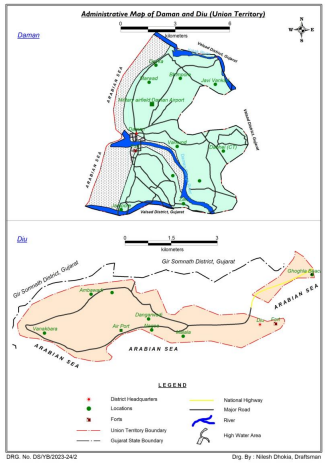
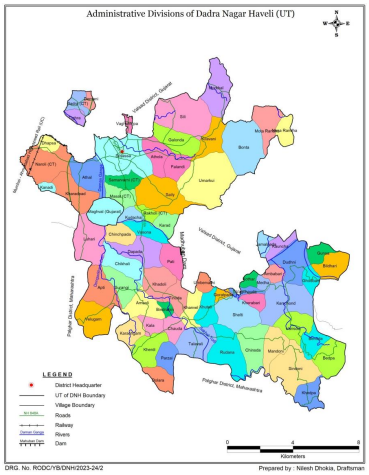
GROUND WATER LEVEL BULLETIN
May 2024
UT OF DAMAN, DIU AND DNH





ABSTRACT

Ground water level Scenario during May-2024 highlighting the findings, status of ground water level in different aquifers and its annual and decadal comparison.

CGWB, WEST CENTRAL REGION, UT OF DAMAN, DIU AND DNH

INTRODUCTION

Groundwater bulletin is prepared by CGWB depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attributes of groundwater regime monitoring is groundwater level. The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumping from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are being measured by Central Ground Water Board four times a year during January, May, August and November. Initially, the monitoring commenced in the year 1969 with the establishment of 82 observation wells spread uniformly over the entire state, and since then, the number of stations were added regularly so as to get proper hydrological information of different hydrogeological and geo-morphological units. A network of 43 observation wells called National Hydrograph Network Stations (NHNS), as on 31.03.2024, located all over the state is being monitored. Index map showing in Fig.1 and Administrative map shown in Fig.-2.

