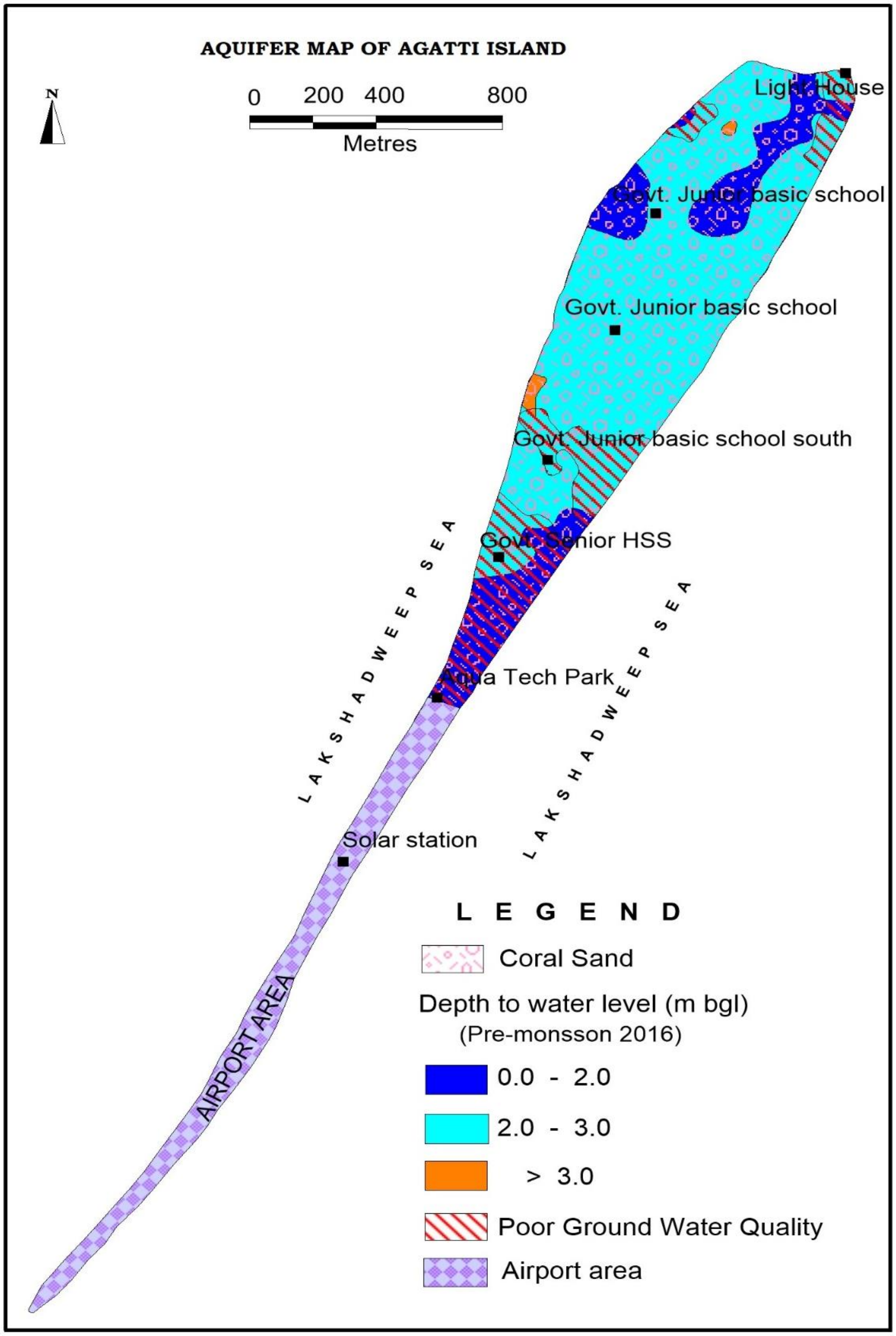


Fig 5.22 Aquifer map of Agatti island

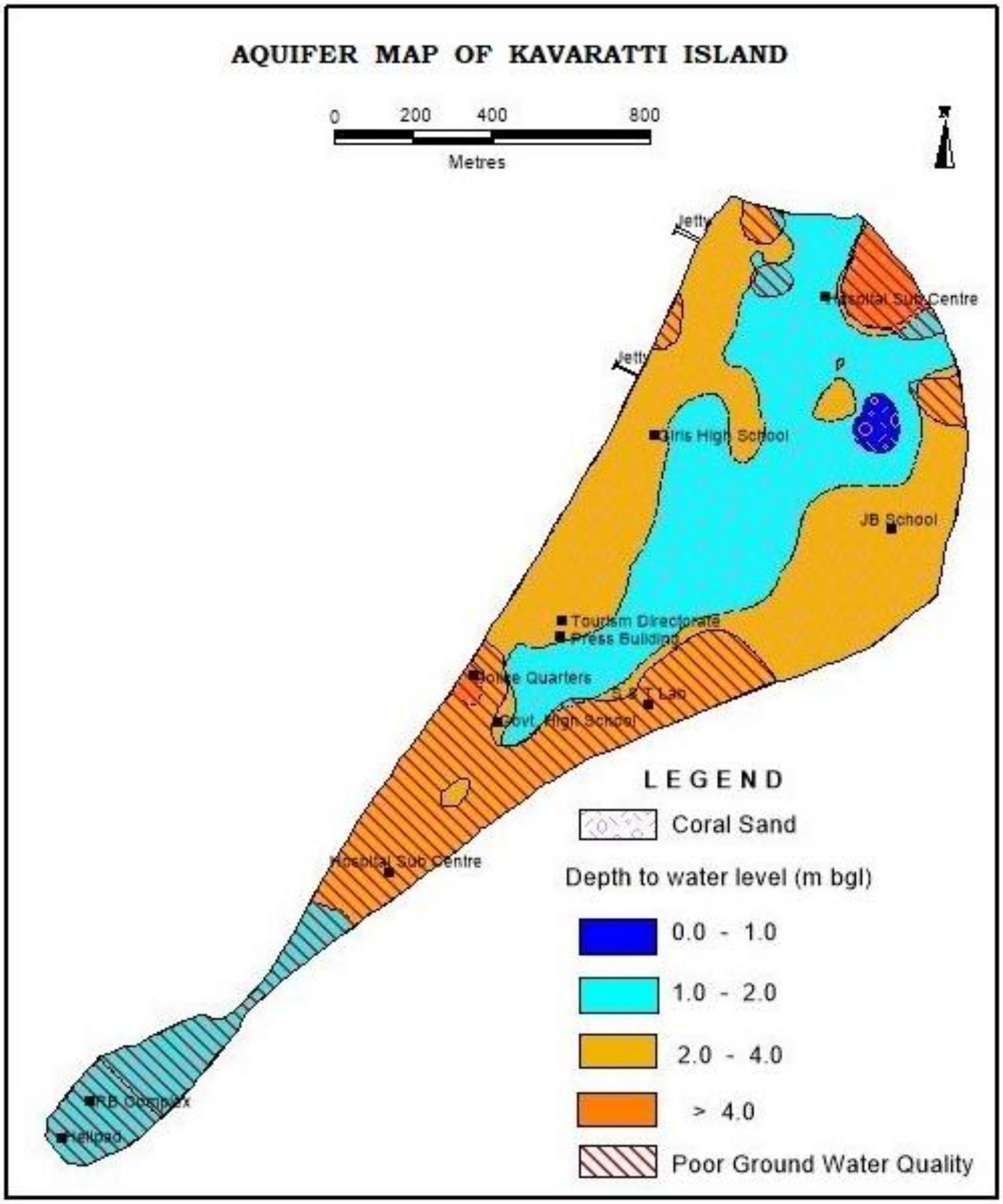


Fig.5.23 Aquifer map of Kavaratti Island

5.4.3 Kalpeni Island

Kalpeni forms part of the cluster of islands north of nine-degree channel. It is oriented in a NE-SW direction . It is almost club-shaped with a large lagoon on its west. There is a tiny island called the Cheriam on the northeast of it, which is approachable during low tide. In the central part of the island, the ground water is very fresh with the EC of 1000 μS/ cm while in the rest of the island the EC is in the range of 730- 3000 μS/ cm. In the northern parts, to the north of PWD store, towards the north western periphery as well as along the south eastern tip of the island, the water is brackish with the EC of about 6300 μS/ cm. There are 730 wells in the island with a well density of about 320/sq km. The depth to water level ranges from 0.7 to 3.85 m, while the depths of wells

are in the range of 1.70 to 4.24 m. The comparison of long-term water levels do not show any definite pattern and show both fall as well as rise in water levels without any specific pattern in spatial distribution. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.10, 5.18 and 5.24 respectively The weekly water level from the 10 Observation Wells of LPWD is presented in Appendix-IIb.
The comparison of DTW with rainfall for Kalpeni island is presented in figure.5-32. The figure shows that there is no much fluctuation due to rainfall in water level and the fluctuation is mainly due to tidal influences. Due to the highly porous nature of coral sands, the rain fall get dispersed very fast and hence there is much water level rise due to rain

5.4.4 Amini Island

Amini is located on the north-central part of the Lakshadweep archipelago. It is elliptical in shape and is oriented in a roughly NE-SW direction. Amini Island is quite unique by having a lagoon all around it unlike most of the other islands with a fringing reef on the eastern periphery and a lagoon on their west. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.6, 5.14 and 5. 25 respectively. The freshwater availability in this island is limited to south western and north eastern parts, while it is brackish in the central part. The depth to water varies from 0.97 to 6.37 m. and depth of wells range from 1.92 to 7.0 m. The comparatively deeper wells are seen north western part of the island where hard coral lime stone is exposed.There are 1050 domestic dug wells with a density of about 420 wells/ sq km.
The long term trend of water level as per weekly data is presented in figue-5.31. The figure shows that there is no much variation in water level with rainfall and variation is mainly due to tidal influence.The weekly water level from the select Observation Wells are presented in Appendix-II b.

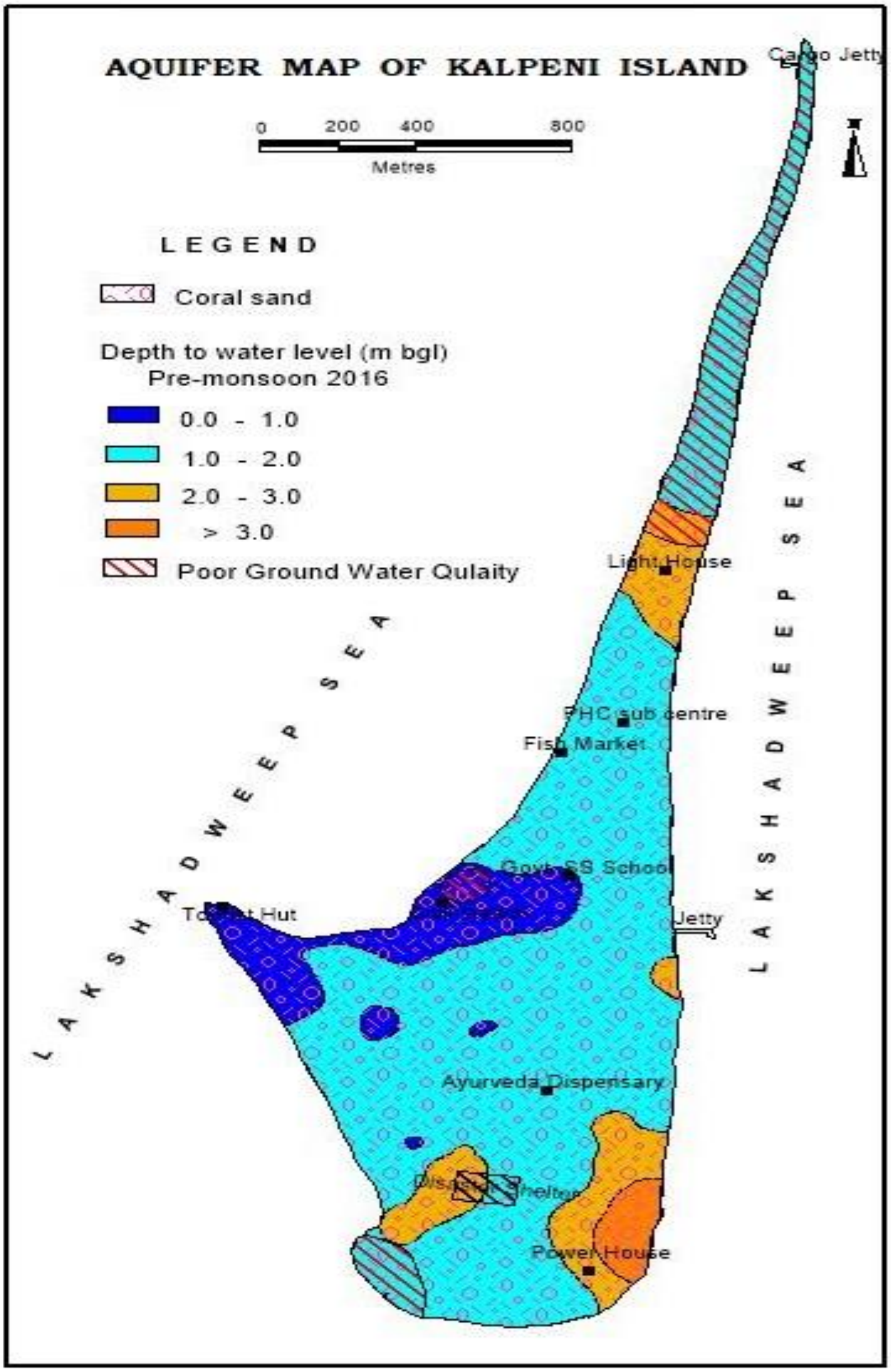


Fig. 5.24. Aquifer map of Kalpeni Island

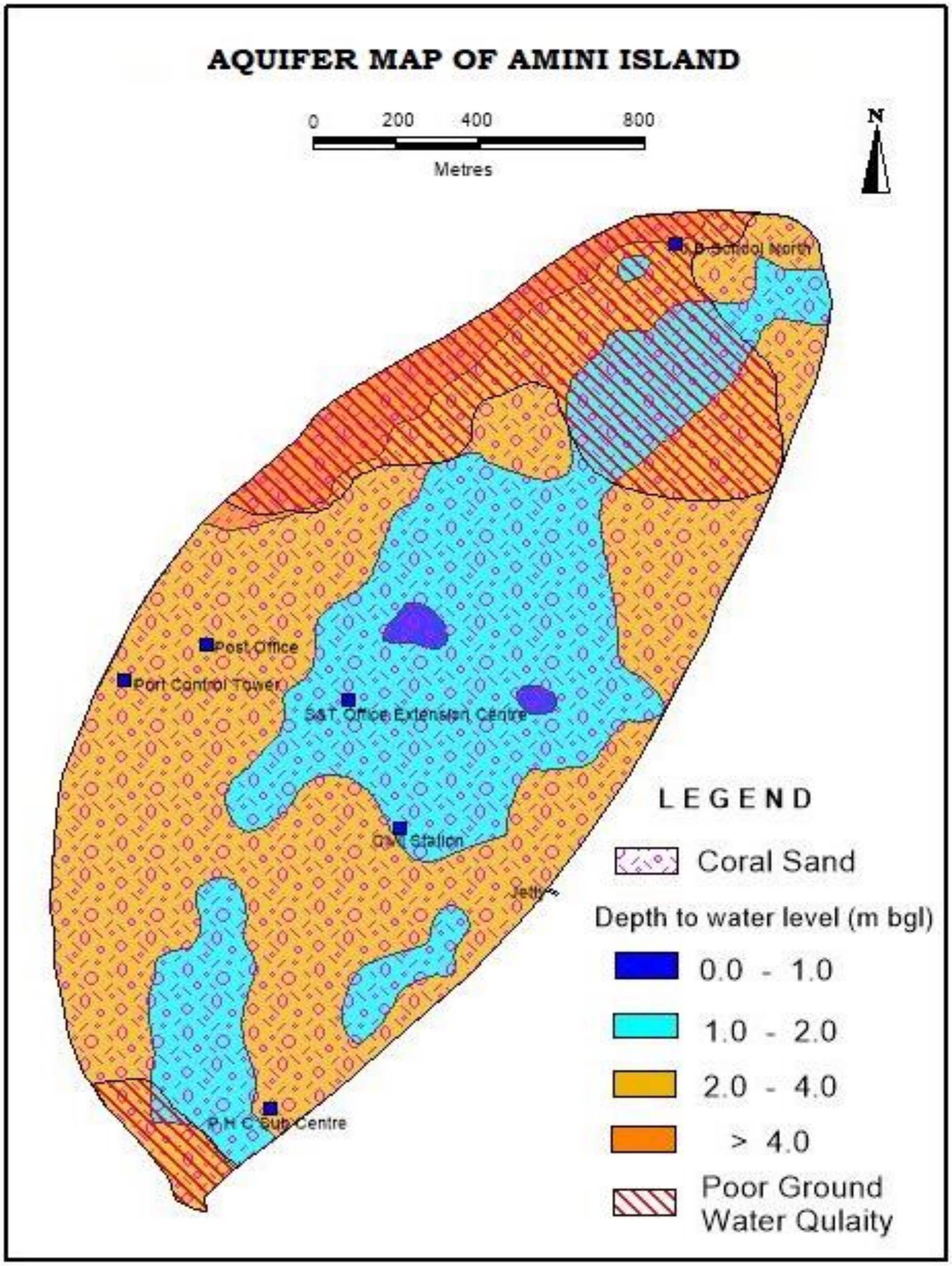


Fig. 5.25 Aquifer map of Amini island

5.4.5 Androth Island

Androth is the largest island in the U.T of Lakshadweep. It covers an area of 4.8 sq km and is roughly sole-shaped with a length of 4.6 km and width of 1.5 km. Unlike other islands, Androth is oriented in an east-west direction and it lacks a lagoon. Almost the entire island has a freshwater lens except along the western tip of the island, where the ground water is brackish, which may be due to the fact that the aquifer material in this area is composed of coarse-grained sand as compared to that in other parts of the island. The island boasts of the maximum number of about 1660 wells. The well density is about 345/ sq km. The depth to water ranges from 0.87 to 2.98 m, while the depth of the wells ranges 2.45 to 4.70 m.bgl. The ground water level is comparatively shallower in Androth Island compared to other islands. The ground water development is almost uniform. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.5, 5.15 and 5. 28 respectively.

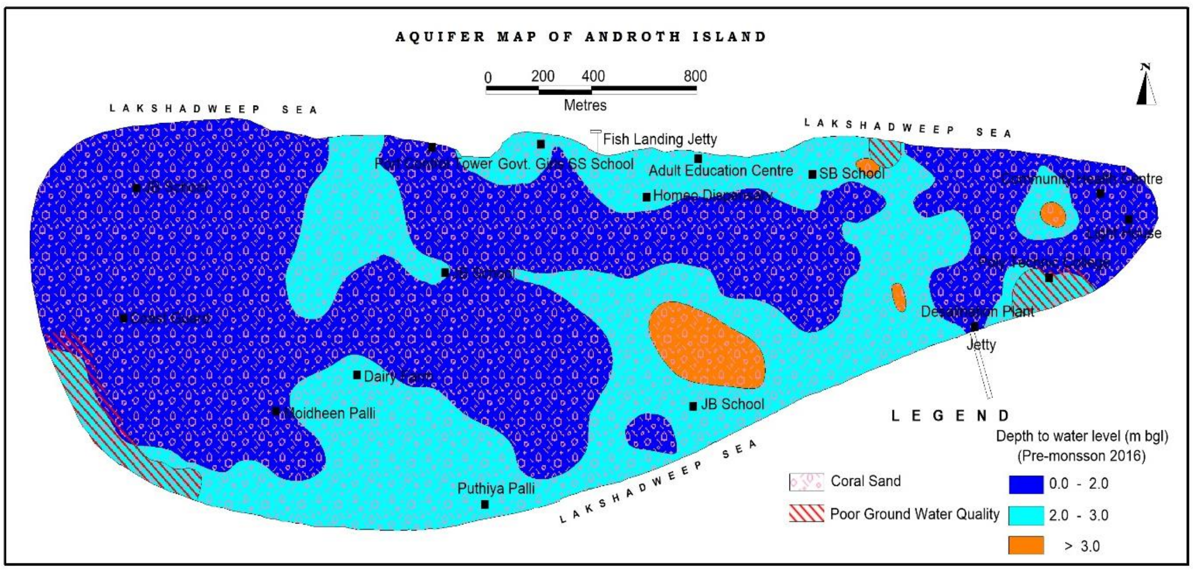


Fig. 5.26. Aquifer map of Androth Island

5.4. 6 Minicoy Island

Minicoy is the southernmost island of Lakshadweep, encircled by a large lagoon on its west. The demand for freshwater and the disposal of waste and related problems are severely felt in the island. In this island, freshwater is found in about 85 percent of the area along the north central part and brackish water in rest of the area. The depth to water ranges from 0.75 to 2.8 m and the depth of wells range from 1.2 to 3.2 m. The ground water development is restricted to the western parts of the northern half of the island. There are about 1645 wells with a well density of 374 / sq km. The maps showing depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.21 and 5. 30 respectively.

5.4.7 Kadmat Island

Kadmat trends in NNE-SSW direction and is an elongated island. It covers an area of 3.13 sq. km. and has a small lagoon on either side. Because of its shape (maximum width of 0.5 km), the occurrence of freshwater lens is very limited. The southern portion lying to the south of Bader palli has brackish water with EC of >3000 μS/ cm, whereas the north central parts of the island has freshwater with EC in the range of 500-2800 μS/ cm. There are about 925 wells with a density of 296 wells/sq km. The well density is the lowest compared to the rest of the islands. The depth to water level varies from 0.43 to 3.88 m and the depths of wells range from 1.61 to 4.95 m. bgl. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.11, 5.17 and 5. 29 respectively.

5.4.8 Kiltan Island

Kiltan is located about 50 km to the northeast of Kadmat Island and is an elongated island oriented in a roughly N-S direction. The island covers a small lagoon on its west. Almost the entire island has freshwater lens except along the southern tip, where the ground water is brackish. There are about 685 wells with a density of about 421 wells/ sq km. The depth to water level in the island ranges from1.60 to 3.70 m and the depths of wells range from 2.10 to 4.30 m bgl. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.8, 5.20 and 5. 27 respectively. The weekly water levels of observation wells in Kadmat Island is presented in Appendix-IIb.

5.4.9 Chetlat Island

Chetlat is the northernmost island of the Lakshadweep archipelago and has an area of 1.40 sq. km. The island is roughly sole-shaped, oriented in NNE-SSW direction with a small lagoon in the west. Freshwater occurs in about 90 percent of the total area except along the southern and northern tips. This is being tapped through about 480 domestic wells resulting in a well density of 461 wells / sq. km. The depth to water level varies from 1.01 to 3.98 m and the depths of the wells range from1.58 to 4.80 m bgl. Long-term comparison of water levels in select wells does not show any significant change in water levels. Ground water fluctuation in the island is in the range of 6 to 29 cm. The maps showing locations of the key wells, depth to water table (pre-monsoon 2016) and hydrogeology of the island is given in figures 5.12, 5.16 and 5. 28 respectively. The weekly water level of observation wells in Chetlat island are presented in Appendix-II a.

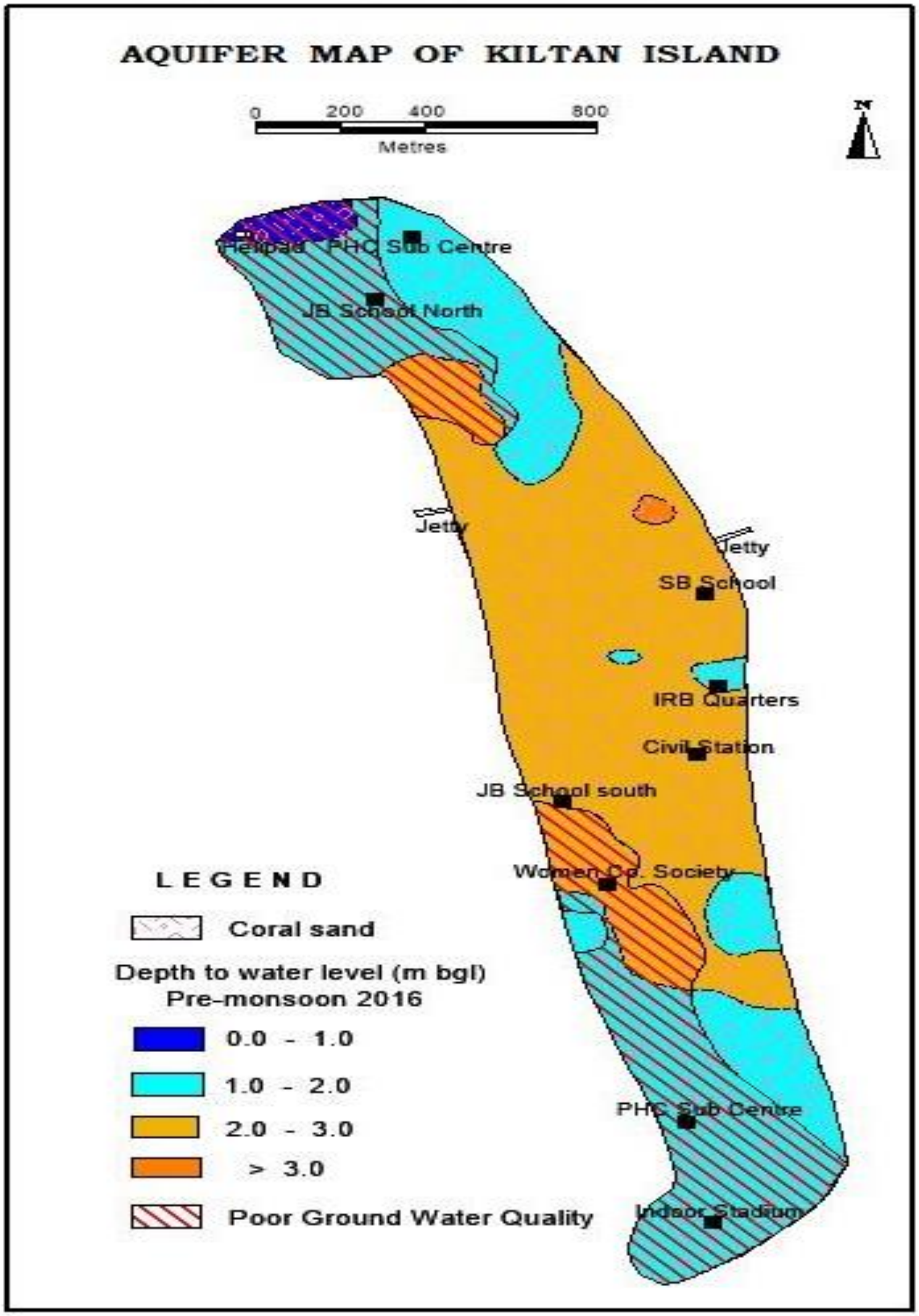


Fig. 5.27. Aquifer map of Kiltan Islands

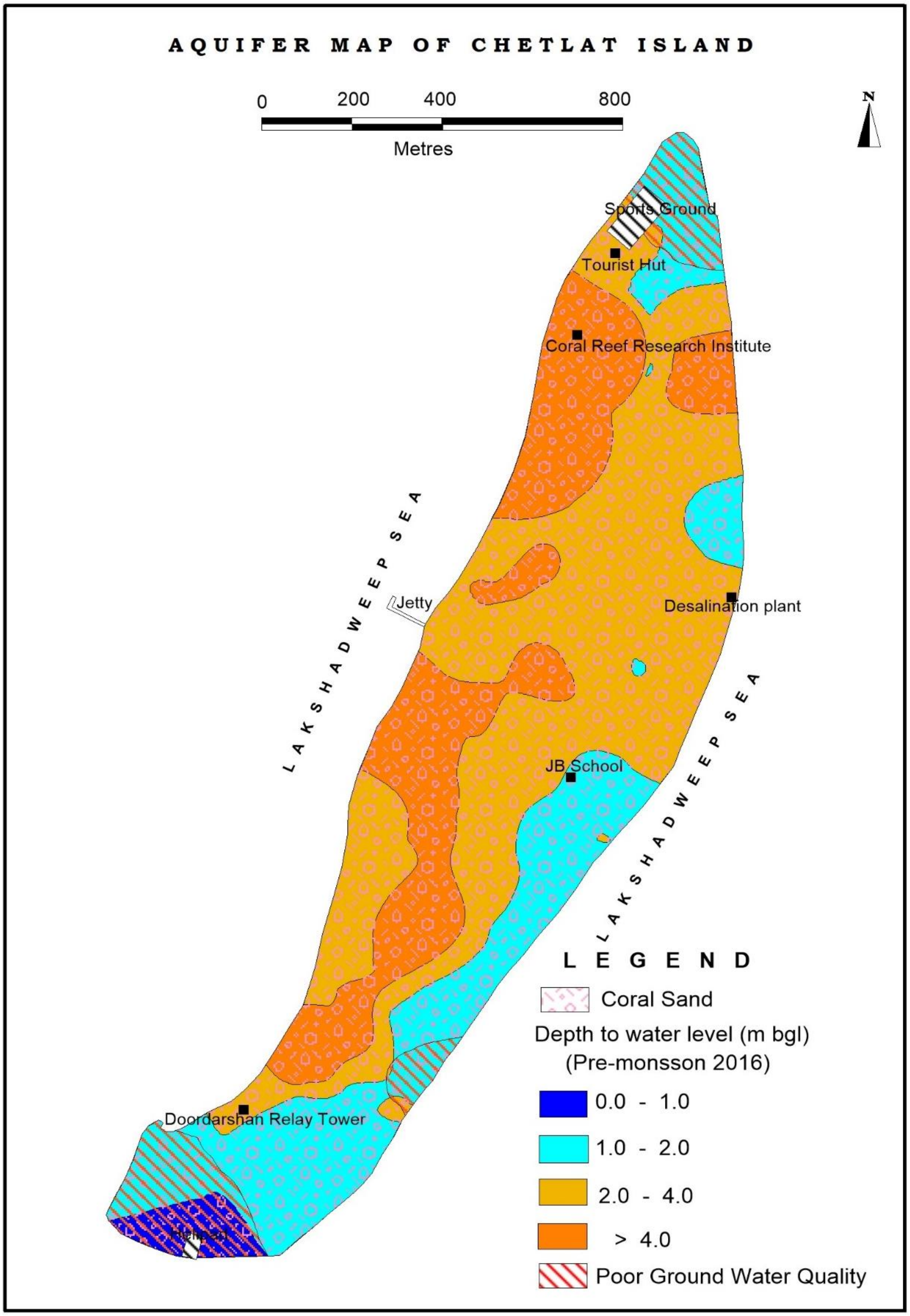


Fig. 5.28. Aquifer map of Chetlat Island

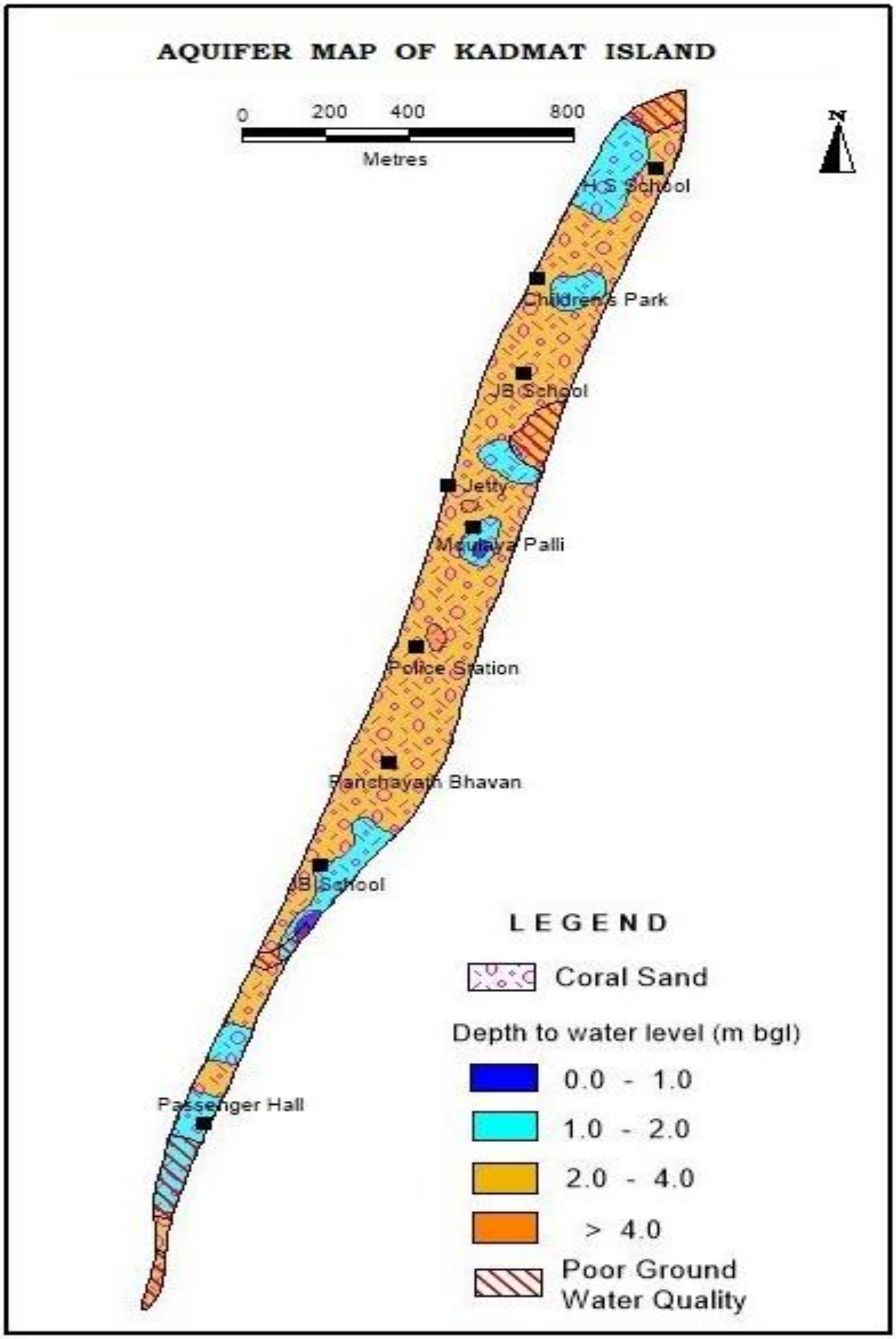


Fig. 5.29. Aquifer map of Kadmat Island

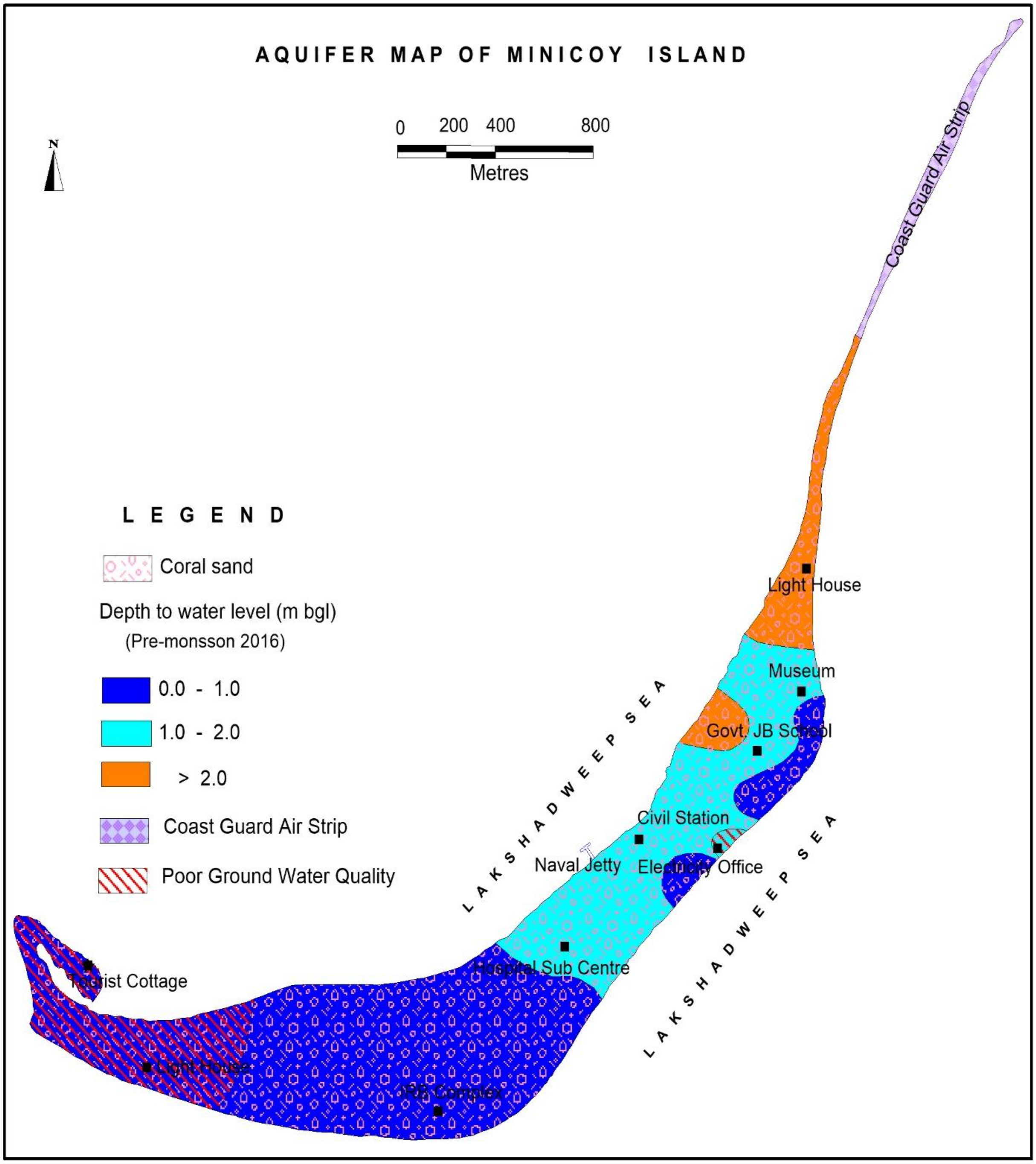
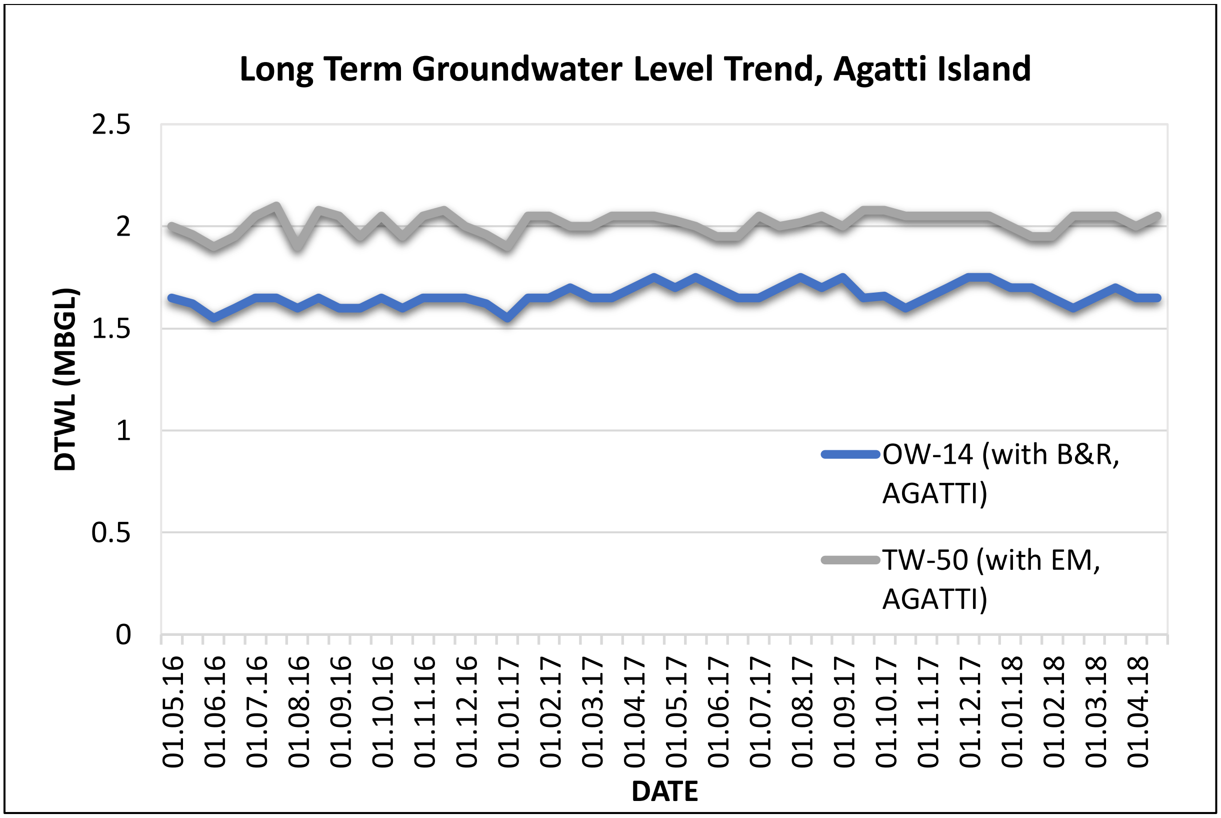
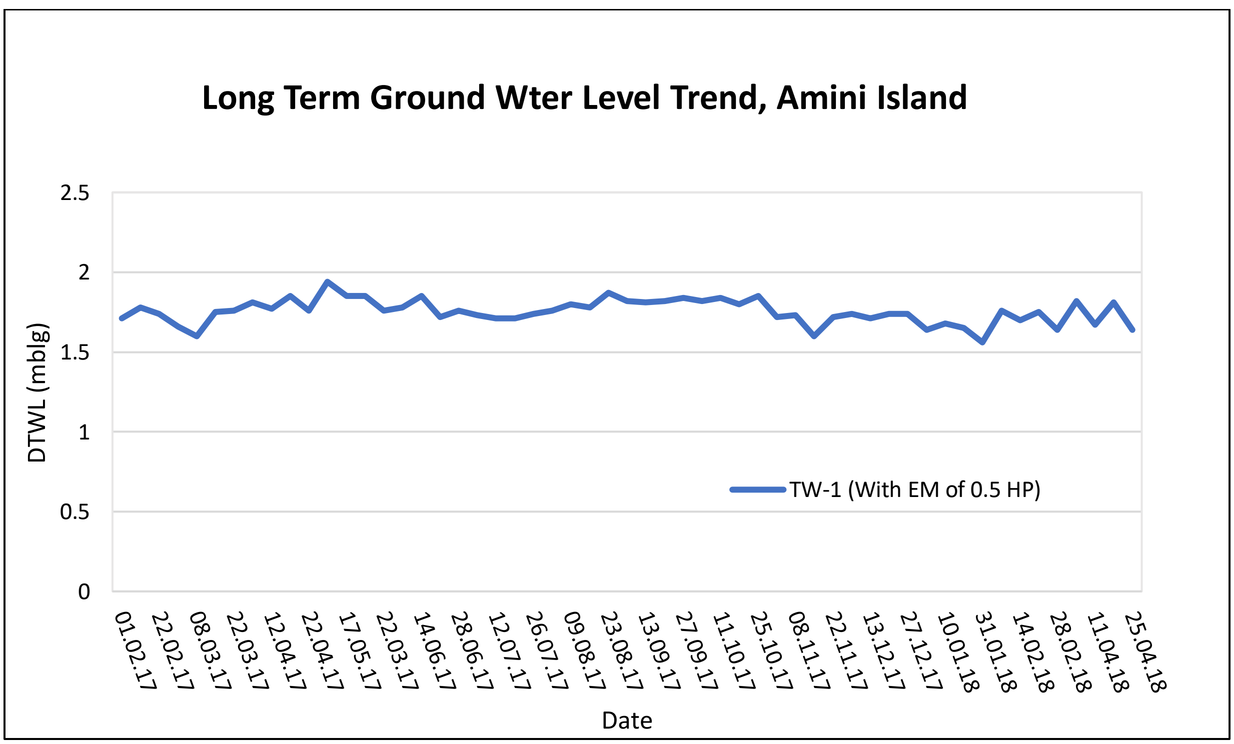
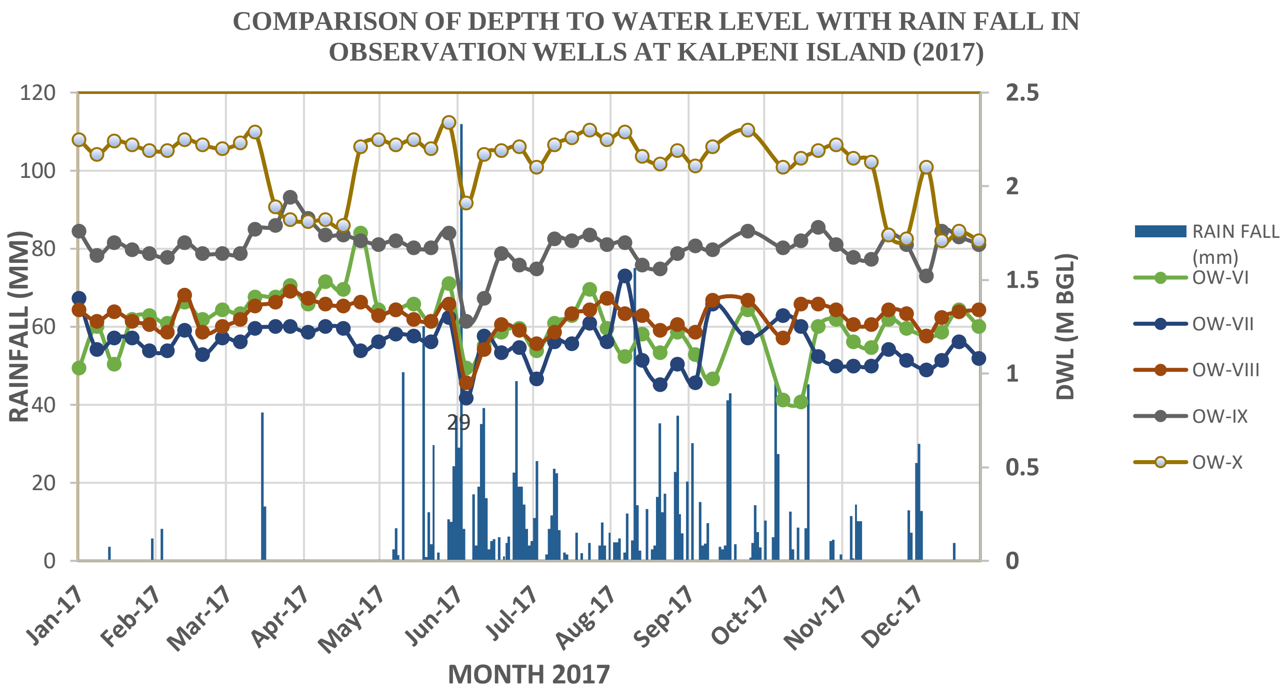


Fig. 5.30. Aquifer map of Minicoy Island





5.31 Long term trend of Ground water level in Observation wells at Agatti&Amini Islands.



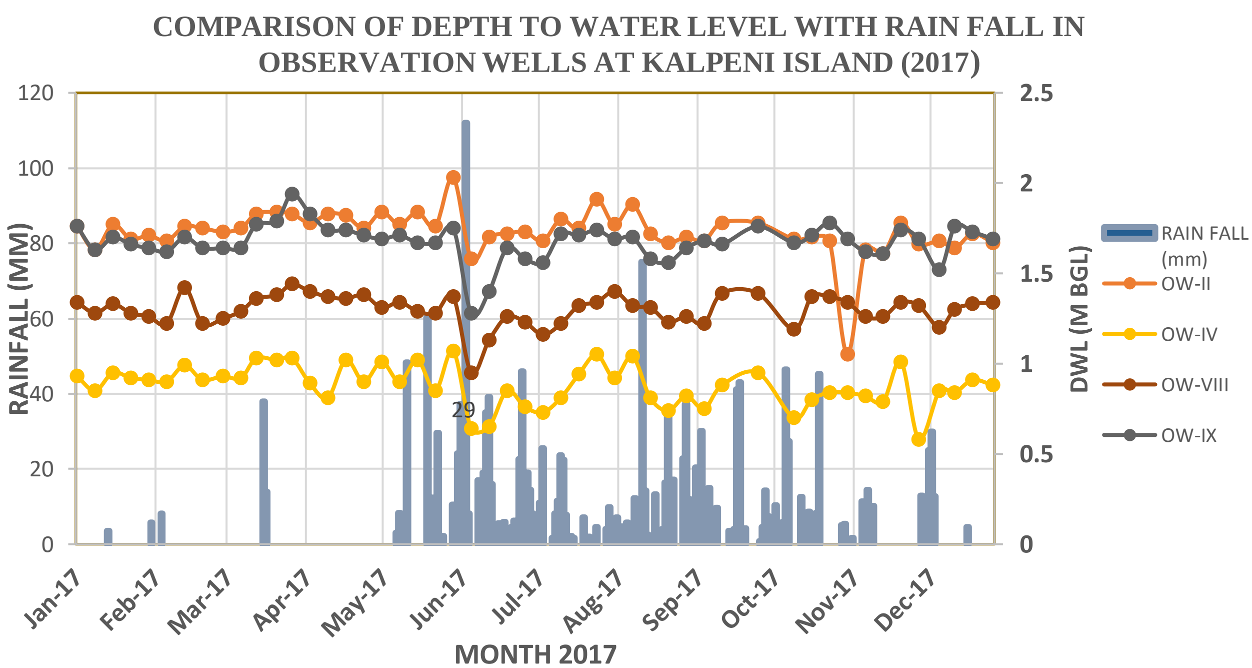


Fig.32 Comparison of DTW with Rainfall in Observation Wells in Kalpeni Island

6. QUALITY OF GROUND WATER

Ground water in Lakshadweep Islands is generally alkaline with few exceptions. The electrical conductivity ranges from 500 to 15,000 µS/cm at 25$_o$ C. Ranges of pH, EC and concentrations of important chemical constituents in ground water in the islands, based on the analytical results of samples collected from select open wells tapping the freshwater lens are shown in Table. 6.1.

The LPWD is maintaining chemical lab in all the islands and are monitoring the periodic chemical quality of the Observation Wells. The chemical data from this lab are utilised for the study.

Table 6.1: Hydrochemistry of select ground water samples collected from open wells in U.T of Lakshadweep

Sl No	Name of Island	No of Samples	pH	EC (µS/cm)	TDS (mg/l)	Total Hardness(mg/l)	Ca (mg/l)	Mg (mg/l)	Cl (mg/l)
1	Agatti	20	7.10-7.69	1190-11600	558-4322	380-1600	88-224	39-253	89-3834
2	Amini	140	7.43-8.12	1180-13800	661-7778	200-1370	20-590	10-170	20-3000
3	Androth	150	7.10-7.64	520-11740	506-4372	140-820	40-1400	20-800	50-970
4	Chetlat	55	7.12-8.50	700-11100	392-6216	270-1470	30-450	180-1020	50-3350
5	Kadmat	107	7.43-8.12	960-14940	538-8366	240-2650	100-200	130-2450	90-5350
6	Kalpeni	55	6.9-7.95	180-15030	101-8417	66—3140	40-1200	80-1840	40-5730
7	Kavaratti	78	7.02-8.66	306-11400	171-6384	60-1670	40-640	20-1120	30-4350
8	Kiltan	59	7.22-7.55	480-4730	269-2647	140-820	60-260	40-700	40-440
9	Minicoy	25	7.5-8.6	500-2500	274-1400	220-580	100-240	120-380	70-480

The major ions in the fresh water lens are within the permissible limits and fluoride varies from 0.12 to 1.52 mg/l. Lateral, vertical and temporal changes in quality of ground water are observed. The fresh water lens is generally alkaline with pH ranging from 7.02 to 8.66. The dissolution of $CaCO_3$ during rainwater infiltration leads to high pH of ground water. However, samples from the pumping wells immediately after pumping are found to be slightly acidic. This is because of the precipitation of $CaCO_3$ from water due to instability of equilibrium between Calcium and bicarbonate ions. $CaCO_3$ precipitate is quite often seen at the bottom of such pumping wells. The decrease of pressure that accompanies pumping from a certain depth below water level is likely to cause a decrease of dissolved CO_2 and to render the water more saturated with calcite than it originally was (Mandal, S and Shiftan, Z.L, 1981). The overall reaction describing $CaCO_3$ dissolution and precipitation is given below:

$$CaCO_3 + H_2O + CO_2 \Leftrightarrow Ca^{++} + 2HCO_3^-$$

Higher concentrations of the dissolved solids are generally seen along the periphery of the islands and also close to pumping centers.

6.1 Variations in ground water quality

The ground water quality variations in the Islands could be lateral, vertical and temporal. The quality is also highly variable and reversible. It is observed that the quality improves with rainfall . Other factors affecting the quality are tides, ground water recharge and draft. There is a vertical variation in the quality due to the zone of the interface and underlying sea water. It is also seen that any perforation like drilling affects the quality. This acts as a conduit for up-coning of seawater.

Quality of ground water in the islands varies with time too. Wells from which water is drawn by hand retain more or less the same quality over a long period, whereas quality deterioration is observed around pumping centers. A trend towards sea water composition is observed with increasing electrical conductivity in and around pumping centers. Similarly, brackish water is seen along topographic lows and in areas where coarse pebbles and corals are seen.

