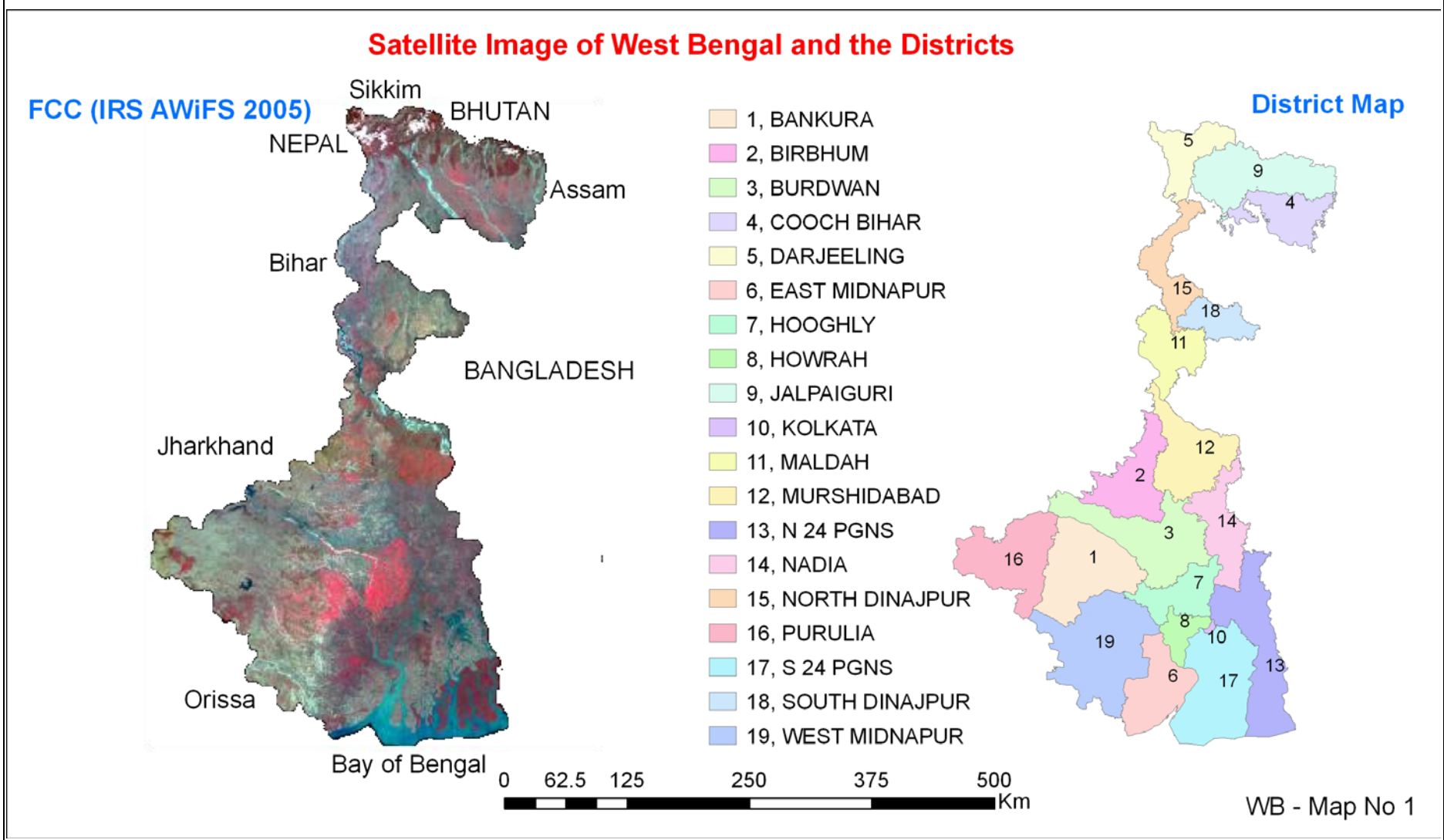
WEST BENGAL

INTRODUCTION

Location and Administrative Setup: West Bengal has an area of 8875.200 Th ha (88752 sq. km), which constitutes 2.70% of the geographic area of the country. It lies between latitude 20°31' and 27°12' N and longitude 85°50' and 89°52' E. The state has international boundaries with Bangladesh in the east, Bhutan and Nepal in the north. The states with which West Bengal shares its boundary are Sikkim in the north, Bihar and Jharkhand in the west and Orissa in the south. There are 19 districts(Map 1) and more than 23 towns in the state. The largest cities are Kolkata, Howrah, Asansol, Durgapur and Siliguri. Other important towns include Darjeeling, Kharagpur and Haldia. Kolkata is the state capital. Kolkata is amongst the largest metropolitan regions in the world.

According to 2001 census, total population of the state is 8,02,21,171 out of which 4,14,87,694 (51.71%) are male. Decadal growth in population is 17.84%. The state has population density of 904 persons/sq. km. The overall sex ratio is 934 i.e. 934 females per 1000 males. The state has overall literacy rate of 58.82 %.



Climate: The climate of West Bengal varies according to the location. It varies from moist-tropical in the south-east to dry tropical in the south west and from sub-tropical to temperate in the mountains of north. The climate is cooler in the northern mountains than in the southern plains. The temperature range is from well below freezing point in the hills during the winter to about 45oC in southern parts during the summer. The winter months are generally pleasant in the southern part of the state. Snowfall is limited to the Himalayan regions. The monsoon season lasts from June to September and brings heavy rain. The monsoon brings respite to the parched plains and means a bountiful harvest but they often cause floods and landslides. The winter months are from October to February. Annual rainfall varies from 900 mm in south-west to 6,000 mm in parts of the north. Normal rainfall of the state is 1829 mm but large variations exist across the districts.