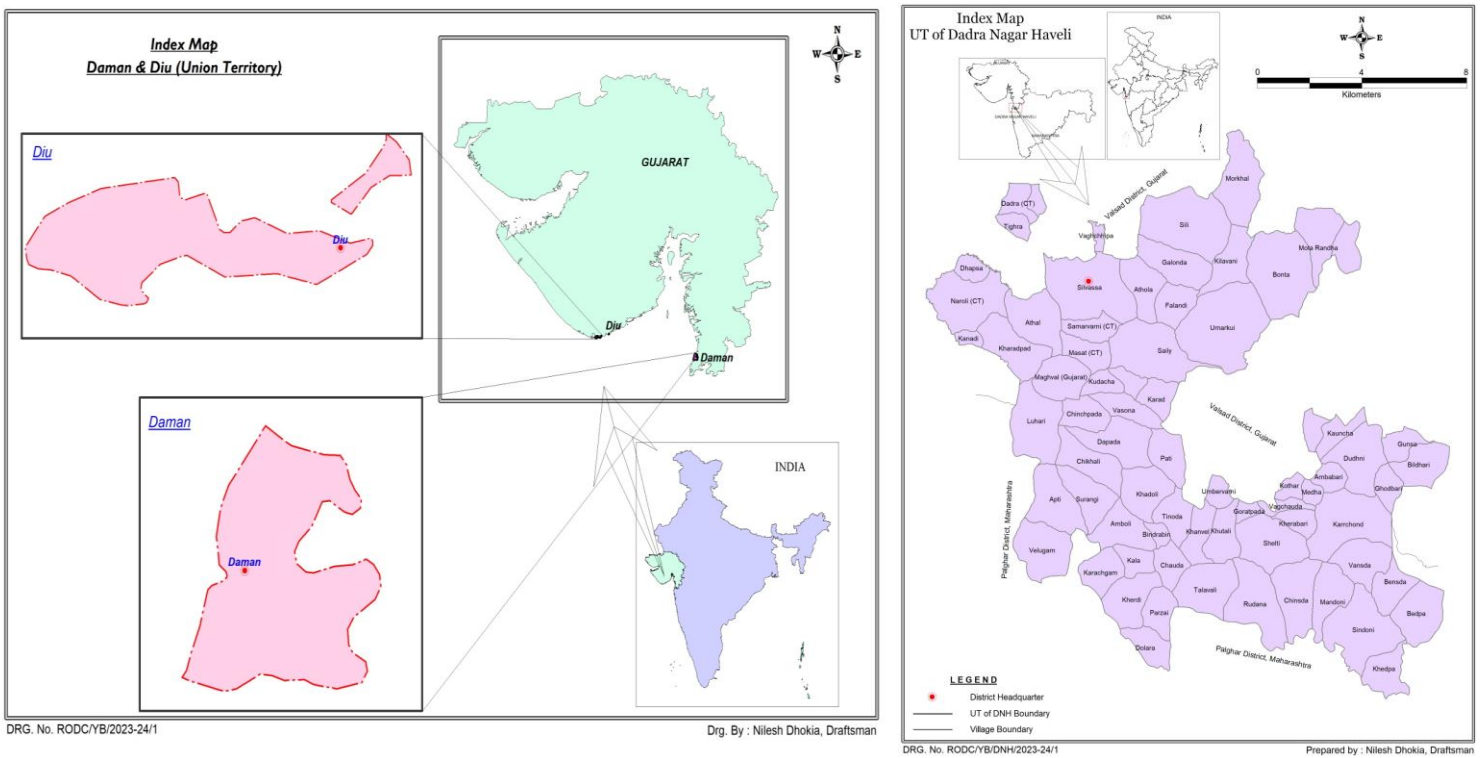


Figure 1: Index Maps of UT of DAMAN, DIU and DNH

STUDY AREA

The West Central Region of Central Ground Water Board has jurisdiction over the Union Territory of Daman & Diu and Dadra and Nagar Haveli (UT of DDD). Daman & Diu covering an area of 112 sq km. Diu is an Island just south of Saurashtra coast and Daman is situated west of Vapi in the south and Dadra Nagar Haveli covering an area 491 sq.km. (Fig 2)

Daman is a small port on the Arabian Sea. Daman is situated between north latitudes 20°22' & 20°29'58" and east longitudes 72°49'42" & 72°54'43"and falls in Survey of India toposheet No. 46 D/15. It covers an area of 72 sq. km. Its length measures 11 km from extreme north to south and the width measures 8 km. from east to west. The UT is bounded on the north, east and south by Valsad district of Gujarat state and west by Arabian Sea.

Diu district of UT of DDD is situated in southern part of Saurashtra region of Gujarat State, in western India. The Diu district is situated between north latitudes 20°44'39" & 20°42'00" and east longitudes 70°52'26" & 71°00'24" and falls in Survey of India toposheet No. 41 L/14. Its east west extent is nearly 19.2 km and north south width is varying from 1 to 2.5 km. Out of the total area of 43.8 Sq Km, 26.84 Sq. Km is rural area and 17.76 Sq.km is urban area.

The Union Territory of Dadra and Nagar Haveli is situated on the western coast of India between states of Gujarat and Maharashtra. It lies between north latitudes 20° 02' and 20° 22' and east longitudes 72° 54' and 73° 14' and falls in Survey of India Topo sheet no. 46 D/15, 16, 46H/3 and H/4. The Territory is surrounded on the west, north and east by Valsad district of Gujarat State and in the south and southeast by Thane and Nashik districts of Maharashtra State.

The total population of UT of Daman and Diu& Dadra and Nagar Haveli is 243,247 of which 150,301 are males and 92,946 are females (2011 Census) and for Dadra and Nagar Haveli is 343,709 of which 193,760 are males and 149,949 are females (2011 Census).