6.2 Ground water quality characteristics of individual islands

The quality characteristics of ground water in the islands are controlled by their shapes, climate, water use pattern etc. The water quality characteristics of individual islands are described in brief in the following sections.

6.2.1 Agatti: The quality of water in the island is good and potable. It is mainly Mg-Ca bicarbonate type sand is suitable for irrigation and other purpose also. pH values ranges from 7.10 to 7.69. The EC values are generally in the range of 1190- 11600 µS/ cm at 25 $_{o}$C and about 90 % of the dug wells have EC less than 3000 µS / cm at 25 c. The salinity is the highest of the south western part of the island where it is 12200 µS / cm at 25 $_{o}$C. Chloride content shows vide variation from 88 mg/ l to 3834 mg/l. The fluoride content is in the range of 0.3 to 1.0 mg/l. The spatial variations in EC are depicted in Fig. 6.1.

6.2.2 Amini: Ground water is fresh in southwestern half of the island except in two small saline patches in the southwestern tip of the island. There is another vast stretch of fresh water lens on the northern part of the island and a small fresh water lens within the island in the southern part. The water is generally brackish with E.C more than 3000 µS / cm at 25$_{o}$C in the central, southern and north western parts. The water is alkaline with pH in the range of 7.43 to 8.12. The chloride content shows the wide variation of 20-2000 mg/l .About 70% of the water samples shown the EC 5range <3000 µS / cm at 25$_{o}$C and about 94 % of samples shown the chloride content <1000 mg/l. Fluoride is in the range of 0.2 to 1.4 mg/l. The spatial variations in EC are depicted in Fig. 6.2.

6.2.3 Androth: In general, the ground water quality of the island is fresh with EC in the range from 520 to 11740 µS/ cm at 25º C, whereas in the western tip of the island a higher degree of ground water mineralization is noticed. Water is almost neutral to slightly alkaline with pH values in the range of 7.10 to 7.64. Majority of the water samples shown the EC less than 3000µS / cm at 25$_{o}$C and chloride value < 1000 mg/l. The spatial variations in EC are depicted in Fig. 6.3.

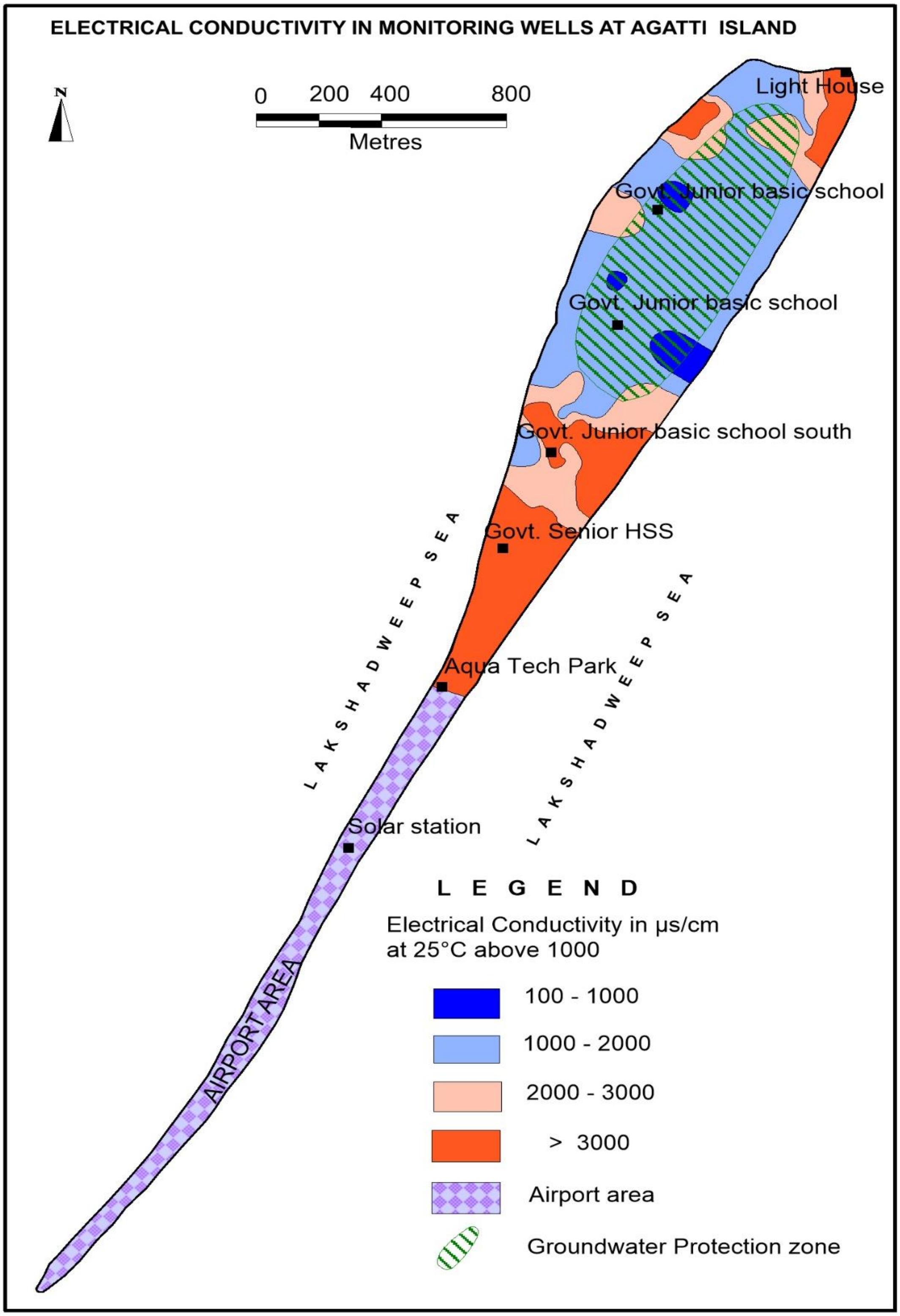


Fig. 6.1. Spatial variations in EC in Agatti island

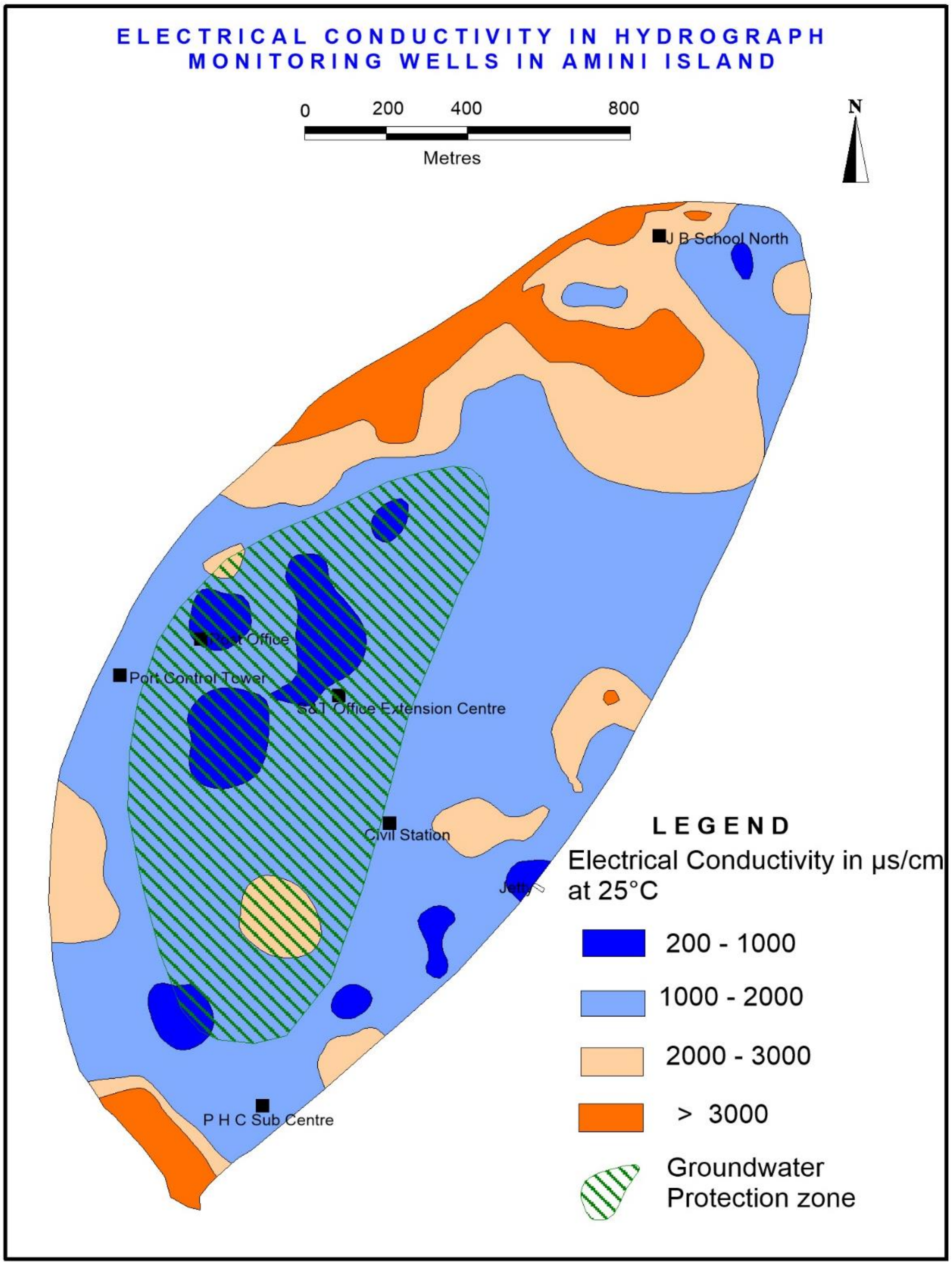


Fig. 6.2. Spatial variations in EC in Amini island

6.2.4 Chetlat: The ground water is fresh and is suitable for drinking purposes except along the northern and southern tips of the island where it is brackish. The EC values are generally within the range of 700-300 µS / cm at 25$_{o}$C 0. About 80% of the water samples shown the EC range <3000 µS / cm at 25$_{o}$C .The chloride value of water samples are also less than 1000 mg/l in 90% of the samples. The spatial variations in EC are depicted in Fig. 6.5

6.2.5 Kavaratti: Quality of ground water in the island is good and potable. It is mainly Mg- Ca-Bicarbonate type and is suitable for irrigation and other purposes also. The pH value ranges from 7.02 to 8.66.The EC values are generally within the range of 306- 11400 µS / cm at 25 c. The chloride content shows a wide variation of 30- 4350 mg/l. About 70% of the water samples shown the EC range <3000 µS / cm at 25$_o$C and 83 % of samples shown the chloride range<1000 mg/l .Ground water in the western tip of the island is brackish, and are fresh and potable in the north central part of the island.The spatial variations in EC are depicted in Fig. 6.7.

6.2.6 Kalpeni: The best quality of ground water is encountered in the central part of the island, whereas the water is very fresh with the EC value are within the range of 380- 1204 µS/cm at 25ºC. The water is brackish in the northern tail of the island and in the north western coastal area. A zone of high conductivity is observed in the southern part of the island also. About 90 % of the water samples shown the EC <3000 µS / cm at 25$_o$C and Chloride <1000 mg/l.The spatial variations in EC are depicted in Fig. 6.6.

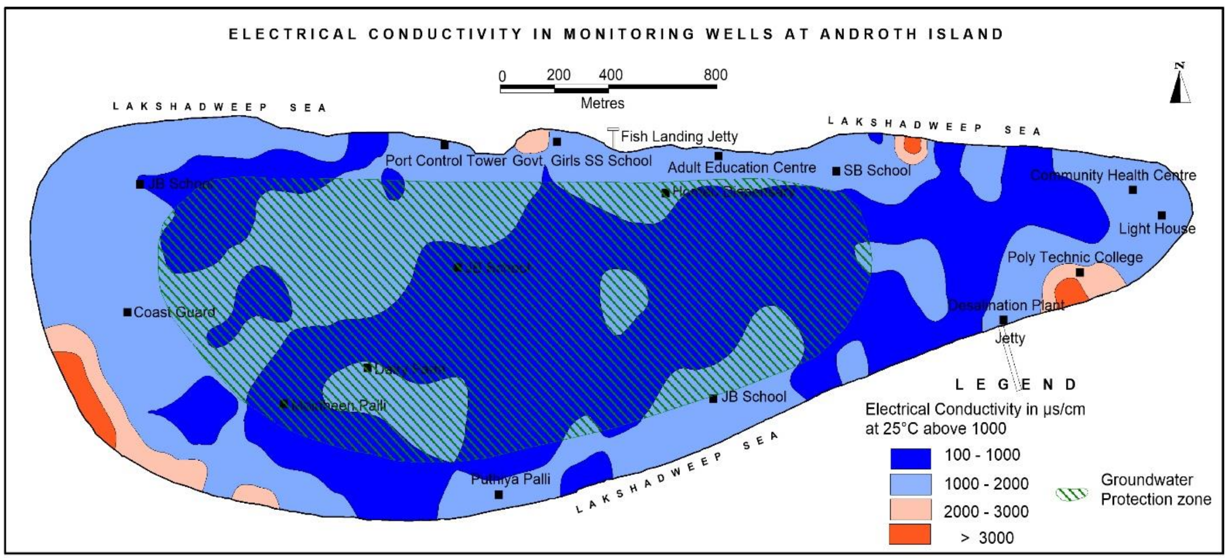


Fig. 6.3. Spatial variations in EC in Androth island

6.2.8 Kiltan: In general, the ground water in the island is fresh, with all parameters within permissible limits for drinking purpose as per BIS in about 90 % of dug wells in the area. The water is almost neutral to slightly alkaline with the pH in the range of 7.2 – 7.55. The EC ranges from 480 to 4370 µS/cm at 25º C. The chloride is in the range of 40 to 400 mg/l. Fluoride and nitrate values range from 0.3- 1.2 mg/l and 0.2-68 mg/l. The spatial variations in EC are depicted in Fig. 6.8.

6.2.8 Kadmat: In general, the ground water quality of the island is fresh with EC in the range of 960 to3000 µS/cm at 25º C. Water is almost neutral to slightly alkaline with pH values in the range of 7.43 to 8.12. The chloride content shows a wide variation of 90- 1000 mg/l. Fluoride is in the range of 0.59 to 0.83 mg/l. About 70 % of samples shown the EC range <3000 µS/cm at 25º C and 85 % of samples shown the chloride range <1000 mg/l. The spatial variations in EC are depicted in Fig. 6.4.

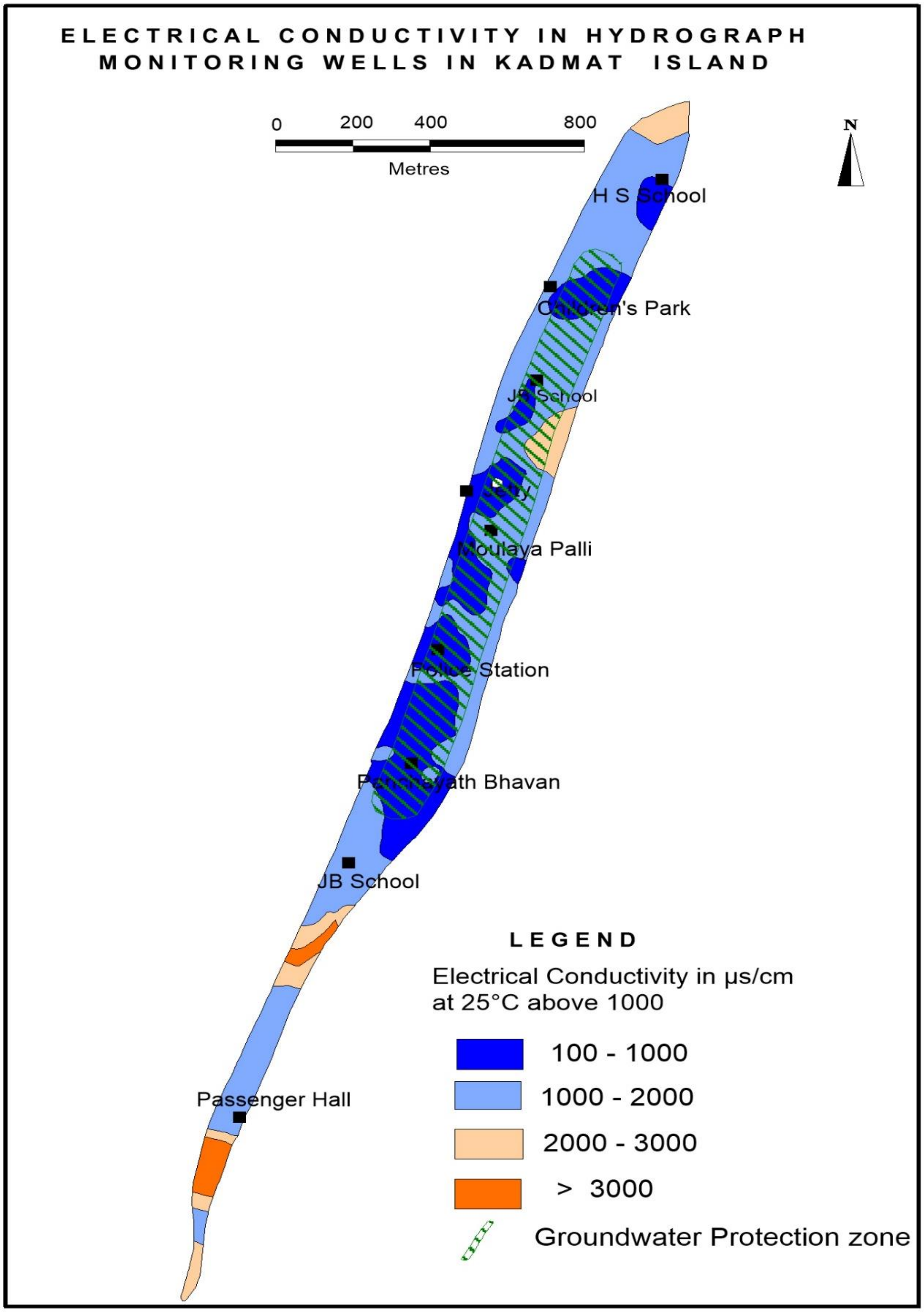


Fig. 6.4. Spatial variations in EC in Kadmat islands.

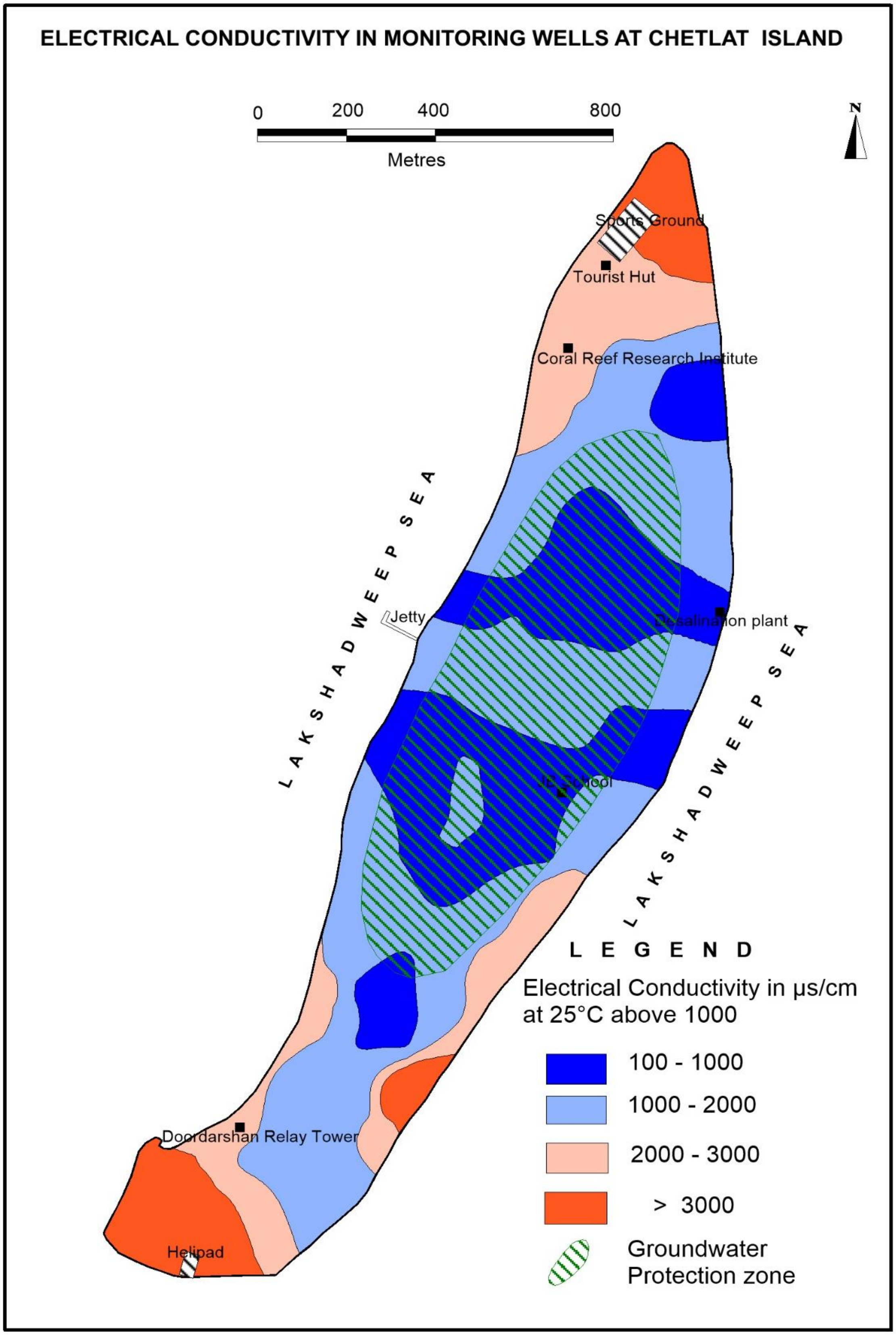


Fig. 6.5. Spatial variations in EC in Chetlat islands

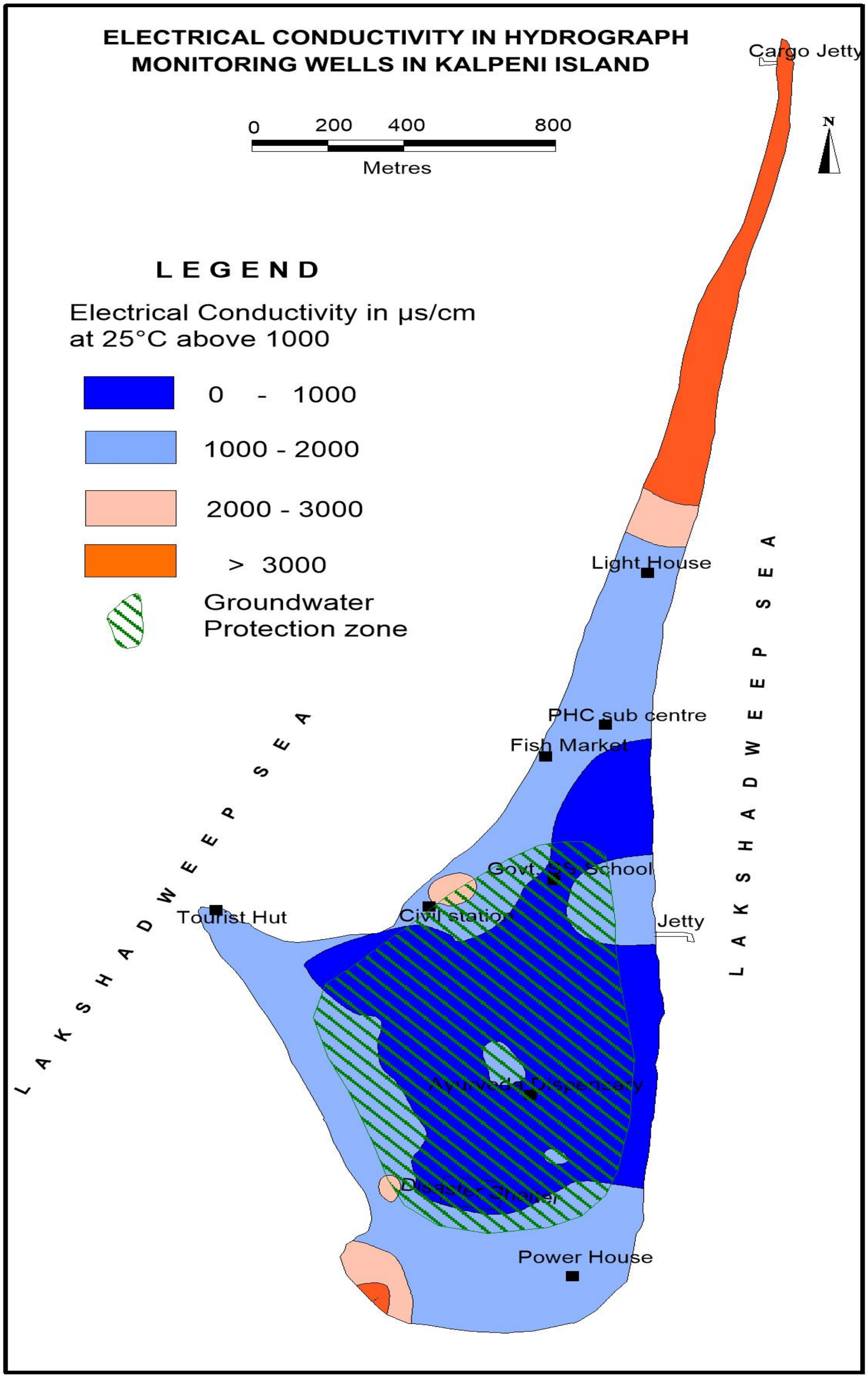


Fig. 6.6. Spatial variations in EC in Kalpeni island.

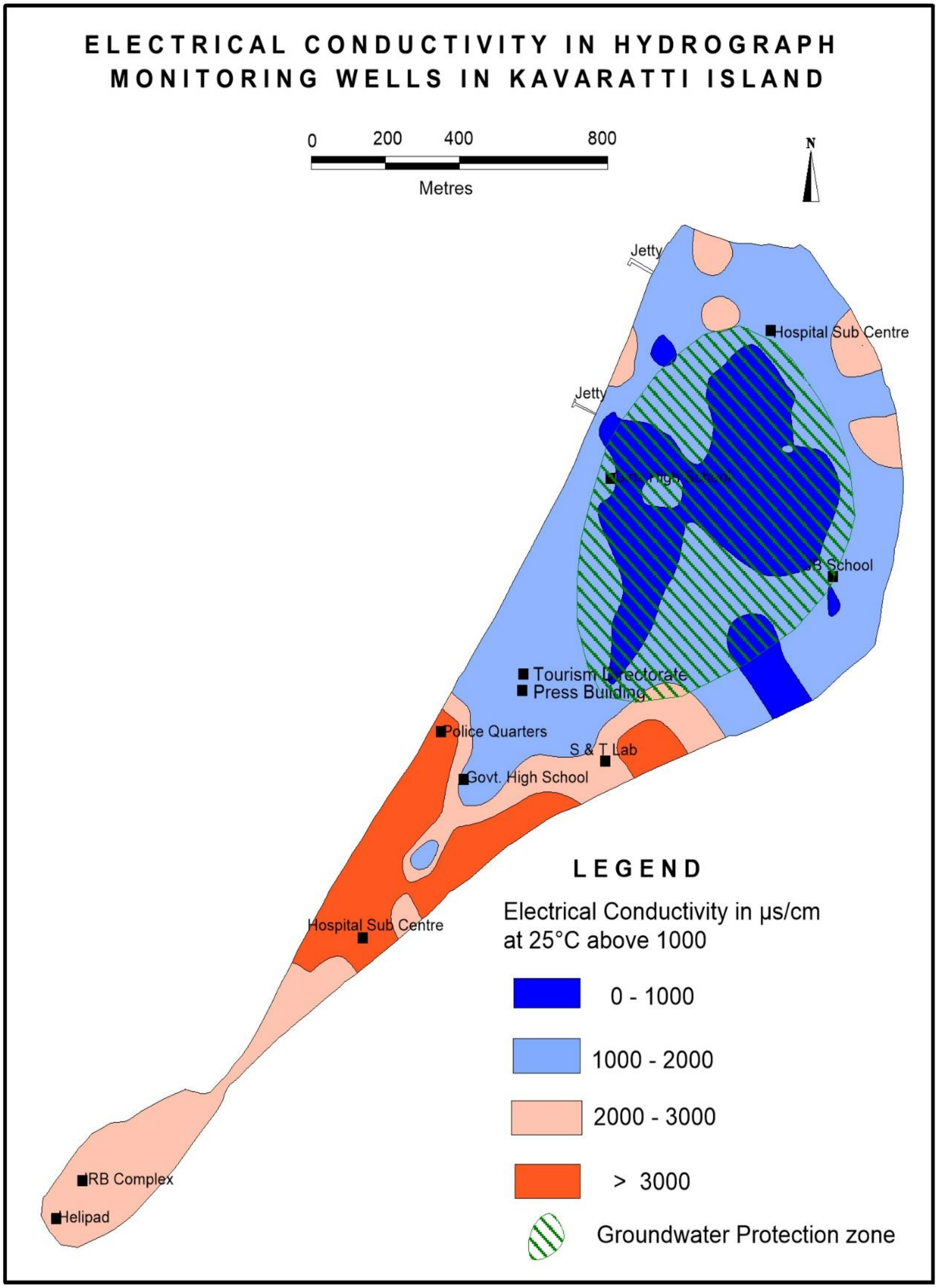


Fig. 6.7. Spatial variations in EC in Kavaratti island.

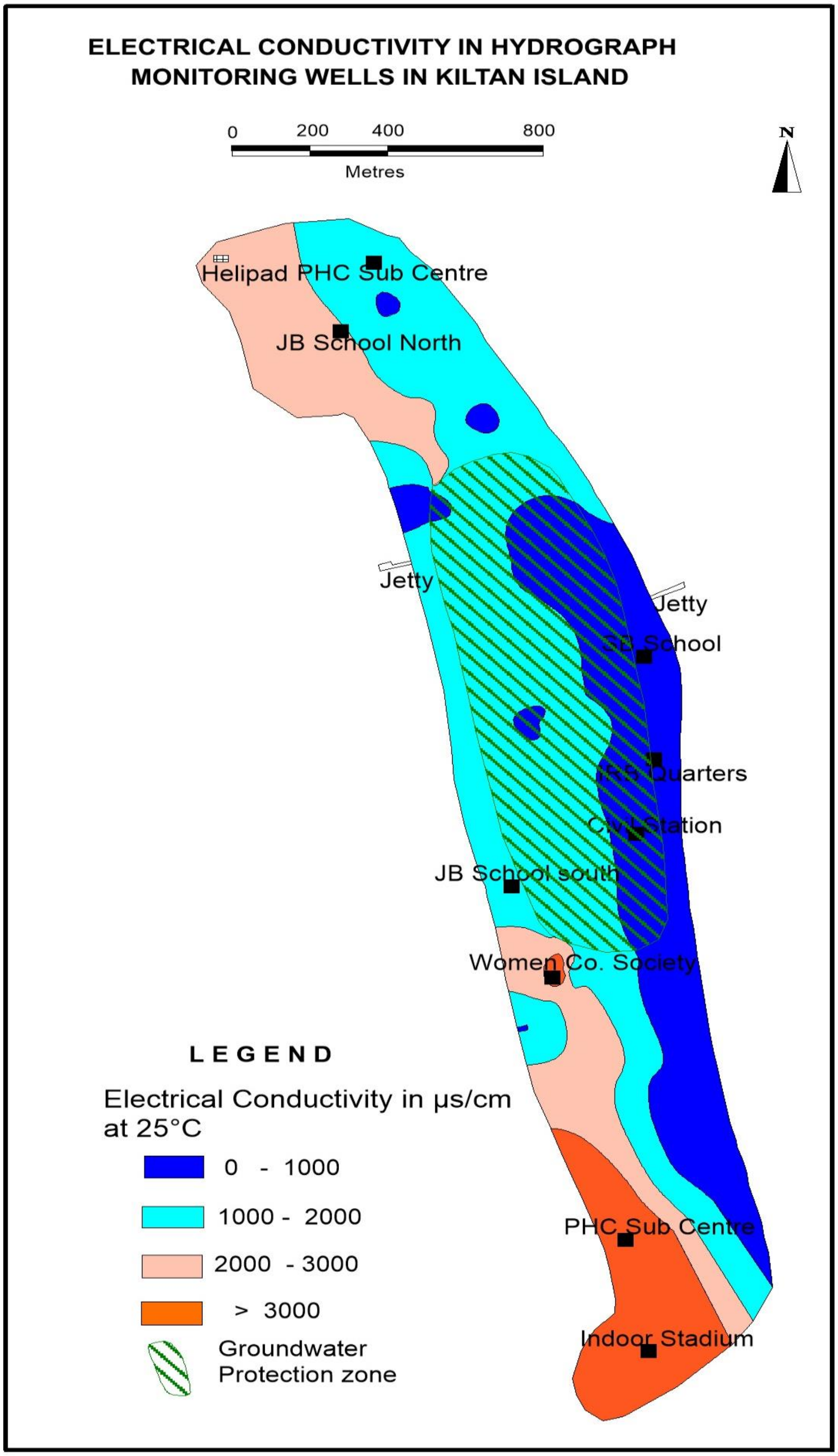


Fig. 6.8. Spatial variations in EC in Kiltan island.

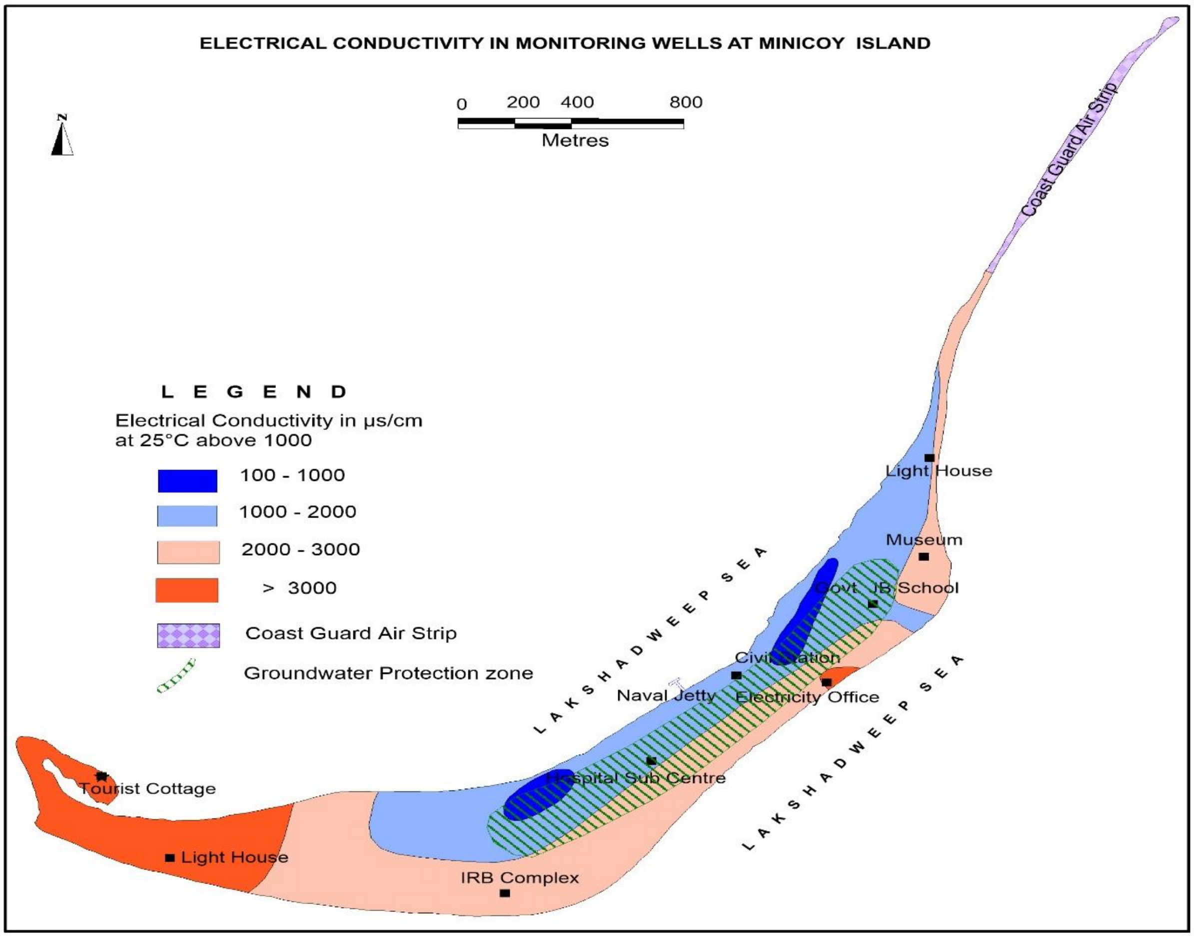


Fig. 6.9. Spatial variations in EC in Minicoy island.

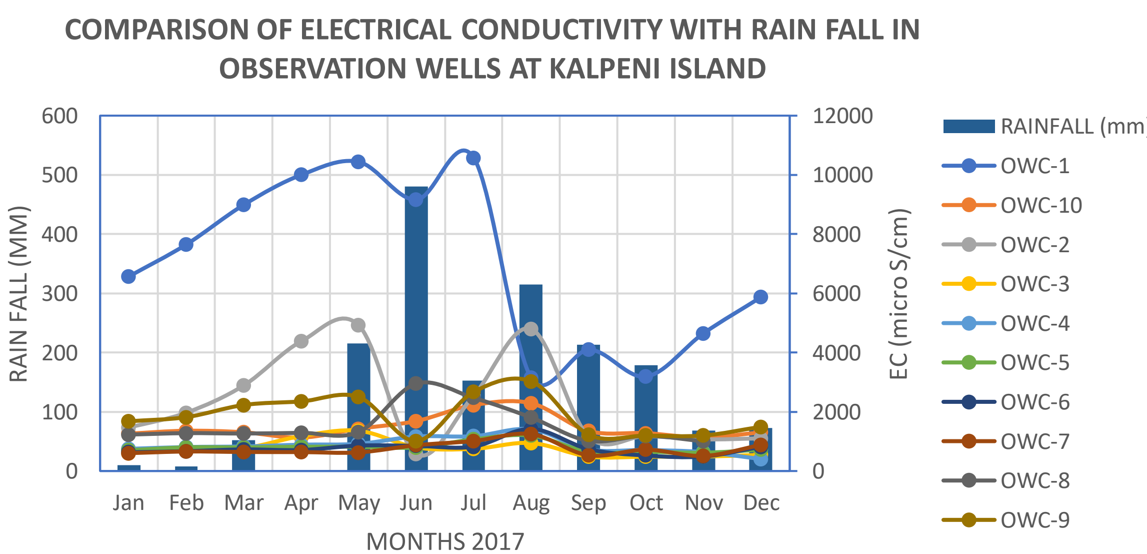


Fig.6.10 Comparison of EC with rain fall in Observation Wells,Kalpeni Island

6.2.7 Minicoy: In general, the ground water in the island is fresh, with all parameters within permissible limits for drinking purpose as per BIS in about 87 % of dug wells in the area. The water is almost neutral to slightly alkaline with the pH in the range of 7.1 - 8.0. The chloride is in the range of 25 to 433 mg/l. Fluoride and nitrate values range from 0.3- 1.2 mg/l and 0.2-68 mg/l. Almost all the samples shown the EC range <3000 μS/cm at 25º C and the chloride range <1000 mg/l The spatial variations in EC are depicted in Fig. 6.9.

The chemical quality of water samples collected from all the Islands by CGWB are presented in Appendix-III. The chemical quality of water samples collected from observation wells in Agatti Island during pre-monsoon and post monsoon period ,and Amini island are also presented in Appendix-III. The chemical quality of water samples from Observation Wells in different Islands are presented in Appendix-IV. The monthly chemical data of observation wells in Kalpeni ,Kavaratti and Minicoy islands are presented in Appendix-V. The comparison Electrical conductivity with rainfall for the observation wells in Kalpeni island is presented in igure-6.10

6.3 Factors affecting ground water quality

In Lakshadweep islands, ground water flow is mostly vertical with fluctuations due to several factors like diurnal tidal effects, recharge, draft etc. Horizontal flow of ground water is relatively insignificant as the freshwater lens contracts and expands in response to draft and recharge. The tidal effect on the fresh water lens, shallow ground water conditions, pollution from unscientific sewerage disposal, use of detergents for washing, presence of soak pits/ septic tanks and other kinds of human interference with the eco-system are causes of concern as far as the quality of ground water in these islands is concerned. Various factors affecting the quality of water in the coral aquifer system in Lakshadweep islands are discussed below in brief:

6.3.1 Tidal influence

As the ground water is in hydraulic continuity with seawater, its quality is influenced by the diurnal tidal fluctuations of the sea. There is a marked variation in water quality with time in these islands. Quality variation is observed with tidal fluctuation and some of the wells located in areas where the freshwater lens is very thin and are brackish during low tides yield freshwater during high tides. It is established that the quality variation due to tides is not very significant. However, it is seen that best quality of water available is during high tide and more specifically, during the rising limb of high tide.

6.3.2 Effect of ground water over draft

The freshwater-salt water interface in Lakshadweep islands is in a delicate equilibrium and any undue stress on this equilibrium by over draft results in the up-coning of the saline water from beneath. Thus the movement of saline front is not horizontal as in the case of inland aquifers. Heavy withdrawal of ground water from a point source induces up-coning of saline water and the quality deterioration due to pumping is evident even on limited pumping.

6.3.3 Effect of ground water recharge

Studies in Lakshadweep Islands revealed that there is no rejected recharge of ground water even during heavy rainfall. About 18 to 51 percent of the annual rainfall gets recharged into the ground water depending on the intensity, frequency and distribution of rainfall. The Ghyben-Herzberg (GH) equation (Todd 1959) indicate that the depth to interface between fresh and salt water is about forty times the thickness of freshwater above mean sea level in small islands in ideal situations. This indicates that only a fraction of the freshwater lens is available above mean sea level and the rest is below. Consequently, whenever there is a recharge into the ground water in small islands, a major part of the recharged water gets readjusted below mean sea level by expansion of the lens. Hence, there will not be any significant rise in water level, and only a small fraction of the recharge will be above mean sea level. Many times this fractional increment will be less than the negative influence created by the tides, which is difficult to decipher by regular hydrograph analysis. The effect of rainfall is evident in improvement in the quality of freshwater lens, which is very well elucidated from various studies.

6.3.4 Aspect ratio of Islands

The shape and size of the islands have a role in the water quality as well the stability of freshwater lens. Hence, the aspect ratio of the islands was worked out to study the behaviour and stability of the freshwater lens, as mentioned in one of the previous sections. The aspect ratios of the islands were studied with reference to the stability of the freshwater lens. It is postulated based on the studies that in islands where the aspect ratio is more than one, the fresh lens is stable and the changes in quality due to draft and recharge is not remarkable. In islands where the aspect ratio is less than 0.5, the freshwater lens is highly vulnerable to changes in draft and recharge.

6.3.5 Marine aerosols

The rainwater quality in Lakshadweep Islands is influenced by the aerosols in the atmosphere. The atmosphere in the coastal parts and islands are enriched in Chloride ions, which gets washed down to the ground during the rains. The first rain, after a long dry spell, will have a higher concentration of Chloride compared to the rains received after continuous rainy days. Similarly, the concentration of chloride is less as we go towards the central part of the islands as the thick vegetation obstructs the aerosols.

6.4 Seasonal changes in ground water quality

There is a marked improvement in quality of ground water during monsoon months in a majority of the wells in the Lakshadweep islands. Only in wells located in thick freshwater lens, where the mineralization is very low, the quality variation is not significant which indicates that chemical change is inversely proportional to the lens thickness at any given time.

Studies have established that the quality variations in these islands are not irreversible. This is in contrast to mainland situation, where the reversal of quality deterioration is a very slow process. This finding gives a much-needed leverage for the development of the ground water resources in extreme drought situations. It is established from the studies that a water surplus of 20mm is sufficient to reverse the deteriorating trend in water quality in summer months. Water surplus of above 100mm give a marked improvement in quality that sustains for the next two to three months with the normal rate of draft. The freshwater lens continuously contracts in the absence of rainfall, due to the effect of water lost due to mixing, draft by vegetation and draft for domestic consumption. The quality variation is higher in the fringe areas of freshwater lens during various seasons as compared to that of the central part of freshwater lens, where the water is fresh all through.

6.5. Lateral variation in ground water quality

The Electrical Conductivity of ground water in all the wells in the islands of Kavaratti, Amini and Agatti was measured as part of a scientific study taken up by Central Ground Water Board. These measurements were spread over 10-15 days in each of the islands. The objective of this study was to prepare the exact quality maps of these islands. This is in agreement with the recommendations of the approach paper of the UNESCO 1991 where in the EC tested on exposed water surfaces (e.g., wells and ponds) is identified as the basis of a surface-salinity map in small islands. In addition, measurements of water levels were also done which were useful in determining the mean height of the water table above mean sea level. However, the water levels cannot be used to determine the thickness of the freshwater lens using the Ghyben-Herzberg ratio, as the sharp interface assumption of this model does not apply to small islands.

After detailed studies in these islands it was established that the temporal variation in quality is much more significant and dependent on recharge/draft relations. These studies revealed very useful information on the marked changes in quality within a short area of 20 to 100m and quality deterioration associated with nature of the draft. Generally, in wells fitted with pump sets, quality of water is inferior to that of neighbouring wells without pump sets, even if the total draft from the non-pumping well is higher. Many of the houses in Kavaratti and some of the houses in other islands have two wells, one fitted with pump for general domestic requirements and the other hand-drawn well exclusively for drinking water needs. Generally, the pumping well will be in front of the house and the hand drawn behind the house separated by about 10-20m. The difference in EC between the two wells generally ranged between 10 and 22 percent. However, in some of the cases the EC variations were observed, which did not have a clear logical explanation as in the case of Kavaratti, where the well away from the sea had a higher EC compared to those of the neighbourhood. Some of the possible reasons for such unpredictable variations in quality include changes in grain size of the aquifer material, density of coconut plantations, subtle changes in elevation, variations in aquifer parameters viz. porosity and permeability and the difference in rate of ground water draft.

To understand the broad behaviour of the freshwater lens with reference to draft and recharge, the EC and chloride data from 180 observation wells in Kavaratti Island for various seasons were analysed. It was observed from the analysis that after heavy monsoon rainfall the water quality in the entire island north of Chicken neck was having freshwater with the EC of less than 3000 μS/cm, except in a small patch along the northeast influenced by the saline water lake in the area. A water surplus of more than 800 mm during the monsoon was found to result in the fresh water lens spreading in the entire island. A dry spell of about six months, coupled with domestic draft and evapotranspiration by plants, resulted in contraction of the freshwater lens to a small pocket in the north central part of the island. It was further observed that the availability of water surplus rather that the rainfall plays an important role in the expansion of freshwater lens. A water surplus of 20 mm is sufficient to effect an improvement in ground water quality and expansion of freshwater lens. The water surplus is arrived at based on daily water budgeting. The effect of heavy rainfall continues to be felt in the following few months. The data on Chloride also follow the same pattern as is seen from the EC.

From the above observations, the following inferences were drawn:

- The freshwater lens continues to expand laterally as well as vertically if sufficient rainfall is available and there is no rejected discharge as postulated earlier with the study of water level data.
- The improvement in ground water quality in response to a single heavy rainfall continues for succeeding 2-3 months.
- The quality of ground water lens in these islands is highly dynamic and the quality deterioration is fast reversible unlike that of mainland.
- The expansion and contraction of freshwater lens is directly proportional to the rainfall/water surplus during the month and the preceding months as the draft is almost uniform.

• The quantification of the rainfall and its impact on the quality of the aquifer requires a continuous monitoring of ground water quality and its relation to rainfall.

The detailed studies carried out in Kavaratti Island as a model reveals the hydrochemical environment prevailing in all the Islands.

6.6 Chemical evolution of ground water in Kavaratti Island

A detailed analysis of hydrochemical data from Kavaratti Island was carried out in order to elucidate the hydrochemical processes responsible for the chemical evolution of ground water in Lakshadweep Islands. The water samples were analysed for major ions, fluoride and important minor ions such as Iodide, Boron, and Strontium. (Table.6.2). The Chloride contents showed wide variation from 46 to 2591 mg/l, while the variation in alkalinity was far less pronounced. Bicarbonate is derived by dissolution of coral formation by percolating rainwater, containing CO_2. The relative concentrations of major ions as percent equivalents of anions and cations were plotted in the trilinear diagram (Fig.7.10) to identify the hydrochemical facies for comparing the origins and distribution of ground water masses (Piper, A.M. 1944, Hem, J.D, 1985, Lloyd, J.W and Heathcote, J.A 1985). The samples falling in Ca-Mg-HCO_3 field were found to be from the northern part of the island representing the stable fresh water lens, whereas samples falling in Na - Cl field and in the central part of the diamond field are characterized by mixing of waters and are located the southern tapering part and on the eastern periphery of the island.