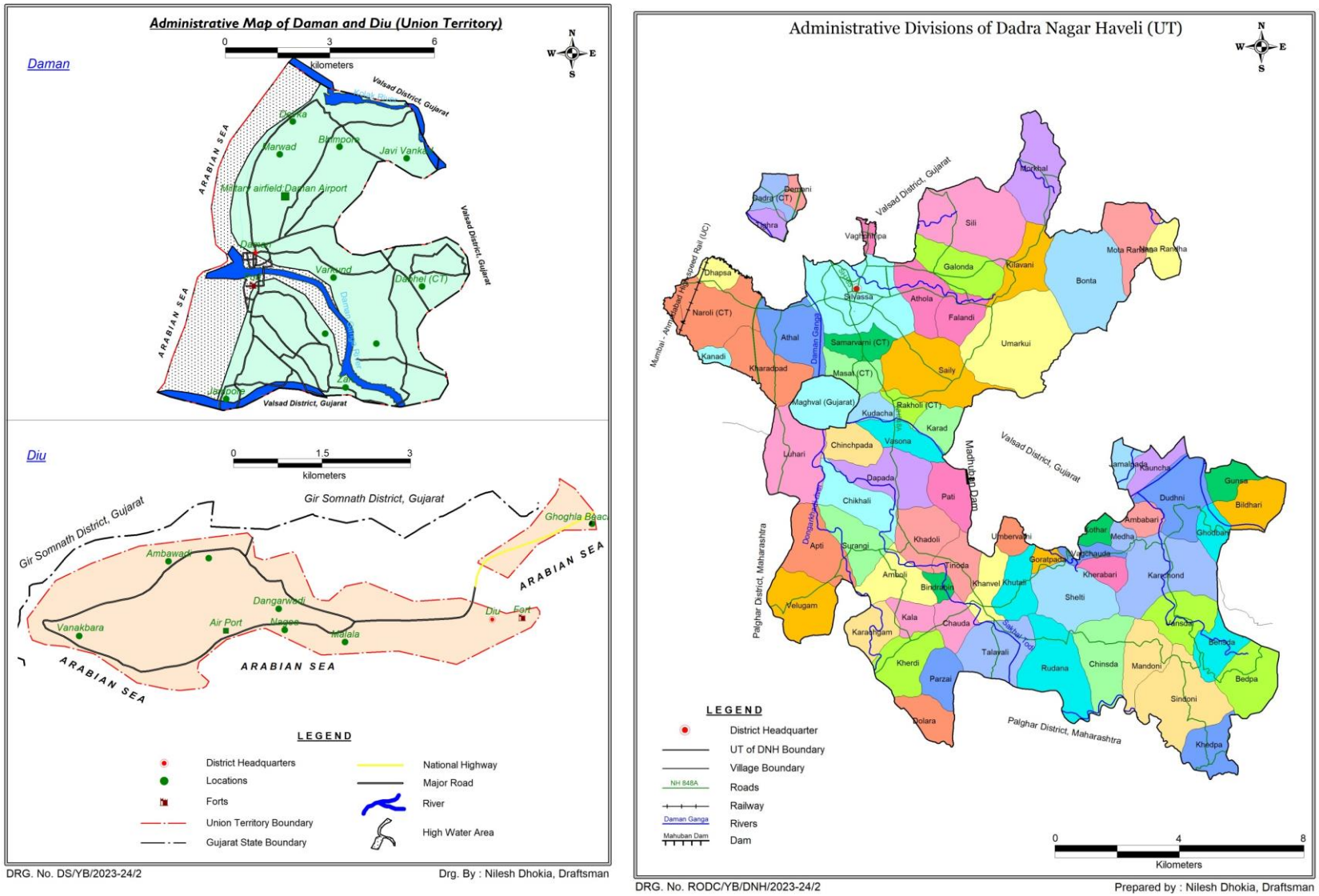


Figure 2: Map showing major aquifers and administrative divisions of Daman & Diu and Dadra and Nagar Haveli (UT of DDD).

GROUND WATER LEVEL MONITORING

Central Ground Water Board, as a part of its national program, has established a network of observation wells in the UT of Daman, Diu and DNH for periodic monitoring of groundwater levels and to study its quality variation in time and space. WCR, has set up a network of observation wells known as the Ground Water Monitoring Wells (GWMW's) located all over UT of Daman, Diu and DNH which comprises 43 GWMWs. The distributions of monitoring wells in UT are given in Table 1. Map showing hydrograph stations monitored during the year and their distribution is presented as Fig. 3.

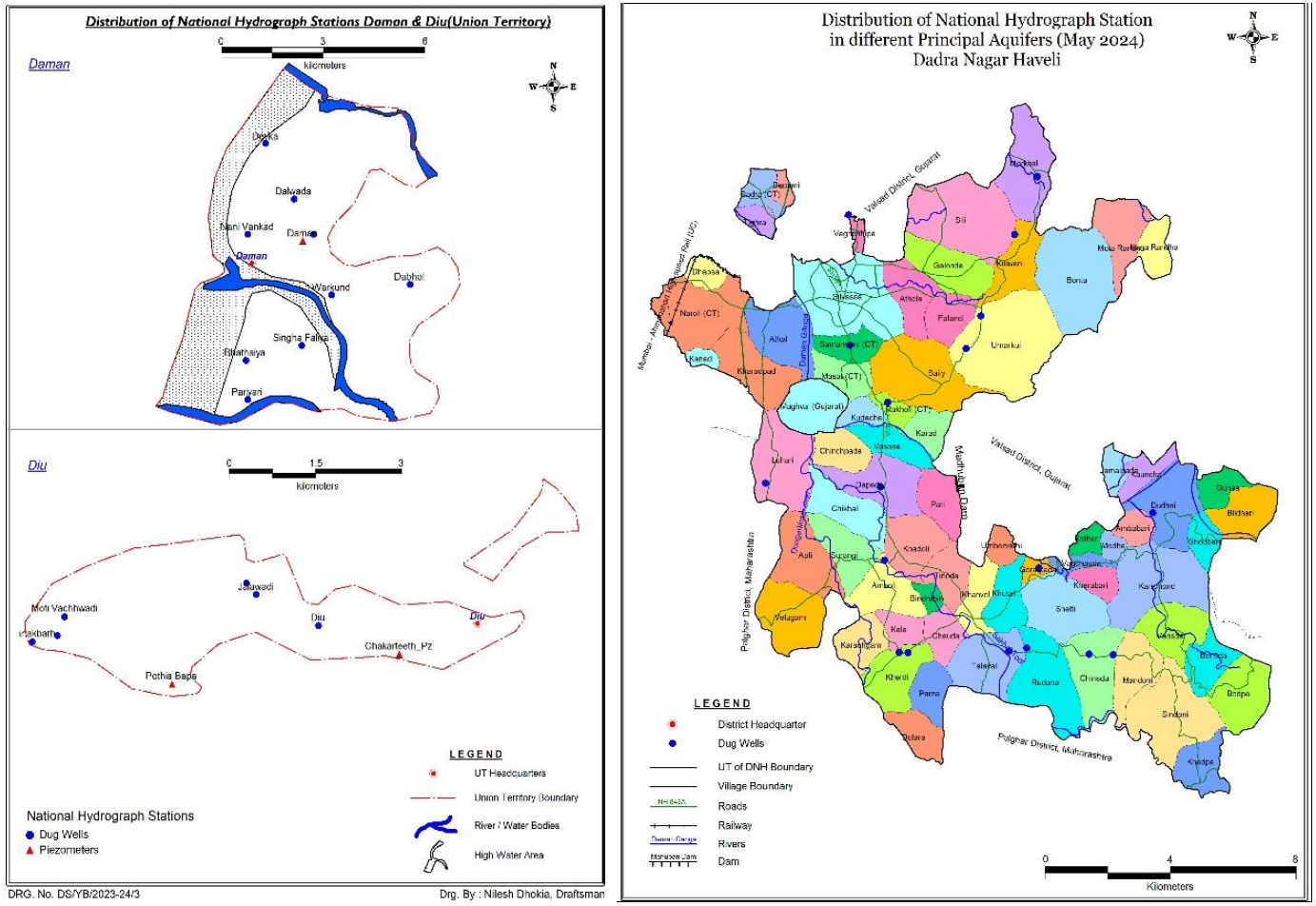


Figure 2: Distribution of NH Stations in UT of DDD UT of DAMAN, DIU and DNH

S.No	DISTRICT	HardRock		SoftRock		Total		
		DW	PZ	DW	PZ	DW	PZ	Total
1	Daman	14	2	0	0	14	2	16
2	Diu	0	0	6	2	6	2	8
3	Dadra and Nagar Haveli	18	1	0	0	18	1	19
U.T.Total		36	2	5	2	20	3	43

Table 1: District wise breakup of NH Stations in UT of DAMAN, DIU and DNH

GROUNDWATER LEVEL SCENARIO

Depth to Water Level in Unconfined Aquifer (May 2024) – UT of DNH & DD

The depth to water level of 43 wells are used for the analysis. Analysis of depth to water level data of 43 wells shows that depth to water level is in the range of 3.7 m bgl at Devka to 9.8 m bgl at Delwada of Daman and 5.02 m bgl at Chakarteeth_Pz, to 7.3 m bgl at Moti Vachhwadi in Diu and 2.62 m bgl at Kharadpada to 13.52 m bgl at Umarkui- Bhujarpada of DNH.

Water level between 2 to 5 m bgl in 16.7% of wells, and between 5 to 10 m bgl in 83.3% of wells in Daman. In Diu, 100% of wells falls between 5 to 10 m bgl. In DNH, Water level between 2 to 5 m bgl in 31.8% of wells, and between 5 to 10 m bgl in 40.9% of wells, and between 10 to 20 m bgl in 27.3% of wells.