The solution activity of the percolating rain on the geological formation being uniform throughout the island, Bicarbonate content does not show large variations (Najeeb1994). On the other hand, the Chloride ion, being a seawater component, shows wide variation depending on the ground water draft, transmissivity and the proximity to saline water body (Varma, 1997). The mean Na/Cl ratio in the ground water in Kavaratti Island is 0.87, which is very close to that of seawater (0.86) indicating that Sodium as well as Chloride is of marine origin (Stumm, W., Morgan, J.J, 1981). Further, the correlation observed between Na and Cl (Fig.7.11) supports its marine origin.

well No	pH	EC in µ s/ cm at 25 °C.	Concentration in mg/l													
			TDS	Ca	Mg	Na	K	HCO_3	SO_4	Cl	F	I x10^{-3}	B	NO_3	PO_4	Sr
1	7.65	1960	330	86	28	232	9.8	165	72	469	0.2	55	nd	28	0.09	1.7
2	7.69	8260	1090	144	177	1340	65	268	300	2591	0.9	21	0.63	29	nd	nd
3	7.76	5460	870	116	141	800	70	415	210	1455	1.2	12	0.27	50	nd	3.3
4	7.78	1970	440	80	58	212	4.9	342	77	398	0.9	10	0.12	32	0.59	nd
5	7.52	3110	675	78	117	380	4.5	549	96	717	1.4	18	0.21	8	0.17	4.4
6	7.66	3220	680	102	103	380	8.9	561	100	731	1.3	9	0.33	10	0.03	nd
7	7.52	3040	800	82	145	330	7.7	659	155	582	1.9	31	0.24	15	0.21	nd
8	7.46	2580	695	128	91	232	14	561	80	511	1.5	12	0.46	15	0.04	5.7
9	7.58	2180	605	78	100	200	37	781	80	291	1.9	67	0.37	9	0.14	nd
10	7.65	1250	460	62	74	81	1.5	439	44	156	1.4	22	0.26	5.7	0.11	2.7
11	7.74	1490	455	94	53	100	23	317	60	167	0.9	9.5	nd	212	0.05	nd
12	7.75	1430	425	96	45	118	2.5	439	53	213	1.0	17	nd	8	0.13	nd
13	7.74	1150	415	104	38	86	2.7	439	28	135	0.8	12	nd	4.5	0.17	2.8
14	7.54	2130	585	84	91	250	17	610	52	334	1.6	76	nd	tr	0.11	nd
15	7.87	1040	400	72	53	59	7.5	378	32	114	1.2	14	nd	14	0.18	nd
16	7.92	650	290	62	33	20	2.3	305	16	46	0.6	3.5	0.26	13	0.11	nd
17	7.66	1240	410	80	51	97	7.5	439	44	142	1.1	11	nd	19	0.09	2.6
18	8.22	601	190	28	29	44	0.9	220	24	60	0.7	13	nd	tr	0.05	nd
19	7.81	1020	395	68	55	55	0.4	390	90	99	1.1	11	nd	4.3	0.27	2.9
20	7.8	1250	415	72	57	94	8.5	390	36	170	0.9	45	nd	27	0.05	nd
21	7.91	1200	335	72	38	100	28	329	32	156	1.5	16	nd	60	0.02	nd
22	7.4	2660	615	120	77	296	2	464	70	589	1.3	22	nd	tr	0.05	nd
23	7.61	2010	540	92	75	190	13	464	52	362	1.3	36	nd	20	0.16	2.7
24	7.55	1240	390	76	49	116	4.9	354	37	206	1.6	nd	nd	2.5	nd	2.6
25	7.84	1110	420	64	63	90	9.1	342	49	128	1.7	nd	nd	30	nd	2.7
26	7.47	1530	370	56	56	172	6.8	281	54	312	1.9	34	nd	10	nd	nd
27	7.31	2910	590	80	95	400	16	397	103	724	1.7	19	0.06	5.3	0.01	nd
28	7.36	1080	360	76	42	80	6.5	415	34	110	0.7	8	0.04	28	0.03	nd
29	7.38	1120	520	68	85	67	2.1	500	32	110	2.1	nd	nd	tr	0.1	4.4
30	7.16	1310	550	84	83	220	4.1	512	30	383	2.0	nd	nd	11	nd	nd
31	7.3	3160	920	96	166	280	12	854	135	504	1.2	nd	nd	3	nd	nd
32	6.98	6740	1110	144	183	1060	46	549	204	1889	1.12	39	0.44	32	0.15	5.7
33	7.2	8300	1150	172	176	1240	70	537	335	2130	0.9	nd	nd	75	nd	nd
34	7.18	2890	640	164	56	252	56	415	70	426	0.5	nd	nd	420	0.11	nd
35	7.29	5560	1050	136	173	700	40	671	222	1310	1.6	44	0.42	12	0.23	nd

nd- not determined, tr- present in traces

Table 6.2: Chemical quality of water samples from open wells in Kavaratti Island

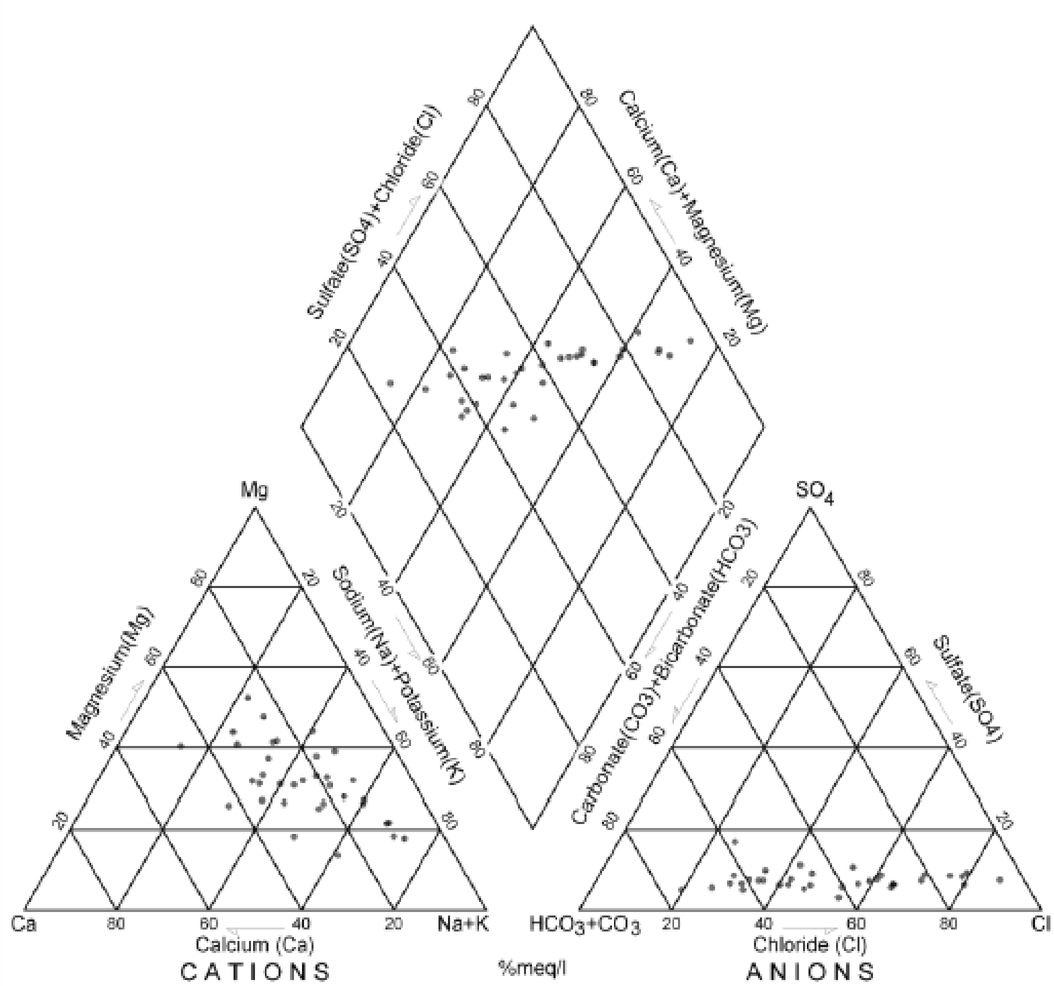


Fig. 6.11. Hill-Piper diagram showing hydrochemical facies of ground water in Kavaratti Island

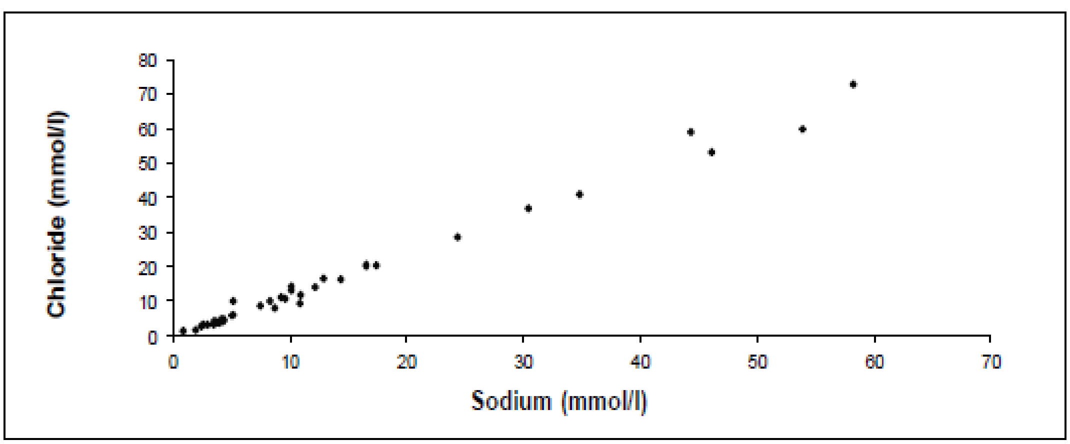


Fig. 6.12. Correlation between sodium and chloride in ground water from Kavaratti Island

However, the perfect linear relation observed at low concentrations can also be attributed to the influence of marine aerosols. The Sodium Chloride accumulated in the top soil by marine aerosols gets washed down along with the infiltrating rainwater.

The matrix of correlation coefficient of chemical parameters of 35 samples from Kavaratti island indicate existence of several group of significantly related constituents at 99.5% confidence level (Table 6.3). While TDS, Cl^-, SO_4^{-2}, Na^+, K^+, and Mg^{+2} show high positive correlation amongst themselves, HCO_3^- shows significant positive correlation with F^-, Mg^{+2} and TDS.

Table 6.3: Correlation coefficient matrix of water samples from Kavaratti Island

	EC	TDS	Ca	Mg	Na	K	HCO_3	SO_4	Cl	F
EC	1									
TDS	0.929*	1								
Ca	0.796*	0.79	1							
Mg	0.874*	0.968*	0.612*	1						
Na	0.988*	0.885*	0.744*	0.838*	1					
K	0.825*	0.721*	0.751*	0.624*	0.809*	1				
HCO_3	0.26	0.559*	0.286	0.607*	0.17	0.124	1			
SO_4	0.968*	0.903*	0.717*	0.872*	0.949*	0.786*	0.268	1		
Cl	0.985*	0.879*	0.742*	0.832*	0.997*	0.791*	0.146	0.944*	1	
F	-0.064	0.139	-0.214	0.266	-0.065	-0.14	0.462*	-0.048	0.074	1
* Statistically significant correlation between variables at 99.5% confidence level										

Aquifer mineralogy and presence of clay minerals play a significant role in ion exchange process. However, coral aquifers are devoid of clay minerals and mainly consist of coral sands and shells ($CaCO_3$). Cation exchange of sodium of seawater for calcium of aquifer material and dissolution of $CaCO_3$ are the major chemical reactions in this aquifer system, leaving apart the daily and seasonal mixing of seawater.

$CaCO_3 + H_2O + CO_2 \Leftrightarrow Ca^{++} + 2HCO_3^-$ ($CaCO_3$ dissolution)--------- 1

2 Na(water) + Ca – aquifer → 2Na-aquifer + Ca (water) .. …….. 2

Normally, ground water exchange calcium for Sodium in a ground water flow regime. But, in the present situation, there is not much scope for adsorbed sodium in the aquifer material for exchange with calcium ion as there is no adsorbing material like clay in the aquifer system. The high sodium concentrations observed are due to mixing of seawater. The cation exchange process in such mixing zones is reversible in nature, such that the seawater exchanges sodium ion for calcium, with the Ca-Mg-HCO_3 type water of the fresh water lens which ultimately evolves to Na-Cl type water. These different stages of ion exchanges have resulted in the development of different hydro chemical facies as revealed in the hill-piper diagram (Fig.7.10).

The advancing saltwater front generally carries a higher proportion of calcium to sodium than that is characteristic of seawater. In these coral islands it is the dominating cation exchange process that is taking place due to the advancement of seawater in to the fresh water domain. The cation exchange process is also evident from the high calcium-sodium mole ratios compared to that in seawater (Mercado Abraham.1985).

The magnesium concentrations in 19 samples are found to be higher than or equal to calcium. A lower concentration of magnesium compared to Calcium is normally observed in ground water environment. Magnesium dominant ground waters are found in dolomitic terrain. In coral islands and limestone terrain, magnesium occurs in significant amounts but its dominance over calcium is seldom found. Dissolution of limestone and consequent release of adsorbed magnesium in limestone is the source of magnesium in ground water. This being the only source of magnesium in the island, a reasonable correlation can be expected between calcium and magnesium ions in the ground water. However, the dominance of Mg over Ca in the water may be due to the involvement of other influencing factors on the concentration of these ions other than the dissolution process. Once magnesium is released to ground water as a result of dissolution, the process is not easily reversible. Hence, the magnesium concentrations may increase even under a situation where calcium precipitates due to over saturation. This in conjunction with mixing of seawater contributed a high Mg: Ca ratio in some of the areas. The spatial distribution of sample locations with high Mg than Ca are located either in the southern half of the island or in the coastal part, where the fresh lens is vulnerable to mixing with sea water. In seawater the Mg: Ca ratio is high. This is because of the higher consumption of Ca by marine organisms. The mixing zones in the island are having a distinct high Mg: Ca ratio.
Presence of Sulphur in the form of Calcium Sulphate as gypsum ($CaSO_4.2H_2O$) or as anhydrite, which contains no water molecule, is common in a limestone terrain. In coral islands, its presence is not in significant levels as a major constituent in ground water. The aquifer material in this island is composed of calcareous sand of high purity having 87% $CaCO_3$ (Jacob et al., 1987). From the Ca: SO_4 ratio (Fig.7.12) and Mg: SO_4 ratio (Fig.7.13) it can be observed that there is an increase in SO_4 corresponding to the increase in Ca and Mg. This is because of the solubility characteristics of gypsum.

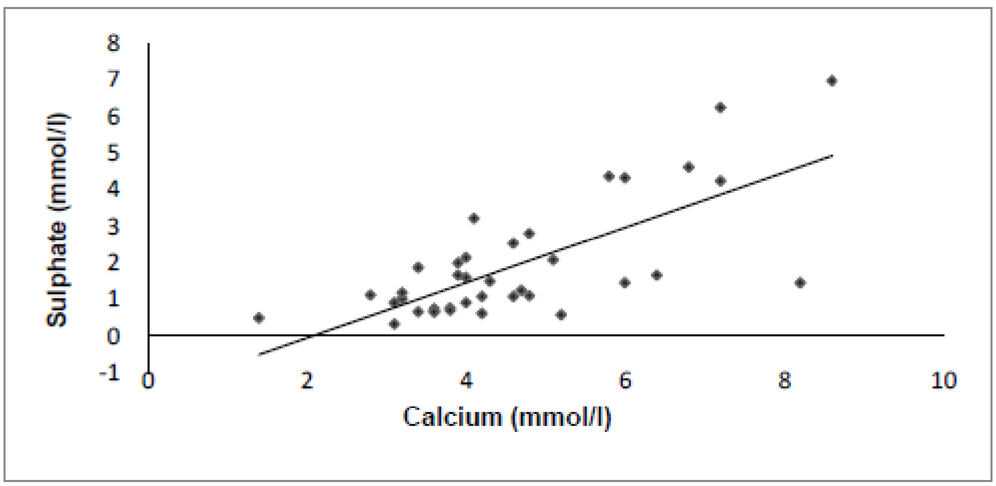


Fig. 6.13. Correlation between calcium and sulphate in ground water in Kavaratti Island

With an increase in other solutes, the solubility of gypsum increases owing to greater ionic strength and smaller activity coefficient. The plotting spread on either side of the main trend indicates the effect of other influencing factors such as mixing of waters, cation exchange etc.

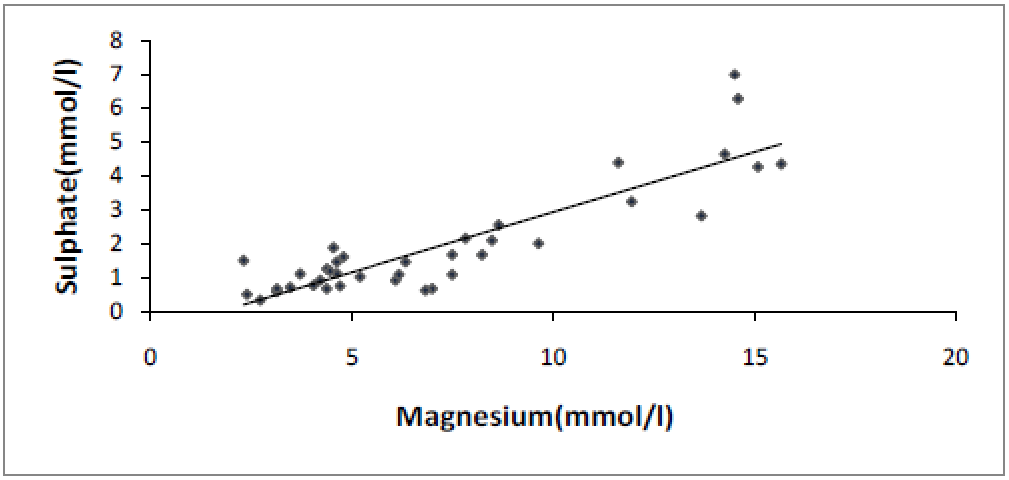


Fig. 6.14: Correlation between magnesium and sulphate in ground water in Kavaratti Island

6.7 Distribution of trace elements

The important minor components of seawater viz. Fluoride, Iodide, Boron, and Strontium were analysed from the ground water samples of Kavaratti Island. Fluoride is present in low concentrations (normally less than 1.5mg/l) as it forms strong solute complexes with many cations. The spatial distribution of fluoride in the island varies in the range of 0.2 to 2.1 mg/l (Table 6.2). The major sources of fluoride in coral islands are the fluoride associated with calcium in the form of Calcium Fluoride (CaF) in the skeletal remains of marine organisms.

The Strontium content of the ground water is in the range of 1.7 to 5.7 mg/l (Table 6.2), which is quite abnormal. Similarly, the Sr/Cl ratio in the ground water is in the range of 0.002 to 0.06, which is 60 to 160 times greater than that in seawater. The higher content of Strontium is attributed to biological origin from weathering and decay of corals (Najeeb, 2004). The calcitic shells of microorganisms of recent age are dominated by aragonite phase whereas those of early tertiary and older ages are dominated by calcite phase, as revealed from the X-ray diffraction studies of the sedimentary formations of coastal Kerala (Jacks, G 1987). The Aragonite has higher Strontium content than Calcite. The Iodine content of the ground water is in the range of 3.5 to 76 μ grams/l. The I/Cl ratio is in the range of $8x10_{-6}$ to 2.6 x 10_{-4}, which is about 3 to 90 times higher than that of seawater. The marine organisms derive iodine from seawater. These organisms, on decay, release the iodine into ground water thereby increasing the concentration of iodine in ground water (Krauskopf, 1967). The Boron content in the ground water varied from traces to 0.6 ppm. The Boron concentration in the ground water is not conspicuous.

6.8. Ground water contamination

Contamination of ground water is a major threat to ground water in the Lakshadweep islands. Human waste, sewerage, biological wastes and fertilizers are the major agents of pollution of ground water. The traditional burial grounds also contribute to ground water contamination to some extent.

The chemical analysis data from the Islands for the isotope study in 2010 is appended. The chemical analysis details of water samples collected from Amini Island in 2016 and select wells from Agatti islands are appended.

7. STATUS OF GROUND WATER RESOURCES

The ground water resource availability in Lakshadweep Islands is restricted to the top few meters of the phreatic aquifers, composed of coral sands and coral limestone. Central Ground Water Board, as part of its activities, periodically assess the dynamic ground water resources of the islands, the salient details of which are described briefly in the following sections.

7.1 Unit of Computation

The unit of computation is taken as island. An island with well-defined hydrogeological boundaries is an appropriate Hydrogeological unit for ground water resource estimation. The geographical area of the island varies from 1.04 sq.km to 4.84 sq.km.

7.2 Ground water recharge

In small island conditions, the estimation of recharge based on ground water fluctuation method is not practicable unlike in the case of continental coastal aquifers as the head build up due to rainfall recharge dissipates within 2-3 days and diurnal fluctuation is nearly the same as seasonal fluctuation. Therefore, water table fluctuation method cannot be adopted for assessing the dynamic ground water potential of Lakshadweep islands.

The ground water recharge in Lakshadweep Islands has been computed for six months from May to October using rainfall Infiltration method. The Normal Monsoon Rainfall (NMR) is taken as 1416.9 mm for Minicoy islands, whereas the NMR of 1325.7 mm, recorded at Amini is taken. In areas with no coconut trees, the recharge to ground water is about 50% of the rainfall and as the coconut tree increases to a full cover, the recharge can reduce to about 30% of the rainfall. A rainfall infiltration factor of 0.30 is adopted for the entire islands.

The evapotranspiration (ET) value for coconut tree is taken as 80% of that of shallow rooted vegetation which in turn is assumed to be equal to the PET of a reference crop. The proportions of freshwater lens area covered by deep rooted vegetation can be estimated from ground observations or aerial photographs. For Lakshadweep islands, the proportion is taken as 30%. The PET from the coconut trees has been estimated for a period of 6 non-monsoon moths @ 30 liter/ day/ tree for 180 days.

7.3 Total available ground water resource

About 20% of the total recharge from rainfall in the island is considered lost due to mixing with seawater during tides and another 20% is allocated for reserve for use during periods of delayed or low rainfall. These components, along with the transpiration losses from coconut trees are deducted from the total recharge for getting the total available resource in each island.

7.4 Ground water draft

The major component of ground water draft in Lakshadweep islands is the extraction through wells for domestic consumption. Almost all households have their own dug well and more than 75% of the wells are fitted with small capacity (normally 0.5 HP) electric pumps. A per capita consumption of 150 lpd has been considered for domestic draft calculation, on the basis of the population as per 2001 census. Irrigation drat is negligible in the islands as almost all the crops are rain-fed.

7.5 Stage of ground water development

The stage of ground water development (SD) has been computed using the following formula

SD = {B/A} x 100

Where, B is the gross ground water draft A is the total available ground water resource

7.6 Categorization of islands

Categorization of islands as per the GEC-2015 methodology is not applicable in island conditions due to the peculiar nature of the hydrogeological regime. The freshwater lens will quickly adjust with the incremental additions or abstractions by virtue of its floating nature thereby making long-term trend insignificant. However, categorization has been attempted in this estimation purely based on stage of ground water extraction.

7.7 Computation of ground water resources

The dynamic ground water resources have been assessed by computing various components of recharge and draft. Rainfall is the only source of recharge in the Islands, whereas domestic draft, evapotranspiration losses and water loss due to base flow into the sea are the major components of draft. A part (20%) of the annual water surplus is reserved as buffer zone for reserve during delayed or deficit monsoon years. The computational details and island wise recharge figures are given in Table 6.1. As per the computation, the total annual surplus of ground water in the islands amount to 1072.60 Ha.m, ranging from 42.30 Ha.m in Chetlat Island to 196.70 Ha.m in Androth Island. The island-wise figures are shown in Table 7.1.

Evapotranspiration from coconut trees during 6 non-monsoon months amounts to 282.8 ha.m, whereas the water loss due to subsurface flow into sea is of the order of 210.9 Ha.m. An equal quantum of water is reserved as buffer to cater to late or deficit monsoon years in the islands. The balance ground water resources available for development ranges from 14.10 Ha.m (Chetlat) to 63.70 Ha.m (Minicoy), amounting to a total of 360.80 Ha.m for the group of Islands as a whole.

Ground water extraction in the Islands, by and large, is for domestic uses of the populace. The extraction component ranges from 8.70 Ha.m in Chetlat islands to 41.80 Ha.m in Kavaratti Island, amounting to a total of 238.00 Ha.m.

Balance ground water resources available in the Islands range from 5.40 Ha.m (Chetlat) to 25.10 (Minicoy), adding up to a total of 122.90 Ha.m for the group of Islands as a whole.

The stage of ground water extraction for the group of islands is of the order of 65.70 % and ranges from 46.70% (Kadamat) to 83.10% (Kavaratti). In the absence of long-term water level data, the islands have been categorized solely based on the stage of extraction. Based on the Stage of Extraction, Agatti, Amini, and Kavaratti Islands have been categorized as ‘Semi-Critical’, whereas the remaining islands have been categorized as ‘Safe’. The average annual replenishable ground water resource of the island in meter works out as 0.034 m.

Table 7.1: Dynamic Ground Water Resources of Lakshadweep Islands (As in March 2017)

Sl.No.	Annual components of Water Balance	Name of Island									Total
		Agatti	Amini	Androth	Chetlat	Kadmat	Kalpeni	Kavaratti	Kiltan	Minicoy	
1	Population (Projected as on 2017)	7927	7854	11482	2381	5446	4479	11954	4125	11076	66724
2	Area (Ha)	271.0	259.0	484.0	104.0	312.0	228.0	363.0	163.0	437.0	2621
3	Normal Monsoon Rainfall (m)	1.355	1.355	1.355	1.355	1.355	1.355	1.355	1.355	1.410	1.361
4	Rainfall Infiltration Factor (%)	30	30	30	30	30	30	30	30	30	30
5	Total Resource (Water Surplus) (Ha.m)) [2*3*4]	110.2	105.3	196.7	42.3	126.8	92.7	147.6	66.3	184.9	1072.6
6	ET loss from Trees for 6 non-monsoon months (Ha.m)	29.3	27.8	53.3	11.3	33.8	24.8	38.3	17.3	47.3	282.8
7	Water loss due to outflow to sea [20% of (3) (Ha.m)]	22.0	21.1	39.3	8.5	25.4	18.5	29.5	13.3	37.0	210.9
8	Buffer zone for reserve during delayed or lesser monsoon period [20% of (3)] (Ha.m)	22.0	21.1	39.3	8.5	25.4	18.5	29.5	13.3	37.0	210.9
9	Balance available resource (Ha.m)	36.8	35.4	64.8	14.1	42.3	30.9	50.3	22.5	63.7	360.8
10	Domestic Extraction @100 lpcd [1*100*365] (Ha.m)	27.1	28.7	41.9	8.7	19.8	16.4	41.8	15.1	38.6	238.0
11	Gross Annual GW Extraction (Ha.m)	27.1	28.7	41.9	8.7	19.8	16.4	41.8	15.1	38.6	238.0
12	Groundwater balance available [9-11](Ha.m)	9.7	6.8	22.9	5.4	22.6	14.5	8.5	7.4	25.1	122.9
13	Stage of ground water extractiion [11*100/9]	73.6	80.9	64.7	61.6	46.7	**53.0**	**83.1**	**66.9**	60.6	65.7
14	Category	**Semi-Critical**	**Semi-Critical**	**SAFE**	**SAFE**	**SAFE**	**SAFE**	**Semi-Critical**	**SAFE**	**SAFE**	**SAFE**

8. GROUND WATER MANAGEMENT SCENARIO

8.1. Water Supply

Apart from rain, ground water constitutes the only conventional source of fresh water in Lakshadweep islands, which is being supplemented by rainwater harvesting and desalinated seawater in some of the bigger islands. A Central Team headed by Shri Mohammed Inamul Haque , Adviser, Technology Mission, Department of Rural Development, Government of India along with experts from Central Ground Water Board, Central Salt and Marine Chemical Research Institute, Bhavanagar, National Environmental Engineering Research Institute, Nagpur and Center for Earth Science Studies, Thiruvananthapuram visited the islands in June 1988 came to the conclusion that no single system to provide water supply to these islands would be sufficient due to the typical geological and hydro geological nature of these islands. This team of experts was of the opinion that the right approach to solve the problem of drinking water in these islands can consists of three elements as follows. i. Use the ground water to the extent available, the exact quantum of extraction without danger of salinity to be determined by a detailed island wise study to be conducted by Center for Earth Science Studies, ii. Wherever the ground water is not adequate to provide water to the entire population, this has to be supplemented by desalination of brackish water through Reverse Osmosis Plants and iii. Recognizing the value of the water as a scarce resource on the islands, it was decided to optimize the availability of the resource by encouraging rain water harvesting so that at least some of the water which otherwise is wasted could be utilized for part of the year. The expert team also recommended that water available from the above sources may be distributed through a common network of underground pipes and public stand posts, with the distribution system managed by local Panchayaths. Lakshadweep Administration has prepared water supply scheme for the U.T of Lakshadweep for the extraction of ground water through collector wells, which envisages extraction of ground water through radial perforated pipes of 5 m length located at specified shallow depths. The ground water flows under gravity through these pipes and collect in a collector well. This mechanism of ground water extraction prevents excessive extraction in the following ways: • The extraction is not from a point source, but is distributed over a large area. • In no case the water below a pre-decided level will be collected since the inflow is only through the perforated pipes. The bottom of the wells is sealed with concrete and as such does not allow seepage of water from the bottom. As per information available in the web site of Lakshadweep Administration (http://lakshadweep.nic.in/depts/lpwd/water_supply.htm), there are 4 to 6 such collector wells in each island. These wells are selected at sites where quality of water is good and thickness of sweet water lens is maximum. Water from these collector wells is pumped intermittently to the collection sump. Extraction of water from each well is done for half an hour and then stopped for an interval of 2 ½ hours to allow time for the interface to subside. After chlorination, the water is pumped from the collection sump to the overhead water tanks. The water is supplied through stand-posts on the streets.

8.2 Rainwater Harvesting Systems Rainwater collection has long been recognized as the most suitable and adoptable method to make up the short falls in ground water availability in Lakshadweep Islands. Rainwater is being collected from the roof tops of the buildings in storage tanks of various capacities ranging from 5000 to 10,000 thousand liters and in some cases, up to 50,000 liters. Such tanks are normally attached Government quarters, non-residential buildings and some private houses. The water collected from the roof tops is made to flow to the collection through a filter, designed to remove suspended particles. The water is then chlorinated and distributed to the public. Operation related to the pumping and distribution of water is entrusted with the respective Village (Dweep) panchayats in respect of water collected in community rainwater tanks in Hospitals, Schools etc. Community rainwater harvesting systems using public buildings such as hospitals and schools have also been implemented in Kavaratti and Minicoy islands, from which the harvested water, after filtration and chlorination in a centralized unit, is pumped into overhead tanks for distribution along with water collected from other sources such as ground water, desalination plants etc.

8.3. Desalination Plants

As per information available from Lakshadweep Administration, a total of ten brackish water reverse osmosis (R.O) desalination plants have been established in the U.T of Lakshadweep. Desalination plants set up by the National Institute of Ocean Technology (NIOT) under the Ministry of Earth Sciences, GOI, which is based on the temperature differential in the seawater and not on the conventional membrane (RO) technology are functioning in Kavaratti, Agatti and Minicoy Islands. Each of these plants has the capacity of 1 lakh litre of desalinated water/day, which is supplied free of cost to the local residents through taps. The variation in ocean water temperature with an increase in depth is used in the Low Temperature Thermal Desalination (LTTD) plants to flash evaporate the warm water at low pressure and condense the resulting vapor with the deep sea cold water.

8.4 Ground water Quality monitoring

There is a total of nine Water Quality Testing Laboratories installed in the U.T of Lakshadweep, with each of the inhabited island except Bitra having one each. These Laboratories are regularly monitoring the quality of ground water from select wells. The local Public Health authorities are kept informed of any change in the quality of ground water, especially salinity.

8.5 Ground water regulation

The Lakshadweep Ground Water (Development and Control) Regulation, 2001 was promulgated on August 6, 2001. As per the regulation, a Ground Water Authority is to be constituted in the U.T of Lakshadweep, which will have the powers to control and regulate the extraction and use of water in any form in any of the islands in Lakshadweep. The Authority, however, is yet to be constituted.

8.6. Ground water management issues

Major constraints in the sustainable development of the limited ground water resources in the Lakshadweep Islands are summarized below:

- Absence of surface water resources in the islands putting stress on the limited ground water resources available.
- Deterioration of ground water quality especially during summer months.
- Existing supplies unable to cope with the rapidly increasing demands for drinking and domestic uses.
- Indiscriminate ground water extraction at places, resulting in up-coning of saline water and consequent quality deterioration.

8.7 Management interventions for sustainable development

Requirements to meet the needs of a growing population and the non-availability of alternatives is likely to put the limited ground water resources in Lakshadweep Islands under increasing stress in the coming years. Some of the feasible management interventions to ensure long-term sustainability of ground water in the islands are:

- Rehabilitation, restoration, renovation and protection of available ponds and wells.
- Large scale implementation of roof top rainwater harvesting schemes through participation of local communities.
- Regulation / control on the indiscriminate extraction of ground water through mechanical devices.
- Regular monitoring of water levels and water quality.
- Encouraging use of water efficient domestic fixtures like taps/ flush tanks to improve water use efficiency and reduce wastage.
- Decentralized garbage / waste treatment systems to prevent further contamination of available fresh water resources.
- Installation of desalination plants in all Islands to reduce stress on ground water
- Sensitization and capacity building of stakeholders at all levels on the importance of water conservation and ways and means for its judicious management for ensuring long-term sustainability of water resources.

9. AQUIFER MANAGEMENT PLAN

In the Lakshadweep islands, groundwater occurs in phreatic condition and is in hydraulic continuity with sea water. The management strategy suitable for aquifer in the continental land is not appropriate for the tiny islands like Lakshadweep. Since surface run off is totally absent and recharge of rainfall is taking place naturally, the need for artificial recharge is ruled out. Management strategy needs to concentrate on limited ground water withdrawal and optimum utilization. The people should be educated about the danger of over exploitation of the precious resource and about the limitations of island conditions.

9.1 Major natural challenges for ground water related Issues in the Islands are

- Climate Change
- Sea Level Rise
- Variation in rainfall (tropical cyclones, Drought)
- Natural groundwater discharge to ocean due to hydraulic continuity between aquifer and Sea water
- Evapotranspiration loss due to vegetation-Coconut tree roots are touching water table at places.
- High population density and associated pressure on the limited ground water resources.

9.2 Groundwater pollution by sanitation

- The thickness of the unsaturated zone through which seepage leaches was found to be the most significant determinant of groundwater contamination in Lakshadweep islands. Groundwater contamination by pathogens has been recorded in almost all the islands. Generally, guidelines of 30 metres separation between domestic septic tanks and water supply wells have been applied and found to give inadequate protection from pathogens, especially in permeable aquifers. The U.T.administration has taken steps to ensure installation of scientific septic tank in all newly constructed houses and other buildings.

9.3 Control Measures

9.3.1. Institutional

- A comprehensive island water legislation would help to resolve institutional uncertainties on roles and responsibilities and provide a firm foundation for addressing systematically and consistently the issues involved in water resource management.
- The need for the introduction of a water-pricing regime should be a priority, essential to the operation and maintenance of the water supply system and to demand side management.

9.3.2 Community

- Control measures to prevent sanitation impacts on water supplies and human health on tropical islands may include one or more of the following:
- 1. Providing public information on the linkage between sanitation and drinking water quality
- 2. Developing public health regulations on the design and maintenance of sanitation systems
- 3. Specifying well-head protection zones (minimum separation distances for contaminant sources)
- 4.Establishing monitoring procedures for pathogens and nitrogen in drinking water supplies, and
- 5. Disinfection of water supply wells or finding alternative water supplies (eg rainwater tanks). The acceptability and effectiveness of the various measures will obviously depend on the attitude of the local community

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

- Hydrogeological conditions, problems ,issues and its manifestations are identical in all Islands.
- Lakshadweep is a Union Territory with an area of 32 sq. km., and comprises 10 inhabited islands, 17 uninhabited islands and attached islets, 4 newly formed islets and 5 submerged reefs.
- Lakshadweep archipelago, lying well within the tropics and extending to the equatorial belt, have a tropical humid, warm climate and the islands are flat, rarely rising more than a few meters above mean sea level, and consist of fine coral sand and coral limestone.
- All Lakshadweep islands are of coral origin and some of them like Minicoy, Kalpeni, Kadmat, Kiltan and Chetlat are typical atolls.
- The islands are characterized by the absence of surface drainage and do not have any rivers or other surface water bodies, except for the brackish water ponds existing at Bangaram and Minicoy.
- Ground water exists under phreatic conditions in these islands as a thin fresh water lens floating over the saline water in the porous formation and is in hydraulic continuity with the seawater. The fresh water lenses are tapped by open wells.
- Exploratory drilling carried out by Central Ground Water Board in Kavaratti Island revealed existence of alternating layers of hard/soft lime stones and coral sands with fresh-saline water interface maximum at the centre and minimum towards the periphery. The vertical interface is irregular in shape with an overall saucer shape for the Island.
- The depth to water level in the islands varies from a few centimetres to 5 m below ground level and depth of the wells varies from less than a meter to about 6 m.

• The depth to water level is influenced by the tides. The water level fluctuation in these islands is significantly controlled by tides when compared to the ground water recharge and draft. The diurnal fluctuation of water level due to tides is in the range of negligible to 80 cm.

• The fresh water lens in the Lakshadweep islands is fragile and the shape of islands plays a significant role on its occurrence and stability. Hydrogeological conditions being same, the islands with aspect ratio less than 0.5 are vulnerable to sea water mixing.

• The stage of ground water development as in March 2013 ranges from 48.6 to 86.5 %. Stage of ground water development of the islands as a whole stands at about 67.7 %.

• The water level suddenly rises to fraction of metres immediately after the rainfall and again falls down to the original level within hours. Hence the magnitude of seasonal fluctuation in water level due to ground water recharge is not so significant when compared to tidal fluctuations.

• The Electrical Conductivity of ground water ranges from 500 to 15,000 μS /cm at 25º C.

• The quality variation is vertical, temporal and also lateral. Brackish water is present along topographic lows and in places where coarse pebbles and corals are present.

• Human waste, sewerage and other biological wastes are major sources of ground water contamination in the islands.

• Ground water is limited in quantity and its salinity level increases as a function of time during withdrawal in the dry periods.

• Water supply in the Lakshadweep Islands is through a combination of ground water extracted through collection wells, harvested rainwater and desalinated water.

• Though the "Lakshadweep Ground Water (Development and Control) Regulation, 2001" was promulgated on August 6, 2001 for control and regulate the extraction and use of water in any form in any of the islands in Lakshadweep through constitution of Lakshadweep Ground Water Authority, the same is yet to be constituted.

• Important constraints in the sustainable development of the limited ground water resources in the Lakshadweep Islands include the absence of surface water resources in the islands putting stress on the limited ground water resources available, deterioration of ground water quality during summer months, rapidly increasing demands for drinking and domestic uses, indiscriminate ground water extraction at places, resulting in up-coning of saline water and consequent quality deterioration, lack of proper sanitation, resulting in large scale bacterial contamination. Burial places in the Island are potential microbial contaminant sources.

10.2 Recommendations

As the full requirement of fresh water in the islands cannot be met with from the limited ground water resources, water supply schemes in all islands must resort to a combination of ground water, desalinated water and rainwater harvesting .The Low Temperature Thermal Desalination (LTTD) plants presently available at Kavaratti,Agatti and Minicoy Islands with suitable capacities may be installed in the remaining islands to supplement ground water resources for domestic purposes.

- The indiscriminate extraction of ground water through electric pumps from tube wells needs to be regulated for protecting the limited water resources from salinization due to up-coning of seawater. The constitution of Lakshadweep Ground Water Authority under the Lakshadweep Ground Water (Development & Control) Regulation, 2001 needs to be expedited to achieve this objective.

The pumping of water from dug wells directly to multi storied buildings may be stopped. The water may be pumped from dug wells with low capacity pump and collected in ground level storage tanks and from this water may be pumped to multi storied buildings.

- Roof top rainwater harvesting can provide reliable freshwater for the islands during a part of the year. Individual and community-based rainwater harvesting systems can reduce the dependence on ground water to a considerable extent. Efforts to popularize rainwater harvesting needs to be accelerated, through incentives wherever necessary, to reduce the increasing stress on the limited ground water resources. Legal provisions to make rainwater harvesting mandatory for all future civil constructions may also be made.
- As the shallow, thin floating lens of groundwater is easily prone to contamination, efforts for proper sewage disposal are to be given top priority. The U.T. Administration has taken steps to ensure installation of scientific septic tank in all newly constructed houses and other buildings. However, the existing soak pit/leach pit toilets need special attention
- Measures for improving water use efficiency through use of water efficient fixtures in homes/buildings should be encouraged.
- Judicious pumping from freshwater lens through radial wells possible in most of the islands
- Hand drawn wells to be encouraged over energized wells.
- Pumps above 0.25 hp should not be allowed.
- Pumping for water supply should be only from radial wells
- Low rate of continuous pumping preferred
- Should have zero tolerance for Wastage.
- Roof top Rain water harvesting should be mandatory, and people of saline zone should be given preference. With the advent of LTTD plants and free water supply at the door, the maintenance of roof top rain water harvesting set up were ignored by the public and the available structures are using for other purposes. Abandoned wells and pond are to be rejuvenated and protected and wells should not be converted into garbage disposal pit. Water supply through desalination plants are note to be taken as alternate source but it should be taken as supplementary source. The Lakshadweep Building development Board was constituted for supervising and regulating building permit in the island and locating the sites for building. Huge building and infrastructure project can be located at water scares barren land and such project may not be located in ground water worthy areas and very shallow ground water level areas. By construction of big buildings in this area, the foundation of the building touches the water table, there by mixing of cement and construction materials with fresh water and which leads to pollution of the aquifer. A ground water protection zone are demarcated in each Islands (Fig 6.1 to 6.9) and such zone should not be allowed for other construction activities.

- The tourism activities may be concentrated in Agatti Island, north of Airport where the area is almost barren and local people are not dwelling due to poor quality of water .The facilities for the tourists with drinking water from desalination plants may reduce the inconvenience to local people due to tourism. The tourism activities in Kadmat island is near southern tip of this elongated island. Due to the pumping of dug wells the salinity has moved to the north in the land. The pumping in the southern part of this island may be reduced to the minimum and desalination water may be used for the tourists. In Kalpeni island the northern part of the island is almost saline and tourism activities may be concentrated in this area so that tourism activities will not make hindrance to local people and the calm and silent atmosphere of the island .Likewise in other islands also the tourism activities may be concentrated in the unused / poor ground water quality areas so that the tourism activities may flourish with the support of local people. For any construction activities, the rules of Coastal Regulatory Authority may be followed.

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APPENDICES

HYDROGEOLOGICAL DATA OF DUG WELLS INVENTORIED IN DIFFERENT ISLANDS (CGWB) **APPENDIX 1**

Agatti Island

Month of monitoring:June 2014

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (m agl)	DWL (m bgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	OW-11	72.1922	10.8616	4.2	1.15	0.6	3	1590	28.9	7.9	CR	Two pumps
2	OW-10	72.1917	10.8598	4.1	1.15	0.6	3	3300	29.1	7.4	CR	Pump
3	OW-5	72.192	10.8562	3.75	1.25	0.75	2.21	2100	29.9	7.6	CR	Two pumps
4	OW-4	72.1917	10.8545	3.7	1	0.8	2.3	3300	29.3	7.3	CR	Pump
5	OW-1	72.1896	10.8495	3.3	1	1	1.65	5800	29.4	7.5	CR	Two pumps
6	OW-2	72.1905	10.8503	3.15	1.18	0.92	1.68	6800	29.4	7.1	CS	Pump
7	OW-3	72.1906	10.8506	2.95	1	0.7	1.74	7200	29.3	7.1	CR	Pump
8	OW-13	72.1955	10.8633	3.75	1.2	0.8	2.35	1490	29.9	7.7	CR	Pump
9	OW-14	72.1984	10.8622	3.2	1	0.6	2.15	720	29.8	7.8	CS	Rope & Bucket
10	OW-15	72.2001	10.8645	3.1	1	0.6	2.05	1410	30	7.3	CS	Rope & Bucket
11	OW-16	72.2007	10.8658	3.55	1	0.6	2.4	1300	29	7.4	CS	Pump
12	OW-22	72.2016	10.8675	3.78	1	0.6	2.35	1280	29.5	7.2	CS	Pump
13	OW-23	72.2022	10.8686	3.55	0.9	0.7	2.2	1430	29.2	7.2	CS	Pump
14	OW-24	72.2027	10.8694	3.85	1	0.8	2.35	1560	29.5	7.3	CS	Pump
15	OW-30	72.2031	10.8717	4.05	1	0.8	2.4	1650	29.5	7.2	CS	Pump
16	OW-31	72.2043	10.8694	3.6	1	0.7	2.2	3100	29.5	6.9	CS	Pump
17	OW-17	72.1977	10.8668	3.3	0.9	0.7	2	1120	30	7.3	CS	Pump
18	OW-21	72.1984	10.8686	3.9	1.6	0.9	2.1	1660	30.2	7.5	CSCM	Pump
19	OW-25	72.1998	10.8705	3.1	0.95	0.7	1.55	1850	28.6	7.4	CR	Pump
20	OW-26	72.1991	10.871	3.8	0.87	0.6	2.7	1100	29.4	7.6	CS	Pump
21	OW-29	72.2024	10.8723	3.25	1.1	0.6	1.95	1520	29.2	7.3	CS	Pump
22	OW-36	72.2049	10.8739	3.5	1	0.8	2.9	4500	29.5	7.1	CS	Pump
23	OW-35	72.2045	10.8739	2.95	0.9	0.65	1.9	1910	29	7.5	CS	Rope & Bucket
24	OW-37	72.2057	10.8749	3.2	1.2	0.8	1.85	3300	29.2	7.2	CS	Pump
25	OW-38	72.2059	10.8759	3.2	1.2	0.7	2.08	3700	29.4	7.3	CS	Pump
26	OW-32	72.2052	10.8771	3.25	1.1	0.7	1.8	4600	29.1	7.4	CS	Pump
27	OW-40	72.2022	10.8739	3	1.5	0.8	1.75	2500	28.5	7.5	CS	Rope & Bucket
28	OW-39	72.2038	10.8757	3.2	1.1	0.6	1.95	1950	29.4	7.3	CS	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (m agl)	DWL (m bgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
29	OW-34	72.2001	10.8762	4.4	1.1	0.9	2.85	1250	30	7.5	CS	Pump
30	OW-33	72.1998	10.8751	3.75	1	0.7	2.55	3500	30	7.1	CS	Pump
31	OW-28	72.1989	10.8738	3.9	1.1	0.7	2.6	3100	29	7.4	CS	Pump
32	OW-27	72.197	10.8725	3.4	1.2	0.5	2.2	1300	29.7	7.6	CS	Pump
33	OW-20	72.196	10.8713	3.25	1.1	0.7	1.65	1550	29.5	7.5	CS	Pump
34	OW-19	72.1953	10.8701	3.35	1.4	0.8	1.75	2600	29.4	7.2	CS	Pump
35	OW-18	72.1946	10.868	3.7	1.1	0.7	2.2	1750	29.7	7.2	CS	Pump
36	OW-8	72.1961	10.8583	3.7	1.3	0.7	2.1	3100	29.5	7.3	CS	Pump
37	OW-7	72.1944	10.8558	3.55	1.15	0.8	2.05	3500	29	7.4	CS	Pump
38	OW-6	72.1932	10.8543	3.09	0.9	0.7	1.9	2900	28.7	7.5	CS	Pump
39	OW-45	72.1944	10.8577	3.35	0.9	0.8	2.02	3700	29.6	7.2	CS	Pump
40	OW-43	72.1932	10.8593	3.6	1.4	0.7	2.4	2900	29.5	7.2	CS	Pump
41	OW-42	72.1928	10.8595	3.62	1.5	0.7	2.23	1540	29.1	7.6	CS	Pump
42	OW-41	72.1923	10.8594	4.05	1.1	1	2.57	4600	29.4	7	CS	Pump
43	OW-49	72.1916	10.8588	3.6	1.1	0.7	2.4	5200	28.9	7.2	CS	Pump
44	OW-48	72.192	10.8582	3.8	1.2	0.65	2.55	3200	29.7	8.2	CS	Pump
45	OW-47	72.1926	10.8573	3.55	0.85	0.6	2.4	3500	29.8	7.2	CS	Pump
46	OW-46	72.193	10.8574	3.57	1.2	0.7	2.3	2800	29.7	7.4	CS	Pump
47	OW-50	72.1939	10.8598	3.85	1.1	0.7	2.6	1680	30	7.4	CS	Pump
48	OW-44	72.1937	10.8591	3.8	1.2	0.7	2.6	3400	30.5	7.3	CR	Two pumps
49	OW-12	72.1934	10.8645	3.95	1.2	0.5	2.85	1390	30	7.3	CS	Pump
50	OW-9/TW-3	72.1935	10.8756	3.62	1.1	0.7	2.55	2300	29.2	7.4	CS	Pump
51	OW-5A	72.1915	10.8585	4.1	1.2	0.7	2.65	1620	29	7.5	CS	Pump
52	Govt S S S	72.1908	10.853	3.6	3	0.85	2.15	5300	29.6	7.5	CR	Two pumps
53	TW-1	72.1915	10.8541	3	1.15	0.7	1.66	3500	29	7.3	CS	Pump
54	TW-5	72.1956	10.8635	4	1.3	0.9	2.35	1150	29.2	7.8	CR	Pump
55	TW-6	72.1952	10.8666	3.8	1.2	0.7	2.2	970	29.8	7.4	CS	Pump
56	TW-7	72.1983	10.8704	3.9	1.2	0.8	2.35	690	29.1	7.6	CS	Pump
57	TW-10	72.2023	10.8752	4.4	1.4	0.8	2.7	1510	29.3	8	CS	Pump
58	TW-9	72.2008	10.8741	4.4	1.3	0.75	3.05	1890	29.3	7.5	CS	Pump
59	TW-2	72.1933	10.8573	3.2	1.3	0.6	2	2800	29.7	7.3	CS	Pump
60	TW-4	72.1934	10.8607	4.3	1.05	0.8	2.55	2200	29.7	7.2	CR	Pump

Amini Island

Month of monitoring: December 2014

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL	EC (µS/cm)	Temp	pH	Lining material	Lifting device
1	OW 47	72.7193	11.1238	3.85	1	0.63	2.75	1090	27.8	7.5	CS	Pump
2	OW 49	72.721	11.1249	5.65	0.89	0.52	4.15	1040	28	7.7	CR	Pump
3	OW 59	72.7186	11.1252	5.43	0.97	0.8	3.61	1120	28	7.1	CR	Pump
4	OW 48	72.7177	11.1239	5.59	1.15	0.85	3.9	1560	27.9	7.2	CS	Pump
5	OW 37	72.7172	11.1233	5.23	1.65	0.71	3.41	1940	27.9	7.6	CS	Pump
6	OW 38	72.7188	11.123	3.9	1.65	0.65	2.63	1300	27	7.2	CR	Pump
7	OW 35	72.718	11.1219	4.86	0.97	0.9	3.18	1530	27.7	7.2	CR	Pump
8	T2	72.718	11.1216	4.7	1.17*1.1	0.65	2.79	860	27.5	7	CS	Pump
9	OW 36	72.7168	11.1225	5.08	1	0.53	3.89	1610	27.8	7.2	CS	Pump
10	OW 25	72.717	11.1218	3.9	1	0.7	2.61	1820	27.6	7	CS	Pump
11	OW 26	72.7179	11.1212	3.4	1.2	0.52	2.22	1390	27.8	7.5	CS	Pump
12	OW 23	72.7178	11.1196	4.29	1.3*1.16	0.7	2.68	1190	28.1	7.2	CSCM	Pump
13	OW 24	72.7026	11.1199	4.59	1.37	0.5	3.55	2800	27.7	7.3	CSCM	Pump
14	OW 12	72.7166	11.1188	4.2	1.2	0.7	3.27	2800	27.6	7	CR	Pump
15	OW 11	72.717	11.118	4.54	1.32	0.75	2.86	1330	28.1	7.1	CR	Pump
16	OW 13	72.7178	11.1188	4.23	1.05	0.9	2.6	1660	28.2	7.1	CSCM	Pump
17	OW-10	72.7181	11.1175	3.75	1.35	0.7	2.05	1100	27.6	7.4	CS	Pump
18	OW-04	72.7183	11.1164	3.69	1.40*1.37	0.56	2.08	1180	27.2	7	CSCM	Pump
19	OW-03	72.7167	11.1002	4.56	0.97	0.7	3.04	4400	28.2	7.2	CR	Pump
20	OW-02	72.7183	11.1141	3.7	2.76	0.75	2.01	5200	28.8	7.5	CSCM	Pump
21	T1	72.7192	11.1151	3.22	0.9	0.7	1.82	1240	28.5	7	CR	Pump
22	OW-05	72.7197	11.1154	3.82	1.26	0.9	1.75	1240	28.3	7.2	CSCM	Pump
23	OW-01	72.7196	11.1138	3.2	1.15	0.52	1.8	1630	27.7	7.2	CS	Pump
24	OW-06	72.7202	11.1145	3.03	0.9	0.72	1.8	1310	27.4	7	CS	Nil
25	OW-07	72.721	11.1148	3.52	0.91	0.75	2.1	1530	27.5	7.1	CR	Pump
26	OW-50	72.7206	11.1239	3.55	1	0.56	2.14	1000	28.9	7	CS	Pump
27	OW-39	72.7196	11.1228	3.85	1.25*1.27	0.75	2.39	260	27.5	7.2	CS	Pump
28	OW-46	72.7221	11.1226	3.05	0.9	0.6	1.77	1400	27.7	7.5	CSCM	Nil
29	OW-34	72.7192	11.1213	3.58	1.06	0.75	2.35	1150	27.2		CS	Nil
30	OW-27	72.7191	11.1208	3.46	1.12	0.7	2.3	1240	27.8	7.2	CS	Nil
31	OW-28	72.7203	11.1205									
32	OW-22	72.7194	11.1193	3.41	1.3	0.62	2.27	1160	28.5	6.9	CS	Nil
33	OW-21	72.72	11.119	3.08	1.1	0.89	1.55	1600	27.7	7.5	CS	B&R

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL	EC (µS/cm)	Temp	pH	Lining material	Lifting device
34	OW-14	72.7189	11.1183	3.28	1.1	0.9	1.9	1380	27.6	7.3	CS	Pump
35	OW-20	72.7212	11.1185	3.94	0.93	0.94	2.58	2500	26.9		CR	
36	OW-15	72.7198	11.118	3.39	1	1.1	1.65	1260	27.3	7.1	CR	Pump
37	OW-09	72.7195	11.1169	2.64	1.04	0.63	1.84	820	27.5	7.3	CR	Pump
38	OW-08	72.7215	11.1156	4.27	0.93	1	2.7	1780	27.2	7	CSCM	Pump
39	OW-16	72.7221	11.1165	4.26	1.09	0.84	3.05	1430	28.2	6.9	CR	Pump
40	OW-17	72.7228	11.1161	3.27	1*0.9	0.57	2.07	2400	28.1	7.4	CS	Nil
41	OW-18	72.7235	11.1166	3.6	1	0.78	2.19	1690	27.4	7.5	CR	Pump
42	OW-19	72.7231	11.1174	2.7	1.07	0.71	1.27	610	27	7.3	CR	Pump
43	T3	72.7241	11.1178	3.32	0.8/6	0.65	1.83	1920	27.4	7.5	CSCM	Pump
44	OW-30	72.7247	11.1181	3.46	1.1	0.75	1.98	860	27.3	6.9	CS	Pump
45	OW-31	72.7258	11.1184	3.58	1.18	0.67	2.16	1580	27.4	6.9	CS	Pump
46	OW-42	72.726	11.1191	3.82	1.05	0.75	2.23	1320	26.8	6.9	CSCM	Pump
47	OW-43	72.7268	11.12	3.81	2.15	0.67	2.23	810	28.1	6.9	CS	Nil
48	OW-32	72.7248	11.119	3.2	1.13	0.7	1.78	800	27.3	7.4	CS	Pump
49	OW-41	72.725	11.1196	3	0.9*.84	0.65	2.45	1810	27.2	6.9	CS	Pump
50	OW-44	72.7254	11.1206	2.92	1.32*1.5	0.65	1.63	920	27.1	7	CS	Pump
51	OW-45	72.7247	11.1209	2.91	0.95	0.97	1.48	3100	27.2	6.8	CR	Pump
52	OW-33	72.7216	11.1207	4.44	1.15*1.10	0.65	2.73	1280	27.2	7.4	CS	Pump
53	OW-40	72.7213	11.1219	2.7	96	0.72	1.58	1080	26.9	6.9	CSCM	Pump
54	T7	72.7205	11.1276	5.35	1.15	0.75	3.91	1690	29.4	6.8	CR	Pump
55	OW-60	72.7194	11.1268	5.21	1.1	0.5	3.71	1420	28.4	7.6	CR	Pump
56	OW-61	72.7198	11.1263	4.69	1	0.65	3.2	490	27.6	7.5	CS	Pump
57	OW-58	72.7208	11.1248	4.12	1	0.85	2.72	1300	28	7.8	CR	Pump
58	OW-62	72.7214	11.1257	3.72	1.25	0.85	2.39	1190	27	6.8	CSCM	Pump
59	OW-63	72.723	11.1248	2.86	1.15*1.13	0.55	1.1	670	27.7	7.4	CS	Pump
60	OW-51	72.7222	11.1235	2.62	1.13	0.7	1.1	940	27.5	7.9	CS	Pump
61	OW-57	72.7228	11.1239	3.11	1.07	0.65	1.59	1380	27.7	7.3	CS	Pump
62	OW-56	72.7257	11.1227	3.62	1	0.4	1.72	1750	27.8	7.5	CR	Pump
63	OW-52	72.7256	11.1213	3.45	0.95	0.65	1.99	2300	27.7	7.3	CS	Pump
64	OW-29	72.7238	11.1191	3.95	1.15	0.83	2.4	1200	27.7	7.6	CR	Pump
65	OW-53	72.7273	11.1209	3.57	1	0.5	2.07	2300	27.9	7.5	CR	Pump
66	OW-54	72.7281	11.1216	3.6	1	0.7	2.28	2000	28.4	7.5	CR	Pump
67	OW-55	72.7271	11.1221	3.3	0.7	0.5	2.1	1000	28.2	8	CS	Pump
68	OW-64	72.7272	11.123	3.49	0.95	0.65	1.85	1060	27.8	7.3	CS	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL	EC (µS/cm)	Temp	pH	Lining material	Lifting device
69	OW-65	72.7279	11.1231	2.97	1.12	0.67	1.6	2800	27.6	7.5	CS	Pump
70	T4	72.7283	11.1231	3.22	0.95	0.7	1.87	2000	27.4	7.8	CR	Pump
71	OW-66	72.7286	11.1229	3.5	1	0.75	2.37	1380	27.9	6.8	CR	Pump
72	OW-67	72.7294	11.1239	3.3	1	0.73	1.82	3100	28	7.4	CR	Pump
73	OW-68	72.7286	11.1854	3.43	0.85	0.75	1.94	840	27.9	7.9	CS	Pump
74	T5	72.7267	11.1241	1.92	0.95*1.15	0.32	0.88	1310	27.9	7.3	CSCM	Pump
75	OW-69	72.728	11.1248	1.98	2.25*2.70	0	1.35	1190	27.7	7.5	CS	Nil
76	OW-77	72.7278	11.1251	3.7	0.95	0.66	2.04	1530	28.8	7.3	CR	Pump
77	OW-78	72.7286	11.1249	3.2	1	0.8	2.05	1440	28.7	7.6	CR	Pump
78	OW-70	72.7238	11.126	2.47	1.2	0.7	0.97	1850	28.6	7.5	CS	Pump
79	T6	72.7232	11.1265	3.56	1.15*1.00	0.8	2	1240	28.3	7.5	CR	Pump
80	OW-71	72.7223	11.1267	4.03	1.37*1.25	1	2.55	850	28.1	8	CSCM	Pump
81	OW-72	72.7213	11.1271	4.12	0.96	0.8	2.84	1240	27.7	7.3	CS	Pump
82	OW-73	72.7201	11.1269	1.1	1.1	0.6	3.03	2500	28.1	7.4	CRR	Pump
83	OW-74	72.7209	11.1281	5.31	1	0.75	3.85	1750	28.1	6.9	CS	Pump
84	OW-85	72.7216	11.1294	7	1	0.62	5.48	3200	28.2	6.8	CR	Pump
85	OW-84	72.7222	11.1283	4.45	0.9	0.5	3.26	1810	28.36	7.6	CSCM	Pump
86	OW-75	72.7224	11.1278	4.29	0.9	0.8	3.02	1880	28.2	7.5	CS	Pump
87	OW-83	72.7229	11.1281	3.9	1.15	0.55	2.6	1110	27.9	7.8	CS	Pump
88	OW-76	72.7233	11.1273	3.6	1.08	0.62	2.2	1240	28.1	6.8	CSCM	Pump
89	OW-82	72.7238	11.1277	3.17	1	0.7	1.79	870	28.5	7.4	CS	Pump
90	OW-88	72.7236	11.1285	3.45	1*1.03	0.7	2.33	1170	27.2	7.9	CSCM	Pump
91	OW-87	72.7233	11.129	3.56	1	0.43	2.44	1930	28	7.3	CR	Pump
92	OW-86	72.7225	11.1294	4.9	1.4	0.6	3.85	1650	28.3	7.5	CS	Pump
93	OW-98	72.7229	11.1302	6.55	1.05	0.47	5.56	2500	28.2	7.3	CSCM	Pump
94	OW-97	72.7235	11.1302	4.28	1.2	0.8	2.99	3400	28	7.6	CSCM	Pump
95	OW-99	72.7242	11.1312	6.61	1.05	0.5	5.42	5200	28.6	7.5	CSCM	Pump
96	OW-100	72.7246	11.1309	4.47	1.12	0.65	3.35	3100	28.3	7.5	CSCM	Pump
97	OW-101	72.7251	11.1304	3.8	1.20*1.16	0.75	2.48	2600	28.1	8	CS	Pump
98	OW-96	72.7241	11.1296									Pump
99	OW-95	72.7251	11.1287	3.15	1.08	0.7	1.41	1410	27.8	7.5	CSCM	Pump
100	OW-102	72.7257	11.1297	3.9	0.97	1.2	2.18	1340	28.1	8	CR	Pump
101	OW-110	72.7264	11.1308	3.3	1.00*0.90	0.65	2.31	2200	28	7.3	CSCM	Pump
102	T8	72.7254	11.1306	4.3	1.05	0.75	3.05	1070	27.8	7.5	CSCM	Pump
103	OW-111	72.7259	11.1312	3.85	1.1	0.5	2.73	1810	27.8	7.8	CSCM	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL	EC (µS/cm)	Temp	pH	Lining material	Lifting device
104	OW-112	72.7256	11.1316	4.83	0.9	0.65	3.6	1800	28.2	6.8	CSCM	Pump
105	OW-113	72.726	11.1323	5.45	1.1	0.65	4.23	3400	28.3	7.4	CSCM	Pump
106	OW-123	72.7274	11.1329	5.2	1.2	0.7	3.86	3300	28.7	7.9	CSCM	Pump
107	OW-124	72.7281	11.1336	5.75	0.85	0.8	4.68	2400	28.2	7.3	CSCM	Pump
108	OW-133	72.7293	11.1345	7.76	0.93	0.75	6.37	4200	28.6	7.5	CR	Pump
109	OW-132	72.7298	11.1339	4.22	0.95	0.7	2.9	3000	28.2	7.3	CSCM	Pump
110	OW-134	72.73	11.1348	6.15	1	0.4	5.3	2700	29.3	7.6	CSCM	Pump
111	OW-135	72.7306	11.1348	4.55	0.95	0.8	3.58	3200	27.8	7.3	CSCM	Pump
112	OW-140	72.731	11.1349			0	0	0				Pump
113	OW-136	72.7309	11.1343	3.88	1.1	0.75	2.45	1410	28	7.5	CS	Pump
114	OW-131	72.7303	11.1337	3.46	1.2	0.7	2.08	1680	27.6	8	CR	Pump
115	OW-125	72.7289	11.1331	3.97	1.6	0.6	2.77	1880	27.7	7.3	CSCM	Pump
116	OW-121	72.7284	11.1326	3.95	1.05	0.8	2.65	1810	27.1	7.5	CSCM	Pump
117	OW-122	72.7278	11.1324	3	1.80*1.80	0.12	2.48	3900	26.9	7.8	CSCM	Pump
118	OW-114	72.7271	11.1314	3.65	1.22	0.65	2.1	1880	26.9	6.8	CSCM	Pump
119	T10	72.7291	11.1338	3.04	0.93	0.8	1.48	2800	28.2	7.4	CR	Pump
120	OW-120	72.7293	11.1324	2.3	1.2	0.6	1.15	0			CS	Pump
121	OW-126	72.7303	11.1324	2.8	1.15*1.13	0.8	1.4	3400	28.2	7.3	CS	Pump
122	OW-130	72.731	11.1331									
123	OW-129	72.7318	11.1326	3.79	1.98	1.05	1.95	1080	28.8	7.3	CR	Pump
124	OW-137	72.7319	11.1337	3.26	1.75	0.6	1.95	840	28.2	7.6	CSCM	Pump
125	OW-139	72.7321	11.1347	3.84	1.75	0.7	2.4	1530	28.9	7.3	CSCM	Pump
126	OW-138	72.7326	11.1334	3.3	1.60*1.30	0.7	1.8	2300	30.2	7.5	CSCM	Pump
127	OW-128	72.7326	11.132	4	1.05*1.05	1	2.43	1190	29.3	8	CSCM	Pump
128	OW-127	72.7327	11.1308	4.15	0.95	0.7	2.69	1790	28.6	7.3	CSCM	Pump

Androth Island **Month of monitoring: October 2014**

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC(µS/cm)	Temp (°C)	pH	Lining material	Lifting device
1	OW-1	73.7007	10.8141	3.51	1.32	0.95	1.86	1510	28.9	0	CSCM	Pump
2	OW-2	73.7009	10.815	3.25	1.27	0.83	1.6	1080	28.9	0	CSCM	Pump
3	OW-3	73.702	10.8155	3.4	1.2	0.85	1.77	1630	28.8	0	CSCM	Pump
4	OW-4	73.7018	10.8161	3.5	1.95	0.95	1.49	1380	28.4	0	CSCM	Pump
5	OW-5	73.7001	10.8169	3	1.15	0.57	1.83	1640	28.7	0	CR	Pump
6	OW-6	73.6995	10.8159	3.35	0.95	0.9	1.94	1090	28.7	0	CSCM	Pump
7	OW-7	73.6989	10.8155	4.5	1.06*1.06	0.8	3.45	720	28.5	0	CSCM	Pump
8	OW-8	73.6991	10.8142	3.25	1.1	0.65	0.87	1040	28.8	0	CSCM	Pump
9	OW-9	73.6991	10.8137	3.47	1.1	0.75	2	2200	27.8	0	CSCM	Pump
10	OW-10	73.698	10.8127	4.7	1.3	0.97	2.98	3500	27.9	0	CSCM	Pump
11	OW-11	73.6967	10.813	3.2	1.05	0.34	1.98	1340	28.4	0	CR	Pump
12	OW-12	73.6967	10.8151	3.45	1.15	0.75	1.95	1000	28.4	0	CR	Pump
13	OW-13	73.6971	10.816	3.27	.95*.95	0.85	1.8	750	27.8	0	CSCM	Pump
14	OW-14	73.6972	10.8005	3.5	1.45*1.45	0.95	2	1080	27.9	0	CSCM	Pump
15	OW-15	73.6963	10.8164	3.65	1.1	1.1	1.67	830	28.5	0	CR	Pump
16	OW-16	73.695	10.8166	3.45	.9*.9	0.75	2	1150	28.1	0	CSCM	Pump
17	OW-17	73.6941	10.8162	3.25	1.07*1.1	0.8	1.87	800	28.4	0	CSCM	Pump
18	OW-18	73.6933	10.8169	4.47	1.12	0.75	2.95	1020	28.4	0	CSCM	Pump
19	OW-19	73.6933	10.8176	3.58	1.27*1.27	1.02	1.83	810	28	0	CSCM	Pump
20	OW-20	73.6925	10.8178	4.2	1.1	0.65	2.7	3400	28.3	0	CSCM	Pump
21	OW-21	73.6916	10.817	4.32	1	0.75	3.15	1440	28	0	CSCM	Pump
22	OW-22	73.6928	10.816	3.9	1.17*1.17	1	2.1	950	27.9	0	CS	Pump
23	OW-23	73.6926	10.8155	3.25	1.57	0.72	2.23	910	28	0	CR	Pump
24	OW-24	73.694	10.8145	3.45	1.1*1.1	0.85	2.15	770	28.1	0	CR	Pump
25	OW-25	73.6946	10.813	3.4	1.2	0.75	1.85	890	27.9	0	CSCM	Pump
26	OW-26	73.695	10.812	3.65	.9*.9	1	2	1000	28	0	CR	Pump
27	OW-27	73.6937	10.8115	3.3	1.37*1.37	0.7	2.2	910	28.1	0	CS	Pump
28	OW-28	73.6931	10.8121	4.2	1.05*1.05	0.7	2.95	1050	28.3	0	CS	Pump
29	OW-29	73.6928	10.8132	4.6	1.15*1.15	0.8	3.05	1140	28.3	0	CS	Pump
30	OW-30	73.6931	10.8141	3.87	1.15*1.15	0.68	2.42	1060	28.5	0	CSCM	Pump
31	OW-31	73.6914	10.8162	2.45	1	0.65	1.25	1100	28.3	0	CR	Pump
32	OW-32	73.6912	10.8151	3.3	1.25*1.25	0.95	2.05	820	28.2	0	CSCM	Pump
33	OW-33	73.6909	10.814	3.25	0.9	0.6	1.9	1140	27.9	0	CR	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC(µS/cm)	Temp (°C)	pH	Lining material	Lifting device
34	OW-34	73.6914	10.8129	3.55	1	0.7	2.2	780	28	0	CR	Pump
35	OW-35	73.6922	10.8115	3.7	1.45*1.45	1.03	2.17	680	28.1	0	CSCM	Pump
36	OW-36	73.6912	10.8109	3.88	1.1	0.83	2.47	880	27.5	0	CS	Pump
37	OW-37	73.6903	10.8108	3.87	1.05*1.05	0.8	2.4	1060	28	0	CSCM	Pump
38	OW-38	73.6898	10.8129	3.9	1.5*1.5	0.8	1.7	640	28.2	0	CSCM	Pump
39	OW-39	73.6901	10.8146	3.35	.85*.85	0.9	1.85	970	27.5	0	CS	Pump
40	OW-40	73.6902	10.8161	3.1	1.05	0.73	1.97	980	28.1	8	CR	Pump
41	OW-41	73.6911	10.8184	4	1.1	0.9	2.5	900	27.4	0	CS	Pump
42	OW-42	73.6906	10.8174	4.7	1.15	1.05	2.7	1620	26.8	0	CS	Pump
43	OW-43	73.6894	10.8174	3.6	1.15*1.15	0.9	2.05	1740	27.2	0	CS	Pump
44	OW-44	73.6887	10.8163	3.85	1.25*1.25	1	2.5	990	27.8	6.9	CSCM	Pump
45	OW-45	73.6881	10.8157	3.17	1.05	0.8	1.4	720	27.9	6.8	CR	Pump
46	OW-46	73.6879	10.8138	3.3	1.05*1.05	0.9	1.6	860	28.2	6.7	CS	Pump
47	OW-47	73.6868	10.8136	3.25	0.9	0.7	1.65	870	28.1	6.6	CR	Pump
48	OW-48	73.6877	10.8102	4.5	1.15	1	3.1	1180	27.4	7.3	CR	Pump
49	OW-49	73.6882	10.8101	3.9	1.05	0.92	2.13	890	27.6	7.1	CSCM	Pump
50	OW-50	73.6874	10.8091	4.5	1.15	1.15	2.45	1370	27.7	6.9	CR	Pump
51	OW-51	73.6856	10.8089	3.65	1.05	0.75	2.15	1700	28	6.7	CR	Pump
52	OW-52	73.6843	10.8098	3.85	0.9	0.85	2.3	1090	28.2	6.7	CR	Pump
53	OW-53	73.6846	10.8116	5.9	1.05	0.9	4.4	710	27.5	7.2	CR	Pump
54	OW-54	73.6857	10.8132	3.65	1.05*1.05	0.9	2.1	830	27.8	6.6	CSCM	Pump
55	OW-55	73.6853	10.8156	3.1	1.05*1.05	0.7	1.85	740	28	6.8	CS	Pump
56	OW-56	73.6858	10.8168	3.85	1.1	0.9	2.2	1180	28	6.5	CR	Pump
57	OW-57	73.6834	10.8173	3.55	0.85	0.65	2.35	1380	28.7	6.6	CR	Pump
58	OW-58	73.6825	10.8159	3.87	.85*1.3	0.8	2.1	1290	28.5	6.5	CR	Pump
59	OW-59	73.682	10.8145	3.45	.9*.9	0.92	1.48	810	27.9	6.9	CR	Pump
60	OW-60	73.6819	10.8132	3.65	1.05	0.85	2.2	1050	27.8	6.6	CR	Pump
61	OW-61	73.6829	10.8115	3.8	1.05*1.05	0.9	2.2	970	27.9	6.8	CR	Pump
62	OW-62	73.682	10.8089	3.8	1.05*1.05	0.9	2.45	910	27.6	7.1	CS	Pump
63	OW-63	73.6829	10.8084	3.6	1.1	0.95	1.8	1070	27.8	6.7	CR	Pump
64	OW-64	73.6825	10.8075	4.05	1.55	0.85	2.25	1180	27.6	6.1	CS	Pump
65	OW-65	73.6824	10.8069	4.1	1.15	0.7	2.8	1310	27.7	7.1	CR	Pump
66	OW-66	73.6807	10.8066	4.1	1.15*1.15	0.65	2.85	860	28	6.6	CS	Pump
67	OW-67	73.68	10.8074	3.05	1	0.6	1.6	1040	28	6.6	CR	Pump
68	OW-68	73.6806	10.8096	2.75	1.2	0.85	1.3	980	27.5	6.9	CSCM	B&R

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC(µS/cm)	Temp (°C)	pH	Lining material	Lifting device
69	OW-69	73.6783	10.8138	3.8	1.3*1.3	0.95	2	810	28.6	6.8	CS	Pump
70	OW-70	73.6791	10.8157	3.5	1.15	0.95	1.55	920	28.4	6.6	CR	Pump
71	OW-71	73.679	10.8171	3.9	1.55*1.55	0.95	2.3	1000	28.5	6.8	CSCM	Pump
72	OW-72	73.6798	10.8177	3.3	1.5*1.5	0.8	2	1440	28	6.8	CS	Pump
73	OW-73	73.6786	10.8177	4.15	1.27*1.27	0.95	2.35	2300	28.7	6.6	CSCM	Pump
74	OW-74	73.6782	10.8171	3.4	1.5	0.65	2.25	1300	27.8	6.7	CSCM	Pump
75	OW-75	73.6769	10.8172	3.5	1.8	0.7	2.05	1690	28.3	6.5	CSCM	Pump
76	OW-76	73.6762	10.8157	2.85	1.25*1.25	1.05	1.5	1380	28	6.7	CSCM	Pump
77	OW-77	73.6752	10.8135	3.75	1.25*1.25	0.95	2.05	740	27.8	6.9	CSCM	Pump
78	OW-78	73.6764	10.8116	2.45	1.15	0.65	1	970	27.5	6.5	CR	B&R
79	OW-79	73.677	10.8074	3.3	1.1*1.1	0.65	2.35	690	27.6	6.9	CSCM	Pump
80	OW-80	73.6776	10.8061	4.55	1*1	0.8	2.85	1170	27.4	6.8	CSCM	Pump
81	OW-81	73.6756	10.8055	4.2	1.45	0.95	2.45	1690	27.1	6.7	CSCM	Pump
82	OW-82	73.6749	10.8059	3.7	.7*.7	0.87	2.18	780	27.6	6.9	CSCM	Pump
83	OW-83	73.6754	10.8082	4.35	1.15	1.1	2.6	1170	26.9	7.2	CR	Pump
84	OW-84	73.6751	10.8114	2.9	1.1	1	1.1	730	27.5	7.2	CR	Pump
85	OW-85	73.6749	10.8122	2.55	1.2	1	0.77	530	27.5	7.5	CR	Pump
86	OW-86	73.6733	10.8133	3.4	1.05	1.05	1.65	1150	27.4	7.3	CR	Pump
87	OW-87	73.6734	10.8139	3.5	1.15	0.8	1.95	1300	27.5	7	CR	Pump
88	OW-88	73.6732	10.8156	3.7	1.7	0.7	2.35	1090	27.3	7.1	CSCM	Pump
89	OW-89	73.6733	10.8163	3.9	1.05	0.9	2.2	910	27.6	7.1	CR	Pump
90	OW-90	73.674	10.8179	3	1	0.6	1.8	1250	27.8	7.1	CR	Pump
91	OW-91	73.673	10.8172	3.4	1.2*1.2	0.8	2.05	1020	27.8	7.1	CSCM	Pump
92	OW-92	73.6718	10.8321	3.75	1.3*1.3	0.75	2.3	920	27.8	7	CSCM	Pump
93	OW-93	73.671	10.8124	3.75	1.15	0.75	2.05	1160	27.7	6.8	CR	Pump
94	OW-94	73.6711	10.8111	3.1	1.15*1.15	0.9	1.65	850	27.6	7.3	CSCM	B&R
95	OW-95	73.6716	10.8096	4.15	1.1*1.1	0.95	2.75	1110	28	7	CSCM	Pump
96	OW-96	73.6717	10.8073	3.5	1.05*1.05	0.85	2.1	580	26.8	7.7	CSCM	Pump
97	OW-97	73.6712	10.8058	4.2	1.05*1.05	0.67	2.73	1090	27.3	6.8	CSCM	Pump
98	OW-98	73.6699	10.8059	4.3	1.15	0.9	2.6	1610	27.2	6.7	CR	Pump
99	OW-99	73.67	10.8078	3.55	1.15	1.1	1.5	590	26.9	7.7	CR	Pump
100	OW-100	73.6698	10.8107	0	0	0	0	0	0	0	0	Pump
101	OW-101	73.6684	10.8119	4.05	1.1	0.85	1.95	1080	28.2	6.8	CR	Pump
102	OW-102	73.6684	10.8124	3.05	1.25*1.25	0.9	1.7	720	27.1	7.2	CSCM	Pump
103	OW-103	73.6678	10.8136	3.3	1.15	0.9	1.7	1040	27.9	6.8	CR	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC(µS/cm)	Temp (°C)	pH	Lining material	Lifting device
104	OW-104	73.669	10.8156	3.6	1.05*1.05	0.85	1.9	1080	27.6	7.1	CR	Pump
105	OW-105	73.6696	10.8173	3.8	1.1*1.1	0.9	1.9	830	27.8	7.2	CR	Pump
106	OW-106	73.6698	10.8179	3.35	1.15*1.15	0.85	1.65	1220	27.6	7.1	CSCM	Pump
107	OW-107	73.6683	10.8179	3.2	1.05	0.75	1.75	1110	27.4	7	CR	Pump
108	OW-108	73.6679	10.8166	3.3	1.1	1	1.25	890	27.7	7	CR	Pump
109	OW-109	73.668	10.8153	3.3	1.1*1.1	0.82	1.78	950	27.6	7.1	CR	Pump
110	OW-110	73.6673	10.8113	3.25	.85*.85	1	1.45	870	28	7	CSCM	Pump
111	OW-111	73.6677	10.8108	3.45	1.1	0.95	1.75	1440	27.1	6.7	CR	Pump
112	OW-112	73.6686	10.8091	3.45	1.15	0.75	1.85	790	28.3	7.1	CSCM	Pump
113	OW-113	73.6684	10.8083	3.15	1.1*1.1	0.9	1.4	940	28.2	6.7	CSCM	Pump
114	OW-114	73.6683	10.8067	4.2	.95*.95	0.8	2.55	1210	27.4	6.9	CR	Pump
115	OW-115	73.6683	10.8061	4.35	0.8	0.85	2.8	2800	27.4	6.8	CSCM	Pump
116	OW-116	73.6672	10.8066	3.8	.95*.95	1	2.25	1530	27.7	6.7	CSCM	Pump
117	OW-117	73.6675	10.8078	3.6	1.25	0.85	1.7	1070	27.4	6.7	CSCM	Pump
118	OW-118	73.668	10.8091	3.5	1.15*1.15	0.85	1.7	1010	28.4	6.7	CR	Pump
119	OW-119	73.6504	10.8104	3.04	1.1	0.95	1.3	870	28	7.1	CR	Pump
120	OW-120	73.6663	10.8123	2.9	0.9	0.9	1.4	1350	27.4	6.9	CR	Pump
121	OW-121	73.6656	10.8143	2.87	1.17*1.17	0.72	1.48	810	27.4	7.3	CSCM	Pump
122	OW-122	73.666	10.8157	2.95	1.15	0.8	1.1	970	27.7	6.8	CR	Pump
123	OW-123	73.6663	10.8171	3	1.25*1.25	0.7	1.45	880	27.2	7.1	CSCM	Pump
124	OW-124	73.6663	10.8183	2.7	.8*.8	0.8	1.1	1650	27.3	6.8	CSCM	Pump
125	OW-125	73.6647	10.8181	3	1.1	0.7	1.35	1820	27.5	7.1	CR	Pump
126	OW-126	73.6645	10.8004	3.05	1.1	0.6	1.65	870	27.2	7	CR	Pump
127	OW-127	73.6643	10.8166	3.5	1.15	0.9	1.6	990	27.1	7.3	CR	Pump
128	OW-128	73.6645	10.8152	3.55	1.05	0.9	1.6	1100	27.7	6.9	CR	Pump
129	OW-129	73.6644	10.8139	3.3	1.3*1.3	0.85	1.6	1260	27.6	6.7	CSCM	Pump
130	OW-130	73.6645	10.8123	3.3	1.2*1.2	0.95	1.55	1100	27.3	6.8	CS	Pump
131	OW-131	73.6654	10.8118	3.2	1.05*1.05	0.6	1.7	1440	27	6.8	CR	Pump
132	OW-132	73.6653	10.8105	3.2	1.15*1.15	1	1.7	1260	27.4	6.8	CSCM	Pump
133	OW-133	73.683	10.8094	0	0	0	0	0	0	0		Pump
134	OW-134	73.6663	10.8079	3.15	1.25*1.25	0.95	1.9	890	26.4	7.4	CSCM	Pump
135	OW-135	73.6661	10.8069	3.7	1.1	0.82	2.13	2400	27.3	6.8	CR	Pump
136	OW-136	73.6653	10.8071	3.7	1.2*1.2	0.85	2.2	2100	27.4	6.8	CR	Pump
137	OW-137	73.6644	10.8088	3.3	.85*.85	0.95	1.8	1000	27.8	6.9	CSCM	Pump
138	OW-138	73.6635	10.8108	3.7	1.1*1.1	1	1.65	1150	28.1	6.9	CR	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC(µS/cm)	Temp (°C)	pH	Lining material	Lifting device
139	OW-139	73.6633	10.8117	3.35	1.1*1.1	0.85	1.6	1410	27.7	6.7	CR	Pump
140	OW-140	73.6629	10.8129	3.1	.95*.95	0.75	1.75	1180	27.4	6.8	CSCM	Pump
141	OW-141	73.6637	10.814	2.9	1.25*1.25	1	1.35	1030	27.3	7	CSCM	Pump
142	OW-142	73.6632	10.8158	2.85	0.9	0.9	1.3	1430	28.3	6.8	CR	Pump
143	OW-143	73.6633	10.8169	3.25	1.15	1.1	1.35	1110	28.5	7.2	CR	Pump
144	OW-144	73.6642	10.8179	3.25	1.15	0.7	1.45	1350	27.7	7	CR	Pump
145	OW-145	73.6611	10.8166	2.85	1	0.75	1.2	1640	28.1	7	CR	B&R
146	OW-146	73.6613	10.816	2.8	1	0.5	1.1	1360	28	7.1	CR	B&R
147	OW-147	73.6612	10.815	2.75	1.1	0.85	1.15	1780	28	7.3	CR	Pump
148	OW-148	73.6618	10.8121	3.75	1.35	0.85	1.75	1840	27.7	6.7	CR	Pump
149	OW-149	73.6615	10.81	3.4	1.4	0.6	2.2	3500	27.7	7	CSCM	Nil
150	OW-150	73.6623	10.8094	3.65	1.1	1.05	2.05	3100	28	7	CR	Pump

Kadmat Island

Month of monitoring: December 2014

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (°C)	pH	Lining material	Lifting device
1	OW-1	72.7618	11.1832	3.95	1.15	0.72	2.6	2800	27.9	8	CR	Pump
2	OW-2	72.7621	11.1839	3.35	1.17	0.52	2.34	2300	28.5	7.7	CSCM	Rope & Bucket
3	OW-3	72.7628	11.1876	3.22	1.03	0.55	2.05	1840	28.5	7.7	CSCM	Rope & Bucket
4	OW-4	72.7636	11.1908	3	0.97	0.7	1.72	5100	27.8	7.7	CSCM	Pump
5	OW-5	72.764	11.1935	2.71	1.02	0.55	1.58	1520	28.3	7.8	CSCM	Pump
6	OW-6	72.7658	11.1969	3.45	8.87	0.7	2.2	1450	28	7.9	CSCM	Pump
7	OW-7	72.7663	11.1984	3.02	1.04	0.7	1.75	1570	28.5	7.4	CR	Rope & Bucket
8	OW-8	72.7734	11.2021	3.9	1.03	0.8	2.37	1860	28.5	7.5	CR	Pump
9	OW-9	72.7678	11.2039	3.88	1.8	0.92	2.27	3100	27.6	7.6	CSCM	Nil
10	OW-10	72.7699	11.2066	1.61	0.84	0.68	0.43	3000	28.7	7.1	CR	Pump
11	OW-11	72.7697	11.2071	3.25	1.35	0.68	1.92	1250	28.6	7.5	CSCM	Pump
12	OW-12	72.7688	11.2076	4.42	0.98	0.55	3.3	1000	28.8	7.6	CSCM	Rope & Bucket
13	OW-13	72.7709	11.208	2.52	1.05	0.5	1.78	1530	28.3	7.6	CR	Pump
14	OW-14	72.7705	11.2111	3.95	0.9	0.64	2.62	1510	29.6	7.2	CSCM	Pump
15	OW-15	72.7719	11.2094	3	1.3	0.62	1.5	1190	28.2	7.6	CSCM	Rope & Bucket

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (°C)	pH	Lining material	Lifting device
16	OW-16	72.7703	11.2098	3.7	1.6	0.62	1.98	1310	29.5	7.4	CSCM	Pump
17	OW-17	72.7733	11.2117	2.64	0.92	0.48	1.75	750	28.5	7.3	CR	Pump
18	OW-18	72.7716	11.2111	3.3	2.7	0.68	2.17	1220	29.5	7.1	CSCM	Pump
19	OW-19	72.7711	11.2133	3.8	1.1	0.67	2.43	1890	28.6	7.4	CSCM	Pump
20	OW-20	72.7729	11.2126	3.42	2.9	0.78	1.89	900	28.3	7.7	CSCM	Pump
21	OW-21	72.7748	11.2133	3.75	1.25	0.5	2.6	820	28.1	7.8	CS	Pump
22	OW-22	72.773	11.2144	4.12	2.7	0.68	2.98	750	28.3	7.4	CSCM	Pump
23	OW-23	72.7719	11.2158	3.8	0.9	0.8	2.58	900	28.3	7.6	CSCM	Pump
24	OW-24	72.7725	11.2172	4.6	4.6	1	3.83	1080	28.1	7.3	CS	Pump
25	OW-25	72.7741	11.2164	3.9	0.92	0.65	2.55	880	27.8	7.7	CSCM	Nil
26	OW-26	72.7753	11.2152	3.5	0.88	0.63	2.12	1110	28	7.2	CS	Pump
27	OW-27	72.7753	11.2147	3.6	1.2	0.46	2.45	660	28.1	7.8	CS	Pump
28	OW-28	72.7759	11.2161	3.37	0.85	0.6	2.08	990	28.1	7.4	CS	Pump
29	OW-29	72.7763	11.2168	3.94	1	0.58	2.52	1340	28	7	CS	Pump
30	OW-30	72.7749	11.2169	3	0.85	0.4	2.23	960	28.1	7.2	CS	Pump
31	OW-31	72.7741	11.2179	4.58	2.8	0.72	3.24	670	27.9	7.6	CSCM	Pump
32	OW-32	72.7732	11.2183	4.25	1.07	0.58	3.32	650	28.4	7.4	CS	Pump
33	OW-33	72.774	11.2208	5.2	1.15	0.7	3.75	880	28.6	7.5	CSCM	Pump
34	OW-35	72.7756	11.2186	3.45	0.95	0.58	2.14	790	28.6	7.1	CS	Pump
35	OW-36	72.7766	11.2181	3.47	0.82	0.55	2.23	1000	27.9	7.4	CS	Pump
36	OW-37	72.777	11.2195	3.2	0.98	0.48	2.08	1040	28.1	7.5	CR	Pump
37	OW-38	72.7757	11.2204	4.38	1.07	0.7	2.98	630	27.9	7.8	CSCM	Pump
38	OW-39	72.774	11.2225	4	0.85	0.53	2.87	1160	28.1	7.6	CS	Pump
39	OW-40	72.7744	11.2227	4.35	1.08	0.6	3	810	28.3	7.5	CSCM	Pump
40	OW-41	72.7756	11.2218	4.62	1	0.5	3.45	1040	28.2	7.3	CS	Pump
41	OW-42	72.7762	11.2219	4.3	1.08	0.67	2.93	1020	28.1	7.2	CS	Pump
42	OW-43	72.7779	11.2223	4	1.08	0.8	2.5	1070	28.4	7.9	CR	Pump
43	OW-44	72.7763	11.2226	4.93	1.15	0.58	3.68	690	27.8	7.6	CR	Pump
44	OW-45	72.7757	11.2232	4.7	1.15	0.53	3.27	730	27.9	7.5	CS	Pump
45	OW-46	72.7748	11.2242	3.6	0.95	0.34	2.66	790	28.2	7.7	CSCM	Pump
46	OW-47	72.7754	11.2249	5	0.94	0.88	3.22	800	28.3	7.4	CSCM	Pump
47	OW-48	72.7767	11.2241	6.58	1	0.88	4.22	950	28.7	7.7	CS	Pump
48	OW-49	72.7787	11.2251	3.77	0.45	0.96	2.02	1260	28.5	7.5	CSCM	Pump
49	OW-51	72.7773	11.2251	2.4	0.8	0	0	1060	28.6	7.5	CS	Pump
50	OW-52	72.7758	11.2254	4.95	0.88	0.65	3.65	890	28.5	7.7	CS	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (°C)	pH	Lining material	Lifting device
51	OW-53	72.7753	11.2258	3.32	1.05	0.37	2.48	1230	28.2	7.6	CSCM	Pump
52	OW-54	72.7759	11.2268	4.5	0.95	0.6	3.2	880	28.8	7.4	CS	Pump
53	OW-55	72.7764	11.2264	4.95	1.15	0.52	3.88	1070	28.5	7.3	CSCM	Pump
54	OW-56	72.7783	11.2261	3.2	0.98	0.6	2.01	1000	28.5	7.2	CR	Pump
55	OW-57	72.7774	11.2273	4.18	1.03	0.37	3.55	690	28.2	7.8	CS	Pump
56	OW-59	72.7766	11.2278	4.8	0.95	0.76	3.49	970	28.9	7.3	CR	Pump
57	OW-60	72.7758	11.2285	3.9	0.83	0.48	2.97	1170	28.5	7.3	CS	Pump
58	OW-61	72.7769	11.2289	4.6	1.45	0.72	3.08	740	28.2	7.6	CSCM	Pump
59	OW-62	72.7791	11.2281	3.54	0.9	0.62	2.28	1240	27.6	7.2	CSCM	Pump
60	OW-63	72.7799	11.2289	3.87	1.15	0.77	2.63	870	27.4	7.4	CR	Pump
61	OW-64	72.7791	11.2296	3.7	0.92	0.55	0.8	1310	27.5	7.8	CS	Nil
62	OW-65	72.7781	11.2281	5.45	1	0.68	4	660	27.9	7.5	CS	Pump
63	OW-66	72.7744	11.2314	4.45	1.33	0.58	3.28	790	27.6	7.9	CR	Pump
64	OW-67	72.7778	11.2317	5	1.25	0.86	3.56	1170	27.9	7.8	CR	Pump
65	OW-68	72.7796	11.2313	3.15	1.3	0.8	1.4	1340	28.2	7.5	CS	Pump
66	OW-69	72.7804	11.231	3.9	0.9	0.68	2.42	1620	27.9	7.5	CS	Pump
67	OW-71	72.7804	11.2318	3.7	0.95	0.7	2.3	1950	27.7	7.6	CS	Pump
68	OW-72	72.7784	11.2324	5.6	1.3	0.7	4.35	870	27.6	8	CS	Pump
69	OW-73	72.7771	11.2328	3.72	1.05	0.3	2.8	950	28.1	7.7	CR	Pump
70	OW-74	72.7778	11.2333	3.85	1	0.6	2.8	780	27.9	7.6	CS	Pump
71	OW-75	72.7783	11.2332	4.7	1.1	0.75	3.49	650	27.9	7.9	CS	Pump
72	OW-76	72.7809	11.2323	4	0.95	0.96	2.34	1460	27.6	7.8	CR	PUMP
73	OW-77	72.7812	11.2342	3.2	0.95	0.85	1.95	1700	28.2	7.7	CS	PUMP
74	OW-78	72.7804	11.2348	2.7	0.94	0.93	1.12	870	27.7	7.8	CS	PUMP
75	OW-79	72.7789	11.2342	4.95	1.1	0.4	3.9	12.5	28.6	7.6	CS	Pump
76	OW-80	72.7829	11.2405	3.6	0.94	0.58	2.42	1660	27.7	7.6	CR	Pump
77	OW-81	72.7816	11.2364	3.4	1	0.5	2.2	2600	27.5	7.5	CR	Pump
78	OW-82	72.7804	11.2383	3.25	0.95	0.62	2.23	800	28.2	8.1	CS	PUMP
79	OW-83	72.7796	11.2351	2.6	0.9	0.63	1.1	820	28.4	7.6	CS	Pump
80	OW-85	72.7778	11.2361	4	1.2	0.77	2.63	1290	28.1	7.9	CR	Pump
81	OW-86	72.7791	11.238	4	0.9	0.6	2.8	950	27.9	7.8	CS	PUMP
82	OW-87	72.779	11.2387	4.65	9.23	0.8	3.35	1340	28.1	7.7	CR	Pump
83	OW-88	72.7791	11.2409	3.9	1	0.7	2.5	1950	29.1	7.9	CS	PUMP
84	OW-89	72.7808	11.2405	4.35	1.25	0.65	3	950	28.5	8.1	CS	PUMP
85	OW-90	72.7837	11.2411	4.15	1.1	0.96	2.59	1930	28.3	7.7	CR	Pump

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (mbgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (°C)	pH	Lining material	Lifting device
86	OW-91	72.7814	11.2426	4.45	1.17	0.68	3.12	1060	28.4	8	CS	Pump
87	OW-92	72.7848	11.2435	3.6	1.03	0.6	2.2	1410	28.1	7.8	CS	Pump
88	OW-93	72.7818	11.2441	3.9	1.5	0.7	2.4	1070	28.7	7.6	CS	Pump
89	OW-94	72.7817	11.2457	5.2	0.93	0.9	3.55	1020	30.4	7.7	CR	Pump
90	OW-95	72.7822	11.2473	5.1	1.05	1.05	3.45	1310	29.2	7.8	CR	Pump
91	OW-96	72.7833	11.2474	4.2	1.3	0.8	2.75	1080	28.8	7.8	CS	Pump
92	OW-97	72.7852	11.2466	3.4	1.4	0.84	1.91	640	29.6	8.1	CS	PUMP
93	OW-98	72.7864	11.248	3.35	1.1	0.6	3.1	1140	28.4	7.7	CSCM	PUMP
94	OW-99	72.7843	11.2489	4.1	0.9	0.75	2.55	1180	29.3	7.9	CR	Pump
95	OW-100	72.7837	11.2482	4.1	0.9	0.75	2.5	1330	30	7.6	CS	Pump
96	OW-101	72.7858	11.2511	3.6	1.5	0.9	1.8	1150	28.2	7.9	CSCM	Pump
97	OW-102	72.788	11.2523	3.9	0.95	0.3	2.3	850	28.3	8	CR	Pump
98	OW-103	72.7888	11.2547	3.8	2.9	0.8	2.2	1430	28.6	8	CSCM	Pump
99	OW-104	72.7883	11.2549	3.6	2.9	0.75	2.15	1690	29.5	7.4	Bricks	Pump
100	OW-105	72.7868	11.2547	3.2	2.9	0.75	1.5	1100	28.5	8.1	Bricks	Pump
101	OW-106	72.7878	11.2574	3.35	1.1	0.5	2.2	2700	28.3	7.8	CS	PUMP
102	OW-107	72.7833	11.2461	2.75	1.5	0.84	1.51	490	28.8	8.1	CS	PUMP

Kiltan Island

Date Of Monitoring:January 2015

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	OW-1	11.5	72	2.17	1.1*1.1	0.78	1.7	1950	28.5	7.5	CSCM	Pump
2	OW-2	11.5	72	3	1.65	0.69	2.4	1210	27.7	7.7	CSCM	Rope & Bucket
3	OW-3	11.49	72.02	2.1	1	0.31	1.6	2800	28.4	7.1	CR	Pump
4	OW-4	11.49	72	3.11	.88*.88	0.61	2.4	2700	28.3	7.2	CSCM	Pump
5	OW-5	11.49	72	2.86	3	0.76	2.3	980	27.9	7.6	CSCM	Pump
6	OW-6	11.49	72	2.66	1.06	0.75	2.07	1100	28.7	7.2	CSCM	Pump
7	OW-7	11.49	72.01	3.16	1.15*1.15	0.65	2.76	1300	28.1	7.2	CSCM	Pump
8	OW-8	11.49	72	2.5	1.3	0.6	1.92	1340	28	7	CSCM	Pump
9	OW-9	11.49	72	2.7	1.2	0.73	2.3	1530	28.2	7.2	CS	Pump
10	OW-10	11.49	72	3.5	1.25	0.55	2.8	2300	28.6	7	CS	Pump

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
11	OW-11	11.49	72	2.35	1.4	0.51	1.95	880	28.4	7.5	CSCM	Pump
12	OW-12	11.49	72.01	4.2	1.3	0.8	3.7	1250	28.3	7.2	CSCM	Pump
13	OW-13	11.49	72.01	4.17	1.16	0.65	3.6	1270	28.6	7.3	CR	Pump
14	OW-14	11.49	72.01	3.4	1.18	0.9	2.8	1240	28.3	7	CSCM	Rope & Bucket
15	OW-15	11.49	72	3.3	1.32	0.67	2.8	2100	28	7.1	CSCM	Pump
16	OW-16	11.49	72	3.65	1.05	0.7	3	2100	28.2	7.1	CSCM	Rope & Bucket
17	OW-17	11.49	72	3.73	1.18	0.75	2.92	850	27.9	7.4	CSCM	Pump
18	OW-18	11.49	72	3.48	1.25	0.6	2.65	1150	28.6	7	CSCM	Pump
19	OW-19	11.49	72.01	3.7	1.1	0.65	3.1	910	28.4	7.2	CSCM	Pump
20	OW-20	11.49	72.01	3.63	1.2	0.65	3	650	28	7.5	CSCM	Pump
21	OW-21	11.49	72	3.48	1.25	0.6	2.25	1150	28.6	7	CSCM	Pump
22	OW-22	11.49	72.01	3.37	1.1	0.72	2.83	770	28.5	7.2	CSCM	Pump
23	OW-23	11.49	72.01	4.3	1.3	0.15	3.77	810	28.2	7.2	CSCM	Pump
24	OW-24	11.49	72	3.45	1.31	0.7	2.8	1110	28.2	7	CS	Pump
25	OW-25	11.49	72	3.77	1	0.8	3.1	1330	28.5	7.1	CSCM	Pump
26	OW-26	11.49	72	3.4	1.2	0.76	2.85	1300	28.7	7	CSCM	Pump
27	OW-27	11.49	72.01	3.88	1.2	0.7	3.2	830	28.6	7.2	CR	Pump
28	OW-28	11.48	72.01	3.43	0.96	0.76	3.1	3	27.6	7.5	CSCM	Nil
29	OW-29	11.49	72.01	0	0	0	0	0	0	0	CSCM	Nil
30	OW-30	11.49	72.01	3.65	1.25	0.65	2.7	1430	28.2	7.2	CSCM	Nil
31	OW-31	11	72	0	0	0	0	0	0	0		
32	OW-32	11.48	72	3.92	1.05	0.85	3.25	1400	28.7	6.9	CR	Nil
33	OW-33	11.48	72.01	3.3	1.05	0.37	2.75	1020	28.1	7.5	CSCM	Rope & Bucket
34	OW-34	11.48	72.01	3.65	1.15	0.75	2.95	770	29	7.3	CSCM	Pump
35	OW-35	11.48	72.01	0	0	0	0	0	0	0		
36	OW-36	11.48	72.01	3.31	1.3	0.68	2.65	1220	28.8	7.1	CS	Pump
37	OW-37	11.48	72.01	3.35	0.9	0.6	2.77	950	28.5	7.3	CS	Pump
38	OW-38	11.48	72	3.5	1.25	0.55	2.99	1120	28.5	7	CS	Pump
39	OW-39	11.48	72.01	3.6	1.12	0.75	2.95	1370	28.9	6.9	CSCM	Pump
40	OW-40	11.48	72.01	3.88	1.15	0.68	3.15	1090	28	7.4	CS	Nil
41	OW-41	11.48	72.01	3.15	1.2	0.63	2.6	840	28.8	7.5	CS	Pump
42	OW-42	11.48	72.01	3.9	1.2	0.6	3.2	750	28.5	7.3	CSCM	Pump
43	OW-43	11.48	72.01	3.53	1.18	0.56	3.2	530	28.3	7.5	CSCM	Pump
44	OW-44	11.48	72.01	3.4	1.05	0.6	3	1430	28.6	6.9	CS	Pump
45	OW-45	11.48	72.01	3.5	1.3	0.65	3.1	1330	28.5	6.9	CSCM	Pump

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (μS/cm)	Temp (oC)	pH	Lining material	Lifting device
46	OW-46	11.48	72.01	3.65	1.1*1.1	0.65	3.15	1600	28.8	6.9	CSCM	Pump
47	OW-47	11.48	72.01	3.75	12.*1.2	0.73	2.95	1070	28.4	6.9	CSCM	Pump
48	OW-48	11.48	72.01	3.5	1.55	0.75	2.95	810	27.7	7.4	CSCM	Pump
49	OW-49	11.48	72.01	0	0	0	0	0	0	0		
50	OW-50	11.48	72.01	4	1.25	0.65	3.2	1020	28.1	7	CSCM	Pump
51	OW-51	11.48	72.01	3.85	1.35	0.67	3.15	3500	28.6	6.8	CSCM	Pump
52	OW-52	11.48	72.01	3.8	3.15	0.75	3	1010	28.3	7.4	CSCM	Pump
53	OW-53	11.48	72.01	4.1	1.15	0.75	3.45	2300	28.7	6.9	CSCM	Pump
54	OW-54	11.47	72.01	0	0	0	0	0	0	0		
55	OW-55	11.47	72.01	3.08	1.18	0.8	2.45	640	27.9	7.6	CSCM	Rope & Bucket
56	OW-56	11	72	0	0	0	0	0	0	0		
57	OW-57	11	72	0	0	0	0	0	0	0		
58	OW-58	11.47	72.01	3.65	1.29*1.29	0.68	3.1	2400	28.7	6.8	CS	Pump
59	OW-59	11.47	72.01	3.5	1.4	0.62	3.05	1000	28.3	7.4	CSCM	Pump
60	OW-60	11	72	0	0	0	0	0	0	0		
61	OW-61	11.47	72.01	3.26	1.85	0.74	2.61	770	28.6	7.3	CSCM	Pump
62	OW-62	11.47	72.01	3.18	1.18	0.72	2.55	950	28.4	7.5	CSCM	Pump
63	OW-63	11.47	72.01	2.8	1.2	0.7	2.2	760	28.4	7.3	CSCM	Pump
64	OW-64	11.47	72.01	2.9	2.55	0.94	2.42	4100	28.5	7.6	CSCM	Pump
65	T-7	11.47	72.01	3.21	1.3	0.59	2.7	690	26.9	7.5	CSCM	Pump
66	T-6	11.48	72.01	3.85	1.1	0.76	3.05	1080	27.3	7.5	CSCM	Nil
67	T-4	11.49	72.01	3.72	3.1	0.78	3	610	27	8	CSCM	Nil
68	T-3	11.47	72	2.1	0.95	0.55	1.85	990	27.4	7.3	CSCM	Nil

Kavaratti Island **Month of monitoring: June 2014**

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	MP (m agl)	DWL (m bgl)	Dia(m)	EC (μS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	OW-110	10.5706	72.6382	3.2	0.6	2.61	2.2	1040	28.8	8.6	CR	EM,0.5
2	OW-93	10.5703	72.6379	4.26	0.7	2.51	1.8	820	29.9	8.5	CR	B&R
3	OW-108	10.5695	72.64	2.4	0.8	1.85	1.25	770	28.8	8.5	CSCM	B&R
4	OW-115	10.5703	72.6407	2.76	0.9	2.27	1.25*1.25	1440	29	8.2	CR	EM,0.5
5	OW-128	10.5714	72.6423	2.1	0.8	1.56	1.2	820	29.2	8.4	CR	B&R
6	OW-138	10.5711	72.644	2.24	0.6	1.64	2.4*2.4	630	29.1	8.4	CSCM	EM
7	OW-126	10.5702	72.6446	2.4	0.7	2.01	2.2	750	28.4	8.5	CR	EM
8	OW-139	10.5711	72.6448	2.55	1	2.01	2.25	860	29.6	8.2	CR	EM
9	OW-144	10.5719	72.6461	2.41	0.6	1.68	1.1	1440	29	8.2	CR	EM
10	OW-140	10.5707	72.6464	1.94	0.65	1.38	1	1950	28.4	8.2	CSCM	EM,0.5
11	OW-146	10.5723	72.6437	2.11	0.7	1.51	1.2*1.0	720	28.4	8.3	CR	B&R
12	OW-131	10.5723	72.6384	3.2	1.1	2.31	2.5	2400	29.1	8.3	CR	3Nos EM
13	OW-129	10.5715	72.641	2.4	0.7	1.71	1.8	1430	29.4	8.1	CR	EM,0.5
14	OW-136	10.5723	72.6414	2.04	1	1.65	1.8	1240	28.6	8.2	CR	EM
15	OW-148	10.5732	72.6416	2.43	0.9	1.72	1.2	1550	28.5	8	CS	EM
16	OW-154	10.5742	72.642	2.4	1.1	1.81	0.9	2900	28.8	7.1	CSCM	EM
17	OW-153	10.5746	72.6413	2.82	0.9	2.41	1.8	1450	29	8.1	CR	EM
18	OW-161	10.5743	72.6436	2.21	0.8	1.53	2	1730	28.1	8.1	CR	EM
19	OW-170	10.5748	72.6451	2.52	0.3	1.96	1.0*1.0	1440	28.9	8.1	CSCM	EM
20	OW-158	10.573	72.6479	2.41	1	1.75	2	3000	28.1	8.2	CS	EM
21	OW-142	10.57	72.6489	3.02	0.7	2.68	2	2600	28.7	8	CR	EM,0.5
22	OW-118	10.5693	72.6449	3.75	0.85	3.35	1.8*1.8	1020	28.6	8.4	CR	EM
23	OW-117	10.5692	72.6433	2.34	1	1.71	3	680	28.9	8.6	CR	B&R
24	OW-105	10.5687	72.6435	2.85	0.6	1.55	Tank	490	30.4	9.5	CS	EM
25	OW-96	10.5683	72.6414	2.6	0.35	2.08	1.75	970	30.2	8.2	CSCM	B&R
26	OW-164	10.576	72.6404	3.4	0.7	2.64	3.5	1610	28.3	8.5	CS	EM,0.5
27	OW-152	10.5751	72.64	3.74	0.9	3.23	1.1	1600	29.5	8.2	CS	EM,0.5
28	OW-166	10.5761	72.6423	2.69	0.75	2.09	1	2700	29.8	8.1	CSCM	EM,0.5
29	OW-167	10.5754	72.6426	2.6	1	2.21	1.8	1340	28.7	8.3	CSCM	EM,0.5
30	OW-180	10.5764	72.6431	2.15	0.8	1.71	0.8	1640	29.8	8.2	CR	EM
31	OW-176	10.576	72.6455	2.7	0.6	1.13	1.8	1600	29.1	8.4	CR	EM,0.5