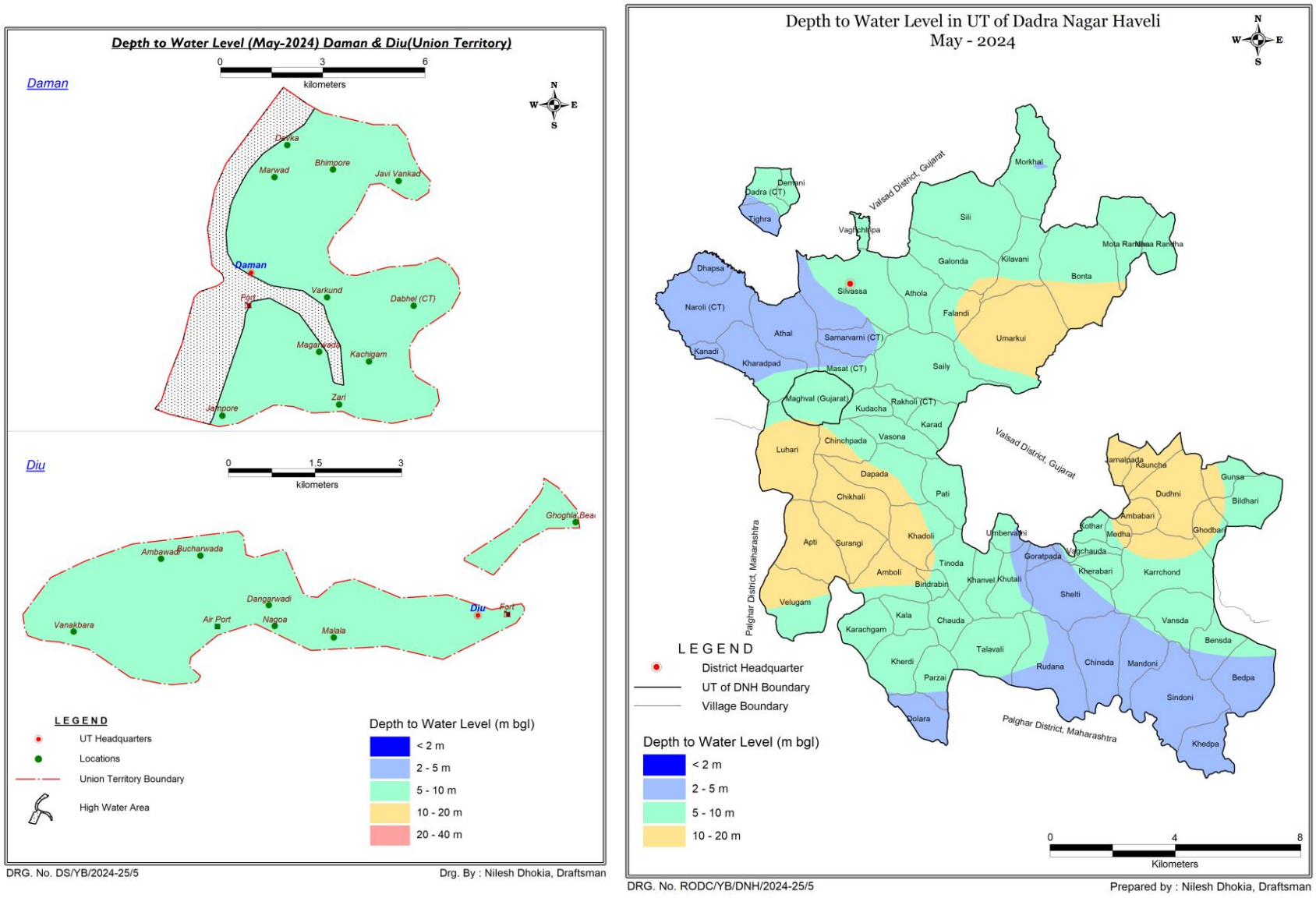


Figure 3 : Depth to Water Level in UT of DDD

Annual Water Level Fluctuation (May 2023 to May 2024)- UT of DNH & DD

In UT of Daman, rise of water level range from 0.041 to 1.07m bgl whereas fall is range from 0.81 to 2.12m bgl. In UT of Diu, fall is range from 0.84 to 1.39m bgl. In UT of DNH, rise of water level range from 1.55m bgl to 0.15.