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	MP (m agl)	DWL (m bgl)	Dia(m)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
32	OW-173	10.5748	72.6465	2.07	0.9	1.3	1.1	1440	29.5	8.8	CR	EM
33	OW-154	10.5736	72.6442	1.5	0	1.11	4	1650	30.4	7.8	CSCM	EM
34	OW-125	10.569	72.6459	1.2	0.6	0.52	1	890	3.2	8.4	CS	B&R
35	OW-122	10.5674	72.6488	3.35	0.75	2.67	2.2*2.2	1390	29.5	8.2	CR	EM,3 Nos
36	OW-103	10.5659	72.6476	2.66	0.7	2.21	2.25	1100	29.5	8.8	CS	EM
37	OW-101	10.5641	72.6477	2.9	0.7	2.32	1.5	1440	29.2	8.1	CR	EM
38	OW-58	10.5611	72.638	2.75	0.85	1.79	4	980	27.8	8.5	CR	EM,1.5
39	OW-56	10.5584	72.6388	3.32	0.8	2.92	4	3400	9.5	8.1	CSCM	EM,1.5
40	OW-25	10.5534	72.6313	3.26	1	2.43	1	5700	29.5	8	CR	EM
41	OW-1	10.5423	72.6167	2.04	1	1.34	2.25	2100	31.1	8.4	CR	EM
42	OW-6	10.548	72.6244	2.64	1	2.11	1.5	18000	29.2	7.9	CR	B&R
43	OW-7	10.55	72.6258	2.66	1	1.93	1	1020	28.8	8.5	CR	B&R
44	OW-9	10.5516	72.6261	3.1	1	2.41	1	7900	28.8	8	CSCM	EM
45	OW-13	10.5535	72.6275	3.48	0.75	2.85	2.5	8000	28.6	8	CS	EM
46	OW-37	10.557	72.6322	3.14	1	2.01	3.25	1470	28.4	8.7	CR	EM
47	OW-35	10.5561	72.6318	2.95	0.8	2.01	3	2900	29.4	8.8	CR	EM
48	OW-74	10.5676	72.6368	3.65	0.65	3.13	2.1	1040	27.5	8.8	CS	EM
49	OW-61	10.563	72.6339	4.1	0.7	3.41	1.6	1260	27.8	8.5	CR	EM
50	OW-52	10.5612	72.6328	3.88	0.6	3.26	1.5	1040	29	8.6	CR	B&R
51	OW-44	10.56	72.6328	2.02	0.7	1.22	1.8	1400	28.5	8.4	CR	EM
52	OW-50	10.5595	72.6347	2.61	0.8	1.66	2.5	1930	28.6	8.3	CR	EM
53	OW-43	10.5589	72.6313	4.66	0.8	4.11	1.75	3600	28.7	8.3	CSCM	EM,3Nos
54	OW-22	10.5549	72.6293	3.38	0.8	2.61	2.1	4000	29.2	8.3	CR	EM
55	OW-21	10.554	72.6287	3.19	0.75	2.61	2.25	4100	29	8.4	CR	EM
56	OW-10	10.5519	72.6269	3.68	0.7	3.16	1.8	37000	29.2	8.7	CR	EM
57	OW-16	10.5516	72.6288	3.15	0.75	2.66	2.4	4000	29.5	8.6	CR	EM
58	OW-17	10.5523	72.6298	3.5	0.8	2.88	2.5	2200	29.6	8.6	CS	EM
59	OW-38	10.5548	72.6304	3.16	0.6	2.33	4	1020	29.8	8.7	CSCM	EM
60	OW-39	10.5565	72.6348	3.26	0.9	2.41	2	3400	29.6	8.4	CR	EM
61	OW-CH	10.5577	72.6381	3.5	0.6	2.71	1.2	2400	30	8.4	CR	EM
62	OW-54	10.5593	72.6366	2.7	0.3	1.91	1.2	1640	30.4	8.3	CR	EM
63	OW-65	10.5629	72.6384	2.52	0.6	1.81	1.25	770	30.7	8.4	CR	EM
64	OW-64	10.5633	72.6371	2.87	0.75	1.99	2	1630	30.3	8.2	CS	EM

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	MP (m agl)	DWL (m bgl)	Dia(m)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
65	OW-70	10.5633	72.6407	2.49	0.65	1.71	2	1170	30.6	8.4	CSCM	B&R
66	OW-78	10.5646	72.6416	1.86	0.6	1.11	1.8	1020	30.2	8.4	CSCM	B&R
67	OW-85	10.5646	72.6416	3.76	0.6	2.64	0.95	1130	29.7	8.2	CR	EM
68	OW-68	10.5616	72.6441	2.86	0.7	2.22	2	880	29.4	8.4	CSCM	EM
69	OW-81	10.5626	72.6461	2.8	0.9	2.32	1.3*1.3	1440	28.5	8.4	CR	B&R
70	OW-83	10.5636	72.6468	2.6	0.7	2.1	1.75	880	28.5	8.5	CR	EM
71	OW-99	10.5647	72.6465	2.83	0.7	2.47	1.75	1010	29.2	8.4	CR	EM
72	OW-143	10.5711	72.6486	2.67	0.4	1.84	2.2*2.5	1050	29.4	8.6	CR	EM
73	OW-163	10.5749	72.6416	2.8	0.8	1.96	1.8	1410	30.2	8.2	CR	EM
74	OW-150	10.5744	72.6404	4.05	0.6	3.22	1.75	1440	29	8.4	CR	EM
75	OW-134	10.5728	72.6397	3.55	1	3.15	1.5	860	28.4	8.5	CR	B&R
76	OW-88	10.5678	72.6395	3.02	1	1.82	4.5	1100	29.2	8.6	CR	EM
77	OW-76	10.5667	72.6389	2.4	0.8	1.72	2.5*2.5	780	29.2	8.6	CS	EM
78	OW-89(T-5)	10.5683	72.6385	2.5	0.4	1.82	1.8	720	29	8.6	CR	EM
79	OW-89	10.5684	72.6376	4.5	0.6	3.82	1.75	1480	29	8.3	CSCM	EM
80	OW-91	10.569	72.6367	3.25	0.75	2.79	1.0*1.0	1370	29.1	87	CR	EM

Chetlat Island **Date Of Monitoring:January 2015**

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	OW-1(T.1)	72.7155	11.6899	1.68	1	0.55	1.1	4400	27.2	8	CS	B&R
2	OW-2	72.7149	11.6786	2.42	1.1	0.9	2.01	3100	27.6	8	CSCM	EM ,0.5
3	OW-3	72.7151	11.6668	2.4	0.9	0.9	1.98	2600	27	8	CS	B&R,EM 0.5
4	OW-7	72.7138	11.6565	2.8	1	0.9	2.01	2300	28.5	7.8	CR	EM,0.5
5	OW-10	72.7155	11.6459	4.07	3.5	1	3.56	750	27.2	8.6	CR	B&R
6	OW-15	72.716	11.6343	2.65	1.2	1	2.01	1170	28.1	8.1	CR	EM,0.5
7	OW-23	72.7156	11.6231	3.3	1.8	0.8	2.65	990	27.5	8.3	CR,	EM,0.5(2 No)
8	OW-25	72.7139	11.6142	2.88	1.2	0.7	2.2	870	27.9	8.2	CSCM	B&R
9	OW-27	72.7121	11.6064	3.5	2	0.9	2.74	1470	29	8	CSCM	EM,0.5 2 nos
10	OW-29	72.7127	11.597	3.7	2	0.9	3.2	920	29.2	8.2	CSCM	B&R
11	OW-34	72.7145	11.5868	2.51	1.2	0.85	1.99	1030	27.9	8	CSCM	B&R
12	OW-36	72.7123	11.5798	3.5	1.4	0.8	2.9	1150	27.8	8	CS	EM,0.5
13	OW-40	72.7129	11.5709	3.52	1.5	0.6	3.12	1350	28	8.1	CS	EM,0.5,B&R
14	OW-42	72.7145	11.5622	3.2	1.4	0.7	2.64	890	27.8	8.3	CS	EM,0.5
15	OW-47	72.7111	11.5562	2.95	1.5	0.6	2.45	1080	26.9	8.6	CSCM	EM
16	OW-49	72.711	11.548	4.62	1.2	0.6	3.98	970	28.2	8.4	CR	EM,2 Nos
17	OW-50	72.7121	11.5403	3.02	1.2	0.8	2.47	820	27.5	8.4	CR	EM,0.5
18	OW-43	72.714	11.5329	2.42	1.3	0.7	1.71	1040	27.3	8.2	CSCM	B&R
19	OW-51	72.7141	11.5257	2.64	1.2	0.9	1.73	1460	27.5	8.1	CSCM	B&R
20	OW-52	72.7138	11.5186	2.58	0.8	1	2.01	1480	27.6	8	CSCM	EM,0.5
21	OW-53	72.7129	11.5121	2.74	1	1	1.69	980	28.1	8.3	CS	B&R,EM
22	OW-62	72.7133	11.5054	2.18	1.5	0.5	1.28	2700	27.4	7.6	CR	EM,0.5
23	OW-60	72.7113	11.5001	3.17	1.2	0.8	2.54	940	28.2	8.2	CR	EM
24	OW-64	72.7117	11.4933	2.86	1.4	0.7	2.34	1050	27.2	8.2	CR	B&R
25	OW-70	72.712	11.4862	2.26	0.9	0.7	1.75	2300	27.1	7.8	CSCM	EM
26	OW-72	72.7105	11.4811	4.36	2	0.7	3.74	1030	27.6	8.1	CSCM	B&R
27	OW-79	72.7102	11.4737	2.12	1.3	0.8	1.54	890	28.6	8	CSCM	B&R
28	OW-84	72.7104	11.4673	2.53	0.8	0.35	1.95	5900	29.2	7.1	CR	EM,0.5
29	OW-85	72.7098	11.4616	2.46	1.4	0.8	2.02	2700	28.8	7.7	CS	B&R
30	Ow-86	72.7091	11.4567	2.67	1	0.75	1.87	1090	28	8.2	CR	B&R
31	OW-91	72.7088	11.4507	2.56	1.2	0.6	1.68	1250	27.4	8.1	CS	EM,0.5
32	OW-100	72.7061	11.4459	2.16	1.2	0.8	1.44	3000	27.7	7.8	CS	B&R
33	OW-98	72.7066	11.4413	2.04	1.3	0.7	2.06	2600	28.2	7.8	CS	B&R,EM
34	OW-96	72.7074	11.4366	2.04	1.4	0.7	1.52	1500	28.1	7.9	CR	EM
35	OW-93(T.9)	72.7078	11.4324	2.38	1.2	0.7	1.56	1420	27.2	8	CS	EM

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
36	OW-88	72.7084	11.4289	4.52	1.5	1	4.01	1670	28.8	7.7	CR	B&R
37	OW-83	72.709	11.4252	4.81	1.4	0.7	3.84	1030	27.8	8.1	CSCM	B&R
38	OW-81	72.7086	11.4216	3.42	1.4	0.6	2.77	2400	29.7	7.6	CR	EM,0.5
39	OW-80	72.7091	11.4171	4.62	1.2	1	3.69	1100	29.3	7.9	CR	B&R,EM
40	OW-73	72.7094	11.4135	3.48	1.4	1	2.77	920	29.2	7.9	CR	EM
41	OW-75	72.709	11.4101	3.58	1.3	0.8	2.8	1750	28.2	7.7	CS	EM
42	OW-67	72.7096	11.4078	3.02	1.4	0.7	2.36	1200	29.2	7.9	CSCM	EM,0.5
43	OW-59	72.7108	11.4044	4.8	1.4	0.7	3.85	800	28.8	8.1	CSCM	B&R
43	TW-2	72.7147	11.4092	2.65	1	0.8	1.95	1420	26.7	8.8	CR	B&R
44	TW-4	72.7127	11.4011	3.2	1	0.7	2.7	790	28	8.4	CR	B&R
45	TW-5	72.7113	11.3966	3.55	1.2	0.9	2.8	1700	27.8	8	CS CM	B&R
46	TW-3	72.7133	11.3955	3.55	2.4	0.7	2.72	960	27	8.9	CS	EM,0.5
47	TW-6	72.7114	11.3873	3.22	1.2	0.7	2.48	1060	28.5	8	CSCM	EM
48	TW-7	72.711	11.3825	3.86	1.2	0.9	3.14	1420	29.3	7.7	CS	EM,0.5
49	TW-8	72.7096	11.3762	3.88	1.3	0.8	3.24	720	28.2	8.2	CR	EM,0.5
50	TW-10	72.7063	11.3758	1.58	1.2	0.6	0.98	3300	26.5	7.7	CR	B&R
51	OW-101	72.7088	11.3732	1.92	1.2	0.6	1.15	1480	28.2	7.9	CS	B&R
52	OW-102	72.716	11.3744	2.25	1.2	0.65	1.81	1010	28.4	8.2	CS	EM,0.5
53	OW-103	72.714	11.3738	3.1	1	1	2.68	1090	29.2	8.2	CR	B&R
54	OW-104	72.7132	11.3713	3.18	1	0.9	260	2300	27.5	8.1	CR	EM,0.5
55	OW-105	72.7116	11.364	3.54		1	3.01	700	28.2	8.8	CS	EM

Kalpeni Island

Month of monitoring: December 2014

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	OW-1	73.6486	10.0863	2.4	1.8*1.5	0.6	1.76	3100	27.8	9	CSCM	EM
2	OW-2	73.0143	10.082	3.6	1.8	0.8	2.86	1640	27.4	9	CR	B&R
3	OW-7	73.6359	10.0765	1.98	1.8	0.7	1.3	1200	28	9	CSCM	EM
4	OW-23	73.0103	10.071	2.25	2.2*2.0	0.65	1.5	1340	27.8	8.7	CR	EM
5	OW-27	73.6271	10.0674	2.62	1.8	0.7	1.9	1520	28.2	8.4	CS	EM
6	OW-39	73.0144	10.0643	2.9	1.5	0.7	2.02	220	27.8	8.5	CS	B&R
7	OW-52	73.6143	10.0632	1.98	1.5*1.6	0.7	1.32	630	28.4	8.4	CR	B&R

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
8	OW-33	73.0091	10.0655	1.44	2.5	0.7	0.7	2200	26.7	8.5	CSCM	B&R
9	OW-49	73.6015	10.0629	1.95	1.75	0.65	0.81	640	27.6	9.1	CR	B&R
10	OW-47	73.003	10.0623	1.52	1.0*1.0	0.7	0.82	1820	28.2	8.5	CS	EM
11	OW-64	73.5883	10.0605	0.4	1.1*1.1	0.7	0.72	1290	27.6	8.7	CS	EM
12	OW-63	73.0055	10.0594	1.85	2.5	0.75	1.15	940	26.8	9	CR	EM,1.5
13	OW-61	73.584	10.0576	2.35	1.4	0.7	1.31	840	27.5	8.7	CR	EM,1.5
14	OW-59	73.0108	10.056	1.93	1	0.65	1.09	640	28.2	9	CS	EM
15	OW-58	73.5798	10.0547	2.14	1.8	0.7	1.32	580	27.8	8.9	CS	B&R
16	OW-73	73.0138	10.0548	2.32	1	0.6	1.45	610	28.6	8.9	CR	B&R
17	OW-74	73.5711	10.0551	1.97	1.3	0.9	1.13	770	28.6	8.6	CS	B&R
18	OW-76	73.0106	10.0551	2.64	1.25	0.6	1.3	1070	28.8	8.5	CS	EM,B&R
19	OW-69	73.561	10.0515	2.04	1.2	0.6	1.43	1120	28	8.6	CS	EM
20	OW-68	73.0081	10.0507	1.73	1.4	0.75	1.11	840	28.1	8.6	CR	EM
21	OW-67	73.5496	10.0514	1.85	1.4	0.8	0.95	1020	28	8.6	CS	EM
22	OW-72	73.014	10.0532	2.4	1.2	0.75	1.85	910	28.8	9.2	CR	B&R
23	OW-71	73.5475	10.0488	1.92	1.2	0.7	1.3	650	29.2	9.1	CS	EM,B&R
24	OW-78	73.0091	10.0518	2.11	1.3	0.6	1.44	640	28	9	CR	B&R
25	OW-79	73.5337	10.048	1.5	1.1	0.65	1.05	1190	28.3	8.6	CR	EM
26	OW-82	73.0062	10.0471	1.84	1.2	0.6	1.02	1080	28.3	8.6	CR	EM,0.5
27	OW-84	73.5302	10.0501	2.26	1.1*1.0	0.8	1.76	920	27.5	8.7	CS	B&R
28	OW-85	73.0113	10.0497	2.13	1.2	0.8	1.4	880	28.5	8.6	CR	EM
29	OW-87	73.5267	10.0481	2.96	1	0.6	2.33	620	27.8	8.7	CR	B&R
30	OW-89	73.0139	10.0464	3.67	2	0.65	2.93	960	27.4	8.8	CR	EM,0.5
31	OW-90	73.5185	10.0464	2.05	0.9*0.9	0.35	1.67	1020	27.5	8.6	CR	EM
32	OW-93	73.0093	10.0469	2.14	1.2*1.2	0.6	1.64	940	27.8	8.6	CS	EM,B&R
33	OW-92	73.5068	10.0473	1.75	1.05	1.05	1.28	1200	28	8.4	CR	EM
34	OW-98	73.007	10.0465	2.14	0.7	0.8	1.4	1480	27.8	8.5	CR	EM
35	OW-102	73.5043	10.0451	1.67	2.2*2.2	0.8	1.2	920	27	8.6	CR	B&R
36	OW-103	73.0116	10.0442	2.56	1.8	0.7	1.62	960	27.4	8.6	CR	B&R,EM
37	OW-105	73.4961	10.0444	2.5	1.8	0.55	2.1	520	27.5	8.9	CR	EM
38	OW-106	73.0076	10.0444	1.58	0.6	0.95	0.95	1120	27.5	8.4	CSCM	B&R
39	OW-107	73.4875	10.0444	2.2	1.6	0.6	1.57	1440	27.4	8.2	CR	B&R
40	OW-113	73.0073	10.0423	2.1	1.8	0.88	1.41	2300	27.4	8.2	CR	EM,B&R
41	OW-110	73.4834	10.0425	3.1	0.9	0.7	2.4	550	27.6	8.9	CR	EM
42	OW-117	73.0064	10.0365	2.2	6*6	0.3	1.5	3200	27.6	8.3	CSCM	EM

Sl. No.	LPWD Well ID.	Longitude	Latitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL (mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
43	OW-119	73.4774	10.0376	1.7	0.85	0.6	1.2	1720	27.8	8.7	CR	EM
44	OW-120	73.0123	10.0372	2.8	1.7*1.8	0.9	1.94	1510	27.8	8.6	CR	B&R
45	OW-115	73.4768	10.0388	4.24	1.8	1.2	3.85	1430	27.6	8.5	CR	EM,2Nos
46	TW-1	73.0129	10.053	2.06	1*1.2	0.6	1.44	1760	28.2	8.8	CR	EM
47	TW-2	73.471	10.0505	2.22	1.8	0.6	1.7	1280	28	8.6	CR	B&R
48	TW-3	73.0134	10.046	2	2.2*2.2	0.7	1.35	680	27.8	9.2	CR	B&R
49	TW-4	73.4636	10.0424	1.9	1.5	0.6	0.8	920	28.1	8.8	CR	B&R
50	TW-5	73.0092	10.0408	1.58	1.2	0.5	0.93	1010	27.4	8.8	CR	B&R
51	TW-6	73.4539	10.0385	1.84	1.1*1.1	0.7	1.22	590	28	8.8	CS	EM
52	TW-7	73.0094	10.0369	1.7	2*2	0.7	0.98	790	28.8	8.8	CR	B&R
53	TW-8	73.4479	10.0416	1.7	1.2	0.7	1.3	1730	28.5	8.4	CR	EM
54	TW-9	73.0066	10.0397	2.3	0.9	0.9	1.6	1160	27.8	8.4	CS	EM
55	TW-10	73.4442	10.0374	2.9	1.8	1	2.16	1580	27.1	8.4	CR	EM

Minicoy Island Month of monitoring:March 2015

Sl. No.	LPWD Well ID.	Latitude	Longitude	Depth (m bgl)	Dia (m)	MP (magl)	DWL(mbgl)	EC (µS/cm)	Temp (oC)	pH	Lining material	Lifting device
1	Tide well-1	8.277639	73.05306	1.19	0.9*0.6	0.4	0.63	1600	29.2	8.5	Cement lining	EM 0.5 HP
2	Tide well-3	8.276833	73.05225	1.62	0.85	0.6	0.83	1160	28.4	8.6	Cement ring	Bucket&rope
3	Tide well-4	8.278889	73.05442	1.86	2.2	0.6	1.12	1900	29.6	7.4	Cement lining	EM ,0.5HP
4	Tide well-5	8.280361	73.05689	1.6	2	0.7	90	1830	29.7	7.8	do	EM,0.5HP
5	Tide well-7	8.283778	73.05742	1.56	1.8	0.7	1.04	3900	29.6	7.6	do	EM,0.5HP
6	Tide well-8	8.284861	73.05939	2.01	0.9	1	1.39	1590	30.1	7.5	do	EM 0.5 HP
7	OW-1	8.293944	73.06364	2.75	0.7*0.7	0.85	2.19	1490	29.8	8	Brick lined	Bucket& rope
8	OWC-1	8.282861	73.05806	1.2	2	0.8	0.64	940	29.8	8.1	Cement lining	Bucket&rope
9	OWC-8	8.289583	73.06156	2.7	2.5	0.6	2.1	430	30.1	8.6	do	do
10	R O Plant well	8.282667	73.05625	2.1	4	1	1.2	1910	30.4	8.1	do	EM

*: Square well **EC** : Electrical conductivity in Microsiemens/cm @ 25o C**,B&R**: Bucket& Rope ,**EM** : Electric Motor
CSCM : Coral stone lining with cement mortar **CR** : Concrete ring **CS** : Coral stone

Ground water level data of monitoring wells (Weekly water level data)-LPWD

Chetlat Island **Appendix II.a**

DATE	TIDE-1 DTW (mbgl)		TIDE-2DTW (mbgl)		TIDE-3DTW (mbgl)		TIDE-5DTW (mbgl)		TIDE-6DTW (mbgl)		TIDE-7DTW (mbgl)		TIDE-8DTW (mbgl)		TIDE-9DTW (mbgl)		TIDE-10DTW (mbgl)	
	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN
02-01-2014	1.42	1.55	2.63	2.73	3.39	3.5	3.49	3.5	2.96	3.06	3.91	4	3.88	3.98	2.21	2.32	1.5	1.62
09-01-2014	1.45	1.54	2.65	2.73	3.38	3.47	3.51	3.59	3	3.08	3.93	4	3.9	3.97	2.23	2.3	1.5	1.6
16-01-2014	1.45	1.53	2.65	2.73	3.39	3.47	3.5	3.58	2.99	3.08	3.93	4	3.99	4.06	2.23	3	1.51	1.6
23-01-2014	1.48	1.48	2.7	2.68	3.43	3.4	3.55	3.52	3.06	3.03	4.09	4.06	3.93	3.9	2.27	2.24	1.5	1.5
06-02-2014	1.35	1.33	2.6	2.6	3.32	3.34	3.44	3.45	2.95	2.95	3.87	3.88	3.82	3.83	2.15	2.17	1.4	1.43
13-02-2014	1.31	1.42	2.56	2.65	3.29	3.38	3.4	3.47	2.9	2.98	3.83	3.93	3.78	3.86	2.09	2.2	1.38	1.48
20-032014	1.47	1.36	2.69	2.6	3.4	3.31	3.51	3.43	3.04	2.95	3.95	3.86	3.9	3.81	2.21	2.12	1.49	1.4
27-o3-2014	1.35	1.45	2.57	2.67	3.31	3.4	3.42	3.52	2.91	3.01	3.84	3.93	3.8	3.89	2.13	2.23	1.4	1.5
03-04-2014	1.46	1.36	2.69	2.6	3.4	3.33	3.51	3.42	3.03	2.95	3.94	3.86	3.89	3.81	2.22	2.12	1.5	1.4
17-04-2014	1.56	1.59	2.29	2.2	4.12	4.06	3.98	3.91	3.07	2.96	3.57	3.59	3.45	3.59	2.72	2.65	1.52	1.48
24-04-2014	1.16	1.2	2.66	2.7	3.4	3.43	3.52	3.57	3.02	3.1	4.06	4.1	3.98	4.13	2.22	2.28	1.54	1.57
01-05-2014	1.54	1.4	2.76	2.64	3.48	3.43	3.6	3.56	3.12	3.07	4	3.94	4.14	4.09	2.3	2.24	1.59	1.52
08-05-2014	1.39	1.38	2.6	2.61	3.39	3.37	3.47	3.45	3	2.96	3.9	3.89	4.06	4.05	2.23	2.22	1.37	1.42
15-05-2014	1.55	1.42	2.74	2.65	3.46	3.38	3.6	3.51	3.122	3.04	4.01	3.93	4.17	4.09	2.32	2.24	1.62	1.56
22-05-2014	1.43	1.46	2.61	2.67	3.38	3.42	3.52	3.58	3	3.07	3.92	3.98	4.06	4.11	2.2	2.26	1.4	1.48
29-05-2014	1.54	1.49	2.73	2.68	3.46	3.41	3.54	3.47	3.04	2.96	3.97	3.89	4.1	4.02	2.25	2.18	1.54	1.47
06-06-2014	1.49	1.43	2.69	2.61	3.39	3.41	3.52	3.44	3.04	3	3.97	3.95	4.05	4.04	2.22	2.21	1.5	1.52
12-06-2014	1.41	1.44	2.16	2.19	4.04	4.07	3.9	3.94	2.99	3.02	3.9	3.94	4.04	4.07	2.16	2.19	1.41	1.44
19-06-2014	1.44	1.35	2.65	2.58	3.36	3.27	3.45	3.37	3	2.93	4.02	3.94	4.03	3.96	2.16	2.11	1.42	1.37
26-06-2014	1.38	1.44	2.79	2.8	3.45	3.45	3.53	3.53	3.03	3.03	3.96	3.96	4.09	4.11	2.26	2.32	1.56	1.6
03-07-2014	1.54	1.52	2.45	2.43	3.45	3.42	3.57	3.54	3.1	3.07	4	3.98	4.14	4.11	2.39	2.37	1.56	1.54
10-07-2014	1.45	1.43	2.65	2.63	3.37	3.34	3.49	3.45	3.03	3	3.92	3.89	4.07	4.05	2.46	2.43	1.52	1.5
17-07-2014	1.39	1.34	2.56	2.5	3.22	3.19	3.38	3.34	2.93	2.9	3.8	3.75	3.95	3.93	2.13	2.1	1.42	1.4
24-07-2014	1.35	1.33	2.49	2.45	3.2	3.18	3.36	3.34	2.94	2.92	3.79	3.82	3.94	3.92	2.12	2.1	1.42	1.41
31-07-2014	1.43	1.4	2.67	2.63	3.39	3.35	3.51	3.48	3	2.98	3.95	3.93	4.09	4.05	2.27	2.2	1.51	1.49
07-08-2014	1.33	1.31	2.54	2.52	3.29	3.26	3.5	3.48	2.98	2.94	3.95	3.9	3.96	3.94	2.1	2.09	1.39	1.35
14-08-2014	1.28	1.31	2.45	2.48	3.11	3.14	3.32	3.34	2.85	2.88	3.74	3.79	3.98	4.03	2.05	2.1	1.38	1.43
21-08-2014	1.34	1.32	2.31	2.3	3.25	3.23	3.4	3.37	3	2.97	3.82	3.8	3.97	3.94	2.13	2.11	1.43	1.4
28-08-2014	1.34	1.36	2.36	2.4	3.29	3.33	3.39	3.43	2.98	3	3.86	3.89	3.98	4.01	2.16	2.18	1.45	1.47
04-09-2014	1.4	1.44	2.39	2.45	3.29	3.35	3.4	3.44	2.89	2.96	3.8	3.88	3.97	4.03	2.29	2.34	1.4	1.44
11-09-2014	1.47	1.46	2.47	2.45	3.38	3.36	3.47	3.43	3	2.96	3.89	3.88	4.03	4	2.2	2.17	1.5	1.48

DATE	TIDE-1 DTW (mbgl)		TIDE-2DTW (mbgl)		TIDE-3DTW (mbgl)		TIDE-5DTW (mbgl)		TIDE-6DTW (mbgl)		TIDE-7DTW (mbgl)		TIDE-8DTW (mbgl)		TIDE-9DTW (mbgl)		TIDE-10DTW (mbgl)	
	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN
18-09-2014	1.49	1.46	2.48	2.44	3.35	3.33	2.45	2.41	2.89	2.8	3.86	3.84	4	3.98	2.17	2.15	1.48	1.46
25-09-2014	1.41	1.47	2.62	2.64	3.39	3.43	3.5	3.54	3	3.03	3.96	3.99	4.11	4.13	2.28	2.3	1.53	1.54
09-10-2014	1.45	1.49	2.47	2.5	3.25	3.29	3.45	3.48	3	3.04	3.93	3.97	4.1	4.12	2.28	2.33	1.54	1.59
16-10-2104	1.49	1.45	2.65	2.61	3.4	3.36			3.04	3	3.93	3.89	4.09	4.03	2.24	2.2	1.65	1.59
23-10-2014	1.45	1.43	2.63	2.6	3.38	3.36			3.02	3	3.91	3.89	4.07	4.02	2.21	2.2	1.43	1.39
30-10-2014	1.45	1.48	2.58	2.64	3.38	3.41			3.02	3.05	3.91	3.97	4.07	4.1	2.18	2.21	1.38	1.42
06-11-2014	1.47	1.44	2.57	2.51	3.4	3.38			3.04	3	3.95	3.9	4.06	4.03	2.19	2.16	1.41	1.39
13-11-2014	1.43	1.4	2.5	2.48	3.41	3.37			3.09	3.05	3.98	3.95	4.09	4.05	2.21	2.19	1.44	1.41
20-11-2014	1.42	1.45	2.6	2.61	3.31	3.33			3.04	3.07	3.93	3.97	4.1	4.12	2.22	2.26	1.43	1.45
04-12-2014	1.43	1.46	2.61	2.65	3.4	3.5			3.04	3.09	3.9	3.94	4.11	4.13	2.2	2.3	1.54	1.6
11-12-2014	1.48	1.46	2.65	2.63	3.38	3.34			3.03	2.99	3.9	3.88	4.06	4.03	2.2	2.17	1.6	1.58
18-12-2014	1.46	1.49	2.47	2.5	3.35	3.39			2.94	2.99	3.89	3.94	4.03	4.07	2.16	2.19	1.46	1.49
01-01-2015	1.46	1.45	2.45	2.47	3.36	3.4			3.03	3.05	3.9	3.93	4	4.04	2.18	2.2	1.47	1.49
08-01-2015	1.47	1.43	2.79	2.77	3.2	2.23			3.04	3.01	3.94	3.93	4.09	4.05	2.2	2.19	1.5	1.48

Kalpeni Island (Jan 2016 To December 2016)

Date	OW-I		OW-II		OW-III		OW- IV		OW-V		OW- VI		OW- VII		OW- VIII		OW- IX		OW- X	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
04-01-2016	1.58	1.72	1.72	1.8	1.34	1.47	0.9	1.01	0.91	1.03	0.99	1.09	1.4	1.5	1.24	1.35	1.66	1.77	2.2	2.28
11-01-2016	1.54	1.78	1.64	1.85	1.31	1.48	0.86	1.1	0.87	1.04	0.92	1.11	1.32	1.8	1.22	1.37	1.6	1.78	2.13	2.28
18-01-2016	1.59	1.65	1.68	1.75	1.4	1.43	0.86	0.91	0.9	0.91	0.99	1.05	1.35	1.45	1.18	1.26	1.58	1.65	2.21	2.26
25-01-2016	1.52	1.62	1.63	1.73	1.28	1.36	0.86	0.97	0.84	0.91	0.89	0.99	1.29	1.41	1.17	1.27	1.54	1.65	2.08	2.18
01-02-2016	1.6	1.63	1.72	1.72	1.38	1.39	0.91	0.92	0.91	0.93	1.01	1.02	1.42	1.4	1.21	1.24	1.61	1.64	2.19	2.22
08-02-2016	1.7	1.63	1.67	1.79	1.63	1.35	0.86	0.99	0.87	1.01	0.92	1.02	1.3	1.27	1.21	1.34	1.59	1.66	2.13	2.25
15-02-2016	1.63	1.58	1.86	1.8	1.42	1.33	0.96	0.89	0.97	0.92	1.05	1.03	1.47	1.42	1.24	1.17	1.73	1.65	2.22	2.25
22-02-2016	1.58	1.79	1.68	1.76	1.35	1.44	0.89	1.01	0.88	1.01	0.98	1.05	1.37	1.46	1.32	1.32	1.64	1.62	2.17	2.24
29-02-2016	1.72	1.6	1.8	1.68	1.48	1.43	1.02	0.91	1.05	0.96	1.1	1.03	1.5	1.36	1.33	1.12	1.74	1.65	2.3	2.19
07-03-2016	1.5	1.71	1.62	1.76	1.25	1.45	0.84	1.01	0.86	1	0.89	1.05	1.29	1.48	1.22	1.37	1.61	1.75	2.13	2.35
14-03-2016	1.63	1.6	1.72	1.58	1.46	1.33	0.96	0.85	0.94	0.83	1.07	0.94	1.48	1.38	1.28	1.16	1.64	1.61	2.22	2.12
21-03-2016	1.53	1.63	1.63	1.76	1.25	1.43	0.81	0.94	0.85	0.95	0.9	1.02	1.3	1.21	1.22	1.12	1.6	1.5	2.12	2.1
28-03-2016	1.71	1.62	1.78	1.65	1.49	1.42	1.01	0.92	0.99	0.89	1.1	0.95	1.51	1.32	1.34	1.17	1.79	1.72	2.27	2.15

Date	OW-I		OW-II		OW-III		OW- IV		OW-V		OW- VI		OW- VII		OW- VIII		OW- IX		OW- X	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
04-04-2016	1.53	1.65	1.62	1.76	1.29	1.46	0.89	1	0.89	1	0.96	1.11	1.37	1.55	1.31	1.45	1.68	1.8	2.19	2.36
11-04-2016	1.78	1.55	1.87	1.65	1.63	1.31	1.06	1.01	1.02	0.95	1.49	1.2	1.52	1.11	1.34	1.29	1.79	1.89	1.77	1.73
18-04-2016	1.65	1.7	1.73	1.85	1.37	1.5	0.93	1.03	0.97	1.2	1.34	1.4	1.16	1	1.34	1.34	1.69	1.69	1.77	1.79
25-04-2016	1.78	1.6	1.9	1.7	1.59	1.35	1.09	0.94	1.17	1	1.45	1.25	1.3	1	1.39	1.4	1.81	1.78	1.8	1.77
02-05-2016	1.64	1.63	1.73	1.78	1.28	1.38	0.95	0.94	1.03	1.01	1.3	0.75	1.17	1.15	1.34	1.38	1.71	1.74	1.75	1.77
09-05-2016	1.79	1.55	1.85	1.71	1.59	1.25	1.08	0.88	1.13	0.98	1.45	0.74	1.27	1.06	1.36	1.24	1.76	1.77	1.79	1.71
16-05-2016	1.56	1.6	1.7	1.7	1.3	1.33	0.83	0.86	0.97	0.95	1.21	1.24	1.1	1.1	1.26	1.27	1.6	1.64	1.73	1.68
23-05-2016	1.79	1.57	1.95	1.73	1.58	1.3	1.15	0.91	1.11	1	1.147	1.24	1.2	1.11	1.33	1.25	1.73	1.66	1.79	1.72
30-05-2016	1.7	1.66	1.73	1.69	1.42	0.57	0.95	0.74	0.97	0.98	1.25	1.13	1.17	1.13	1.23	1.16	1.61	1.55	1.66	1.6
06-06-2016	1.68	1.63	1.77	1.73	1.57	1.47	0.76	0.93	0.83	0.8	1.21	1.15	1.17	1.11	1.24	1.2	1.58	1.54	2.15	2.08
13-06-2016	1.65	1.71	1.78	1.84	1.4	1.46	0.81	0.87	0.93	1.35	1	0.76	1.33	1.41	1.14	1.21	1.54	1.62	2.12	2.23
20-06-2016	1.59	1.56	1.7	1.78	1.38	1.42	0.76	0.85	0.87	0.95	0.94	1.02	1.27	1.35	1.1	1.15	1.49	1.546	2.06	2.14
27-06-2016	1.66	1.69	1.77	1.82	1.38	1.43	0.79	0.84	0.9	0.95	0.98	1.01	1.31	1.39	1.15	1.2	1.53	1.6	2.13	2.17
04-07-2016	1.7	1.74	1.81	1.84	1.42	1.45	0.81	0.86	0.85	0.9	1.03	1.08	1.31	1.37	1.16	1.18	1.58	1.63	2.16	2.21
11-07-2016	1.74	1.47	1.62	1.36	1.21	0.41	0.66	0.6	0.75	0.71	1.23	1.17	0.97	0.89	1.08	1.04	1.42	1.36	2.03	1.97
18-07-2016	1.6	1.5	1.64	1.58	1.35	0.83	0.73	0.59	0.85	0.69	1.15	1.05	1.22	0.91	1.21	1.04	1.54	1.39	2.12	2.07
25-07-2016	1.62	1.48	1.69	1.56	1.33	1.09	0.71	0.64	0.8	0.57	0.86	0.69	1.269	1.11	1.15	0.99	1.51	1.35	2.11	1.94
01-08-2016	1.6	1.63	1.73	1.79	1.39	1.41	0.72	0.73	0.8	0.8	1.07	1.11	0.92	0.97	1.2	1.24	1.67	1.69	2.1	2.13
08-08-2016	1.66	1.61	1.72	1.72	1.45	1.35	0.9	0.79	0.99	0.95	1.3	1.2	1.16	1.07	1.28	1.22	1.67	1.64	2.22	2.17
16-08-2016	1.62	1.6	1.73	1.72	1.41	1.42	0.91	0.9	0.95	0.93	1.03	1	1.4	1.39	1.33	1.34	1.7	1.39	2.22	2.2
22-08-2016	1.62	1.64	1.78	1.8	1.44	1.47	0.93	0.96	0.9	0.95	0.93	0.95	1.13	1.16	1.3	1.33	1.68	1.75	2.2	2.22
29-08-2016	1.55	1.63	1.68	1.78	1.3	1.37	0.82	0.91	0.91	0.98	1.17	1.27	1.05	1.15	1.32	1.39	1.66	1.75	2.22	2.26
05-09-2016	1.7	1.64	1.76	1.7	1.23	1.15	0.92	0.86	0.97	0.9	1.3	1.25	1.15	1.1	1.34	1.23	1.72	1.69	2.22	2.17
12-09-2016																				
19-09-2016	1.75	1.69	1.78	1.75	1.48	1.38	1	0.96	1.07	1.05	1.35	1.34	1.23	1.16	1.44	1.49	1.78	1.75	2.22	2.32
26-09-2016	1.65	1.75	1.76	1.84	1.37	1.45	0.94	1.04	1.02	1.12	1.33	1.39	1.2	1.22	1.43	1.46	1.83	1.91	2.31	2.41
03-10-2016	1.68	1.64	1.76	1.73	1.43	1.4	0.96	0.99	1.02	1.04	1.06	1.03	1.45	1.44	1.42	1.44	1.79	1.82	2.3	2.32
10-10-2016	1.53	1.58	1.72	1.77	1.38	1.4	0.91	0.98	1.01	1.05	1.3	1.34	1.19	1.27	1.5	1.54	1.79	1.82	2.23	2.24
17-10-2016	1.59	1.79	1.68	1.76	1.35	1.43	0.88	1.03	0.95	1.07	1.25	1.36	1.07	1.19	1.37	1.47	1.72	1.83	2.21	2.28
24-10-2016	1.58	1.62	1.66	1.71	1.29	1.33	0.89	0.93	0.98	1.03	1.25	1.31	1.11	1.17	1.33	1.36	1.74	1.79	2.2	2.24
31-10-2016	1.6	1.63	1.75	1.78	1.36	1.4	0.91	0.94	0.97	1	1.15	1.25	1.11	1.13	1.39	1.42	1.74	1.76	2.24	2.27
07-11-2016	1.62	1.68	1.74	1.79	1.33	1.42	0.92	0.97	1.02	1.09	1.27	1.37	1.13	1.17	1.39	1.5	1.74	1.81	2.24	2.35
14-11-2016	1.6	1.9	1.63	1.58	1.21	1.53	0.8	1.01	0.88	1.15	0.85	1.39	1.27	1.37	1.31	1.79	1.7	2.14	2.15	2.37
21-11-2016	1.8	1.9	1.48	1.43	1.38	1.32	0.9	0.86	0.99	0.95	1.3	1.25	1.31	1.32	1.74	1.84	2.04	2	2.22	2.17
28-11-2016	1.78	1.86	1.6	1.83	1.33	1.53	0.86	1.06	1	1.19	1.25	1.45	1.37	1.37	1.09	1.24	1.74	1.45	2.21	2.37
05-12-2016	1.68	1.7	1.76	1.77	1.4	1.41	0.91	0.92	1.01	1	1.31	1.29	1.77	1.18	1.39	1.4	1.74	1.75	2.27	2.29
12-12-2016	1.52	1.54	1.64	1.66	1.21	1.23	0.84	0.87	0.93	0.97	1.2	1.22	1.29	1.3	1.29	1.31	1.68	1.7	2.17	2.2

Date	OW-I		OW-II		OW-III		OW- IV		OW-V		OW- VI		OW- VII		OW- VIII		OW- IX		OW- X	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
19-12-2016	1.66	1.6	1.78	1.7	1.42	1.38	0.95	0.94	1.05	0.97	1.05	0.98	1.44	1.37	1.44	1.38	1.74	1.61	2.22	2.1
26-12-2016	1.57	1.63	1.68	1.78	1.24	1.31	0.88	0.93	0.98	1.06	0.98	1.06	1.37	1.43	1.32	1.37	1.72	1.77	2.23	2.3

Kavarathi Island (January 2014 to December 2014)

Date	OWC 1		OWC 2		OWC 3		OWC 4		OWC 5		OWC 6		OWC 7			OWC 8	OWC 10	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
01.01.14	0.5	0.48	3.78	3.83	2.81	2.85	2.73	2.76	2.22	2.24	4.85	4.87	2.21	2.26	3.38	3.45	2.25	2.33
8.1.14	0.57	0.49	2.95	2.87	2.84	2.76	2.78	2.68	2.24	2.19	4.94	4.85	2.31	2.25	3.54	3.49	2.49	2.42
22.1.14	0.49	0.44	2.87	2.82	2.8	2.75	2.71	2.7	2.2	2.18	4.89	4.82	2.21	2.24	3.45	3.4	2.49	2.45
29.1.14	0.52	0.41	2.85	2.8	2.68	2.65	2.69	2.64	2.19	2.16	4.76	4.71	2.27	2.24	3.45	3.4	2.47	2.42
5.2.14	0.41	0.45	2.81	2.85	2.74	2.79	2.72	2.77	2.18	2.21	4.85	4.91	2.24	2.29	3.48	3.5	2.43	2.47
12.2.14	0.42	0.5	2.86	2.89	2.75	2.77	2.69	2.74	2.19	2.24	4.79	4.84	2.21	2.29	3.43	3.47	2.37	2.44
19.2.14	0.45	0.41	2.88	2.82	2.82	2.75	2.71	2.65	2.22	2.19	4.88	4.8	2.26	2.21	3.47	3.4	2.45	2.41
26.2.14	0.4	0.46	2.79	2.86	2.71	2.8	2.69	2.78	2.17	2.23	4.79	4.85	2.2	2.27	3.4	3.45	2.44	2.48
05.03.14	0.54	0.45	2.91	2.79	2.88	2.82	2.88	2.8	2.23	2.2	4.86	4.81	2.23	2.19	3.51	3.45	2.47	2.42
12.03.14	0.51	0.4	2.87	2.82	2.9	2.87	2.74	2.65	2.26	2.2	4.9	4.85	2.25	2.23	3.49	3.45	2.3	2.27
19.03.14	0.48	0.52	2.86	2.93	2.8	2.85	2.73	2.79	2.21	2.24	4.88	4.94	2.2	2.26	3.4	3.48	2.39	2.45
26.03.14	0.53	0.47	2.94	2.89	2.89	2.82	2.74	2.7	2.25	2.2	4.96	4.88	2.3	2.22	3.49	3.41	2.51	2.46
02.4.14	0.45	0.41	2.87	2.93	2.74	2.8	2.69	2.74	2.21	2.25	4.89	4.95	2.22	2.27	0.15	3.51	0.12	2.54
09.04.14	0.55	0.5	2.95	2.91	2.88	2.8	2.79	2.7	2.22	2.17	4.94	4.87	2.26	2.21	3.53	3.48	2.51	2.45
16.04.14	0.53	0.47	2.93	2.87	2.88	2.8	2.7	2.65	2.26	2.21	4.95	4.9	2.28	2.24	3.5	3.45	2.52	2.45
23.04.14	0.47	0.45	2.88	2.82	2.85	2.8	2.47	2.71	2.18	2.15	4.86	4.93	2.26	2.28	-	-	2.47	2.52
28.5.14	0.96	0.87	2.7	2.65	2.72	2.62	2.68	2.55	2.16	2.12	4.83	4.79	2.06	2.14	-	-	0.52	2.46
5.6.14	0.67	0.86	3.08	2.92	2.85	2.66	2.73	2.5	2.2	2.28	4.68	4.74	2.15	2.27	-	-	0.48	2.51
25.6.14	0.95	0.78	2.83	2.63	2.78	2.7	2.64	2.55	2.23	2.18	4.76	4.67	2.12	2.08	-	-	2.45	2.41
9.7.14	0.97	0.93	3.16	3.1	2.65	2.58	2.5	2.45	2.18	2.13	4.8	4.76	2.16	2.02	-	-	0.48	2.51
16.7.14	0.69	0.63	2.87	2.81	2.7	2.65	2.66	2.57	2.13	2.07	4.81	4.68	2.22	2.16	-	-	2.55	2.48
23.7.14	0.96	0.84	3.06	2.6	2.87	2.75	2.74	2.63	2.18	2.12	4.84	4.71	2.62	2.57	-	-	0.57	2.46
30.7.14	0.86	0.73	3.12	3.08	2.76	2.68	2.67	2.61	2.25	2.18	4.76	4.69	2.23	2.13	3.3	3.21	2.52	2.46
6.8.14	0.96	0.98	3.02	3.16	2.67	2.79	2.63	2.7	2.04	2.13	4.8	4.86	2.24	2.32	3.41	3.45	0.29	2.38
13.8.14	0.9	0.81	3.12	8.05	2.74	2.6	2.78	2.65	2.2	2.13	4.83	4.68	2.21	2.16	3.35	3.2	2.33	2.07
20.8.14	0.85	0.63	3.07	3.02	2.56	2.48	2.68	2.55	2.06	2.03	4.76	4.71	2.12	2.08	3.16	3.12	0.3	2.16
27.8.14	0.85	0.74	2.94	2.82	2.86	2.79	2.7	2.6	2.18	2.12	4.76	4.65	2.2	2.14	3.31	3.42	2.42	2.31
3.9.14	0.83	0.87	3.23	3.28	2.78	2.85	2.51	2.63	2.3	2.37	4.67	4.8	2.25	2.28	3.44	3.51	0.23	2.27
10.9.14	3.14	3.2	2.64	2.73	2.43	2.55	2.65	2.81	4.86	4.93	2.18	2.24	3.36	3.9	2.43	2.56	2.33	2.07
8.10.14	0.73	0.91	2.98	3.2	2.56	2.76	2.35	2.55	2.53	2.68	4.79	4.93	2.08	2.23	3.21	3.37	0.24	2.52

Date	OWC 1		OWC 2		OWC 3		OWC 4		OWC 5		OWC 6		OWC 7			OWC 8	OWC 10	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
5.11.14	0.97	0.84	3.04	3.14	2.46	2.41	2.51	2.48	2.22	2.18	4.76	4.72	2.16	2.12	3.29	3.25	0.52	2.54
12.11.14	0.64	0.82	3.06	2.95	2.2	2.48	2.75	2.61	2.18	2.28	4.75	4.79	2.14	2.2	3.36	3.23	2.44	2.57
30.11.14	0.73	0.65	3.08	3.02	2.71	2.62	2.63	2.62	2.2	2.16	4.87	4.8	2.28	2.2	3.35	3.38	0.47	2.4
3.12.14	0.85	0.97	3.02	3.13	2.96	3.05	2.43	2.55	2.03	2.16	4.62	4.96	2.2	2.35	3.13	3.28	0.2	2.62
10.12.14	0.92	0.87	3.12	3.1	2.81	2.78	2.48	2.43	2.13	2.09	4.86	4.8	2.25	2.21	3.2	3.16	2.34	2.32
17.12.14	0.84	0.98	3.08	3.16	2.85	2.94	2.68	2.73	2.21	2.35	4.73	4.89	2.2	2.32	3.24	3.4	0.35	2.57

Appendix-II.b

WEEKELY GROUND WATER LEVEL DATA AMINI ISLAND(CGWB) (FEB 2017 TO JAN 2018)

	SL.NO	Well No	01.02.2017				08.02.2017				15.02.2017				22.02.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Feb-17	**1**	**TW-1**	10.3	1.71	15.3	1.78					10.3	1.78	15.3	1.74	10.3	1.74	15.3	1.82
	2	**TW-2**	10.36	2.62	15.4	2.68					10.36	2.82	15.4	2.78	10.36	2.77	15.4	2.85
	3	**TW-3**	10.42	1.53	15.5	1.58					10.42	1.74	15.5	1.71	10.42	1.7	15.5	1.78
	4	**TW-4**	10.5	1.9	16	1.97					10.5	1.98	16	1.92	10.5	1.9	16	1.96
	5	**TW-5**	11	0.96	16.1	1.02					11	0.9	16.1	0.86	11	0.85	16.1	0.91
	6	**TW-6**	11.1	1.94	16.2	1.98					11.1	2.15	16.2	2.12	11.1	2.1	16.3	2.16
	7	**TW-7**	11.16	3.8	16.3	3.86					11.16	4.06	16.3	3.98	11.16	4	16.3	4.07
	8	**TW-8**	11.25	2.94	16.4	3					11.25	3.15	16.4	3.09	11.25	3.1	16.4	3.19
	9	**TW-9**	11.36	2.08	16.5	2.15					11.36	2.36	16.5	2.31	11.35	2.3	16.5	2.36
	10	**TW-10**	11.4	2.53	17	2.61					11.4	2.78	17	2.7	11.4	2.75	17	2.82

	SL.NO	Well No	01.03.2017				08.03.2017				15.03.2017				22.03.2017			
			Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)
Mar-17	1	TW-1	10.3	1.66	15.3	1.56	10.3	1.6	15.3	1.72	10.3	1.75	15.3	1.63	10.3	1.76	15.3	1.8
	2	TW-2	10.36	2.67	15.4	2.59	10.36	2.63	15.4	2.76	10.36	2.76	15.4	2.67	10.36	2.75	15.4	2.8
	3	TW-3	10.42	1.62	15.5	1.55	10.42	1.57	15.5	1.68	10.42	1.7	15.5	1.62	10.42	1.74	15.5	1.81
	4	TW-4	10.5	1.85	16	1.79	10.5	1.8	16	1.91	10.5	1.93	16	1.85	10.5	1.97	16	2.05
	5	TW-5	11	0.77	16.1	0.72	11	0.74	16.1	0.85	11	0.92	16.1	0.86	11	0.95	16.1	1
	6	TW-6	11.1	2.01	16.2	2.1	11.1	1.97	16.2	2.1	11.1	2.09	16.2	2.02	11.1	2.13	16.2	2.17
	7	TW-7	11.16	3.93	16.3	3.88	11.16	3.87	16.3	3.99	11.16	4	16.3	3.92	11.16	4.04	16.3	4.09
	8	TW-8	11.25	3.02	16.4	2.95	11.25	2.95	16.4	3.05	11.25	3.07	16.4	2.99	11.25	3.11	16.4	3.15
	9	TW-9	11.36	2.22	16.5	2.15	11.35	2.18	16.5	2.27	11.36	2.3	16.5	2.21	11.35	2.35	16.5	2.38
	10	TW-10	11.4	2.69	17	2.65	11.4	2.65	17	2.76	11.4	2.79	17	2.71	11.4	2.83	17	1.88

	SL.NO	Well No	05.04.2017				12.04.2017				19.04.2017				22.04.2017			
			Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)	Time	DTW (m bgl)
Apr-17	1	TW-1	10.3	1.81	15.3	1.55	10.3	1.77	15.3	1.69	10.3	1.85	15.3	1.79	10.3	1.76	15.3	1.8
	2	TW-2	10.36	2.72	15.4	2.68	10.36	2.74	15.4	2.7	10.36	2.67	15.4	2.72	10.36	2.75	15.4	2.8
	3	TW-3	10.42	1.67	15.5	1.58	10.42	1.72	15.5	1.61	10.42	1.65	15.5	1.71	10.42	1.74	15.5	1.81
	4	TW-4	10.5	1.82	16	1.85	10.5	1.93	16	1.82	10.5	1.89	16	1.72	10.5	1.97	16	2.05
	5	TW-5	11	0.94	16.1	0.8	11	1.01	16.1	0.98	11	0.97	16.1	1.02	11	0.95	16.1	1
	6	TW-6	11.1	2.12	16.2	2	11.1	2.02	16.2	2.05	11.1	2.18	16.2	2.21	11.1	2.13	16.2	2.17
	7	TW-7	11.16	4.03	16.3	4.01	11.16	4	16.3	3.97	11.16	4.04	16.3	3.99	11.16	4.04	16.3	4.09
	8	TW-8	11.25	2.96	16.4	2.99	11.25	3.07	16.4	2.98	11.25	3.01	16.4	3.06	11.25	3.11	16.4	3.15
	9	TW-9	11.36	2.35	16.5	2.32	11.35	2.3	16.5	2.22	11.36	2.38	16.5	1.72	11.35	2.35	16.5	2.38
	10	TW-10	11.4	2.67	17	2.64	11.4	2.79	17	2.69	11.4	2.73	17	2.74	11.4	2.83	17	1.88

	SL.NO	**Well No**	**10.05.2017**				**17.05.2017**				**31.05.2017**				**22.03.2017**			
			Time	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***	***Time***	***DTW (m bgl)***
May-17	**1**	**TW-1**	10.3	1.94	15.3	1.55	10.3	1.85	15.3	1.8	10.3	1.85	15.3	1.7	10.3	1.76	15.3	1.8
	2	**TW-2**	10.36	2.77	15.4	2.68	10.36	2.82	15.4	2.9	10.36	2.82	15.4	2.72	10.36	2.75	15.4	2.8
	3	**TW-3**	10.42	1.82	15.5	1.58	10.42	1.8	15.5	1.74	10.42	1.76	15.5	1.61	10.42	1.74	15.5	1.81
	4	**TW-4**	10.5	2.06	16	1.85	10.5	2.02	16	1.95	10.5	1.92	16	1.95	10.5	1.97	16	2.05
	5	**TW-5**	11	0.9	16.1	0.8	11	1.12	16.1	1.08	11	1.05	16.1	1	11	0.95	16.1	1
	6	**TW-6**	11.1	2.05	16.2	2	11.1	2.19	16.2	2.17	11.1	2.18	16.2	2.17	11.41	2.13	16.23	2.17
	7	**TW-7**	11.16	3.95	16.3	4.01	11.16	4.12	16.3	4.05	11.16	4.12	16.3	4.1	11.16	4.04	16.3	4.09
	8	**TW-8**	11.25	3.09	16.4	2.99	11.25	3.18	16.4	3.16	11.25	3.2	16.4	3.15	11.25	3.11	16.4	3.15
	9	**TW-9**	11.36	2.26	16.5	2.32	11.35	2.45	16.5	2.41	11.36	2.38	16.5	2.35	11.35	2.35	16.5	2.38
	10	**TW-10**	11.4	2.65	17	2.64	11.4	2.84	17	2.77	11.4	2.73	17	2.68	11.4	2.83	17	1.88

	SL.NO	Well No	07.06.2017				14.06.2017				21.06.2017				28.06.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Jun-17	**1**	**TW-1**	10.3	1.78	15.3	1.8	10.3	1.85	15.3	1.7	10.3	1.72	15.3	1.7	10.3	1.76	15.3	1.65
	2	**TW-2**	10.36	2.7	15.4	2.72	10.36	2.82	15.4	2.7	10.36	2.73	15.4	2.71	10.36	2.72	15.4	2.62
	3	**TW-3**	10.42	1.61	15.5	1.64	10.42	1.74	15.5	1.6	10.42	1.65	15.5	1.63	10.42	1.66	15.5	1.55
	4	**TW-4**	10.5	1.82	16	1.85	10.5	1.95	16	1.85	10.5	1.92	16	1.9	10.5	1.85	16	1.75
	5	**TW-5**	11	0.9	16.1	0.92	11	1.05	16.1	0.91	11	0.87	16.1	0.84	11	1	16.1	0.88
	6	**TW-6**	11.1	2	16.2	2.05	11.1	2.11	16.2	1.96	11.1	2.1	16.2	2.05	11.1	2.05	16.23	1.95
	7	**TW-7**	11.16	4	16.3	4.01	11.16	4.08	16.3	3.93	11.16	3.98	16.3	3.95	11.16	4.03	16.3	3.88
	8	**TW-8**	11.25	3.06	16.4	3.07	11.25	3.15	16.4	3	11.25	3.1	16.4	3.08	11.25	3.1	16.4	3
	9	**TW-9**	11.36	2.17	16.5	2.2	11.35	2.33	16.5	2.15	11.36	2.23	16.5	2.2	11.35	2.25	16.5	2.09
	10	**TW-10**	11.4	2.68	17	2.7	11.4	2.8	17	2.65	11.4	2.68	17	2.65	11.4	2.75	17	1.63

	SL.NO	Well No	05.07.2017				12.07.2017				19.07.2017				26.07.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Jul-17	**1**	**TW-1**	10.3	1.73	15.3	1.69	10.3	1.71	15.3	1.78	10.3	1.71	15.3	1.76	10.3	1.74	15.3	1.79
	2	**TW-2**	10.36	2.7	15.4	2.67	10.36	2.74	15.4	2.81	10.36	2.74	15.4	2.81	10.36	2.78	15.4	2.84
	3	**TW-3**	10.42	1.64	15.5	1.61	10.42	1.65	15.5	1.69	10.42	1.65	15.5	1.69	10.42	1.68	15.5	1.72
	4	**TW-4**	10.5	2.04	16	2	10.5	1.82	16	1.88	10.5	1.82	16	1.88	10.5	1.85	16	1.89
	5	**TW-5**	11	0.85	16.1	0.8	11	0.92	16.1	1	11	0.92	16.1	1	11	0.95	16.1	1.02
	6	**TW-6**	11.1	2.06	16.2	2.03	11.1	2.1	16.2	2.18	11.1	2.1	16.2	2.18	11.1	2.13	16.23	2.19
	7	**TW-7**	11.16	3.99	16.3	3.95	11.16	4	16.3	4.01	11.16	4	16.3	4.01	11.16	4.03	16.3	4.05
	8	**TW-8**	11.25	3.08	16.4	3.05	11.25	3.08	16.4	3.17	11.25	3.08	16.4	3.17	11.25	3.11	16.4	3.2
	9	**TW-9**	11.36	2.2	16.5	2.18	11.35	2.31	16.5	2.36	11.36	2.31	16.5	2.36	11.35	2.36	16.5	2.39
	10	**TW-10**	11.4	2.69	17	2.65	11.4	2.68	17	2.75	11.4	2.68	17	2.75	11.4	2.71	17	2.79

	SL.NO	Well No	02.08.2017				09.08.2017				16.08.2017				23.08.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Aug-17	**1**	**TW-1**	10.3	1.76	15.3	1.8	10.3	1.8	15.3	1.74	10.3	1.78	15.3	1.75	10.3	1.87	15.3	1.74
	2	**TW-2**	10.36	2.73	15.4	2.78	10.36	2.81	15.4	2.77	10.36	2.76	15.4	2.75	10.36	2.8	15.4	2.76
	3	**TW-3**	10.42	1.66	15.5	1.65	10.42	1.72	15.5	1.68	10.42	1.69	15.5	1.67	10.42	1.7	15.5	1.65
	4	**TW-4**	10.5	2.07	16	2.06	10.5	1.88	16	1.85	10.5	2.1	16	2.07	10.5	1.93	16	1.88
	5	**TW-5**	11	0.88	16.1	0.86	11	0.99	16.1	0.97	11	0.9	16.1	0.88	11	0.99	16.1	0.84
	6	**TW-6**	11.1	2.08	16.2	2.06	11.1	2.15	16.2	2.13	11.1	2.1	16.2	2.07	11.1	2.16	16.23	1.94
	7	**TW-7**	11.16	4.02	16.3	4	11.16	4.06	16.3	4.03	11.16	4.06	16.3	4.03	11.16	4.12	16.3	3.93
	8	**TW-8**	11.25	3.1	16.4	3.11	11.25	3.14	16.4	3.11	11.25	3.13	16.4	3.11	11.25	3.18	16.4	2.96
	9	**TW-9**	11.36	2.23	16.5	2.22	11.35	2.37	16.5	2.35	11.36	2.26	16.5	2.23	11.35	2.38	16.5	2.3
	10	**TW-10**	11.4	2.72	17	2.71	11.4	2.73	17	2.68	11.4	2.75	17	2.72	11.4	2.8	17	2.71

	SL.NO	Well No	06.09.2017				13.09.2017				20.09.2017				27.09.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Sep-17	**1**	**TW-1**	10.3	1.82	15.3	1.8	10.3	1.81	15.3	1.73	10.3	1.82	15.3	1.85	10.3	1.84	15.3	1.82
	2	**TW-2**	10.36	2.85	15.4	2.79	10.36	2.81	15.4	2.78	10.36	2.85	15.4	2.86	10.36	2.88	15.4	2.84
	3	**TW-3**	10.42	1.72	15.5	1.73	10.42	1.74	15.5	1.66	10.42	1.74	15.5	1.78	10.42	1.75	15.5	1.71
	4	**TW-4**	10.5	2	16	1.99	10.5	1.99	16	1.91	10.5	1.98	16	2	10.5	2.02	16	1.98
	5	**TW-5**	11	1	16.1	0.9	11	0.94	16.1	0.82	11	0.97	16.1	0.98	11	1.01	16.1	0.98
	6	**TW-6**	11.1	2.21	16.2	2.23	11.1	2.19	16.2	2.11	11.1	2.21	16.2	2.16	11.1	2.21	16.23	2.19
	7	**TW-7**	11.16	4.12	16.3	4.03	11.16	4.08	16.3	4	11.16	4.15	16.3	4.11	11.16	4.11	16.3	4.04
	8	**TW-8**	11.25	3.2	16.4	3.05	11.25	3.22	16.4	3.05	11.25	3.21	16.4	3.2	11.25	3.22	16.4	3.23
	9	**TW-9**	11.36	2.37	16.5	2.39	11.35	2.4	16.5	2.36	11.36	2.44	16.5	2.38	11.35	2.39	16.5	2.37
	10	**TW-10**	11.4	2.82	17	2.79	11.4	2.79	17	2.74	11.4	2.88	17	2.9	11.4	2.81	17	2.75

	SL.NO	Well No	04.10.2017				11.10.2017				18.10.2017				25.10.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Oct-17	**1**	**TW-1**	10.3	1.82	15.3	1.86	10.3	1.84	15.3	1.77	10.3	1.8	15.3	1.89	10.3	1.85	15.3	1.8
	2	**TW-2**	10.36	2.82	15.4	2.85	10.36	2.84	15.4	2.82	10.36	2.82	15.4	2.85	10.36	2.85	15.4	2.82
	3	**TW-3**	10.42	1.71	15.5	2	10.42	1.76	15.5	1.7	10.42	1.71	15.5	1.8	10.42	1.76	15.5	1.73
	4	**TW-4**	10.5	1.98	16	2.21	10.5	2.14	16	1.94	10.5	1.92	16	2.03	10.5	2.01	16	1.98
	5	**TW-5**	11	0.9	16.1	0.98	11	0.96	16.1	0.85	11	0.89	16.1	1	11	0.97	16.1	0.92
	6	**TW-6**	11.1	2.2	16.2	2.17	11.1	2.2	16.2	2.14	11.1	2.2	16.2	2.18	11.1	2.24	16.23	2.21
	7	**TW-7**	11.16	4.08	16.3	4.13	11.16	4.12	16.3	3.97	11.16	4.1	16.3	4	11.16	4.14	16.3	4.05
	8	**TW-8**	11.25	3.21	16.4	3.23	11.25	3.21	16.4	3.15	11.25	3.21	16.4	3.17	11.25	3.24	16.4	3.15
	9	**TW-9**	11.36	2.42	16.5	2.43	11.35	2.38	16.5	2.34	11.36	2.42	16.5	2.37	11.35	2.45	16.5	2.39
	10	**TW-10**	11.4	2.78	17	2.84	11.4	2.83	17	2.74	11.4	2.79	17	2.74	11.4	2.85	17	2.79

	SL.NO	Well No	01.11.2017				08.11.2017				15.11.2017				22.11.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Nov-17	**1**	**TW-1**	10.3	1.72	15.3	1.87	10.3	1.73	15.3	1.72	10.3	1.65	15.3	1.83	10.3	1.72	15.3	1.76
	2	**TW-2**	10.36	2.76	15.4	2.87	10.36	2.73	15.4	2.71	10.36	2.68	15.4	2.8	10.36	2.77	15.4	2.8
	3	**TW-3**	10.42	1.65	15.5	1.79	10.42	1.65	15.5	1.63	10.42	1.59	15.5	1.76	10.42	1.66	15.5	1.68
	4	**TW-4**	10.5	1.92	16	2.03	10.5	1.9	16	1.88	10.5	1.85	16	2.08	10.5	1.84	16	1.86
	5	**TW-5**	11	0.81	16.1	1.01	11	0.85	16.1	0.83	11	0.78	16.1	1.01	11	0.93	16.1	1
	6	**TW-6**	11.1	2.16	16.2	2.23	11.1	2.11	16.2	2.15	11.1	2.15	16.2	2.23	11.1	2.12	16.23	2.17
	7	**TW-7**	11.16	4.03	16.3	4.14	11.16	4.03	16.3	4	11.16	3.97	16.3	4.04	11.16	4.01	16.3	4.03
	8	**TW-8**	11.25	3.16	16.4	3.07	11.25	3.05	16.4	3.03	11.25	3.13	16.4	3.18	11.25	3.09	16.4	3.15
	9	**TW-9**	11.36	2.33	16.5	2.39	11.35	2.3	16.5	2.38	11.36	2.31	16.5	2.36	11.35	2.32	16.5	2.36
	10	**TW-10**	11.4	2.7	17	2.77	11.4	2.72	17	2.74	11.4	2.66	17	2.75	11.4	2.7	17	2.75

	SL.NO	Well No	06.12.2017				13.12.2017				20.12.2017				27.12.2017			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Dec-17	**1**	**TW-1**	10.3	1.74	15.3	1.84	10.3	1.71	15.3	1.87	10.3	1.74	15.3	1.84	10.3	1.74	15.3	1.85
	2	**TW-2**	10.36	2.76	15.4	2.82	10.36	2.75	15.4	2.85	10.36	2.76	15.4	2.82	10.36	2.77	15.4	2.85
	3	**TW-3**	10.42	1.66	15.5	1.78	10.42	1.64	15.5	1.81	10.42	1.66	15.5	1.78	10.42	1.68	15.5	1.74
	4	**TW-4**	10.5	1.93	16	2.03	10.5	1.89	16	2.05	10.5	1.93	16	2.03	10.5	1.93	16	2.24
	5	**TW-5**	11	0.87	16.1	0.99	11	0.79	16.1	1.04	11	0.87	16.1	0.99	11	0.85	16.1	0.98
	6	**TW-6**	11.1	2.11	16.2	2.21	11.1	1.89	16.2	2.05	11.1	2.11	16.2	2.21	11.1	2.1	16.23	2.16
	7	**TW-7**	11.16	3.98	16.3	4.1	11.16	3.95	16.3	3.92	11.16	3.98	16.3	4.1	11.16	3.99	16.3	4.05
	8	**TW-8**	11.25	3.13	16.4	3.23	11.25	3.08	16.4	3.07	11.25	3.13	16.4	3.23	11.25	3.13	16.4	3.21
	9	**TW-9**	11.36	2.26	16.5	2.38	11.35	2.2	16.5	2.2	11.36	2.26	16.5	2.38	11.35	2.26	16.5	2.37
	10	**TW-10**	11.4	2.67	17	2.79	11.4	2.63	17	2.59	11.4	2.67	17	2.79	11.4	2.7	17	2.78

	SL.NO	Well No	03.01.2018				10.01.2018				17.01.2018				31.01.2018			
			Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Jan-18	**1**	**TW-1**	10.3	1.64	15.3	1.8	10.3	1.68	15.3	1.78	10.3	1.65	15.3	1.68	10.3	1.56	15.3	1.84
	2	**TW-2**	10.36	2.68	15.4	2.8	10.36	2.69	15.4	2.79	10.36	2.69	15.4	2.7	10.36	2.63	15.4	2.79
	3	**TW-3**	10.42	1.53	15.5	1.73	10.42	1.62	15.5	1.71	10.42	1.63	15.5	1.66	10.42	1.51	15.5	1.75
	4	**TW-4**	10.5	1.85	16	2	10.5	1.88	16	1.99	10.5	1.87	16	1.89	10.5	1.81	16	1.98
	5	**TW-5**	11	0.7	16.1	0.85	11	0.82	16.1	0.98	11	0.85	16.1	0.89	11	0.61	16.1	0.77
	6	**TW-6**	11.1	2.04	16.2	2.19	11.1	2.05	16.2	2.11	11.1	2.06	16.2	2.08	11.1	1.99	16.23	2.11
	7	**TW-7**	11.16	3.9	16.3	4	11.16	4.01	16.3	4.21	11.16	3.95	16.3	3.98	11.16	3.86	16.3	4.12
	8	**TW-8**	11.25	3.05	16.4	3.2	11.25	3.08	16.4	3.14	11.25	3.06	16.4	3.08	11.25	2.73	16.4	3.15
	9	**TW-9**	11.36	2.15	16.5	2.3	11.35	2.23	16.5	2.35	11.36	2.2	16.5	2.21	11.35	2.13	16.5	2.39
	10	**TW-10**	11.4	2.56	17	2.71	11.4	2.65	17	2.75	11.4	2.66	17	2.69	11.4	2.52	17	2.8

WEEKLY GROUND WATER LEVEL DATA KADMAT ISLAND(CGWB) (FEB 2017 TO JAN 2018)

	SL.NO	MP (m agl)	Well No	07.02.2017				14.02.2017				21.02.2017				28.02.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Feb-17	1	0.8	TW-1	10.15	1.55	16	1.66	10.15	1.71	16.02	1.65	10.1	1.67	16	1.82	10	1.52	16.02	1.46
	2	0.65	TW-2	10.22	0.87	16.08	0.97	10.22	1.04	16.1	0.99	10.17	1.02	16.08	1.13	10.07	0.83	16.1	0.78
	3	1	TW-3	10.3	0.65	16.15	0.74	10.28	0.77	16.2	0.72	10.26	0.74	16.15	0.82	10.15	0.63	16.2	0.59
	4	0.75	TW-4	10.35	1.65	16.23	1.77	10.35	1.75	16.25	1.7	10.31	1.99	16.23	1.78	10.22	1.64	16.25	1.59
	5	0.7	TW-5	10.44	2.5	16.31	2.62	10.4	2.62	16.32	2.57	10.4	2.57	16.31	2.66	10.3	2.39	16.32	2.44
	6	0.72	TW-6	10.5	2.12	16.38	2.26	10.45	2.25	16.4	2.16	10.48	2.18	16.38	2.28	10.38	2.15	16.4	2.05
	7	0.6	TW-7	10.55	0.55	16.46	0.69	11	0.75	16.55	0.65	10.53	0.65	16.46	0.77	10.43	0.53	16.55	0.47
	8	0.7	TW-8	11.05	2.12	17.53	2.22	11.1	2.35	17	2.3	11.03	2.26	17.53	2.4	10.52	2.12	17	2.05
	9	0.8	TW-9	11.15	0.7	17	0.84	11.15	0.84	17.05	0.78	11.1	0.75	17	0.86	11.07	0.74	17.05	0.69
	10	0.6	TW-10	11.22	0.99	17.1	1.13	11.2	1.25	17.1	1.19	11.2	1.15	17.1	1.27	11.17	1.19	17.1	1.13

	SL.NO	MP (m agl)	Well No	07.03.2017				14.03.2017				21.03.2017				28.03.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Mar-17	1	0.8	TW-1	10.15	1.52	16	1.6	10.15	1.65	16.02	1.54	10.1	1.64	16	1.71	10	1.62	16.02	1.59
	2	0.65	TW-2	10.22	0.84	16.08	0.91	10.22	0.94	16.1	0.84	10.17	0.98	16.08	1.02	10.07	0.92	16.1	0.89
	3	1	TW-3	10.3	0.6	16.15	0.67	10.28	0.7	16.2	0.64	10.26	0.72	16.15	0.75	10.15	0.71	16.2	0.68
	4	0.75	TW-4	10.35	1.6	16.23	1.67	10.35	1.7	16.25	1.62	10.31	1.69	16.23	1.73	10.22	1.69	16.25	1.66
	5	0.7	TW-5	10.44	2.46	16.31	2.52	10.4	2.57	16.32	2.45	10.4	2.56	16.31	2.6	10.3	2.54	16.32	2.53
	6	0.72	TW-6	10.5	2.08	16.38	2.2	10.45	2.22	16.4	2.1	10.48	2.2	16.38	2.23	10.38	2.32	16.4	2.26
	7	0.6	TW-7	10.55	0.55	16.46	0.67	11	0.69	16.55	0.51	10.53	0.67	16.46	0.69	10.43	0.75	16.55	0.69
	8	0.7	TW-8	11.05	2.16	17.53	2.28	11.1	2.3	17	2.16	11.03	2.28	17.53	2.3	10.52	2.38	17	2.32
	9	0.8	TW-9	11.15	0.78	17	0.9	11.15	0.92	17.05	0.8	11.1	0.94	17	0.97	11.07	0.96	17.05	0.88
	10	0.6	TW-10	10.22	1.21	17.1	1.29	11.22	1.33	17.1	1.19	11.2	1.21	17.1	1.23	11.17	1.27	17.1	1.19

	SL.NO	MP (m agl)	Well No	04.04.2017				11.04.2017				18.04.2017				28.04.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Apr-17	1	0.80	**TW-1**	10.15	**1.65**	16.00	**1.67**	10.15	**1.63**	16.02	**1.55**	10.10	**1.66**	16.00	**1.62**	10.00	**1.62**	16.02	**1.59**
	2	0.65	**TW-2**	10.22	**0.98**	16.08	**1.01**	10.22	**0.84**	16.10	**0.81**	10.17	**0.97**	16.08	**0.95**	10.07	**0.92**	16.10	**0.89**
	3	1.00	**TW-3**	10.30	**0.71**	16.15	**0.73**	10.28	**0.70**	16.20	**0.65**	10.26	**0.71**	16.15	**0.70**	10.15	**0.71**	16.20	**0.68**
	4	0.75	**TW-4**	10.35	**1.69**	16.23	**1.71**	10.35	**1.69**	16.25	**1.64**	10.31	**1.71**	16.23	**1.69**	10.22	**1.69**	16.25	**1.66**
	5	0.70	**TW-5**	10.44	**2.57**	16.31	**2.58**	10.40	**2.55**	16.32	**2.52**	10.40	**2.58**	16.31	**2.52**	10.30	**2.54**	16.32	**2.53**
	6	0.72	**TW-6**	10.50	**2.26**	16.38	**2.28**	10.45	**2.22**	16.40	**2.12**	10.48	**2.29**	16.38	**2.26**	10.38	**2.32**	16.40	**2.26**
	7	0.60	**TW-7**	10.55	**0.78**	16.46	**0.81**	11.00	**0.59**	16.55	**0.47**	10.53	**0.81**	16.46	**0.79**	10.43	**0.75**	16.55	**0.69**
	8	0.70	**TW-8**	11.05	**2.41**	17.53	**2.42**	11.10	**2.22**	17.00	**2.12**	11.03	**2.42**	17.53	**2.40**	10.52	**2.38**	17.00	**2.32**
	9	0.80	**TW-9**	11.15	**0.85**	17.00	**0.86**	11.15	**0.84**	17.05	**0.76**	11.10	**0.94**	17.00	**0.91**	11.07	**0.96**	17.05	**0.88**
	10	0.60	**TW-10**	11.22	**1.29**	17.10	**1.31**	11.22	**1.08**	17.10	**1.01**	11.20	**1.25**	17.10	**1.23**	11.17	**1.27**	17.10	**1.19**

	SL.NO	MP (m agl)	Well No	02.05.2017				09.05.2017				16.05.2017				23.05.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
May-17	1	0.8	TW-1	10.15	1.68	16	1.63	10.15	1.64	16.02	1.6	10.1	1.69	16	1.6	10	1.6	16.02	1.58
	2	0.65	TW-2	10.22	1.01	16.08	0.96	10.22	0.97	16.1	0.93	10.17	1.02	16.08	0.91	10.07	0.91	16.1	0.89
	3	1	TW-3	10.3	0.73	16.15	0.69	10.28	0.69	16.2	0.66	10.26	0.73	16.15	0.7	10.15	0.71	16.2	0.69
	4	0.75	TW-4	10.35	1.73	16.23	1.69	10.35	1.7	16.25	1.67	10.31	1.74	16.23	1.67	10.22	1.7	16.25	1.69
	5	0.7	TW-5	10.44	2.62	16.31	2.57	10.4	2.55	16.32	2.52	10.4	2.64	16.31	2.57	10.3	2.54	16.32	2.53
	6	0.72	TW-6	10.5	2.28	16.38	2.23	10.45	2.24	16.4	2.2	10.48	2.3	16.38	2.22	10.38	2.23	16.4	2.2
	7	0.6	TW-7	10.55	0.83	16.46	0.79	11	0.65	16.55	0.61	10.53	0.82	16.46	0.75	10.43	0.62	16.55	0.59
	8	0.7	TW-8	11.05	2.43	17.53	2.35	11.1	2.27	17	2.22	11.03	2.44	17.53	2.36	10.52	2.27	17	2.25
	9	0.8	TW-9	11.15	0.91	17	0.88	11.15	0.88	17.05	0.85	11.1	0.97	17	0.9	11.07	0.84	17.05	0.82
	10	0.6	TW-10	10.22	1.17	17.1	1.13	11.22	1.07	17.1	1.03	11.2	1.18	17.1	1.12	11.17	1.09	17.1	1.07

Jun-17	SL.NO	MP (m agl)	Well No	06.06.2017				13.06.2017				20.06.2017				27.06.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
	1	0.8	TW-1	10.15	1.52	16	1.56	10.15	1.6	16.02	1.48	10.1	1.58	16	1.55	10	1.72	16.02	1.66
	2	0.65	TW-2	10.22	0.77	16.08	0.8	10.22	0.83	16.1	0.71	10.17	0.83	16.08	0.8	10.07	0.91	16.1	0.83
	3	1	TW-3	10.3	0.5	16.15	0.52	10.28	0.58	16.2	0.49	10.26	0.68	16.15	0.64	10.15	0.7	16.2	0.62
	4	0.75	TW-4	10.35	1.51	16.23	1.53	10.35	1.57	16.25	1.48	10.31	1.65	16.23	1.61	10.22	1.68	16.25	1.6
	5	0.7	TW-5	10.44	2.55	16.31	2.57	10.4	2.52	16.32	2.41	10.4	2.49	16.31	2.46	10.3	2.6	16.32	2.52
	6	0.72	TW-6	10.5	2.17	16.38	2.2	10.45	2.25	16.4	2.13	10.48	2.19	16.38	2.15	10.38	2.27	16.4	2.2
	7	0.6	TW-7	10.55	0.61	16.46	0.65	11	0.74	16.55	0.67	10.53	0.61	16.46	0.57	10.43	0.78	16.55	0.72
	8	0.7	TW-8	11.05	2.26	17.53	2.28	11.1	2.35	17	2.24	11.03	2.23	17.53	2.2	10.52	2.4	17	2.32
	9	0.8	TW-9	11.15	0.85	17	0.87	11.15	0.92	17.05	0.84	11.1	0.82	17	0.8	11.07	0.95	17.05	0.88
	10	0.6	TW-10	10.22	1.05	17.1	1.08	11.22	1.13	17.1	1.07	11.2	1.07	17.1	1.04	11.17	1.07	17.1	1.01

Jul-17	SL.NO	MP (m agl)	Well No	04.07.2017				11.07.2017				18.07.2017				25.07.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
	1	0.8	TW-1	10.15	1.66	16	1.56	10.15	1.72	16.02	1.64	10.1	1.61	16	1.58	10	1.69	16.02	1.62
	2	0.65	TW-2	10.22	0.89	16.08	0.79	10.22	1	16.1	0.92	10.17	0.91	16.08	0.87	10.07	0.96	16.1	0.88
	3	1	TW-3	10.3	0.69	16.15	0.65	10.28	0.76	16.2	0.67	10.26	0.65	16.15	0.61	10.15	0.67	16.2	0.6
	4	0.75	TW-4	10.35	1.67	16.23	1.57	10.35	1.74	16.25	1.64	10.31	1.64	16.23	1.6	10.22	1.73	16.25	1.66
	5	0.7	TW-5	10.44	2.46	16.31	2.37	10.4	2.62	16.32	2.54	10.4	2.5	16.31	2.45	10.3	2.62	16.32	2.54
	6	0.72	TW-6	10.5	2.16	16.38	2.08	10.45	2.32	16.4	2.2	10.48	2.19	16.38	2.15	10.38	2.31	16.4	2.25
	7	0.6	TW-7	10.55	0.77	16.46	0.71	11	0.78	16.55	0.71	10.53	0.73	16.46	0.69	10.43	0.77	16.55	0.71
	8	0.7	TW-8	11.05	2.38	17.53	2.3	11.1	2.42	17	2.31	11.03	2.3	17.53	2.24	10.52	2.4	17	2.35
	9	0.8	TW-9	11.15	0.91	17	0.8	11.15	1	17.05	0.88	11.1	0.88	17	0.83	11.07	0.98	17.05	0.9
	10	0.6	TW-10	10.22	1.05	17.1	0.97	11.22	1.09	17.1	1.01	11.2	1.03	17.1	0.99	11.17	1.07	17.1	1.02

	SL.NO	MP (m agl)	Well No	01.08.2017				08.08.2017				22.08.2017				29.08.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Aug-17	1	0.8	TW-1	10.15	1.73	16	1.69	10.15	1.76	16.02	1.68	10.1	1.7	16	1.62	10	1.68	16.02	1.64
	2	0.65	TW-2	10.22	0.98	16.08	0.94	10.22	0.99	16.1	0.92	10.17	0.97	16.08	0.89	10.07	0.91	16.1	0.87
	3	1	TW-3	10.3	0.72	16.15	0.7	10.28	0.72	16.2	0.67	10.26	0.7	16.15	0.64	10.15	0.66	16.2	0.63
	4	0.75	TW-4	10.35	1.7	16.23	1.67	10.35	1.74	16.25	1.67	10.31	1.69	16.23	1.62	10.22	1.64	16.25	1.61
	5	0.7	TW-5	10.44	2.56	16.31	2.52	10.4	2.62	16.32	2.52	10.4	2.57	16.31	2.48	10.3	2.5	16.32	2.46
	6	0.72	TW-6	10.5	2.26	16.38	2.22	10.45	2.2	16.4	2.17	10.48	2.22	16.38	2.1	10.38	2.2	16.4	2.15
	7	0.6	TW-7	10.55	0.73	16.46	0.7	11	0.77	16.55	0.65	10.53	0.77	16.46	0.67	10.43	0.66	16.55	0.62
	8	0.7	TW-8	11.05	2.34	17.53	2.3	11.1	2.36	17	2.32	11.03	2.32	17.53	2.26	10.52	2.28	17	2.24
	9	0.8	TW-9	11.15	0.9	17	0.86	11.15	0.86	17.05	0.84	11.1	0.9	17	0.78	11.07	0.79	17.05	0.75
	10	0.6	TW-10	10.22	1.11	17.1	1.08	11.22	1.13	17.1	1.09	11.2	1.15	17.1	1.06	11.17	1.11	17.1	1.06

	SL.NO	MP (m agl)	Well No	05.09.2017				12.09.2017				19.09.2017				26.09.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Sep-17	1	0.8	TW-1	10.15	1.83	16	1.78	10.15	1.72	16.02	1.64	10.1	1.82	16	1.84	10	1.84	16.02	1.8
	2	0.65	TW-2	10.22	1.04	16.08	0.99	10.22	0.99	16.1	0.93	10.17	1.03	16.08	1.05	10.07	1.05	16.1	1.02
	3	1	TW-3	10.3	0.78	16.15	0.75	10.28	0.71	16.2	0.67	10.26	0.77	16.15	0.78	10.15	0.82	16.2	0.8
	4	0.75	TW-4	10.35	1.75	16.23	1.72	10.35	1.69	16.25	1.64	10.31	1.72	16.23	1.74	10.22	1.76	16.25	1.72
	5	0.7	TW-5	10.44	2.6	16.31	2.57	10.4	2.57	16.32	2.47	10.4	2.58	16.31	2.59	10.3	2.62	16.32	2.58
	6	0.72	TW-6	10.5	2.3	16.38	2.26	10.45	2.26	16.4	2.17	10.48	2.22	16.38	2.25	10.38	2.28	16.4	2.22
	7	0.6	TW-7	10.55	0.77	16.46	0.72	11	0.73	16.55	0.67	10.53	0.65	16.46	0.65	10.43	0.73	16.55	0.66
	8	0.7	TW-8	11.05	2.38	17.53	2.35	11.1	2.37	17	2.3	11.03	2.25	17.53	2.27	10.52	2.3	17	2.22
	9	0.8	TW-9	11.15	0.94	17	0.9	11.15	0.87	17.05	0.81	11.1	0.87	17	0.88	11.07	0.86	17.05	0.8
	10	0.6	TW-10	10.22	1.15	17.1	1.11	11.22	1.11	17.1	1.04	11.2	1.08	17.1	1.1	11.17	1.13	17.1	1.07

	SL.NO	MP (m agl)	Well No	07.11.2017				14.11.2017				21.11.2017				28.11.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Nov-17	1	0.8	TW-1	10.15	1.74	16	1.72	10.15	1.76	16.02	1.85	10.1	1.66	16	1.71	10	1.68	16.02	1.72
	2	0.65	TW-2	10.22	0.92	16.08	0.89	10.22	0.94	16.1	1.06	10.17	0.99	16.08	1.03	10.07	0.95	16.1	0.99
	3	1	TW-3	10.3	0.73	16.15	0.7	10.28	0.77	16.2	0.78	10.26	0.7	16.15	0.74	10.15	0.7	16.2	0.74
	4	0.75	TW-4	10.35	1.68	16.23	1.65	10.35	1.6	16.25	1.69	10.31	1.65	16.23	1.69	10.22	1.69	16.25	1.73
	5	0.7	TW-5	10.44	2.5	16.31	2.48	10.4	2.36	16.32	2.44	10.4	2.38	16.31	2.42	10.3	2.5	16.32	2.6
	6	0.72	TW-6	10.5	2.16	16.38	2.08	10.45	2.12	16.4	2.24	10.48	2.1	16.38	2.17	10.38	2.18	16.4	2.28
	7	0.6	TW-7	10.55	0.55	16.46	0.52	11	0.6	16.55	0.72	10.53	0.62	16.46	0.66	10.43	0.6	16.55	0.67
	8	0.7	TW-8	11.05	2.18	17.53	2.12	11.1	2.22	17	2.32	11.03	2.3	17.53	2.36	10.52	2.21	17	2.31
	9	0.8	TW-9	11.15	0.75	17	0.74	11.15	0.67	17.05	0.8	11.1	0.73	17	0.76	11.07	0.73	17.05	0.81
	10	0.6	TW-10	10.22	1.15	17.1	1.11	11.22	1.08	17.1	1.15	11.2	1.11	17.1	1.15	11.17	1.13	17.1	1.18

	SL.NO	MP (m agl)	Well No	05.12.2017				12.12.2017				19.12.2017				26.12.2017			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Dec-17	1	0.8	TW-1	10.15	1.42	16	1.5	10.15	1.71	16.02	1.8	10.1	1.72	16	1.8	10	1.71	16.02	1.81
	2	0.65	TW-2	10.22	0.71	16.08	0.81	10.22	1	16.1	1.07	10.17	1.01	16.08	1.09	10.07	0.99	16.1	1.04
	3	1	TW-3	10.3	0.53	16.15	0.6	10.28	0.76	16.2	0.82	10.26	0.75	16.15	0.83	10.15	0.76	16.2	0.79
	4	0.75	TW-4	10.35	1.62	16.23	1.67	10.35	1.69	16.25	1.75	10.31	1.67	16.23	1.75	10.22	1.73	16.25	1.74
	5	0.7	TW-5	10.44	2.45	16.31	2.52	10.4	2.57	16.32	2.64	10.4	2.47	16.31	2.52	10.3	2.51	16.32	2.54
	6	0.72	TW-6	10.5	2.12	16.38	2.22	10.45	2.15	16.4	2.22	10.48	2.2	16.38	2.25	10.38	2.24	16.4	2.27
	7	0.6	TW-7	10.55	0.49	16.46	0.57	11	0.63	16.55	0.75	10.53	0.63	16.46	0.77	10.43	0.7	16.55	0.78
	8	0.7	TW-8	11.05	2.1	17.53	2.12	11.1	2.28	17	2.32	11.03	2.24	17.53	2.35	10.52	2.31	17	2.36
	9	0.8	TW-9	11.15	0.64	17	0.68	11.15	0.68	17.05	0.76	11.1	0.76	17	0.82	11.07	0.8	17.05	0.83
	10	0.6	TW-10	10.22	0.88	17.1	0.95	11.22	0.95	17.1	1.03	11.2	1.03	17.1	1.09	11.17	1.05	17.1	1.11

	SL.NO	MP (m agl)	Well No	02.01.2018				09.01.2018				16.01.2018				23.01.2018			
				Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
Jan-18	1	0.8	TW-1	10.15	1.54	16	1.67	10.15	1.62	16.02	1.71	10.1	1.55	16	1.66	10	1.63	16.02	1.74
	2	0.65	TW-2	10.22	0.88	16.08	0.96	10.22	0.91	16.1	1.01	10.17	0.84	16.08	0.97	10.07	0.86	16.1	0.88
	3	1	TW-3	10.3	0.67	16.15	0.72	10.28	0.68	16.2	0.73	10.26	0.68	16.15	0.72	10.15	0.72	16.2	0.74
	4	0.75	TW-4	10.35	1.65	16.23	1.67	10.35	1.66	16.25	1.71	10.31	1.64	16.23	1.68	10.22	1.68	16.25	1.72
	5	0.7	TW-5	10.44	2.44	16.31	2.54	10.4	2.52	16.32	2.62	10.4	2.45	16.31	2.52	10.3	2.53	16.32	2.57
	6	0.72	TW-6	10.5	2.12	16.38	2.16	10.45	2.13	16.4	2.2	10.48	2.12	16.38	2.18	10.38	2.16	16.4	2.2
	7	0.6	TW-7	10.55	0.55	16.46	0.69	11	0.61	16.55	0.69	10.53	0.5	16.46	0.57	10.43	0.53	16.55	0.59
	8	0.7	TW-8	11.05	2.06	17.53	2.12	11.1	2.22	17	2.28	11.03	2.12	17.53	2.2	10.52	2.16	17	2.25
	9	0.8	TW-9	11.15	0.66	17	0.74	11.15	0.65	17.05	0.73	11.1	0.62	17	0.66	11.07	0.63	17.05	0.69
	10	0.6	TW-10	10.22	0.81	17.1	0.93	11.22	1	17.1	1.09	11.2	0.91	17.1	0.97	11.17	0.95	17.1	0.99

WEEKELY GROUND WATER LEVEL DATA AGATTI ISLAND (CGWB) (MAY 2016 TO APR 2018)

SL.NO	Well No	01.05.2016		15.05.2016		01.06.2016		15.06.2016		01.07.2016		15.07.2016		01.08.2016		15.08.2016	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
1	**OW-1**	10.4	1.7	10.08	1.65	10	1.55	10.08	1.6	10	1.7	10	1.7	10.2	1.65	10.01	1.72
2	**OW-5**	10.5	2.2	10.18	2.15	11.14	2.07	10.25	2.05	11.17	2.1	10.2	2.1	10.41	2.1	11.17	2.1
3	**OW-12**	11.01	1.95	10.35	1.9	11.18	1.9	11.45	1.8	10.14	1.9	10.45	1.9	11.43	1.8	11.32	1.8
4	**OW-14**	12.06	1.65	11.16	1.62	10.56	1.55	11.25	1.6	11.05	1.65	11.55	1.65	11.39	1	11.07	1.65
5	**OW-16**	11.05	2	11.18	1.9	10.53	1.95	11.42	2	11	2.5	11.51	2.1	11.36	2	11	2.1
6	**OW-18**	11.2	2.65	10.43	2.62	11.02	2.43	11.12	2.65	11.25	2.65	11.1	2.65	11.09	2.6	11.27	2.74
7	**OW-22**	11.57	1.82	11.12	1.79	10.5	1.9	11.37	1.9	10.58	1.9	11.42	1.9	10.33	1.8	10.58	1.8
8	**OW-32**	11.47	1.65	10.52	1.6	10.43	1.4	11.3	1.45	10.49	1.4	11.35	1.45	11.24	1.55	10.5	1.53
9	**OW-33**	11.3	1.82	10.56	1.78	10.37	1.85	11.37	1.9	10.42	1.9	11.3	1.95	10.18	1.8	10.4	1.85
10	**OW-36**	11.52	1.93	11.07	1.89	10.44	1.75	11.33	1.85	11.25	1.85	11.38	1.85	11.27	1.8	10.54	1.85
11	**OW-50**	11.2	2.15	10.23	2.12	10.06	2.05	10.38	2.1	10.17	2.1	10.35	2.1	10.41	2.25	11.2	2.13
12	**TW-1**	10.45	1.2	10.08	1.17	10.08	1.05	10.14	1.15	10.06	1.15	10.05	1.15	10.24	1.15	10.07	1.15
13	**TW-2**	10.54	1.35	10.25	1.33	10.12	1.3	10.2	1.25	10.1	1.25	10.15	1.3	10.45	1.25	10.1	1.3
14	**TW-3**	12.12	2.2	10.21	2.17	11.07	2.08	10.31	2	11.12	2	10.27	2	10.53	2	10.12	2

SL.NO	Well No	01.05.2016		15.05.2016		01.06.2016		15.06.2016		01.07.2016		15.07.2016		01.08.2016		15.08.2016	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
15	**TW-4**	11.08	2.36	10.27	2.32	10.19	2.3	10.43	2.25	10.22	2.35	10.42	2.3	10.47	2.3	10.25	2.3
16	**TW-5**	11.11	1.96	10.3	1.93	10.23	1.93	10.58	1.9	10.25	1.98	10.48	2.03	10.55	1.98	10.23	2.03
17	**TW-6**	11.16	1.72	10.35	1.68	10.26	1.7	11.08	1.7	10.28	1.7	11.01	1.7	11.06	1.7	10.28	1.7
18	**TW-7**	11.2	2	10.5	1.96	10.3	1.9	11.16	1.95	10.32	2.05	11.13	2.1	11.13	1.9	10.33	2.08
19	**TW-9**	11.34	2.46	10.54	2.41	10.34	2.48	11.22	2.4	10.38	2.45	11.24	2.45	11.16	2.4	10.14	2.42
20	**TW-10**	11.44	2.5	11	2.46	10.4	2.1	11.4	1.95	10.46	2	11.45	2.05	11.21	1.8	10.46	2.05

SL.NO	Well No	01.09.2016		15.09.2016		01.10.2016		15.10.2016		01.11.2016		15.11.2016		01.12.2016		15.12.2016	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
1	**OW-1**	10.4	1.65	10.02	1.6	10	1.7	10.05	1.6	11.2	1.7	10	1.72	10.4	1.7	10	1.65
2	**OW-5**	11.2	2.1	11.15	2.05	11.17	2.1	10.18	2.05	11.11	2.1	11.17	2.09	10.5	2.2	11.14	2.15
3	**OW-12**	11.4	1.85	11.48	1.9	10.35	2.3	10.35	1.9	11.3	2.3	10.35	1.9	11	1.9	11.18	1.91
4	**OW-14**	12.06	1.6	10.56	1.6	11.05	1.65	10.16	1.6	10	1.65	11.05	1.65	12.04	1.65	10.56	1.62
5	**OW-16**	12.03	2.05	10.54	2	11.02	2.05	11.18	2	11.25	2.15	11	2.1	12.01	2	10.53	1.92
6	**OW-18**	11.52	1.75	11	1.7	10.4	2.75	10.43	2.75	10.49	2.6	11.25	2.76	11.2	2.65	11.2	2.62
7	**OW-22**	11.16	1.8	10.48	1.8	10.58	1.8	11.12	1.8	10.5	1.85	10.58	1.8	11.57	1.82	10.5	1.79
8	**OW-32**	11.57	1.55	10.43	1.55	10.49	1.5	10.52	1.55	10.11	1.55	10.49	1.53	11.47	1.65	10.43	1.6
9	**OW-33**	11.47	1.8	10.35	1.8	10.42	1.8	10.56	1.8	10.38	1.8	10.42	1.85	11.3	2.82	10.39	2.78
10	**OW-36**	11.3	1.8	10.46	1.85	10.51	1.8	10.58	1.85	10.08	1.85	10.51	1.85	11.52	1.93	10.46	1.89
11	**OW-50**	10.5	2.25	10.16	2.1	10.19	2.1	10.23	2.1	11.24	2.1	10.18	2.13	11.04	2.15	11	2.12
12	**TW-1**	10.45	1.15	10.08	1.15	10.06	1.15	10.08	1.15	11.15	1.2	10.06	1.15	10.45	1.2	10.08	1.17
13	**TW-2**	10.54	1.25	10.12	1.25	10.11	1.25	10.12	1.25	11.19	1.3	10.1	1.3	10.54	1.35	10.12	1.33
14	**TW-3**	10.12	2	11.07	2	11.14	2	10.21	2	11.08	2.05	10.27	2	12.12	2.2	11.06	2.17
15	**TW-4**	11.08	2.35	10.14	2.25	10.22	2.35	10.27	2.25	11.04	2.3	10.22	2.3	11.08	2.36	10.19	2.32
16	**TW-5**	11.11	1.98	10.23	1.9	10.25	1.98	11.3	1.9	10.58	1.88	10.25	1.98	11.11	1.96	10.24	1.92

SL.NO	Well No	01.09.2016		15.09.2016		01.10.2016		15.10.2016		01.11.2016		15.11.2016		01.12.2016		15.12.2016	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
17	**TW-6**	11.16	1.7	10.26	1.7	10.28	1.7	10.35	1.7	10.53	1.7	10.29	1.7	11.16	1.72	10.26	1.68
18	**TW-7**	11.2	2.05	10.3	1.95	10.32	2.05	10.5	1.95	10.45	2.05	10.32	2.08	11.2	2	10.3	1.96
19	**TW-9**	11.24	2.4	10.34	2.4	10.38	2.45	10.54	2.4	10.41	2.45	10.14	2.45	11.34	2.46	10.34	2.41
20	**TW-10**	11.44	1.88	10.4	1.95	10.22	2	11	2.15	10.15	2.15	10.46	2.05	11.44	2.5	10.4	2.46

SL.NO	Well No	01.05.2017		15.05.2017		01.06.2017		15.06.2017		01.07.2017		15.07.2017		01.08.2017		15.08.2017	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
1	**OW-1**	10.15	1.7	11.22	1.7	10.05	1.7	10	1.65	11.25	1.07	10.08	1.7	10	1.4	10.15	1.6
2	**OW-5**	11.33	2.15	11.15	2.2	10.18	2.15	11	2.15	10.45	2.2	10.25	2.15	11.15	2.17	11.33	2.17
3	**OW-12**	11.45	1.85	11.25	1.9	10.35	1.85	10.06	1.9	10.15	1.85	11.51	1.9	11.2	2	11.45	1.85
4	**OW-14**	10.35	1.7	10	1.75	10.16	1.7	11.2	1.65	10.49	1.65	11.43	1.7	10.57	1.75	10.35	1.7
5	**OW-16**	10.58	2	10.55	1.95	11.2	2.1	10.57	2.05	11.24	2.15	11.37	2.1	10.53	2.05	10.57	2
6	**OW-18**	11.15	2.7	10.54	2.7	10.43	2.8	10.47	2.7	10.43	2.6	11.12	2.65	9.55	2.7	11.15	2.7
7	**OW-22**	10.42	1.85	10.08	1.85	11.12	1.8	10.53	1.79	11.12	1.86	11.37	1.85	10.5	1.8	10.42	1.85
8	**OW-32**	10.55	1.65	10.05	1.65	10.53	1.6	10.5	1.5	11.3	1.75	11.3	1.67	10.45	1.68	10.55	1.6
9	**OW-33**	10.48	1.85	10.41	1.85	10.56	1.83	10.45	1.8	10.08	1.8	10.24	1.86	10.38	1.82	10.48	1.8
10	**OW-36**	11.02	1.85	10.35	1.9	11.07	1.85	10.38	1.82	11.38	1.85	11.33	1.87	10.47	1.8	11.02	1.8
11	**OW-50**	11.31	2.15	11.06	2.15	10.23	2.15	11.15	2.12	11.25	2.1	10.38	2.15	10.06	2.15	11.31	2.1
12	**TW-1**	10.05	1.3	11.19	1.25	10.08	1.2	10.45	1.21	11.15	1.2	10.14	1.25	10.08	1.15	10.08	1.16
13	**TW-2**	10.23	1.32	11.12	1.3	10.12	1.26	10.54	1.3	10.19	1.31	10.2	2.3	10.12	1.35	10.23	1.28
14	**TW-3**	11.2	2.05	11.09	2.05	10.21	2.08	12.12	2.05	11.08	2.05	10.31	2.1	11.07	2.02	11.22	2.1
15	**TW-4**	11.25	2.3	11.04	2.3	10.27	2.32	11.08	2.3	10.58	2.3	10.43	2.35	10.2	2.35	11.25	2.35
16	**TW-5**	10.2	1.93	11	1.93	1030	1.93	11.12	1.88	11.04	1.9	10.5	1.98	10.24	1.96	10.2	1.98
17	**TW-6**	11.17	1.75	10.56	1.7	10.35	1.75	11.24	1.75	11.53	1.7	11.08	1.75	10.28	1.7	11.17	1.75
18	**TW-7**	11.08	2.03	10.48	2	10.5	1.95	11.24	1.95	10	2.05	11.16	2	10.35	2.02	11.08	2.05
19	**TW-9**	11.05	2.5	10.44	2.45	10.54	2.45	11.44	2.45	10.05	2.45	11.22	2.5	10.4	2.45	11.05	2.45
20	**TW-10**	10.3	2.05	10.33	2.25	11	2.2	10.42	2.21	10.11	2.25	11.4	2.2	10.32	2	10.3	2.25

SL.NO	Well No	01.09.2017		15.09.2017		01.10.2017		15.10.2017		01.11.2017		15.11.2017		01.12.2017		15.12.2017	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
1	**OW-1**	10.15	1.7	11.22	1.72	10	1.68	10.15	1.65	10.15	1.72	11.22	1.73	10	1.7	10.15	1.75
2	**OW-5**	11.33	2.17	11.15	2.09	11.15	2.1	11.33	2.1	11.33	2.15	11.15	2.2	11.15	2.2	11.33	2.2
3	**OW-12**	11.45	1.85	11.25	1.9	11.2	1.8	11.45	1.85	11.45	1.85	11.25	1.9	11.2	1.85	11.45	1.9
4	**OW-14**	10.35	1.75	10	1.65	10.57	1.66	10.35	1.9	10.35	1.65	10	1.7	10.57	1.75	10.35	1.75
5	**OW-16**	10.58	2.05	10.55	2.1	10.53	1.95	10.57	1.85	10.58	2.15	10.55	2.2	10.53	2.05	10.57	2.2
6	**OW-18**	11.15	2.7	10.54	2.75	9.55	2.75	11.15	2.75	11.15	2.75	10.54	2.75	9.55	2.7	11.15	2.75
7	**OW-22**	10.42	1.8	10.08	1.8	10.5	1.8	10.42	1.75	10.42	1.85	10.08	1.85	10.5	1.85	10.42	1.85
8	**OW-32**	10.55	1.6	10.05	1.55	10.45	1.53	10.55	1.5	10.55	1.6	10.05	1.65	10.45	1.55	10.55	1.6
9	**OW-33**	10.48	1.8	10.41	1.85	10.38	1.8	10.48	1.85	10.48	1.8	10.41	1.85	10.38	1.8	10.48	1.85
10	**OW-36**	11.02	1.8	10.35	1.85	10.47	1.85	11.02	1.8	11.02	1.8	10.35	1.85	10.47	1.8	11.02	1.85
11	**OW-50**	11.31	2.15	11.06	2.1	10.06	2.1	11.31	2.15	11.31	2.1	11.06	2.15	10.06	2.15	11.31	2.15
12	**TW-1**	10.05	1.15	11.19	1.15	10.08	1.15	10.08	1.13	10.05	1.15	11.19	1.2	10.08	1.2	10.08	1.2
13	**TW-2**	10.23	1.25	11.12	1.3	10.12	1.3	10.23	1.25	10.23	1.3	11.12	1.35	10.12	1.3	10.23	1.35
14	**TW-3**	11.2	2.02	11.09	2	11.07	2	11.22	1.98	11.2	2	11.09	2.1	11.07	2.15	11.22	2.15
15	**TW-4**	11.25	2.35	11.04	2.3	10.2	2.3	11.25	2.35	11.25	2.3	11.04	2.4	10.2	2.35	11.25	2.4
16	**TW-5**	10.2	1.96	11	1.98	10.24	2.03	10.2	1.98	10.2	1.98	11	2.03	10.24	1.93	10.2	1.98
17	**TW-6**	11.17	1.7	10.56	1.7	10.28	1.7	11.17	1.67	11.17	1.7	10.56	1.75	10.28	1.75	11.17	1.75
18	**TW-7**	11.08	2	10.48	2.08	10.35	2.08	11.08	2.05	11.08	2.05	10.48	2.05	10.35	2.05	11.08	2.05
19	**TW-9**	11.05	2.45	10.44	2.45	10.4	2.4	11.05	2.4	11.05	2.45	10.44	2.5	10.4	2.4	11.05	2.45
20	**TW-10**	10.3	2	10.33	2.05	10.32	2.05	10.3	1.9	10.3	1.95	10.33	2	10.32	2.05	10.3	2.05