Rise in Water Levels:

In UT of DNH & DD total 7 wells showing rise in WL, In Daman water level rise of less than 2 m is recorded in 75% of the wells. In DNH water level rise of less than 2 m is recorded in 26.7% of the wells.

Fall in Water Levels:

Out of the 14 wells that have registered fall in water levels, In Daman water level fall of 2 to 4 m in 25% wells. In Diu water level fall of less than 2 m is recorded in 100% wells. In DNH water level fall of less than 2 m is recorded in 20% wells, 2 to 4 m in 40.0% wells and more than 4 m in 13.3% of the wells.

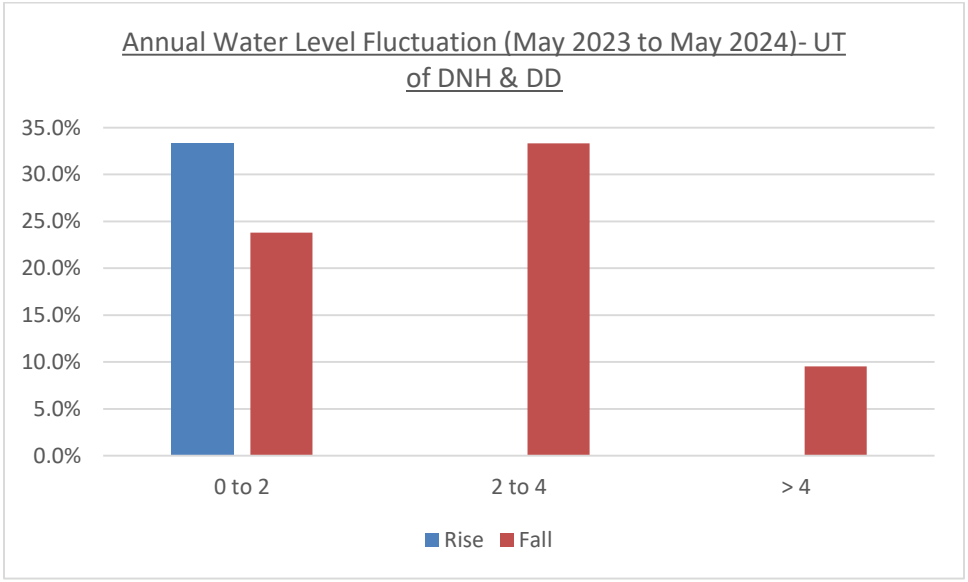


Figure 4: Graph showing Annual Water Level Fluctuation (May 2023 to May 2024)- UT of DNH & DD