SL.NO	Well No	01.01.2018		15.01.2018		01.02.2018		15.02.2018		01.03.2018		15.03.2018		01.04.2018		15.04.2018	
		Time	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*	*Time*	*DTW (m bgl)*
1	**OW-1**	10.15	1.7	11.22	1.75	10	1.7	10.15	1.75	10.15	1.72	11.22	1.73	11.08	1.65	10	1.65
2	**OW-5**	11.33	2.15	11.15	2.1	11.15	2.05	11.33	2	11.33	2.15	11.15	2.2	10.18	2.1	11	2.15
3	**OW-12**	11.45	1.85	11.25	1.9	11.2	1.85	11.45	1.9	11.45	1.85	11.25	1.9	10.35	1.85	10.06	1.9
4	**OW-14**	10.35	1.7	10	1.7	10.57	1.65	10.35	1.6	10.35	1.65	10	1.7	11.16	1.65	11.2	1.65
5	**OW-16**	10.58	2.1	10.55	2	10.53	1.95	10.57	1.95	10.58	2.15	10.55	2.2	11.2	2.15	10.57	2.05
6	**OW-18**	11.15	2.75	10.54	2.8	9.55	2.75	11.15	2.75	11.15	2.75	10.54	2.75	10.43	2.55	10.47	2.7
7	**OW-22**	10.42	1.85	10.08	1.8	10.5	1.8	10.42	1.8	10.42	1.85	10.08	1.85	11.12	1.8	10.53	1.79
8	**OW-32**	10.55	1.5	10.05	1.5	10.45	1.5	10.55	1.5	10.55	1.6	10.05	1.65	10.53	1.72	10.5	1.5
9	**OW-33**	10.48	1.8	10.41	1.83	10.38	1.8	10.48	1.8	10.48	1.8	10.41	1.85	10.56	1.8	10.45	1.8
10	**OW-36**	11.02	1.8	10.35	1.8	10.47	1.75	11.02	1.7	11.02	1.8	10.35	1.85	11.07	1.85	10.38	1.82
11	**OW-50**	11.31	2.1	11.06	2.15	10.06	2.1	11.31	2.1	11.31	2.1	11.06	2.15	10.23	2.1	11.15	2.12
12	**TW-1**	10.05	1.2	11.19	1.2	10.08	1.15	10.08	1.2	10.05	1.15	11.19	1.2	10.08	1.15	10.08	1.15
13	**TW-2**	10.23	1.2	11.12	1.2	10.12	1.15	10.23	1.35	10.23	1.3	11.12	1.35	10.12	1.25	10.1	1.25
14	**TW-3**	11.2	2.15	11.09	2.1	11.07	2.15	11.22	2.15	11.2	2	11.09	2.1	10.21	2.05	11.07	2.02
15	**TW-4**	11.25	2.3	11.04	2.25	10.2	2.25	11.25	2.4	11.25	2.3	11.04	2.4	10.27	2.3	10.2	2.35
16	**TW-5**	10.2	1.93	11	1.93	10.24	1.88	10.2	1.98	10.2	1.98	11	2.03	1030	1.88	10.24	1.96
17	**TW-6**	11.17	1.7	10.56	1.7	10.28	1.65	11.17	1.75	11.17	1.7	10.56	1.75	10.35	1.7	10.26	1.7
18	**TW-7**	11.08	2	10.48	1.95	10.35	1.95	11.08	2.05	11.08	2.05	10.48	2.05	10.5	2	10.3	2.05
19	**TW-9**	11.05	2.35	10.44	2.4	10.4	2.3	11.05	2.45	11.05	2.45	10.44	2.5	10.54	2.4	10.34	2.45
20	**TW-10**	10.3	2	10.33	2.05	10.32	2.1	10.3	2.05	10.3	1.95	10.33	2	11	2.22	10.42	2

ISLAND WISE CHEMICAL ANALYSIS OF GROUND WATER SAMPLES IN UT OF LAKSHADWEEP. (PRE AND POST MONSOON 2010)

SL.NO	LOCATION	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
					mg/l										
1	Kavaratti (Indira Gandhi Hospital)	19.04.10	8.5	1190	330	70	38	120	6.1	24	305	53	196	2.62	4.2
		19.11.10	7.83	1183	335	68	40	102	16	0	390	55	167	1.44	3.5
2	Kavaratti (Ujra Palli)	19.04.10	8.03	260	98	15	15	8.7	0.1	0	124	8.7	17	0.46	1.1
		19.11.10	9.06	222	80	8.8	14	11	0.1	14	73	7	18	0.26	1
3	Kavaratti (Purath Palli)	19.04.10	8.05	1197	430	98	45	57	20	0	482	43	142	0.86	56
		19.11.10	7.77	1441	428	99	44	124	32	0	573	51	149	0.75	50
4	Kavaratti (GSS School)	19.04.10	8.2	919	124	56	41	73	3.7	0	360	39	114	2.44	4.8
		19.11.10	8.1	1280	390	64	56	111	5.1	0	445	50	178	1.64	3.9
5	Kavaratti (Helipad)	19.04.10	8.2	1519	328	74	35	188	7	0	281	55	327	0.77	1.6
		19.11.10	7.69	1810	370	84	39	235	8.9	0	305	67	462	0.64	3.5
6	Agatti (Junior Basic School)	21.04.10	7.99	1180	405	72	55	67	3.3	0	500	33	156	0.79	2.6
		16.11.10	7.96	1111	425	106	39	66	3.5	0	537	28	100	0.92	2.6
7	Agatti (Co-operative Society)	21.04.10	8.26	988	410	90	45	40	6.7	0	494	55	85	0.81	12
		16.11.10	7.94	904	375	96	33	43	6.2	0	439	51	57	0.88	5.3
8	Agatti (Govt. Quarter) (N)	21.04.10	7.91	586	275	76	21	8.3	0.7	0	366	10	21	0.39	2.1
		16.11.10	8.06	1501	456	107	46	148	5.5	0	561	58	213	0.41	2.5
9	Agatti (Juma Masjid)	21.04.10	8.17	2990	620	116	80	425	16	0	580	149	658	0.65	26
		16.11.10	7.55	643	310	90	21	9.9	0.7	0	421	9.6	18	0.2	1.7
10	Bangaram (Dak Bunglow)	21.04.10	7.94	1209	450	100	49	68	3.2	0	610	47	99	0.94	5
		18.11.10	7.53	760	355	94	29	20	0.4	0	476	14	28	1.08	0.35
11	Kadmath (JB School South)	24.04.10	8.16	881	300	72	29	46	2.1	0	378	44	89	1.05	3.3
		13.11.10	7.75	770	340	92	27	25	1.7	0	433	22	43	0.59	4.3
12	Kadmath (Water Supply Well near OHT)	24.04.10	8.3	688	300	74	28	17	1.3	0	409	14	36	0.91	1.4
		13.11.10	7.62	551	250	68	19	15	1.9	0	329	10	25	0.38	1.7
13	Kadmath (High School)	24.04.10	7.66	820	285	72	25	36	8.3	0	317	29	100	0.93	21
		13.11.10	8.06	651	245	72	16	33	6.5	0	299	24	53	0.53	14
14	Kadmath (Census Office)	24.04.10	7.97	494	234	57	22	7.4	0.4	0	303	9	20	0.83	2.4
		13.11.10	7.94	567	270	80	17	13	0.7	0	335	11	25	0.61	2
15	Kadmath (Govt. Quarter near Fisheries Deptt.)	24.04.10	7.72	819	315	78	29	33	3.1	0	366	27	64	0.57	35
		13.11.10	7.84	831	300	72	29	54	12	0	427	27	68	0.22	8.9
16	Kadmath (Govt.Quarter near Govt. Press)	24.04.10	8.02	435	190	44	19	9.9	0.1	0	246	13	17	0.8	3.4
		13.11.10	7.79	949	365	86	36	71	0.2	0	500	23	85	0.6	1.7
17		24.4.10	8.18	499	178	33	23	20	3.3	0	195	30	50	0.98	2.7

SL.NO	LOCATION	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
					mg/l										
	Kadmath (Agriculture office, Soil Testing Lab.)	13.11.10	7.9	419	210	57	17	13	0.1	0	268	19	21	0.43	0.4
18	Ammini (Ujjara Palli)	25.04.10	8.12	492	244	58	24	6.7	0.3	0	317	10	13	1.47	0.57
		14.11.10	8.04	465	268	70	23	7.4	0.5	0	342	7.1	11	1.3	0.7
19	Ammini (Mai danul Islam Madrassa)	25.04.10	8.12	657	315	80	28	14	1.1	0	397	20	32	0.75	3.4
		14.11.10	8.04	555	285	74	24	16	0.6	0	372	14	21	0.2	1.5
20	Ammini (Neercha Palli)	25.04.10	8.14	822	330	66	40	34	2.9	0	409	25	71	0.9	5.3
		14.11.10	8.24	835	340	62	45	52	1.1	0	433	26	75	0.45	1.1
21	Ammini (Sidiqui Palli near SDO Office)	25.04.10	8.1	999	335	60	45	67	4.1	0	287	31	167	0.64	11
		14.11.10	7.68	572	195	42	22	38	5.1	0	214	19	60	0.44	12
22	Ammini (Homeo Hospital)	25.04.10	8.23	741	295	52	40	30	1.5	0	354	21	75	0.68	4.8
		14.11.10	7.79	725	335	88	28	23	0.6	0	451	15	36	0.44	2
23	Kiltan (Community Well near Odipura House)	26.04.10	7.69	876	270	62	28	64	8.7	0	317	22	114	0.37	15
		27.11.10	7.88	670	270	82	16	31	7.7	0	360	14	50	0.22	1
24	Kiltan (Govt. Nursery School)	26.04.10	8.13	522	175	26	27	23	5.9	0	220	21	50	0.73	7.3
		27.11.10	7.94	817	300	64	34	54	4.9	0	433	33	57	0.68	4
25	Kiltan (GSS School, South)	26.04.10	8.25	849	280	42	43	40	2.9	0	329	23	100	0.89	9.4
		27.11.10	7.84	437	195	58	12	13	0.6	0	256	8.7	21	0.27	2
26	Kiltan (Environment and Forest Office)	26.04.10	8.68	667	200	6	45	35	6.4	24	177	27	78	0.73	13
		27.11.10	8.01	642	215	50	22	45	2.9	0	256	25	71	0.46	10
27	Chetlat (Govt.Quarter ICE 14)	27.04.10	7.9	753	290	28	54	24	0.9	0	409	23	32	1.4	1.8
		25.11.10	7.74	697	310	76	29	34	0.5	0	433	16	32	0.74	1.1
28	Chetlat (LPWD Office)	27.04.10	8.36	535	165	22	27	39	7.3	6	201	10	64	0.93	1
		25.11.10	7.91	470	205	60	13	16	1.8	0	268	7	25	0.6	0.6
29	Chetlat (PHC)	27.04.10	7.99	819	290	44	44	32	3.9	0	372	24	71	1.14	1.6
		25.11.10	8	810	320	72	34	48	2.3	0	396	22	75	0.79	0.3
30	Chetlat (Junior Basic	27.4.10	8.45	672	250	40	36	23	3.2	18	293	27	39	1.29	1
		25.11.10	7.93	600	275	72	23	16	2.5	0	329	22	25	0.52	7.4
31	Kalpeni (JB School)	08.05.10	8.35	432	162	3.2	37	14	0.9	2.4	188	10	36	1.35	1.1
		25.11.10	7.8	600	205	52	18	50	0.7	0	262	15	46	0.5	1
32	Kalpeni (Puthiya Palli)	08.05.10	7.83	556	235	52	26	9.7	0.4	0	311	9.1	21	1.24	1
		25.11.10	7.63	605	270	82	16	17	0.2	0	390	14	21	0.58	0.1
33	Kalpeni (Marina Cycle Works)	08.05.10	7.63	567	245	62	22	13	0.5	0	329	6.7	32	0.82	1.1
		25.11.10	8.08	432	168	42	15	14	0.1	0	226	12	21	0.56	0.1
34	Kalpeni (Juma Masjid)	08.05.10	8.07	380	160	53	6.3	8.6	0.7	0	202	14	20	0.57	1.4
		25.11.10	7.87	580	230	64	17	28	1.6	0	336	16	39	0.37	1.6

SL.NO	LOCATION	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
					mg/l										
35	Kalpeni (Seethi Palli)	08.05.10	8.39	768	265	24	50	40	1.8	12	287	43	85	0.66	1
		25.11.10	8.04	1204	390	78	47	88	2.8	0	549	46	114	0.44	0.3
36	Kalpeni (Govt. Nursery School)	08.05.10	8.06	918	435	40	81	43	3.9	0	500	30	60	0.89	1.2
		25.11.10	8.35	1016	270	30	47	99	10	Tr	390	33	121	0.58	2
37	Androth (Usman Palli)	10.05.10	8.45	843	310	24	61	38	1.7	18	329	45	85	0.5	0.9
		27.11.10	7.77	797	335	72	38	19	0.4	0	470	23	25	0.28	0.3
38	Androth (Electricity Office)	10.05.10	8.11	547	240	48	29	10	5.7	0	329	20	14	0.6	2.7
		27.11.10	7.79	691	245	66	19	26	2.8	0	354	22	36	0.32	0.1
39	Androth (Kunthanthu Palli)	10.05.10	8.35	508	235	30	39	8.6	1.7	12	262	11	28	0.62	0.8
		27.11.10	8.1	506	225	46	27	6.1	0.1	0	299	7.9	11	0.45	0.1
40	Androth (GH School)	10.05.10	8.5	508	175	30	24	30	2.9	18	177	19	53	2.45	0.6
		27.11.10	7.98	640	245	62	22	24	3.8	0	336	23	32	0.47	0.3
41	Androth(Badar Palli)	10.05.10	8.06	633	280	60	32	15	0.7	0	354	11	39	0.62	1.1
		27.11.10	7.78	481	168	37	18	24	0.7	0	238	9.3	36	0.1	0.8
42	Androth (Pokar Palli)	10.05.10	8.48	596	270	26	50	13	0.6	12	311	20	32	0.3	1.2
		27.11.10	7.77	767	330	68	39	14	0.7	0	476	16	18	0.48	0
43	Androth (Veterinary)	10.05.10	7.93	764	380	74	47	12	2.7	0	464	32	18	0.78	20
		27.11.10	7.74	834	365	66	49	21	1.5	0	494	35	32	0.53	0.5
44	Minicoy (Lom Bomauge)	22.11.10	8.53	1720	410	92	44	202	48	60	500	97	185	0.56	81
45	Minicoy (Dondale Kagothi)	22.11.10	8.22	950	215	56	18	95	25	0	256	49	107	0.53	77
46	Minicoy (Fallissery Mosque)	22.11.10	7.97	2130	440	92	51	275	58	0	683	117	298	0.39	79
47	Minicoy (Juma Masjid)	22.11.10	8.06	592	215	64	13	34	5.1	0	299	25	39	0.28	8.5
48	Minicoy (Aoukohorathm Manikage)	22.11.10	8.38	798	280	84	17	50	11	6	293	27	60	0.16	73
49	Minicoy (Kibula Mosque)	22.11.10	8.23	1770	390	112	27	214	26	0	537	91	185	0.37	150
50	Minicoy (Odivalu Mosque)	22.11.10	7.92	1270	340	96	24	106	11	0	342	62	128	0.52	136
51	Hameedha Mahal,Minicoy/Badu Village	23.11.10	7.37	1095	265	68	23	55	14	0	415	40	67	0.6	21
52	Govt.Quarter-(New)Power House	23.11.10	7.67	920	305	86	22	63	10	0	378	43	99	0.86	47
53	Dak Bungalow (LPWD)	23.11.10	7.19	1369	400	108	32	108	17	0	488	87	185	0.85	7.3
54	Water Supply Well (LPWD)	23.11.10	7.48	1785	630	106	89	152	3.9	0	726	95	288		3.9

Agatti Island (2017)

SL.NO	LOCATION	SOURCE	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
						mg/l										
1	About 100 M north of Mamepalli,east of road	OW-1	15.05.2017	7.51	23000	2900	320	511	3190	47	0	665	850	8023	1.16	5.1
			15.11.2017	7.45	11600	1600	224	253	2160	25	0	641	500	3834	0.78	3.2
2	Near Veeran Palli,quarters	OW-5	15.05.2017	7.47	11400	1500	160	268	1225	23	0	964	375	2982	1.34	496
			15.11.2017	7.23	6900	1270	168	207	1217	19	0	750	350	2201	1.44	20
3	Water Quality Lab, Agatti	OW-12	15.05.2017	7.6	7100	1300	200	195	663	3.3	0	915	175	1704	1.13	9.8
			15.11.2017	7.43	3600	730	120	105	369	3.4	0	592	138	717	1.02	5.9
4	Ujra Mosque	OW- 14	15.05.2017	7.69	1190	370	92	34	40	0.38	0	555	20	99	0.7	0.67
			15.11.2017	7.17	1200	370	96	32	46	0.41	0	427	21	85	0.82	0.45
5	South of Kunhipalli owner Hyder	OW- 16	15.05.2017	7.47	2200	990	100	180	188	3.4	0	769	95	376	0.9	31
			15.11.2017	7.47	1660	440	96	49	93	2.3	0	464	50	149	0.67	97
6	Near NIOT,owner Abdul Khader	OW-22	15.05.2017	7.51	2100	690	128	90	128	1.8	0	885	50	320	1.17	3.1
			15.11.2017	7.29	1770	600	104	83	142	1.7	0	610	58	263	1.06	2.6
7	Near Thoufeeque Manzil Attakkidavu	OW-32	15.05.2017	7.32	11700	1600	220	255	1508	24	0	702	375	3408	0.83	37
			15.11.2017	7.46	4700	880	152	122	741	11	0	580	205	1328	0.76	20
8	Near Hilder Palli	OW-33	15.05.2017	7.43	7600	1050	180	146	893	15	0	671	175	2059	0.84	44
			15.11.2017	7.32	3600	740	124	105	458	8.1	0	549	135	809	0.69	62
9	Near Thalatha Palli	OW-18	15.05.2017	7.6	2500	640	100	95	198	14	0	750	100	355	0.98	104
			15.11.2017	7.48	2400	600	104	83	212	14	0	604	128	327	1.02	132
10	About 300 M north of Bujrapalli	OW-36	15.05.2017	7.22	11700	1650	240	255	1578	20	0	866	250	3620	1.09	7.4
			15.11.2017	7.28	5100	1040	144	165	790	8.6	0	714	190	1562	1.06	4.6
11	Opposite SKSSF, Agatti	OW-50	15.05.2017	7.61	4200	800	140	109	483	16	0	653	80	1136	1.19	87
			15.11.2017	7.48	4400	740	116	109	500	13	0	549	170	959	1.18	83
12	Opposite to Mini Stadium	TW-1	15.05.2017	7.74	4300	650	80	109	443	12	0	488	75	1136	0.55	10
			15.11.2017	7.2	5100	1040	148	163	760	20	0	836	260	1314	0.74	11
13	About 100 M from Crescent Public School	TW-2	15.05.2017	7.51	6500	1000	160	146	724	12	0	763	130	1846	1.08	2.3
			15.11.2017	7.35	5400	930	148	136	770	16	0	549	200	1491	0.92	2.1

SL.NO	LOCATION	SOURCE	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
						mg/l										
14	About 100 M north of Agatti Co Operative Society	TW-3	15.05.2017	7.76	4500	700	100	109	437	6.9	0	714	130	959	0.7	53
			15.11.2017	7.39	3800	660	128	83	475	6.6	0	616	163	774	0.58	79
15	South of Tanveerul Islam Madrassa	TW-4	15.05.2017	7.53	4600	900	140	134	426	16	0	836	105	888	0.92	216
			15.11.2017	7.35	3300	680	124	90	339	28	0	543	150	533	0.92	275
16	About 100 M from Senior Basic School	TW-5	15.05.2017	7.65	2400	650	120	85	137	8.1	0	604	51	355	0.71	140
			15.11.2017	7.35	2100	500	104	58	153	8.5	0	415	80	256	0.7	126
17	Near Thalatha Palli, About 100 M east of Golden Jubilee Museum	TW-6	15.05.2017	7.46	1420	490	112	51	45	3.2	0	512	51	121	1.35	139
			15.11.2017	7.21	1500	450	100	49	53	3.1	0	433	40	89	1.22	111
18	North of Junior Basic School owner Habeeb Moidan	TW-7	15.05.2017	7.63	1340	380	88	39	80	5.6	0	586	15	163	0.79	23
			15.11.2017	7.28	1310	410	100	39	75	7.3	0	409	42	110	0.78	81
19	Vadakkilapally	TW-9	15.05.2017	7.63	5200	900	120	146	519	10	0	561	110	1349	0.55	112
			15.11.2017	7.57	2200	560	104	73	313	7	0	384	90	561	0.56	106
20	Majidu Rushda,near Mosque	TW-10	15.05.2017	7.72	2900	650	100	97	205	4.7	0	738	65	568	0.48	6.8
			15.11.2017	7.1	1930	540	96	73	192	3.8	0	586	86	334	0.54	1.7

Amini Island (2017)

SL.NO	LOCATION	DATE OF COLLECTION	pH	Ec in µS/cm. at 25°C	TH as $CaCO_3$	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	F	NO_3
					mg/l										
1	Ammini DW along geophysical profile path,P1	21-02-2017	7.15	1350	600	112	78	111	0.3	0	811	37	178	0.63	0.7
2	Amini DW along geophysical profile path,P2	21-02-2017	7.06	2800	720	112	107	404	6	0	842	118	587	0.67	43
3	Amini DW along geophysical profile path,P3	21-02-2017	7.23	2300	600	96	88	429	9	0	756	84	462	0.73	8.3
4	Amini DW along geophysical profile path,P4	21-02-2017	8.13	1820	305	22	61	307	4.1	0	262	54	462	0.72	2
5	Amini, DW :VES 1	19-02-2017	7.18	2400	650	100	97	372	2.1	0	866	103	462	0.73	7
6	Amini, DW :VES 2	19-02-2017	7.01	1890	560	140	51	221	10	0	903	97	298	0.52	62
7	Amini, DW :VES 3	20-02-2017	7.26	2900	650	116	88	445	27	0	610	108	640	0.48	99
8	Amini, DW :VES 4	20-02-2017	7.64	2900	490	92	63	492	6	0	378	106	729	0.51	8.2
9	Amini, DW :VES 5	20-02-2017	7.60	2100	570	108	73	274	3.8	0	622	81	427	0.70	54
10	Amini, DW :VES 6	20-02-2017	7.30	3300	675	100	103	642	7.9	0	695	68	852	0.28	2.5
11	Amini, DW :VES 7	20-02-2017	7.29	990	370	86	38	64	0.8	0	506	28	89	0.29	15
12	Amini, DW :VES 8	20-02-2017	7.24	4800	1025	170	146	868	6.1	0	988	172	1207	0.65	13
13	Amini, DW :VES 11	22-02-2017	7.34	2900	680	140	80	468	9	0	683	123	658	0.61	39
14	Amini, DW :VES 12	22-02-2017	7.37	5100	875	140	128	1028	22	0	610	241	1349	0.66	53
15	Amini, DW :VES 13	22-02-2017	6.92	4600	950	160	134	762	14	0	793	174	1136	0.86	153
16	Amini, DW :VES 14	22-02-2017	7.49	2000	550	92	78	217	3	0	598	78	312	0.35	89
17	Amini, DW :VES 15	22-02-2017	7.41	1900	510	88	71	271	0.6	0	647	87	363	0.39	12
18	Amini, DW :VES 16	22-02-2017	7.22	1090	450	112	41	70	1.2	0	671	37	85	0.95	7.8
19	Kadamat DW along geophysical profile path	17-02-2017	6.65	1380	540	108	66	120	0.8	0	769	44	192	0.56	8.1

Appendix-IV

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –AMINI ISLAND (LPWD LAB DATA)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca- Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW 1	May- 2016		8.3	3800	2128	200	680	80	600	720	361
2	OW 2	May- 2016		7.46	13800	7728	500	1370	300	1070	680	903
3	OW 3	May- 2016		7.42	9130	5113	400	1200	200	1000	880	723
4	OW 4	May- 2016		7.9	4260	2386	200	550	50	500	1472	361
5	OW 5	May- 2016		7.94	2730	1529	340	500	100	400	560	614
6	OW 6	May- 2016		7.91	1260	706	180	300	50	250	480	325
7	OW 7	May- 2016		7.58	3060	1714	460	600	70	530	800	831
8	OW 8	May- 2016		7.76	2360	1322	320	450	30	420	776	578
9	OW 9	May- 2016		7.58	1730	969	220	370	50	320	944	397
10	OW 10	May- 2016		7.96	1840	1030	280	350	50	300	440	506
11	OW 11	May- 2016		7.15	2150	1204	400	400	90	310	440	723
12	OW 12	May- 2016		7.58	1750	980	220	450	150	300	504	397
13	OW 13	May- 2016		7.32	1460	818	180	440	50	390	544	325
14	OW 14	May- 2016		7.74	2110	1182	300	410	100	310	512	542
15	OW 15	May- 2016		7.5	2410	1350	300	510	90	420	608	542
16	OW 16	May- 2016		7.33	2450	1372	380	560	230	330	560	686
17	OW 17	May- 2016		7.5	2720	1523	340	540	240	300	720	614
18	OW 18	May- 2016		7.74	2060	1154	500	420	360	60	560	903
19	OW 19	May- 2016		7.4	1850	1036	28	330	280	50	480	51
20	OW 20	May- 2016		7.5	1870	1047	300	460	370	90	640	542
21	OW 21	May- 2016		7.55	2120	1187	300	450	50	400	472	542
22	OW 22	May- 2016		7.7	1770	991	240	400	50	350	584	434
23	OW 23	May- 2016		7.8	1760	986	240	450	30	420	568	434
24	OW 24	May- 2016		7.68	4560	2554	960	700	240	460	952	1734
25	OW 25	May- 2016		7.17	2710	1518	480	500	80	420	480	867
26	OW 26	May- 2016		7.74	1700	952	280	350	50	300	560	506
27	OW 27	May- 2016		7.78	1720	963	220	400	50	350	440	397
28	OW 28	May- 2016		8	2820	1579	480	500	50	450	728	867
29	OW 29	May- 2016		7.87	2030	1137	400	370	80	290	672	723
30	OW 30	May- 2016		7.94	1620	907	220	330	70	260	560	397
31	OW 31	May- 2016		7.49	2630	1473	300	480	40	440	720	542
32	OW 32	May- 2016		7.5	1180	661	170	270	60	210	536	307
33	OW 33	May- 2016		7.65	1580	885	130	330	30	300	472	235
34	OW 34	May- 2016		7.7	1760	986	200	340	70	270	592	361
35	OW 35	May- 2016		7.55	2600	1456	320	430	60	370	752	578

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca- Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
36	OW 36	May- 2016		7.84	2980	1669	500	400	70	330	408	903
37	OW 37	May- 2016		7.97	3360	1882	620	500	100	400	520	1120
38	OW 38	May- 2016		7.84	1220	683	160	230	30	200	448	289
39	OW 39	May- 2016		7.5	1290	722	100	270	20	250	552	181
40	OW 40	May- 2016		7.9	1700	952	200	270	60	210	592	361
41	OW 41	May- 2016		8.18	1960	1098	280	450	30	420	520	506
42	OW 42	May- 2016		8.1	2860	1602	460	450	200	250	680	831
43	OW 43	May- 2016		8.08	1580	885	560	320	70	250	520	1012
44	OW 44	May- 2016		8.26	1830	1025	400	360	50	310	488	723
45	OW 45	May- 2016		7.95	4500	2520	620	570	80	490	688	1120
46	OW 46	May- 2016		7.13	2100	1176	480	430	100	330	400	867
47	OW 47	May- 2016		7.19	1970	1103	400	420	70	350	552	723
48	OW 48	May- 2016		7.98	1850	1036	100	400	180	220	536	181
49	OW 49	May- 2016		8	1830	1025	240	350	40	310	432	434
50	OW 50	May- 2016		7.91	1230	689	260	350	30	320	560	470
51	OW 51	May- 2016		8.2	2540	1422	440	440	100	340	544	795
52	OW 52	May- 2016		8.15	1680	941	200	410	50	360	416	361
53	OW 53	May- 2016		7.9	1660	930	300	320	70	250	424	542
54	OW 54	May- 2016		7.5	1750	980	300	410	80	330	376	542
55	OW 55	May- 2016		8.3	3500	1960	70	570	50	520	480	126
56	OW 56	May- 2016		7.95	1900	1064	300	420	50	370	416	542
57	OW 57	May- 2016		8.1	1700	952	100	370	70	300	384	181
58	OW 58	May- 2016		8.2	1830	1025		360	50	310	520	0
59	OW 59	May- 2016		7.8	1510	846		350	80	270	368	0
60	OW 60	May- 2016		8.1	1300	728		350	100	250	432	0
61	OW 61	May- 2016		7.55	3390	1898	600	500	80	420	560	1084
62	OW 62	May- 2016		7.78	2020	1131	220	500	70	430	600	397
63	OW 63	May- 2016		7.85	1370	767	200	300	50	250	520	361
64	OW 64	May- 2016		7.62	1730	969	220	400	80	320	688	397
65	OW 65	May- 2016		7.71	2540	1422	440	400	40	360	552	795
66	OW 66	May- 2016		7.72	2010	1126	20	470	60	410	704	36
67	OW 67	May- 2016		7.65	2560	1434	500	430	70	360	600	903
68	OW 68	May- 2016		7.86	1980	1109	500	320	30	290	584	903
69	OW 69	May- 2016		7.56	3040	1702	560	380	40	340	624	1012
70	OW 70	May- 2016		7.55	1860	1042	260	400	30	370	530	470
71	OW 71	May- 2016		7.72	1410	790	400	350	100	250	464	723
72	OW 72	May- 2016		7.57	3380	1893	1000	550	50	500	494	1807

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca- Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
73	OW 73	May- 2016		8.16	3140	1758	1250	450	100	350	296	2258
74	OW 74	May- 2016		8	2540	1422	450	850	100	750	504	813
75	OW 75	May- 2016		8.12	3660	2050	1500	300	50	250	632	2710
76	OW 76	May- 2016		7.83	4410	2470	1100	700	80	620	568	1987
77	OW 77	May- 2016		7.7	3150	1764	580	600	100	500	600	1048
78	OW 78	May- 2016		7.67	2270	1271	220	500	170	330	632	397
79	OW 79	May- 2016		7.64	1860	1042	280	450	30	420	536	506
80	OW 80	May- 2016		7.6	2030	1137	320	350	40	310	544	578
81	OW 81	May- 2016		7.48	2130	1193	300	500	150	350	600	542
82	OW 82	May- 2016		7.55	1460	818	320	300	100	200	488	578
83	OW 83	May- 2016		7.87	1790	1002	280	350	80	270	480	506
84	OW 84	May- 2016		7.62	2230	1249	440	370	20	350	552	795
85	OW 85	May- 2016		7.81	4430	2481	1020	600	150	450	480	1843
86	OW 86	May- 2016		7.5	2340	1310	480	420	40	380	480	867
87	OW 87	May- 2016		7.66	4720	2643	860	260	110	150	584	1554
88	OW 88	May- 2016		7.75	1860	1042	300	350	100	250	520	542
89	OW 89	May- 2016		7.55	1610	902	260	350	80	270	560	470
90	OW 90	May- 2016		7.78	3270	1831	720	500	70	430	608	1301
91	OW 91	May- 2016		7.88	2100	1176	360	440	200	240	488	650
92	OW 92	May- 2016		7.93	2820	1579	520	510	150	360	456	939
93	OW 93	May- 2016		7.5	2170	1215	400	500	180	320	544	723
94	OW 94	May- 2016		7.55	2620	1467	540	500	120	380	504	976
95	OW 95	May- 2016		7.9	2000	1120	280	400	120	280	469	506
96	OW 96	May- 2016		7.88	1900	1064	280	200	120	80	408	506
97	OW 97	May- 2016		7.5	5850	3276	540	500	280	220	520	976
98	OW 98	May- 2016		7.66	5600	3136	680	440	340	100	512	1228
99	OW 99	May- 2016		7.92	8900	4984	800	880	460	420	532	1445
100	OW 100	May- 2016		7.85	4200	2352	420	580	320	260	344	759
101	OW 101	May- 2016		7.52	4500	2520	500	720	240	480	600	903
102	OW 102	May- 2016		7.88	4410	2470	280	720	380	340	680	506
103	OW 103	May- 2016		7.6	3900	2184	140	240	200	40	520	253
104	OW 104	May- 2016		7.7	2820	1579	360	360	320	40	600	650
105	OW 105	May- 2016		7.15	2000	1120	120	260	160	100	480	217
106	OW 106	May- 2016		7.68	1800	1008	440	220	160	60	440	795
107	OW 107	May- 2016		7.9	4000	2240	360	780	480	300	520	650
108	OW 108	May- 2016		7.8	1900	1064	3000	420	180	240	480	5420
109	OW 109	May- 2016		7.52	1340	750	200	300	100	200	520	361

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca- Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
110	OW 110	May- 2016		7.76	2710	1518	320	340	200	140	520	578
111	OW 111	May- 2016		7.5	3650	2044	260	440	160	280	400	470
112	OW 112	May- 2016		7.84	4000	2240	620	520	180	340	720	1120
113	OW 113	May- 2016		7.92	8560	4794	1340	860	540	320	704	2421
114	OW 114	May- 2016		7	3000	1680	360	420	240	180	450	650
115	OW 115	May- 2016		7.1	2200	1232	300	360	180	180	472	542
116	OW 116	May- 2016		7.6	1610	902	160	220	120	100	256	289
117	OW 117	May- 2016		7.35	2340	1310	300	420	240	180	432	542
118	OW 118	May- 2016		7.48	3110	1742	120	360	220	140	560	217
119	OW 119	May- 2016		7.5	3000	1680	230	380	120	260	480	416
120	OW 120	May- 2016		7.95	4000	2240	420	420	240	180	504	759
121	OW 121	May- 2016		7.5	4730	2649	900	580	130	450	880	1626
122	OW 122	May- 2016		7.72	1580	885	200	320	80	240	560	361
123	OW 123	May- 2016		8.65	2650	1484	700	400	190	210	256	1265
124	OW 124	May- 2016		7.78	2030	1137	420	280	60	220	624	759
125	OW 125	May- 2016		7.59	4320	2419	860	770	80	690	800	1554
126	OW 126	May- 2016		8.55	2570	1439	240	770	40	730	400	434
127	OW 127	May- 2016		8.1	4580	2565	1020	630	130	500	480	1843
128	OW 128	May- 2016		7.76	2720	1523	360	400	100	300	576	650
129	OW 129	May- 2016		7.84	9680	5421	2120	950	200	750	528	3830
130	OW 130	May- 2016		7.95	4270	2391	860	540	50	490	536	1554
131	OW 131	May- 2016		7.85	2350	1316	300	420	220	200	760	542
132	OW 132	May- 2016		7.88	5000	2800	450	530	240	290	640	813
133	OW 133	May- 2016		8.5	7000	3920	1000	750	590	160	456	1807
134	OW 134	May- 2016		7.55	6700	3752	750	500	490	10	504	1355
135	OW 135	May- 2016		8.15	6500	3640	500	440	280	160	712	903
136	OW 136	May- 2016		8.18	2380	1333	320	300	180	120	488	578
137	OW 137	May- 2016		7.55	2000	1120	180	300	160	140	400	325
138	OW 138	May- 2016		7.9	3200	1792	250	380	180	200	600	452
139	OW 139	May- 2016		7.97	3400	1904	430	420	240	180	480	777
140	OW 140	May- 2016		7.75	3250	1820	220	320	120	200	512	397

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –KADMAT ISLAND (LPWD Lab Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW - 1	Mar-17		8.05	7260	4066	2350	1250	200	1050	760	4245
2	OW - 2	Mar-17		8.06	3270	1831	950	820	200	620	836	1716
3	OW - 3	Mar-17		7.72	6200	3472	1500	1530	190	1340	840	2710
4	OW - 4	Mar-17		8.1	11240	6294	3700	2100	200	1900	560	6684
5	OW - 5	Mar-17		8.12	3320	1859	950	650	190	460	560	1716
6	OW - 6	Mar-17		7.89	14940	8366	5350	2650	200	2450	792	9665
7	OW - 7	Mar-17		7.79	6650	3724	2000	1510	190	1320	664	3613
8	OW - 8	Mar-17		7.74	9180	5141	2500	2190	180	2010	552	4516
9	OW - 9	Mar-17		7.87	8460	4738	2450	1950	190	1760	552	4426
10	OW - 10	Mar-17		7.84	10110	5662	3050	2360	200	2160	792	5510
11	OW - 11	Mar-17		7.84	2970	1663	620	830	190	640	728	1120
12	OW - 12	Mar-17		7.86	4770	2671	1450	960	200	760	512	2619
13	OW - 13	Mar-17		7.87	2660	1490	600	680	180	500	612	1084
14	OW - 14	Mar-17		7.86	3490	1954	960	840	190	650	556	1734
15	OW - 15	Mar-17		7.89	2960	1658	740	710	200	510	512	1337
16	OW - 16	Mar-17		8.08	2990	1674	730	670	180	490	490	1319
17	OW - 17	Mar-17		7.83	1670	935	250	480	170	310	528	452
18	OW - 18	Mar-17		7.96	2350	1316	560	550	190	360	560	1012
19	OW - 19	Mar-17		7.7	4460	2498	1300	980	190	790	620	2349
20	OW - 20	Mar-17		7.86	1640	918	270	460	180	280	550	488
21	OW - 21	Mar-17		8.1	1850	1036	310	600	180	420	400	560
22	OW - 22	Mar-17		7.9	1460	818	190	400	130	270	400	343
23	OW - 23	Mar-17		8.09	1500	840	210	400	170	230	364	379
24	OW - 24	Mar-17		7.85	1760	986	220	450	170	280	416	397
25	OW - 25	Mar-17		8.05	1370	767	150	500	180	320	412	271
26	OW - 26	Mar-17		7.9	2110	1182	330	550	160	390	456	596
27	OW - 27	Mar-17		8.05	1400	784	140	380	150	230	400	253
28	OW - 28	Mar-17		7.76	1900	1064	250	500	120	380	480	452
29	OW - 29	Mar-17		7.69	1950	1092	280	520	150	370	480	506
30	OW - 30	Mar-17		7.84	1670	935	230	520	190	330	512	416
31	OW-31	Mar-17		8.1	1250	700	90	330	100	230	352	163
32	OW-32	Mar-17		8	1400	784	170	430	100	330	364	307
33	OW-33	Mar-17		7.97	1520	851	180	440	120	320	360	325

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
34	OW-34	Mar-17		7.99	1530	857	150	350	100	250	484	271
35	OW-35	Mar-17		7.8	1180	661	120	360	140	220	360	217
36	OW-36	Mar-17		7.74	1830	1025	200	520	150	370	504	361
37	OW-37	Mar-17		7.59	1820	1019	200	540	100	440	496	361
38	OW-38	Mar-17		7.84	1330	745	160	390	120	270	476	289
39	OW-39	Mar-17		7.61	1570	879	210	420	160	260	448	379
40	OW-40	Mar-17		8.07	1560	874	220	430	140	290	376	397
41	OW 41	Mar-17		7.88	1790	1002	250	530	170	360	400	452
42	OW -42	Mar-17		7.89	1390	778	100	390	150	240	460	181
43	OW - 43	Mar-17		8.1	2120	1187	380	550	160	390	440	686
44	OW - 44	Mar-17		8.08	1370	767	170	400	140	260	360	307
45	OW - 45	Mar-17		7.92	1140	638	120	380	160	220	408	217
46	OW - 46	Mar-17		8.09	1540	862	140	430	170	260	304	253
47	OW - 47	Mar-17		8.09	1540	862	140	440	180	260	352	253
48	OW - 48	Mar-17		7.93	1500	840	130	400	180	220	344	235
49	OW - 49	Mar-17		7.85	2110	1182	290	570	170	400	472	524
50	OW - 50	Mar-17		7.76	2350	1316	430	660	190	470	408	777
51	OW - 51	Mar-17		7.86	1800	1008	250	560	160	400	420	452
52	OW - 52	Mar-17		8.09	1350	756	140	400	140	260	364	253
53	OW - 53	Mar-17		7.77	2190	1226	370	580	160	420	424	668
54	OW - 54	Mar-17		7.9	1520	851	170	400	150	250	392	307
55	OW - 55	Mar-17		7.68	1580	885	180	430	160	270	400	325
56	OW - 56	Mar-17		8	1290	722	130	330	130	200	408	235
57	OW - 57	Mar-17		8.1	1740	974	200	460	170	290	480	361
58	OW - 58	Mar-17		8.09	1370	767	160	420	140	280	384	289
59	OW - 59	Mar-17		8.1	1440	806	150	330	130	200	360	271
60	OW - 60	Mar-17		8.09	1630	913	240	430	140	290	392	434
61	OW - 61	Mar-17		8.09	1380	773	170	350	120	230	400	307
62	OW - 62	Mar-17		7.88	1690	946	240	560	160	400	456	434
63	OW - 63	Mar-17		8.1	2150	1204	380	580	150	430	500	686
64	OW - 64	Mar-17		7.94	1350	756	140	450	130	320	472	253
65	OW - 65	Mar-17		8.09	1320	739	130	330	140	190	480	235
66	OW - 66	Mar-17		8.1	1300	728	150	380	100	280	432	271
67	OW - 67	Mar-17		8.1	1340	750	150	390	150	240	420	271
68	OW - 68	Mar-17		8.04	1420	795	130	470	140	330	352	235
69	OW - 69	Mar-17		8	1350	756	100	350	150	200	436	181

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
70	OW - 70	Mar-17		8.1	1740	974	230	450	140	310	376	416
71	OW - 71	Mar-17		7.94	2700	1512	400	730	160	570	570	723
72	OW - 72	Mar-17		8	1650	924	200	430	180	250	384	361
73	OW - 73	Mar-17		7.86	1550	868	180	450	160	290	412	325
74	OW - 74	Mar-17		8.07	1430	801	150	400	150	250	424	271
75	OW - 75	Mar-17		7.93	1240	694	130	360	170	190	368	235
76	OW - 76	Mar-17		7.75	2530	1417	490	750	190	560	584	885
77	OW - 77	Mar-17		7.98	2560	1434	430	650	160	490	536	777
78	OW - 78	Mar-17		7.89	1580	885	230	440	160	280	520	416
79	OW - 79	Mar-17		7.98	1700	952	190	450	170	280	360	343
80	OW-80	Mar-17		8.1	1590	890	170	400	140	260	448	307
81	OW-81	Mar-17		7.98	2470	1383	420	650	180	470	520	759
82	OW-82	Mar-17		7.6	2920	1635	560	790	200	590	592	1012
83	OW - 83	Mar-17		7.9	1320	739	150	430	120	310	360	271
84	OW -84	Mar-17		8.09	1270	711	100	360	140	220	448	181
85	OW -85	Mar-17		8.1	2770	1551	580	640	200	440	568	1048
86	OW -86	Mar-17		7.43	1260	706	140	370	140	230	440	253
87	OW -87	Mar-17		7.97	1280	717	170	390	130	260	400	307
88	OW -88	Mar-17		8.11	5290	2962	1210	1330	200	1130	660	2186
89	OW -89	Mar-17		8	1470	823	180	490	130	360	456	325
90	OW -90	Mar-17		8.05	3310	1854	780	810	190	620	540	1409
91	OW -91	Mar-17		7.9	1490	834	180	470	190	280	432	325
92	OW -92	Mar-17		7.93	2300	1288	400	680	140	540	528	723
93	OW -93	Mar-17		7.96	1840	1030	200	570	180	390	504	361
94	OW -94	Mar-17		7.89	2060	1154	350	500	180	320	464	632
95	OW -95	Mar-17		7.85	1860	1042	250	420	160	260	408	452
96	OW -96	Mar-17		7.99	1350	756	150	280	150	130	480	271
97	OW -97	Mar-17		8.05	1470	823	130	380	120	260	384	235
98	OW -98	Mar-17		7.7	1650	924	200	480	160	320	456	361
99	OW -99	Mar-17		7.9	1730	969	200	430	120	310	464	361
100	OW -100	Mar-17		7.88	1840	1030	230	500	170	330	480	416
101	OW-101	Mar-17		8.04	1770	991	280	430	170	260	476	506
102	OW-102	Mar-17		8.05	1290	722	150	350	120	230	408	271
103	OW-103	Mar-17		8.09	1940	1086	330	520	160	360	482	596
104	OW-104	Mar-17		7.93	1630	913	270	370	150	220	384	488
105	OW-105	Mar-17		7.94	1620	907	240	390	140	250	384	434

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
106	OW-106	Mar-17		7.96	1750	980	220	440	170	270	424	397
107	OW-107	Mar-17		8.09	4100	2296	1100	770	190	580	540	1987

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –KALPENI ISLAND (LPWD Lab Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW-1	06/05/2016	0.35	7.37	5490	3094	1530	840	120	720	416	2764
2	OW-2	06/05/2016	0.25	7.61	5580	3125	1270	820	140	680	400	2294
3	OW-7	06/05/2016	0.30	7.28	5810	3254	1290	700	80	620	544	2294
4	OW-23	11/05/2016	4.25	7.20	1722	964	150	420	60	360	472	27127
5	OW-27	12/06/2016	0.39	7.36	1813	1015	210	520	100	420	448	379
6	OW-39	13/05/2016	0.90	7.41	2810	1574	430	66	100	560	536	777
7	OW-52	18/05/2016	0.21	7.35	458	256	40	280	80	200	352	72
8	OW-33	12/05/2016	3.50	7.69	2320	1299	310	620	60	560	600	560
9	OW-49	17/05/2016	0.92	7.28	620	347	60	320	40	280	400	108
10	OW-47	17/05/2016	0.68	6.95	15030	8417	5730	3140	1200	1840	648	10381
11	OW-64	19/05/2016	0.50	7.68	1848	990	410	540	140	420	480	931
12	OW-63	19/05/2016	1.14	7.15	1725	825	394	700	140	560	576	668
13	OW-61	19/05/2016	0.5	7.22	528	318	120	630	120	320	400	91
14	OW-59	19/05/2016	1.20	7.12	957	538	180	834	60	340	552	181
15	OW-58	18/05/2016	1.66	6.90	823	461	80	300	80	240	552	145
16	OW-73	24/05/2016	0.19	7.14	830	465	120	300	80	220	472	297
17	OW-76	24/05/2016	0.63	7.18	1124	629	160	440	80	360	608	289
18	OW-69	24/05/2016	0.42	7.30	980	549	150	280	80	200	488	271
19	OW-68	19/05/2016	0.88	7.72	472	264	60	300	60	240	218	108
20	OW-67	19/05/2016	0.57	7.24	804	450	120	440	140	300	449	217
21	OW-72	24/05/2016	0.42	7.10	844	473	110	300	60	240	464	199
22	OW-71	24/05/2016	1.25	7.57	446	250	40	260	40	220	328	72
23	OW-78	26/05/2016	0.16	7.35	650	364	60	320	80	240	440	145
24	OW-79	26/05/2016	0.26	7.33	1180	616	170	320	80	240	440	145
25	OW-82	26/05/2016	0.09	7.30	870	487	100	340	100	240	440	181
26	OW-84	27/05/2016	0.8	7.42	690	538	180	480	100	380	488	253
27	OW-85	27/05/2016	057	7.30	650	364	90	420	80	340	424	163
28	OW-87	27/05/2016	0.32	7.37	560	314	80	240	120	220	352	145
29	OW-89	31/05/2016	0.74	7.56	300	168	60	240	100	140	264	108
30	OW-90	31/05/2016	1.02	7.66	180	101	90	140	60	80	144	163

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
31	OW-93	02/06/2016	1.44	7.84	782	438	140	360	80	280	440	253
32	OW-92	02/06/2016	1.25	7.70	310	174	60	220	70	150	208	108
33	OW-98	03/06/2016	0.81	7.24	1280	605	220	340	100	240	488	397
34	OW-102	03/06/2016	0.64	7.50	500	280	80	380	80	300	352	145
35	OW-103	08/06/2016	1.28	7.53	690	386	110	260	60	200	352	199
36	OW-105	08/06/2016	0.22	7.20	567	318	60	320	80	240	464	108
37	OW-106	08/06/2016	0.20	7.19	748	419	110	380	80	300	480	199
38	OW-107	08/06/2016	0.48	7.38	1030	577	160	200	60	140	592	289
39	OW-110	09/06/2016	0.31	7.28	500	280	40	280	80	200	376	72
40	OW-113	09/06/2016	1.30	7.29	1204	674	200	220	60	160	664	361
41	OW_117	10/06/2016	0.60	7.95	1700	952	660	480	100	380	256	1192
42	OW-119	10/06/2016	1.81	7.27	1350	756	400	380	60	320	496	723
43	OW-120	10/06/2016	1.03	7.34	1667	934	460	480	60	420	480	867
44	OW-115	10/06/2016	0.43	7.24	1045	585	200	380	120	260	584	361
45	OW-116	10/06/2016	0.60	7.22	866	485	140	400	160	240	504	253

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –KILTAN ISLAND (LPWD Lab Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW-1	March-2015		7.34	3520	1971	360	520	160	360	280	542
2	OW-2	March-2015		7.32	2220	1249	140	260	120	140	276	253
3	OW-3	March-2015		7.41	4730	2647	440	480	100	380	360	795
4	OW-4	March-2015		7.38	2650	1484	160	380	100	280	344	289
5	OW-5	March-2015		7.36	1670	935	120	220	80	140	312	217
6	OW-6	March-2015		7.24	1400	784	100	520	200	320	400	181
7	OW-7	March-2015		7.28	1330	745	140	480	160	320	376	253
8	OW-8	March-2015		7.33	1560	874	100	500	200	300	440	181
9	OW-9	March-2015		7.27	1800	1008	200	440	140	300	392	361
10	OW-10	March-2015		7.36	2730	1529	300	720	240	480	480	542
11	OW-11	March-2015		7.34	1360	762	60	380	220	160	328	108
12	OW-12	March-2015		7.41	1920	1075	140	420	260	160	384	253
13	OW-13	March-2015		7.42	1740	974	100	440	200	240	368	181
14	OW-14	March-2015		7.38	1860	1042	100	500	220	280	400	181
15	OW-15	March-2015		7.30	2840	1590	160	580	100	300	528	289
16	OW-16	March-2015		7.35	2200	1232	200	400	100	160	360	361
17	OW-17	March-2015		7.31	1000	560	100	240	80	120	328	181

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
18	OW-18	March-2015		7.22	730	409	60	200	80	120	368	108
19	OW-19	March-2015		7.31	1150	644	140	260	140	180	352	253
20	OW-20	March-2015		7.44	820	459	100	260	180	200	296	181
21	OW-21	March-2015		7.28	1710	958	180	300	100	160	416	325
22	OW-22	March-2015		7.30	1270	711	120	260	100	160	368	217
23	OW-23	March-2015		7.34	1110	622	100	240	80	220	336	181
24	OW-24	March-2015		7.33	1400	784	140	360	140	260	433	283
25	OW-25	March-2015		7.40	1820	1019	160	420	160	280	536	289
26	OW-26	March-2015		7.42	1280	717	140	480	200	240	392	253
27	OW-27	March-2015		7.48	940	526	100	360	120	240	328	181
28	OW-28	March-2015		7.23	3030	1697	300	360	140	220	272	542
29	OW-30	March-2015		7.32	1200	672	180	300	140	160	336	325
30	OW-32	March-2015		7.30	1460	818	180	200	100	100	392	325
31	OW-33	March-2015		7.44	1060	594	120	340	250	140	392	217
32	OW-34	March-2015		7.23	1770	991	180	360	120	240	384	325
33	OW-35	March-2015		7.40	1210	648	120	300	100	200	320	217
34	OW-36	March-2015		7.45	900	504	80	240	100	140	288	145
35	OW-37	March-2015		7.37	1380	773	160	320	120	200	328	289
36	OW-38	March-2015		7.38	1120	627	140	300	80	220	360	253
37	OW-39	March-2015		7.34	1090	610	100	160	100	60	248	181
38	OW-40	March-2015		7.32	750	420	60	180	140	40	192	108
39	OW-41	March-2015		7.48	1000	560	80	300	140	160	224	145
40	OW-42	March-2015		7.50	690	386	60	160	60	100	184	108
41	OW-43	March-2015		7.55	480	269	40	140	60	80	152	72
42	OW-44	March-2015		7.33	1020	571	120	300	160	100	384	217
43	OW-45	March-2015		7.28	1680	941	140	300	160	140	440	253
44	OW-46	March-2015		7.24	2150	1204	200	300	200	100	424	361
45	OW-47	March-2015		7.30	1150	644	160	440	160	280	376	289
4	OW-48	March-2015		7.42	840	470	80	260	100	160	224	145
46	OW-49	March-2015		7.41	1230	689	120	400	100	300	408	217
47	OW-50	March-2015		7.40	1520	851	140	500	80	420	432	253
48	OW-51	March-2015		7.34	3080	1725	240	820	120	700	512	434
49	OW-52	March-2015		7.44	1610	902	160	500	80	420	416	289
50	OW-53	March-2015		7.36	2420	1355	180	700	100	600	440	325
51	OW-54	March-2015		7.33	1230	689	140	500	120	380	400	253
52	OW-55	March-2015		7.48	760	426	80	340	60	280	280	325
53	OW-56	March-2015		7.46	910	510	100	400	80	320	432	181

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
54	OW-58	March-2015		7.24	3560	1994	200	820	140	680	544	361
55	OW-59	March-2015		7.30	1220	683	180	340	100	240	352	325
56	OW-61	March-2015		7.44	880	493	100	300	80	220	240	181
57	OW-62	March-2015		7.42	850	476	80	240	100	140	256	185
58	OW-63	March-2015		7.38	1170	655	160	260	120	240	384	289

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –CHETLAT ISLAND (LPWD Lab Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW-1	02/06/2014		7.96	1000	560	260	300	50	250		470
2	OW-2	02/06/2014		7.68	3700	2072	1450	820	60	760		2618
3	OW-3	02/06/2014		7.18	5000	2800	1750	900	40	860		3160
4	OW-7	02/06/2014		7.49	3300	1848	856	800	130	670		1535
5	OW-10	02/06/2014		7.97	700	392	140	300	70	230		253
6	OW-15	05/06/2014		7.69	1100	616	130	430	40	390		235
7	OW-23	09/06/2014		7.94	800	448	150	270	50	220		271
8	OW-25	09/06/2014		7.69	800	448	80	350	30	320		144
9	OW-27	11/06/2014		8.16	1180	660	150	350	40	310		271
10	OW-29	11/06/2014		8.33	870	487	50	330	30	300		90
11	OW-34	13/06/2014		8.28	1300	728	150	450	50	400		271
12	OW-36	16/06/2014		7.79	1100	616	150	350	100	250		181
13	OW-40	16/06/2014		8.20	1400	784	220	350	60	290		397
14	OW-42	17/06/2014		8.50	1200	672	180	400	100	300		325
15	OW-43	17/06/2014		8.30	800	448	100	300	50	250		181
16	OW-47	19/06/2014		7.87	1300	728	200	360	150	210		361
17	OW-48	19/06/2014		7.95	1400	784	150	440	200	240		271
18	OW-49	19/06/2014		8.30	1200	672	200	380	200	180		361
19	OW-50	19/06/2014		8.22	1000	560	150	370	350	200		271
20	OW-51	23/06/2014		8.39	1512	1223	150	800	150	650		271
21	OW-52	23/06/2014		7.88	2184	728	110	400	100	300		199
22	OW-53	23/06/2014		7.83	728	672	130	400	100	300		235
23	OW-59	24/06/2014		7.86	1200	672	250	380	150	230		452
24	OW-60	24/06/2014		8.09	900	504	120	330	100	230		217
25	OW-62	25/06/2014		8.02	1600	896	180	370	160	210		325