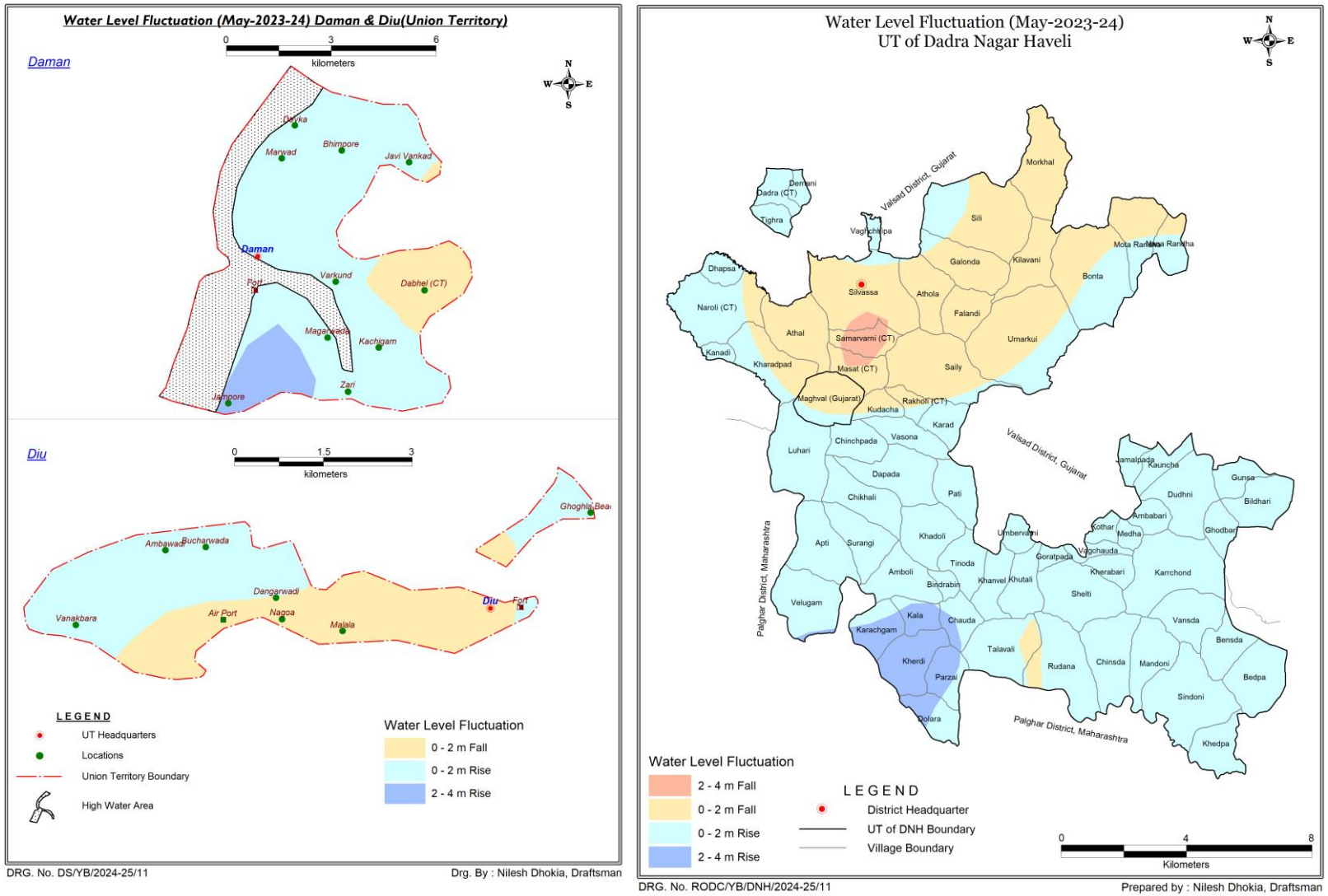


Figure 5: Annual Water Level Fluctuation (May 2023 to May 2024)- UT of DNH & DD

Decadal Fluctuation (Decadal Mean May (2014-2023) to May 2024)- UT of DNH & DD

Total 31 wells are analysed in UT of DNH & DD. In UT of Daman, rise of water level range from 2.18 to 8.84m bgl. In UT of Diu, rise is range from 0.75 to 6.52 m bgl. In UT of DNH, rise of water level range from 0.35m bgl to 7.87.

Rise in Water Levels:

In Daman water level rise in 2 to 4 m in 44.4% wells and more than 4 m in 44.4% of the wells. In Diu water level rise of less than 2 m is recorded in 40.0% wells, and more than 4 m in 60% of the wells. In DNH water level rise of less than 2 m is recorded in 29.4% wells, 2 to 4 m in 29.4% wells and more than 4 m in 35.3% of the wells.

Fall in Water Levels:

In Daman water level fall of less than 2 m is recorded in 11.1% wells. In DNH water level fall of less than 2 m is recorded in 5.9% wells.

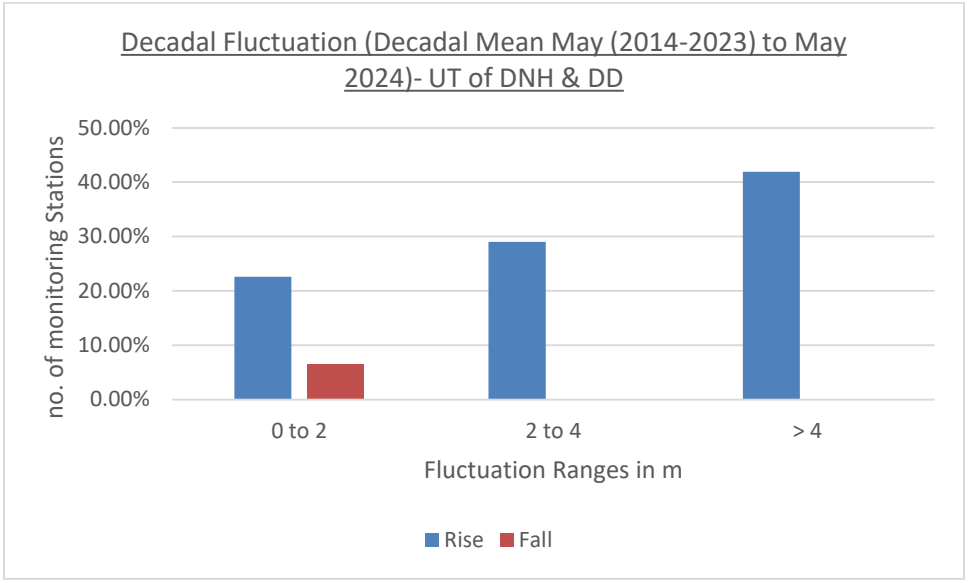


Figure 6: Graph showing Decadal Fluctuation (Decadal Mean May (2014-2023) to May 2024)- UT of DNH & DD

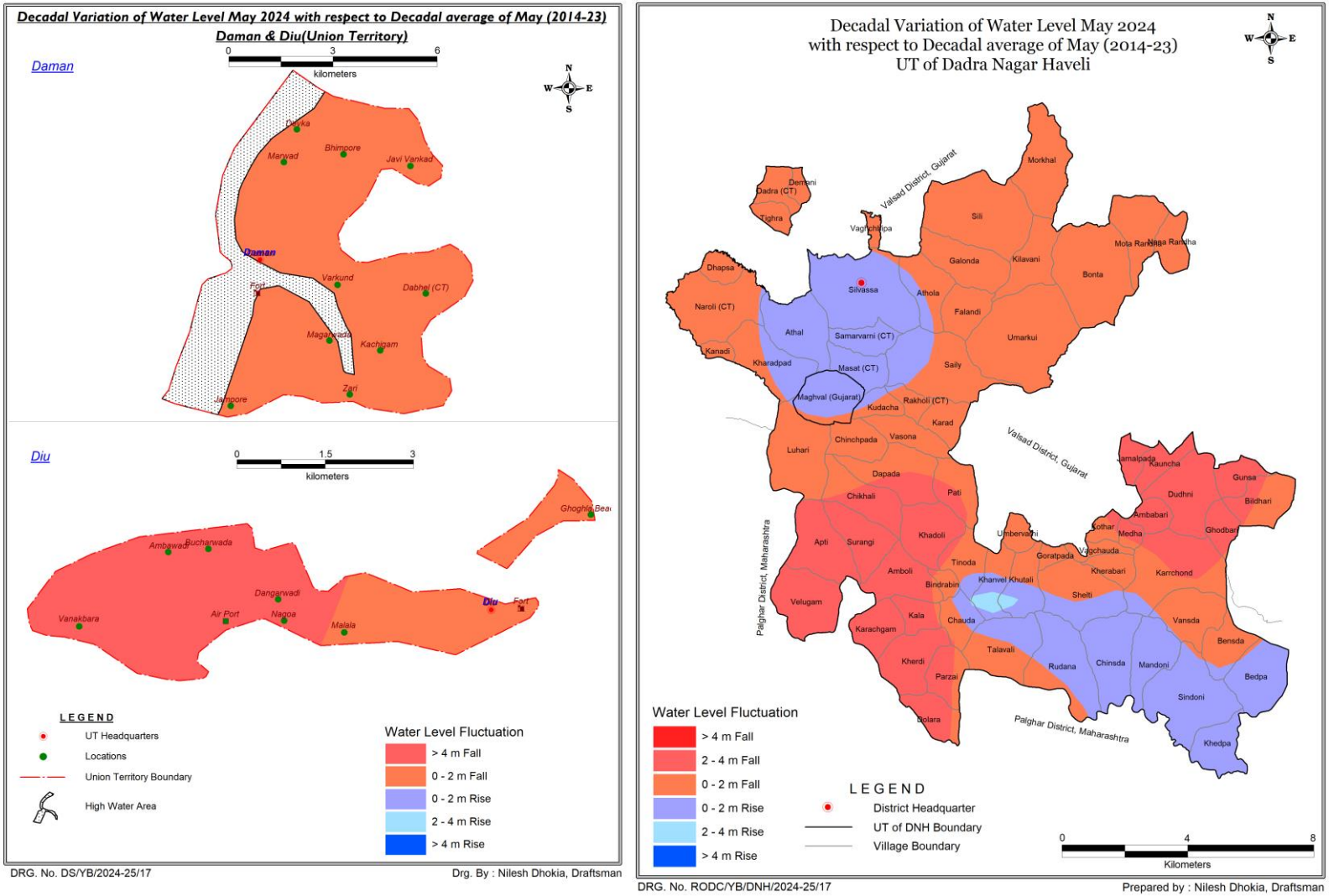


Figure 7: Map showing Decadal Fluctuation (Decadal Mean May (2014-2023) to May 2024)- UT of DNH & DD