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
26	OW-64	25/06/2014		8.07	4200	2357	860	780	350	330		1553
27	OW-67	27/06/2014		8.17	1400	784	200	500	120	830		361
28	OW-70	27/06/2014		8.18	2100	1176	380	680	150	530		686
29	OW-72	01/07/2014		8.22	1000	560	150	400	200	200		271
30	OW-73	01/07/2014		8.11	900	504	100	380	100	280		181
31	OW-75	01/07/2014		8.02	11100	6216	3350	1470	450	1020		6050
32	OW-79	02/07/2014		8.38	1100	616	150	320	120	200		271
33	OW-80	02/07/2014		8.27	1800	1008	350	480	50	430		632
34	OW-81	04/07/2014		7.99	8800	4928	2700	1300	400	900		4876
35	OW-83	04/07/2014		8.32	1500	840	150	400	150	350		271
36	OW-84	04/07/2014		8.22	3100	1736	700	720	200	520		1264
37	OW-85	04/07/2014		8.05	3600	2016	750	800	200	600		1354
38	OW-86	07/07/2014		8.39	2300	1288	400	700	190	510		722
39	OW-88	07/07/2014		7.74	2800	1568	700	590	50	540		1264
40	OW-91	08/07/2014		7.86	1300	728	210	400	100	300		379
41	OW-93	08/07/2014		7.90	1500	840	250	400	100	300		452
42	OW-96	08/07/2014		7.96	1600	896	300	400	150	250		542
43	OW-98	08/07/2014		8.35	3000	1600	600	650	300	350		1083
44	OW-100	08/07/2014		7.95	4300	2400	1000	700	280	420		1806
45	TW-2	05/06/2014		7.75	1100	616	170	550	70	480		307
46	TW-3	05/06/2014		7.68	900	504	150	310	80	230		271
47	TW-5	05/06/2014		7.60	1900	1064	300	640	100	540		542
48	TW-6	05/06/2014		7.52	900	504	100	350	60	290		181
49	TW-7	05/06/2014		7.56	1000	560	130	370	70	300		235
50	TW-8	05/06/2014		7.45	800	448	90	290	80	210		163
51	TW-10	05/06/2014		7.36	5000	2800	2150	620	150	470		3882

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –KAVARATHI ISLAND (LPWD Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW 1	June-2014		7.8	2660	1490	750	400	180	220	1355	228
2	OW 6	June-2014		7.31	9720	5443	3000	1320	440	880	5420	424
3	OW 7	June-2014		7.36	11400	6384	4350	1760	640	1120	7858	640
4	OW 9	June-2014		7.63	9670	5415	3200	1440	460	980	5781	520
5	OW 10	June-2014		7.67	6960	3898	1900	900	400	500	3432	384
6	OW 13	June-2014		7.63	8900	4984	2750	1260	440	820	4968	472
7	OW 16	June-2014		7.73	5900	3304	1550	860	340	520	2800	432
8	OW 17	June-2014		7.58	3160	1770	800	520	280	240	1445	312
9	OW 21	June-2014		7.45	4330	2425	1050	720	320	400	1897	496
11	OW 22	June-2014		7.65	4480	2509	1150	640	320	320	2078	416
12	OW 25	June-2014		7.75	9950	5572	2600	1420	420	1000	4697	520
13	OW 35	June-2014		8.15	3110	1742	750	500	220	280	1355	256
14	OW 37	June-2014		7.94	1772	992	300	380	140	240	542	312
15	OW 39	June-2014		7.02	3040	1702	500	1380	440	940	903	464
16	OW 43	June-2014		7.25	5500	3080	1250	1060	400	660	2258	712
17	OW 44	June-2014		7.16	3040	1702	500	500	360	140	903	536
18	OW 50	June-2014		7.57	926	519	150	300	180	120	271	264
19	OW 52	June-2014		7.7	1348	755	160	340	200	140	289	376
20	OW 54	June-2014		7.65	1540	862	170	440	180	260	307	480
21	OW 56	June-2014		7.74	4380	2453	850	720	120	600	1536	504
22	OW 58	June-2014		7.79	1658	928	210	280	180	100	379	336
23	OW 61	June-2014		7.64	1500	840	130	380	240	140	235	416
24	OW 64	June-2014		7.31	2060	1154	230	500	300	200	416	632
25	OW 65	June-2014		7.61	946	530	210	320	220	100	379	376
26	OW 68	June-2014		7.52	1450	812	130	400	220	180	235	448
27	OW 70	June-2014		7.68	1466	821	120	300	260	40	217	400
28	OW 73	June-2014		7.63	1966	1101	160	400	280	120	289	400
29	OW 76	June-2014		7.81	1308	732	90	340	280	60	163	360
30	OW 78	June-2014		7.58	1439	806	130	360	260	100	235	456
31	OW 81	June-2014		7.62	1961	1098	210	360	240	120	379	480
32	OW 83	June-2014		7.67	1936	1084	210	360	160	200	379	504
33	OW 85	June-2014		7.38	1521	852	120	400	260	140	217	536
34	OW 86	June-2014		7.84	715	400	40	200	100	100	72	200
35	OW 88	June-2014		7.63	1411	790	130	280	140	140	235	480
36	OW 89	June-2014		7.5	2160	1210	200	440	240	200	361	400

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
37	OW 91	June-2014		7.91	1831	1025	190	520	200	320	343	416
38	OW 93	June-2014		7.76	929	520	70	260	140	120	126	304
39	OW 96	June-2014		7.63	1092	612	60	260	60	200	108	320
40	OW 101	June-2014		7.74	1772	992	150	400	200	200	271	432
41	OW 103	June-2014		7.21	1207	676	60	400	220	180	108	400
42	OW 105	June-2014		8.53	643	360	80	80	40	40	145	160
43	OW 108	June-2014		7.66	656	367	40	140	100	40	72	112
44	OW 110	June-2014		7.46	1712	959	150	440	300	140	271	336
45	OW 112	June-2014		7.33	2240	1254	210	520	320	200	379	432
46	OW 115	June-2014		7.73	1971	1104	180	400	120	280	325	352
47	OW 117	June-2014		8.08	498	279	50	180	100	80	90	160
48	OW 118	June-2014		7.65	1233	690	130	260	180	80	235	320
49	OW 121	June-2014		7.63	2080	1165	230	420	200	220	416	384
50	OW 122	June-2014		7.62	2010	1126	200	500	200	300	361	432
51	OW 125	June-2014		8.68	306	171	30	60	40	20	54	96
52	OW 126	June-2014		7.85	810	454	70	200	180	20	126	240
53	OW 129	June-2014		7.22	1540	862	110	380	260	120	199	320
54	OW 132	June-2014		7.39	2580	1445	300	560	280	280	542	404
55	OW 134	June-2014		7.7	1098	615	100	340	180	160	181	256
56	OW 136	June-2014		7.64	1440	806	130	380	260	120	235	368
57	OW 138	June-2014		7.88	800	448	50	220	160	60	90	240
58	OW 139	June-2014		7.48	1269	711	80	240	120	120	145	368
59	OW 140	June-2014		7.6	1941	1087	240	340	180	160	434	240
60	OW 142	June-2014		7.64	2640	1478	420	520	180	340	759	320
61	OW 143	June-2014		8.15	1500	840	190	260	140	120	343	320
62	OW 144	June-2014		8.35	1442	808	170	280	200	80	307	400
63	OW 146	June-2014		7.64	1083	606	90	260	200	60	163	400
64	OW 148	June-2014		7.38	1935	1084	180	320	240	80	325	280
65	OW 150	June-2014		7.8	1839	1030	200	400	160	240	361	352
66	OW 152	June-2014		7.68	2040	1142	200	520	180	340	361	360
67	OW 153	June-2014		8.09	1246	698	100	340	180	160	181	240
68	OW 154	June-2014		7.56	3240	1814	550	620	260	360	994	568
69	OW 155	June-2014		7.44	1952	1093	150	400	200	200	271	488
70	OW 158	June-2014		7.94	2640	1478	490	400	200	200	885	304
71	OW 159	June-2014		8.01	2410	1350	350	320	60	260	632	360
72	OW 161	June-2014		8	3050	1708	510	400	180	220	921	368
73	OW 163	June-2014		7.5	1810	1014	170	320	220	100	307	392

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
74	OW 164	June-2014		7.89	1960	1098	230	360	60	300	416	296
75	OW 166	June-2014		7.64	2590	1450	320	380	160	220	578	432
76	OW 167	June-2014		7.68	2170	1215	210	400	160	240	379	384
77	OW 170	June-2014		7.78	2930	1641	430	520	140	380	777	456
78	OW 173	June-2014		7.92	3220	1803	500	420	200	220	903	376
79	OW 176	June-2014		7.8	892	500	40	180	100	80	72	272
80	OW 180	June-2014		7.69	2130	1193	220	280	200	80	397	328

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –MINICOY ISLAND (LPWD Lab Data)

Sl. No.	Sample reference	Date f Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (mg/l)	Chloride (mg/l)	TH (mg/l)	Ca-Hardness (mg/l)	Mg-Hardness (mg/l)	Alkalinity (mg/l)	Salinity (mg/l)
1	OW-1	02/03/2016		7.7	1560	874	200	430	230	220	280	361
2	OW-2	02/03/2016		7.5	1060	594	160	340	100	240	460	289
3	OW-3	02/03/2016		7.7	1770	991	180	520	160	360	408	325
4	OW-4	02/03/2016		7.8	1820	1019	280	420	180	240	384	506
5	OW-5	02/03/2016		8.1	1840	1030	210	480	100	380	304	379
6	OW-6	02/03/2016		7.9	2200	1232	270	580	180	300	564	488
7	OW-7	03/03/2016		8.1	1220	683	200	380	140	240	320	361
8	OW-8	03/03/2016		7.6	1140	638	100	360	120	240	248	181
9	OW-9	03/03/2016		7.5	490	274	80	260	100	160	192	145
10	OW-10	03/03/2016		7.5	500	280	70	220	100	120	296	126
11	OW-11	03/03/2016		8.4	880	493	130	420	160	260	232	235
12	OW-12	03/03/2016		8.6	940	526	90	300	160	140	176	163
13	OW-13	03/03/2016		7.9	2500	1400	480	520	240	280	392	849
14	OW-14	03/03/2016		7.8	700	392	80	280	140	140	256	145
15	OW-15	03/03/2016		7.8	850	476	130	360	120	240	200	235

APPENDIX-V

MONTHLY CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT Ob. WELLS –KALPENI ISLAND (LPWD Lab Data)

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-1	January-2017	0.35	7.52	6570	3679	2030	1140	120	1020	560	3667
2	OWC-1	February-2017	0.05	7.39	7650	4284	3680	1280	260	1020	560	6648
3	OWC-1	March-2017	0.98	7.43	8990	5034	3780	1300	100	1200	488	6829
4	OWC-1	April-2017	0.09	7.42	10000	5666	3500	1300	160	1140	560	6323
5	OWC-1	May-2017	0.28	7.70	10440	5846	3280	1400	140	1260	544	5925
6	OWC-1	June-2017	0.61	7.84	9160	5130	2600	900	180	720	496	4697
7	OWC-1	July-2017	0.58	7.70	10580	5925	2330	880	160	720	640	4209
8	OWC-1	August-2017	0.80	7.87	3150	1764	800	640	100	540	416	1445
9	OWC-1	September-2016	0.04	7.82	4100	2296	1060	940	180	760	632	1915
10	OWC-1	October-2016	1.95	7.15	3190	1786	1030	740	60	680	632	1861
11	OWC-1	November-2016	0.11	7.80	4650	2604	2430	1160	180	980	568	4390
12	OWC-1	December-2016	0.64	8.42	5870	3287	1580	980	160	820	520	2853

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg- Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-2	January-2017	1.61	7.13	1468	822	250	480	60	420	520	452
2	OWC-2	February-2017	0.22	6.94	1970	1103	320	460	140	320	496	578
3	OWC-2	March-2017	0.76	7.01	2890	1607	700	540	100	440	528	1265
4	OWC-2	April-2017	0.04	7.32	4380	2453	1000	800	120	680	496	1806
5	OWC-2	May-2017	0.74	8.14	4920	2755	1230	760	140	620	576	2222
6	OWC-2	June-2017	0.33	8.74	581	325	120	240	80	160	200	217
7	OWC-2	July-2017	ND	7.90	2550	1428	340	320	100	220	424	614
8	OWC-2	August-2017	0.88	7.76	4800	2688	740	640	100	540	608	1337
9	OWC-2	September-2016	0.15	8.08	1160	650	120	540	80	460	488	219
10	OWC-2	October-2016	ND	7.85	1180	661	130	400	60	340	464	235
11	OWC-2	November-2016	0.18	7.26	1070	599	100	580	160	420	512	181
12	OWC-2	December-2016	0.47	8.68	1104	618	140	380	40	340	456	253

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg- Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-3	January-2017	0.30	7.19	593	332	40	400	40	380	200	72
2	OWC-3	February-2017	0.18	7.23	770	431	70	400	80	320	416	126
3	OWC-3	March-2017	0.62	7.23	774	433	100	380	80	300	400	181
4	OWC-3	April-2017	0.06	7.38	1180	661	160	340	100	240	416	289
5	OWC-3	May-2017	3.00	7.46	1360	762	150	360	100	260	528	271
6	OWC-3	June-2017	0.31	7.51	797	446	70	260	100	160	344	126
7	OWC-3	July-2017	ND	7.81	750	420	50	220	40	180	368	90
8	OWC-3	August-2017	0.73	7.55	948	531	80	280	80	200	400	145
9	OWC-3	September-2016	0.01	7.63	490	363	40	420	60	360	296	72
10	OWC-3	October-2016	ND	7.66	485	272	30	260	40	220	240	54
11	OWC-3	November-2016	0.14	7.46	490	274	30	360	100	260	360	54
12	OWC-3	December-2016	0.59	8.26	546	306	40	320	60	260	360	72

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-4	January-2017	0.37	7.06	749	419	40	360	60	300	280	72
2	OWC-4	February-2017	0.90	6.98	810	454	60	300	100	200	512	108
3	OWC-4	March-2017	1.08	7.07	830	465	80	360	60	300	488	145
4	OWC-4	April-2017	0.32	7.54	890	498	80	380	80	300	496	145
5	OWC-4	May-2017	1.70	7.63	920	515	80	340	120	220	520	145
6	OWC-4	June-2017	0.36	7.46	1166	653	80	320	60	260	480	145
7	OWC-4	July-2017	ND	7.64	1176	656	70	260	60	200	480	126
8	OWC-4	August-2017	ND	7.62	1411	790	120	360	60	300	576	217
9	OWC-4	September-2016	0.80	7.35	730	409	40	400	60	340	492	92
10	OWC-4	October-2016	ND	7.30	710	398	40	300	40	260	576	72
11	OWC-4	November-2016	ND	7.31	640	358	40	380	120	260	472	72
12	OWC-4	December-2016	1.48	7.27	407	40	260	60	200	360	404	72

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-5	January-2017	0.82	7.32	702	393	50	420	100	320	480	90
2	OWC-5	February-2017	0.46	6.95	800	448	90	380	160	220	504	163
3	OWC-5	March-2017	0.90	7.10	798	447	60	300	80	220	432	108
4	OWC-5	April-2017	0.60	7.21	820	459	80	380	80	300	472	145
5	OWC-5	May-2017	1.82	7.65	820	459	60	340	140	200	472	108
6	OWC-5	June-2017	0.55	7.39	798	447	50	300	80	220	400	90
7	OWC-5	July-2017	0.30	7.43	1069	599	60	280	60	220	520	108
8	OWC-5	August-2017	1.20	7.35	1200	692	60	320	60	260	552	108
9	OWC-5	September-2016	0.58	7.77	650	364	30	400	40	360	392	54
10	OWC-5	October-2016	0.10	7.59	649	363	30	300	60	240	440	54
11	OWC-5	November-2016	0.30	7.42	620	347	40	420	160	260	456	72
12	OWC-5	December-2016	0.77	8.30	719	403	40	340	80	260	416	72

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-6	January-2017	1.03	7.27	633	354	70	380	40	340	320	126
2	OWC-6	February-2017	0.07	7.29	670	375	90	400	100	300	352	163
3	OWC-6	March-2017	0.31	7.33	730	409	100	360	60	300	344	181
4	OWC-6	April-2017	0.14	7.24	710	398	100	340	100	240	360	181
5	OWC-6	May-2017	0.06	7.89	860	482	90	320	120	200	408	163
6	OWC-6	June-2017	0.21	7.59	851	477	60	280	80	200	296	108
7	OWC-6	July-2017	0.06	7.82	824	461	70	240	40	200	320	126
8	OWC-6	August-2017	0.92	7.49	1423	797	120	340	80	260	576	217
9	OWC-6	September-2016	0.06	7.54	740	414	50	420	60	360	408	90
10	OWC-6	October-2016	0.10	7.73	524	293	60	240	20	220	256	108
11	OWC-6	November-2016	0.04	7.70	490	274	50	320	80	240	328	90
12	OWC-6	December-2016	1.28	8.22	820	459	60	360	120	240	424	108

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-7	January-2017	0.59	7.36	605	339	70	340	40	300	360	126
2	OWC-7	February-2017	ND	7.23	660	370	80	340	80	260	320	145
3	OWC-7	March-2017	0.31	7.34	644	361	80	280	80	200	312	145
4	OWC-7	April-2017	0.86	7.48	640	358	100	260	60	200	312	181
5	OWC-7	May-2017	0.53	7.86	630	353	50	320	100	220	448	90
6	OWC-7	June-2017	0.31	7.54	872	488	80	280	100	180	328	145
7	OWC-7	July-2017	0.04	7.55	1014	568	70	240	60	180	384	126
8	OWC-7	August-2017	1.71	7.80	1248	699	100	320	100	220	488	181
9	OWC-7	September-2016	0.02	7.83	530	297	40	260	80	180	264	72
10	OWC-7	October-2016	ND	7.59	722	404	60	280	40	240	424	108
11	OWC-7	November-2016	ND	7.63	510	286	70	340	80	260	296	126
12	OWC-7	December-2016	0.322	7.80	881	493	60	340	100	240	512	108

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-8	January-2017	0.71	7.04	1231	689	170	380	40	340	520	307
2	OWC-8	February-2017	0.10	7.03	1280	717	200	420	80	340	552	361
3	OWC-8	March-2017	0.53	7.20	1267	710	200	360	60	300	488	361
4	OWC-8	April-2017	0.08	7.17	1290	722	180	340	100	240	488	325
5	OWC-8	May-2017	0.36	7.74	1320	739	160	440	140	300	416	289
6	OWC-8	June-2017	0.14	7.51	2950	1652	480	440	80	360	536	867
7	OWC-8	July-2017	ND	7.30	2470	1384	230	360	60	300	576	416
8	OWC-8	August-2017	1.52	7.68	1809	1013	180	360	40	320	472	235
9	OWC-8	September-2016	0.48	7.28	1020	571	130	420	80	340	488	506
10	OWC-8	October-2016	0.05	7.45	1189	666	160	380	40	340	552	289
11	OWC-8	November-2016	0.13	7.30	1000	560	130	420	120	300	520	235
12	OWC-8	December-2016	0.15	8.30	1221	684	130	420	80	340	504	235

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (μS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-9	January-2017	0.30	7.02	1680	941	320	500	80	420	560	578
2	OWC-9	February-2017	0.08	7.09	1820	1019	390	480	160	320	592	705
3	OWC-9	March-2017	0.43	7.11	2230	1232	460	480	100	380	552	831
4	OWC-9	April-2017	0.40	7.14	2350	1316	440	560	120	440	560	795
5	OWC-9	May-2017	0.79	7.60	2500	1400	460	480	120	360	672	831
6	OWC-9	June-2017	0.82	7.75	1014	568	140	280	100	180	168	253
7	OWC-9	July-2017	0.51	7.40	2670	1495	280	400	80	320	624	506
8	OWC-9	August-2017	1.63	7.57	3030	1697	400	640	80	560	720	723
9	OWC-9	September-2016	0.12	7.43	1230	756	140	430	60	420	600	271
10	OWC-9	October-2016	0.08	7.33	1196	670	150	360	20	340	480	271
11	OWC-9	November-2016	2.30	7.34	1200	672	210	480	120	300	520	235
12	OWC-9	December-2016	1.68	8.40	1494	837	230	480	60	420	520	416

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (μS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	OWC-10	January-2017	0.40	7.08	1263	707	200	480	80	400	480	361
2	OWC-10	February-2017	0.34	6.94	1360	762	250	500	80	420	584	452
3	OWC-10	March-2017	0.68	6.96	1309	733	240	300	80	300	512	434
4	OWC-10	April-2017	0.34	7.34	1130	633	180	400	100	300	480	325
5	OWC-10	May-2017	3.60	7.57	1430	801	180	380	100	280	536	325
6	OWC-10	June-2017	0.48	7.54	1687	945	240	300	10	180	456	434
7	OWC-10	July-2017	0.46	7.38	2230	1249	220	360	60	300	552	397
8	OWC-10	August-2017	0.93	7.54	2290	1282	240	400	80	320	664	433
9	OWC-10	September-2016	0.29	7.64	1350	756	140	430	60	420	504	253
10	OWC-10	October-2016	0.15	7.28	1280	717	200	330	80	300	520	361
11	OWC-10	November-2016	ND	7.04	1130	633	200	440	80	360	536	361
12	OWC-10	December-2016	1.43	8.17	1306	731	180	360	40	320	512	325

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –MINICOY ISLAND (LPWD Lab Data)

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-1	January-2016		7.05	1890	1008	320	500	220	280	320	518
2	Tide Well-1	February-2016		8.0	1950	1092	350	500	340	160	360	632
3	Tide Well-1	March-2016		7.9	1940	1086	240	300	160	140	480	434
4	Tide Well-1	April-2016		7.30	2200	1232	430	720	300	420	320	777
5	Tide Well-1	May-2016		7.38	2000	1120	350	560	70	490	496	630
6	Tide Well-1	July-2016		7.80	1820	1019	220	360	120	240	440	397
7	Tide Well-1	August-2016		7.46	1800	1008	210	480	130	350	418	379
8	Tide Well-1	September-2016		7.53	1080	605	340	340	60	280	400	614
9	Tide Well-1	October-2016		7.36	1240	694	450	400	120	280	328	813
10	Tide Well-1	November-2016		7.06	1300	728	360	380	200	180	400	648
11	Tide Well-1	December-2016		7.16	1330	744	450	500	20	480	320	810

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-3	January-2016		7.0	1340	750	180	530	160	370	360	325
2	Tide Well-3	February-2016		7.5	1150	644	100	400	220	180	200	181
3	Tide Well-3	March-2016		7.7	1120	627	160	710	160	550	416	289
4	Tide Well-3	April-2016		7.15	1530	857	340	600	250	350	300	614
5	Tide Well-3	May-2016		7.71	1510	846	200	520	120	400	424	360
6	Tide Well-3	July-2016		7.68	1200	672	140	480	130	350	418	253
7	Tide Well-3	August-2016		7.38	1320	739	180	560	140	420	610	325
8	Tide Well-3	September-2016		7.52	610	342	120	260	40	220	336	217
9	Tide Well-3	October-2016		7.43	760	426	210	260	100	160	312	379
10	Tide Well-3	November-2016		7.52	770	431	220	360	100	260	400	396
11	Tide Well-3	December-2016		7.10	920	515	250	260	100	160	368	450

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-4	January-2016		7.05	1090	610	150	370	200	170	240	271
2	Tide Well-4	February-2016		7.2	1510	846	200	400	300	100	280	361
3	Tide Well-4	March-2016		7.6	1920	1075	200	440	180	260	464	361
4	Tide Well-4	April-2016		7.17	2000	1120	300	550	200	350	280	145
5	Tide Well-4	May-2016		7.20	2200	1232	350	520	180	340	600	630
6	Tide Well-4	July-2016		7.72	1900	1064	180	420	100	320	458	325
7	Tide Well-4	August-2016		7.26	1910	1070	260	460	120	340	480	470
8	Tide Well-4	September-2016		7.47	960	538	240	280	60	220	384	434
9	Tide Well-4	October-2016		7.35	1300	728	380	340	110	230	376	686
10	Tide Well-4	November-2016		7.47	1330	744	320	360	180	180	440	576
11	Tide Well-4	December-2016		7.2	1290	722	300	240	100	140	456	540

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-5	January-2016		7.08	1770	991	250	500	260	240	384	452
2	Tide Well-5	February-2016		7.1	1590	890	250	560	280	280	308	452
3	Tide Well-5	March-2016		7.8	1780	997	200	540	200	340	520	361
4	Tide Well-5	April-2016		7.12	2300	1288	250	750	320	430	300	452
5	Tide Well-5	May-2016		7.30	4800	2688	250	640	220	420	560	450
6	Tide Well-5	July-2016		7.78	1840	1030	210	660	200	460	620	379
7	Tide Well-5	August-2016		7.58	2000	1120	280	620	120	500	642	506
8	Tide Well-5	September-2016		7.94	1070	599	260	270	60	210	440	470
9	Tide Well-5	October-2016		7.32	1270	711	400	400	120	280	440	723
10	Tide Well-5	November-2016		7.48	1400	784	400	480	160	320	480	720
11	Tide Well-5	December-2016		7.0	1380	772	400	300	80	220	488	720

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-7	January-2016		7.23	1140	638	150	300	160	140	240	271
2	Tide Well-7	February-2016		7.6	3000	1680	750	540	380	160	336	1355
3	Tide Well-7	March-2016		7.5	3800	2108	850	780	200	580	488	1535
4	Tide Well-7	April-2016		7.40	4300	2408	1000	1030	200	830	350	1807
5	Tide Well-7	May-2016		7.32	2800	1568	1040	1000	80	920	480	1872
6	Tide Well-7	July-2016		7.56	3900	2184	860	700	140	560	542	1554
7	Tide Well-7	August-2016		7.38	1620	907	260	480	160	320	510	470
8	Tide Well-7	September-2016		7.69	1140	638	350	250	40	210	392	632
9	Tide Well-7	October-2016		7.44	1900	1064	520	540	100	440	464	939
10	Tide Well-7	November-2016		7.79	2100	1176	700	640	200	440472	1260	
11	Tide Well-7	December-2016		7.10	2550	1400	800	400	120	280	408	1440

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
1	Tide Well-8	January-2016		7.32	1150	644	150	320	160	160	256	271
2	Tide Well-8	February-2016		7.7	1340	750	200	440	200	240	240	361
3	Tide Well-8	March-2016		7.8	1580	885	200	380	160	220	432	361
4	Tide Well-8	April-2016		7.30	2000	1120	150	610	180	430	310	271
5	Tide Well-8	May-2016		7.65	1860	1042	210	460	160	300	440	378
6	Tide Well-8	July-2016		7.54	1600	896	200	510	120	390	464	361
7	Tide Well-8	August-2016										
8	Tide Well-8	September-2016		7.47	840	470	220	240	40	200	352	397
9	Tide Well-8	October-2016		7.45	980	549	210	260	100	160	328	379
10	Tide Well-8	November-2016		7.48	1010	585	200	340	160	180	368	360
11	Tide Well-8	December-2016		7.14	1060	593	1030	300	80	220	360	1850

Sl No	Observation Well No	Month of Sample Collection	Turbidity (NTU)	PH	Conductivity (µS/cm)	TDS (Mg/l)	Chloride (Mg/l)	TH (Mg/l)	Ca-Hardness (Mg/l)	Mg-Hardness (Mg/l)	Alkalinity (Mg/l)	Salinity (Mg/l)
5	Tide Well-10	May-2016		7.7	1690	946	300	420	100	320	320	540
6	Tide Well-10	July-2016										
7	Tide Well-10	August-2016										
8	Tide Well-10	September-2016		7.77	970	543	330	300	60	240	328	596
9	Tide Well-10	October-2016		7.62	1040	582	330	340	90	250	304	596
10	Tide Well-10	November-2016		7.67	1360	761	500	320	200	120	320	900
11	Tide Well-10	December-2016		7.22	1020	571	520	380	80	300	320	936

CHEMICAL ANALYSIS RESULTS OF WATER SAMPLES COLLECTED FROM PERMANENT OBSERVATION WELLS –KAVARATTI ISLAND (LPWD Lab Data)

JANUARY 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.14	1014	568	50	280	100	180	90	360	ND
2	OWC 2	ND	7.13	968	542	60	340	200	140	108	320	ND
3	OWC 3	ND	7.49	651	365	40	200	100	100	72	224	ND
4	OWC 4	ND	7.45	1510	846	180	380	240	140	325	336	ND
5	OWC 5	ND	7.14	710	398	80	300	200	100	145	248	ND
6	OWC 6	ND	7.08	2160	1210	240	460	220	240	434	432	ND
7	OWC 7	ND	7.68	1780	997	200	460	220	240	361	376	ND
8	OWC 8	ND	7.56	1706	955	160	420	100	320	289	472	ND
9	OWC 10	ND	7.54	1015	568	110	260	140	120	199	256	ND

FEBRUARY 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.18	1002	561	70	360	100	260	126	360	ND
2	OWC 2	ND	7.13	1260	706	110	300	100	200	199	352	ND
3	OWC 3	ND	7.14	1421	796	120	400	200	200	217	408	ND
4	OWC 4	ND	7.44	1511	846	180	340	200	140	325	360	ND
5	OWC 5	ND	7.52	844	473	110	280	140	140	199	304	ND
6	OWC 6	ND	7.33	2320	1299	270	460	160	300	488	456	ND
7	OWC 7	ND	7.13	1130	633	100	280	100	180	181	384	ND
8	OWC 8	ND	7.54	1230	689	220	440	160	280	397	496	ND
9	OWC 10	ND	7.65	2130	1193	150	300	140	160	271	280	ND

MARCH 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.37	1063	595	50	320	120	200	90	416	ND
2	OWC 2	ND	7.58	1190	666	110	280	100	180	199	416	ND
3	OWC 3	ND	7.13	1591	891	100	400	200	200	181	480	ND
4	OWC 4	ND	7.28	1610	902	180	360	180	180	325	440	ND
5	OWC 5	ND	7.43	1620	907	70	420	200	220	126	416	ND
6	OWC 6	ND	7.24	2320	1299	260	480	200	280	470	592	ND
7	OWC 7	ND	7.04	2110	1182	250	520	200	320	452	592	ND
8	OWC 8	ND	7.08	1630	913	420	520	200	320	759	560	ND
9	OWC 10	ND	7.58	1642	920	240	380	180	200	434	392	ND

APRIL 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.41	1076	603	150	320	80	240	271	384	ND
2	OWC 2	ND	7.51	1267	710	100	280	80	200	181	432	ND
3	OWC 3	ND	7.26	1588	889	130	400	40	360	235	504	ND
4	OWC 4	ND	7.81	1378	772	170	320	80	240	307	360	ND
5	OWC 5	ND	7.27	1841	1031	110	260	60	200	199	336	ND
6	OWC 6	ND	7.38	1623	909	340	500	160	340	614	496	ND
7	OWC 7	ND	7.32	1640	918	140	420	200	220	253	536	ND
8	OWC 8	ND	7.38	2440	1366	150	440	200	240	271	448	ND
9	OWC 10	ND	7.32	1984	1111	110	360	80	280	199	392	ND

MAY2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.49	1077	603	110	280	200	80	199	440	ND
2	OWC 2	ND	7.75	1062	595	90	300	160	140	163	360	ND
3	OWC 3	ND	7.83	1091	611	90	280	160	120	163	384	ND
4	OWC 4	ND	8.33	1172	656	110	220	160	60	199	408	ND
5	OWC 5	ND	8.03	779	436	110	240	200	40	199	312	ND
6	OWC 6	ND	7.51	2380	1333	M	500	200	300	--	536	ND
7	OWC 7	ND	7.61	1227	687	130	240	220	20	235	440	ND
8	OWC 8	_	_	_	_	_	_	_	_	_	_	_
9	OWC 10	ND	7.44	2280	1277	430	440	260	180	777	408	ND

JUNE 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.53	1041	583	60	240	60	180	108	336	ND
2	OWC 2	ND	7.85	1146	642	80	320	160	160	145	304	ND
3	OWC 3	ND	7.92	992	556	80	320	160	160	145	304	ND
4	OWC 4	ND	7.8	1355	759	110	360	100	260	199	288	ND
5	OWC 6	ND	7.59	2280	1277	250	480	240	240	452	400	ND
6	OWC 7	ND	7.24	2380	1333	50	660	260	400	90	544	ND
7	OWC 8	ND	7.91	909	509	220	380	180	200	397	272	ND
8	OWC 10	ND	7.7	1904	1066	280	360	260	100	506	304	ND
1	OWC 1	ND	7.53	1041	583	60	240	60	180	108	336	ND

JULY 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.59	1132	634	70	200	60	140	126	352	ND
2	OWC 2	ND	7.88	1219	683	100	280	140	140	181	328	ND
3	OWC 3	ND	8.01	1022	572	100	260	100	160	181	272	ND
4	OWC 4	ND	8.04	1467	822	180	300	160	140	325	288	ND
5	OWC 5	ND	8.13	894	501	60	260	140	120	108	264	ND
5	OWC 6	ND	7.87	1970	1103	230	320	140	180	416	344	ND
6	OWC 7	ND	7.91	1254	702	90	300	200	100	163	336	ND
7	OWC 8	ND	7.72	2750	1540	280	580	180	400	506	383	ND
8	OWC 10	ND	7.89	1190	666	100	220	160	60	181	296	ND

AUGUST 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.66	960	538	50	200	180	20	90	320	ND
2	OWC 2	ND	7.77	1125	630	80	280	160	120	145	352	ND
3	OWC 3	ND	7.97	1083	606	130	260	160	100	235	264	ND
4	OWC 4	ND	8.1	1032	578	120	220	80	140	217	240	ND
5	OWC 5	ND	7.99	1005	563	70	220	180	40	126	312	ND
5	OWC 6	ND	7.88	1991	1115	250	360	160	200	452	248	ND
6	OWC 7	ND	7.59	1951	1093	190	520	220	300	343	536	ND
7	OWC 8	ND	7.69	1982	1110	190	460	220	240	343	512	ND
8	OWC 10	ND	8.14	735	412	140	140	80	60	253	200	ND

SEPTEMBER 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.59	789	442	40	180	140	40	72	256	ND
2	OWC 2	ND	7.79	782	438	60	190	120	70	108	256	ND
3	OWC 3	ND	7.88	860	482	50	190	100	90	90	256	ND
4	OWC 4	ND	7.9	1345	753	170	260	120	140	307	280	ND
5	OWC 5	ND	8.03	749	419	180	160	120	40	325	216	ND
5	OWC 6	ND	7.75	2890	1618	400	360	120	240	723	352	ND
6	OWC 7	ND	8.06	893	500	80	140	100	40	145	256	ND
7	OWC 8	ND	7.89	1336	748	140	320	140	180	253	400	ND
8	OWC 10	ND	8.25	665	372	50	220	60	160	90	203	ND

OCTOBER 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.3	795	445	20	140	40	100	36	272	ND
2	OWC 2	ND	7.6	1136	636	100	280	40	240	181	356	ND
3	OWC 3	ND	7.67	773	433	60	240	40	200	108	252	ND
4	OWC 4	ND	7.72	922	516	80	280	100	180	145	264	ND
5	OWC 5	ND	7.4	620	347	120	200	80	120	217	200	ND
6	OWC 6	ND	7	2220	1243	300	440	240	200	542	624	ND
7	OWC 7	ND	7	1491	835	100	420	260	160	181	152	ND
8	OWC 8	ND	7.36	1735	972	160	580	240	340	289	464	ND
9	OWC 10	ND	7.33	715	400	20	260	60	200	36	232	ND

NOVEMBER 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.08	646	362	30	280	160	120	54	304	ND
2	OWC 2	ND	7.44	818	458	80	280	140	140	145	312	ND
3	OWC 3	ND	7.56	611	342	40	220	180	40	72	232	ND
4	OWC 4	ND	7.62	920	515	110	320	160	160	199	272	ND
5	OWC 5	ND	7.69	503	282	30	180	100	80	54	192	ND
6	OWC 6	ND	7.43	1499	839	140	440	200	240	253	304	ND
7	OWC 7	ND	7.27	1029	576	90	360	240	120	163	376	ND
8	OWC 8	ND	7.3	1335	748	170	560	200	360	307	392	ND
9	OWC 10	ND	7.63	531	297	30	240	120	120	54	216	ND

DECEMBER 2014

SLNO	Location	TUR (NTU) DL -5 PL-10	pH 6.5-8.5	Conductivity (Micro mhos) DL -1500 PL - 3000	Total disolved solids (PPM) DL- 500 PL- 2000	Chloride (PPM) DL - 250 PL -1000	Total Hard ness (PPM) DL - 300 PL - 600	Calcium Hard ness as CaCO3 (PPM) DL -188 PL - 500	Magnesium Hard ness (PPM) DL - 123 PL - 410	Salinity (PPM) NO LIMIT IN BIS	Alklinity (PPM) DL - 200 PL - 600	Residual Chlorine PPM
1	OWC 1	ND	7.6	860	482	20	180	120	60	36	288	ND
2	OWC 3	ND	7.68	830	465	40	140	20	120	72	248	ND
3	OWC 4	ND	7.86	1130	633	100	200	40	160	181	298	ND
4	OWC 5	ND	7.78	730	409	20	240	60	180	36	840	ND
5	OWC 6	ND	7.56	1770	991	220	360	80	280	397	446	ND
6	OWC 7	ND	7.21	1530	857	120	440	40	400	217	408	ND
7	OWC 8	ND	7.59	1790	1002	160	160	60	100	289	224	ND
8	OWC 10	ND	7.98	640	358	50	50	20	30	90	16	ND
1	OWC 1	ND	7.6	860	482	20	180	120	60	36	288	ND

MINUTES OF THE MEETING OF UT LEVEL COMMITTEE FOR NATIONAL AQUIFER MAPPING (NAQUIM)

Venue: CHAMBER OF COLLECTOR

Date and Time: 21.03.2018 at 5.30 PM

1. The meeting of UT Level coordination Committee for National aquifer mapping (NAQUIM) held on 21.03.2018 at 5.30 PM in the chamber of collector UT of Lakshadweep. The following were present in the meeting

   1. Dr. Tariq Thomas IAS, Collector - Chairman
   2. Shri. Muhammed Kudage, Superintending Engineer - Member
   3. Shri. Harjeet Singh Chaudhary, Director, Planning & Statistics - Member
   4. Shri. Kapil Choudary, Director Agriculture - Member
   5. Shri. Kunhambu, Regional Director CGWB Trivandrum - Member Secretary

2. The meeting was chaired by the Collector , UT of Lakshadweep. At the outset all the members were welcomed and the Regional Director CGWB Trivandrum was asked to make the presentation.
3. Shri. Kunhambu, Regional Director CGWB Trivandrum, made the presentation on the progress of NAQUIM studies in the UT of Lakshadweep and the draft report on the Aquifer Mapping and Management plan for the UT of Lakshadweep.
4. He mentioned that Central Ground water Board does not have an office in UTL and has in its study incorporated secondary data from various agencies like CWRDM, NCESS and ground water level details from LPWD.
5. It was brought to the notice that, since the island conditions are distinct, many of the management interventions meant for rest of the country may not be applicable in the islands.
6. The specific management issues that were highlighted are Rain Water Harvesting, avoid wastage, Desalination as supplementary source and not an alternative, awareness and training for the judicious use of water.

7. The chairman also mentioned about the rainwater harvesting efforts taken in general and around the helipad area in particular. It was also pointed out that with the development of Desalination plants, the public was not focusing on the rain water harvesting. This requires to be addressed through IEC
8. Regional Director mentioned about the ground regulatory measures as a powerful management tool and the UTL ground water Act promulgated in 2001 needs to be strengthened by constituting UTL ground water Authority for effective ground water regulation.
9. The Regional director also raised the issue about the possibility of sanitary leakage due to leech pit toilets. Superintending Engineer LPWD informed that, all households are using septic tanks with proper ISI mark and the septage is handled in a scientific manner.

After the presentation the Chairman concluded with observations as under

a) The report contains information based on the field study carried out by CGWB like geophysical studies followed by exploratory drilling within the limitations of island conditions but mainly secondary data from various agencies. The water level and chemical data of LPWD was also utilized for the preparation of the report which is commendable. The danger of upward movement of freshwater saline water interface is clearly demonstrated in the draft report. This was the major concern and the UT Administration needs to take steps to ensure that this does not happen. This would require interdepartmental coordination and efforts.
b) It was decided to circulate the draft report among all the committee members and to the Department of Science and Technology for their perusal and valuable suggestions and comments for enriching the report further as well as to formulate concrete action plan for management prospects. All stakeholder departments to be asked to furnish the comments within 15 days.
c) LPWD should take action for constituting Lakshadweep ground Water Authority as envisaged in the Lakshadweep ground water Act 2001 and as per the subsequent guidelines of CGWB for regulating the ground water use as well as for carrying out other activities of the authority such as IEC activities to educate the public about the need for ground water regulation.

The meeting ended with thanks to the Chair

21.3.2018

Shri. Muhammed Kudage
Superintending Engineer

Shri. Harjeet Singh Chaudhary
Director, Planning, Statistics& taxation

Shri. Kapil Choudary
Director Agriculture

Shri. Kunhambu
Regional Director CGWB Trivandrum

Shri.Dr. Tariq Thomas IAS
Collector

NLEC_5thMeeting_5thD... (494kB) Remove

-------- Original Message --------
From: **PMU CGWB Faridabad** <pmu-cgwb@gov.in>
Date: Dec 28, 2018 4:55:54 PM
Subject: Re: Fifth meeting of the National Level Expert Committee: Minutes of Meeting held on 5th December 2018 at Faridabad
To: PMU CGWB Faridabad <pmu-cgwb@gov.in>, Domain Expert <devinderchadha27@gmail.com>, sushilanitagupta@yahoo.com, dcsinghal@rediffmail.com, saumitra@mail.jnu.ac.in, bsharma@cgiar.org, akeshari@civil.iitd.ac.in, NR_Lucknow <rdnr-cgwb@nic.in>, UR_Dehradun <rdur-cgwb@nic.in>, ER_Kolkata <rder-cgwb@nic.in>, NCCR_Raipur <rdnccr-cgwb@nic.in>, NER_Guwahati <rdner-cgwb@nic.in>, SER_Bhubaneswar <rdser-cgwb@nic.in>, NCR_Bhopal <rdncr-cgwb@nic.in>, NHR_Dharamsala <rdnhr-cgwb@nic.in>, SECR_Chennai <rdsecr-cgwb@nic.in>, KR_Trivandrum <rdkr-cgwb@nic.in>, M-South Sampat kumar <msouth-cgwb@gov.in>, Alok Dubey <mnorth-cgwb@gov.in>, GC Pati <meast-cgwb@gov.in>, CGWA Board <cgwa@nic.in>, P Nandakumaran <mhq-cgwb@gov.in>, TS to Chairman <tschmn-cgwb@nic.in>
Cc: Amlanjyoti Kar <tsmsam-cgwb@nic.in>, "Sanjay Marwaha, RD, CHQ" <smarwaha-cgwb@nic.in>

Sir
Kindly find attached herewith the minutes of the 5th meeting of NLEC held on 5th December at CGWB, Bhujal Bhawan, Faridabad.

Wishing you a happy new year

Ranjan
(R K Ray)
Scientist 'D'

On 29/11/18 10:54 AM, **"PMU CGWB Faridabad"** <pmu-cgwb@gov.in> wrote:

Minutes of the

Fifth meeting of the National Level Expert Committee (NLEC)

held under the Chairmanship of Chairman, CGWB

on 5th Dec, 2018 at Bhujal Bhawan Faridabad

List of participants is annexed. (Annexure-I)

Fifth meeting of the National Level Expert Committee for review and finalization of aquifer maps and management plans was held on 5th Dec, 2018 at CGWB Faridabad under the Chairmanship of Shri K C Naik, Chairman, CGWB. Summary of discussions and major decisions taken during the meeting are summarized hereinafter.

- Regional Director, CHQ, Faridabad briefed about the areas to be presented in the NLEC meeting. It was informed that with permission of Member (South) presentation in respect of Tamil Nadu (1014 km^2) has been decided to be made in the next meeting after the entire basin is covered. It was also informed that presentation in respect of Chhattisgarh (639 km^2) had already been made in the fourth meeting of NLEC.

- This was followed by presentations by the representatives of the regional offices in respect of areas covered in the states of Kerala, West Bengal, Odisha, Uttar Pradesh, Arunachal Pradesh and Uttarakhand. Following points emerged during the deliberations.

    - **NER, Guwahati (700 km^2)**: The area coverage reported is in Mizoram, but North Eastern Region made the presentation in respect of an area of Arunachal Pradesh (East Siang district; 1100sqkm). The map and management plan in respect of East Siang district was approved and it was advised that the presentation in respect of Mizoram (700 km^2) will be made in the next NLEC meeting.

    - **Lakshadweep (32 km^2)**: Presentation for UT of Lakshadweep on aquifer maps and management plan was made by Regional Director, KR, Trivandrum. The aquifer Maps and management plans were appreciated by the expert committee. It was recommended that in the subsequent studies they should attempt to map and demarcate ground water protection zones within the island.

    - **West Bengal (3634 sqkm)**: Aquifer maps and management plans for Purba Medinipur (1820 km^2) and Murshidabad district (1814 km^2) were reviewed. Modifications were suggested in the management plans for change in cropping pattern for Purba Medinipur district along with other minor corrections in maps. In respect of maps and management plans for Murshidabad district, aquifer management plan, terminologies used in reporting ground water resources and runoff coefficients considered for the estimations were recommended to be checked.

    - **Odisha (2644sqkm)**: Presentation in respect of Kendrapada district was made before the Committee. It was recommended to revise the aquifer maps, especially the 3D block diagrams. Modifications were also recommended in the management plan. It was decided in the meeting that concerned member (Member-East) will review the revised maps and management plans in respect of Kendrapada district before it is presented before the NLEC.

- **Uttarakhand (2000 km^2)**: Work of aquifer mapping in parts of Almora district (2000 km^2) was presented. While acknowledging the difficulties in preparation of maps and management plans in such terrains, the Committee observed that available information should be incorporated and a suitable map and management plan should be devised. It was also suggested to incorporate the existing litholog data of Almora district. It was decided that the revised maps and plans will be reviewed by the respective member and will presented in next NLEC meeting, after approval by respective member.(Member-CGWA)

- **Uttar Pradesh (16892 km^2)**: It was a repeat presentation of areas presented in 4th meeting. The work carried out under NAQUIM by NR Lucknow was reviewed. Major modifications were recommended in respect of data, maps and management plans. It was also suggested to include micro watershed delineation in hard rock areas of Bundelkhand. It was recommended that the existing GW recharge structures should be considered while proposing additional management interventions. Various other improvements and modifications were also suggested by the Committee. It was decided that the revised maps and plans will be reviewed by the respective member. Once approved by respective member, (Member-CGWA), it will be presented in next NLEC meeting.

Chairman, CGWB took a serious note of the fact that presentations in respect of aquifer maps/management plans have not been presented to and reviewed by the respective members prior to NLEC meeting as per directives. It was also emphasized that presentations should be focused and desired outputs/possible outcomes should clearly highlight benefits to all the stakeholders.

Meeting ended with thanks to the Chair.

Annexure-I

List of participants

1. Shri K. C. Naik, Chairman, CGWB - in Chair
2. Shri G.C. Pati, Member (East)
3. Dr. E Sampath Kumar, Member (South)
4. Dr. P.K. Parchure, Member (East),CGWB
5. Dr .D K Chadha, Ex-Chairman, CGWB
6. Shri Sushil Gupta, Ex-Chairman, CGWB
7. Dr. D. C. Singhal, Professor (Retd) IIT Roorkee
8. Shri S Marwaha, Regional Director, CGWB, Faridabad
9. Shri. V. Kunhambu, Regional Director, KR, Trivendrum
10. Shri. Waseem Ahmad, HOO, UR, Dehradun
11. Shri Sujit Sinha, Scientist-D, CHQ, Faridabad
12. Dr. Anurag Khanna, CGWB, Faridabad
13. Shri. P. K. Tripathi, Scientist-D, NR, Lucknow
14. Sh. Rajan Ray, Scientist-D, CHQ, Faridabad
15. Shri. Ravikalyan Bussa, Scientist D, UR, Dehradun
16. Shri Gulab Prasad, Scientist D, CGWB, SER, Bhubaneswar
17. Dr. S. Brahma, Scientist-D, ER, Kolkata
18. Ms. Shilpi Gupta, Scientist B, CHQ, Faridabad
19. Shri Shasinlo Kent, Scientist 'B', CGWB, SUO, Shillong
20. Shri Dipjyoti Khound, AHG , CGWB, SUO, Itanagar

PHOTOGRAPHS

Beach erosion-Kavarathi Island

B)Coral sands -Kalpeni Island

C)Desalination plant-Kavarathi Island

D) Step well-Agathi Island

CONTRIBUTORS

Principal Authors

K.Balakrishnan,Scientist-D

G.Sreenath,Scientist-B

Supervision & Guidance

Dr.Nandakumaran.P, Then Regional Director
(Presently Member, CGWB)
V.Kunhambu, Regional Director

K.Balakrishnan,Scientist-D

Scruitiny & Issuance

V.Kunhambu,Regional Director

Dr.V.S.Joji,Scientist-D,Report Processing Section

Hydrogeology

K.Balakrishnan,Scientist-D (Team Leader)

G.Sreenath,Scientist-B

Anil Chand.A.D. Asst Hydrogeologist

Geophysics

N.Veerababu STA (Geophysics)

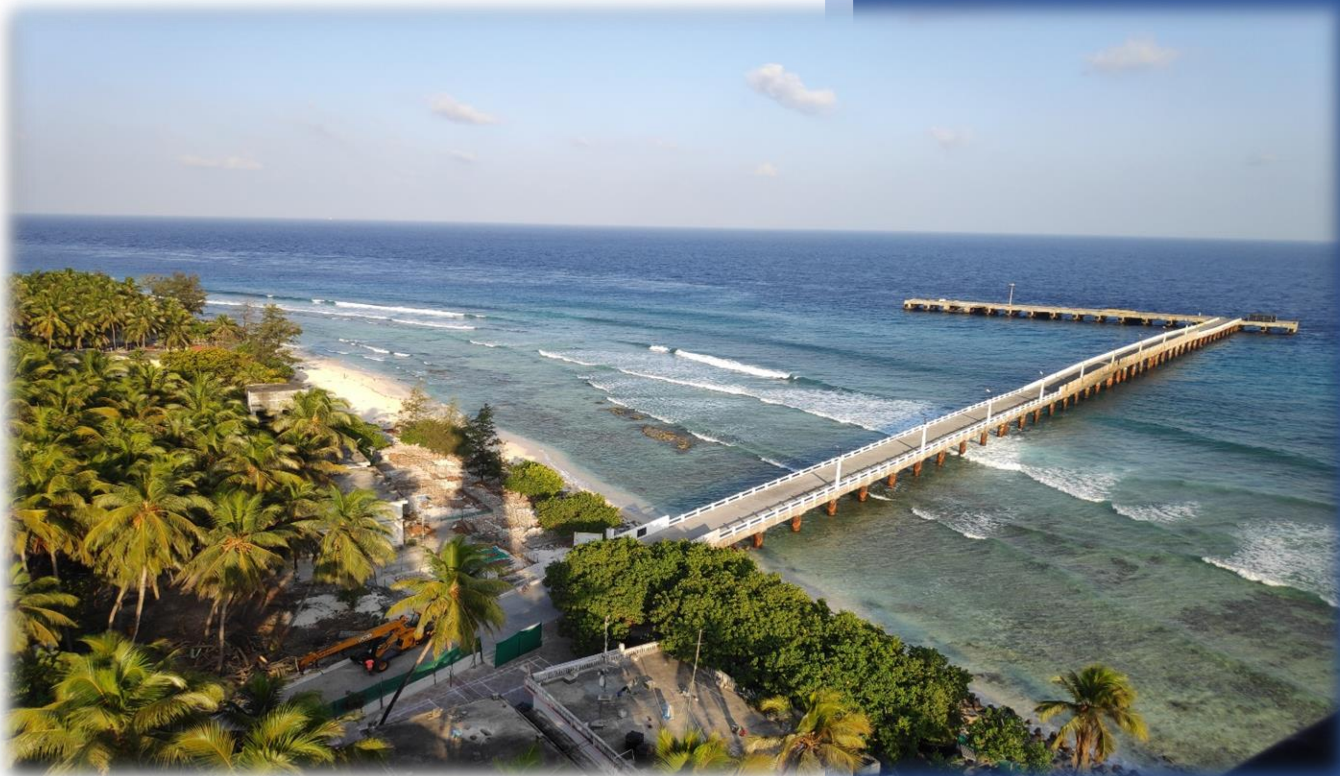
Cartography

Tonny Eapen, Chief Draughtsman

Hydrochemistry

V.N.Sreelatha,Scientist-D

Bindu.J.Viju,Scientist-B



भारत सरकार
GOVERNMENT OF INDIA
जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
केन्द्रीय भूमिजल बोर्ड
CENTRAL GROUND WATER BOARD