Land use: Land use statistics for the year 2004–'05 is given in Table 1.

Table 1: Major Land Use (Th ha)

PARTICULARS	2004-'05
Forest	1175.000
Not Available for Cultivation	
A-Land put to Non Agriculture Uses	1674.000
B-Barren and Uncultivable Land	25.750
Other Uncultivable Land Excluding Fallow Land	
A-Permanent Pastures & Grazing Land	4.500
B-Land under Misc. Tree Crops & Groves	58.540
C-Cultivable Wastelands	35.550
Fallow Land	
A-Current Fallow	314.000
B-Old Fallow	25.340
Cropped Area	
A-Net Area Sown	5374.700
B-Area Sown More Then Once	
Gross Cropped Area	9522.930
Cropping Intensity (%)	177.18

(Source: www.indiastat.com)

Satellite Data: IRS P4 LISS III data of two different seasons namely, pre monsoon (April-May, 2005) and post monsoon (November-December, 2004) were used for delineation of waterlogged and salt affected areas of various commands of West Bengal.

WATER RESOURCES AND COMMAND AREAS

Water Resources: The rivers in North Bengal viz., Teesta and Mahananda flow into Bangladesh were they finally create a huge river system along with the Ganges and the Brahmaputra. The rivers of the North and the Ganges are perennial rivers since they originate in the Himalayas.

The important rivers in the plains of Bengal include the Ganges, Hooghly, Rupnarayan and Damodar. The plains of the Ganges and the other associated rivers form one of the most fertile regions in the world. The Ganges flows through the state at one of its narrowest points and flows into Bangladesh.

Command Areas: There are 35 irrigation commands in West Bengal. Number of major and medium irrigation commands are 5 and 30, respectively (Map 2).

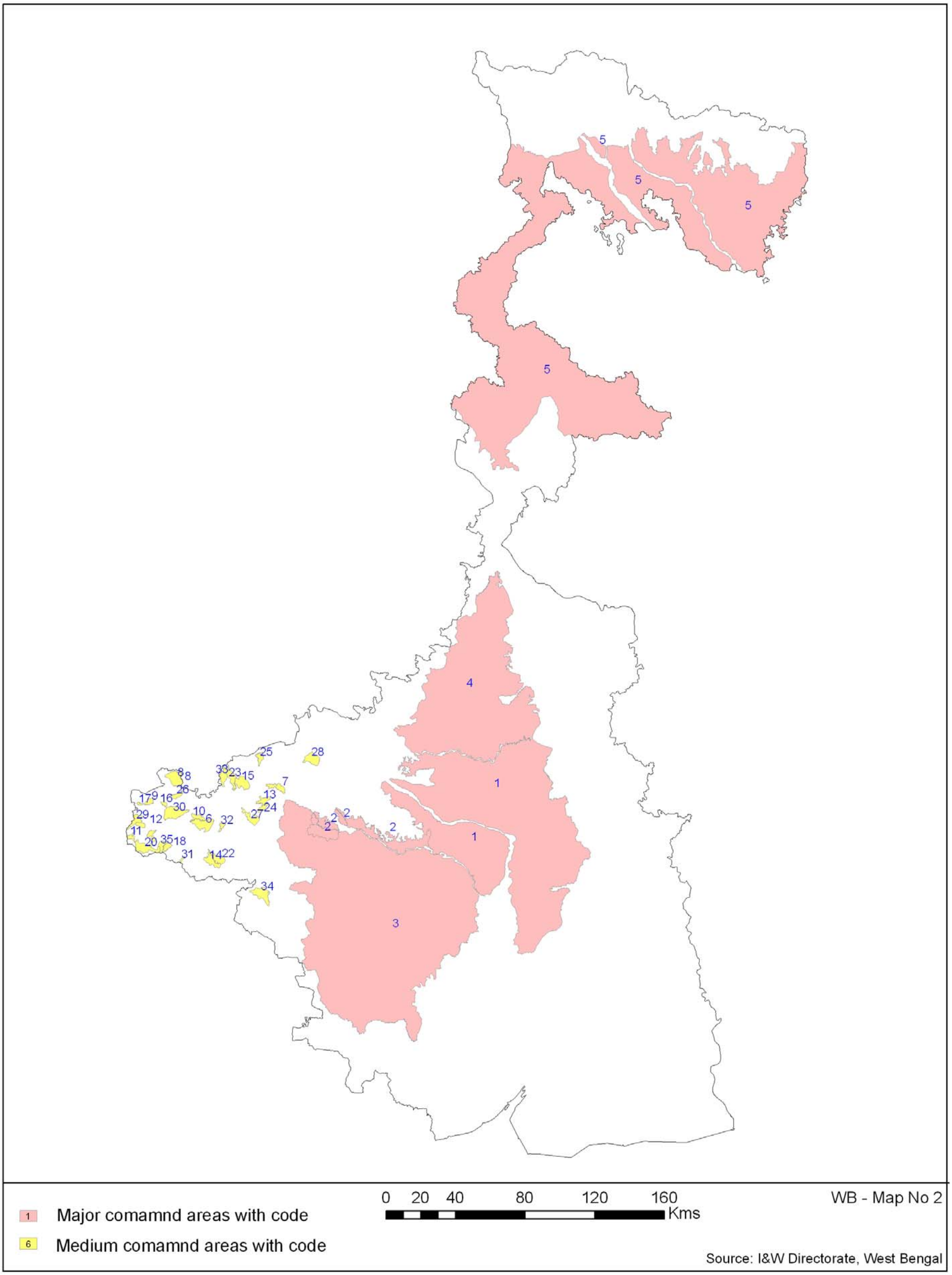
WATER LOGGING AND SALT AFFECTED AREAS IN MAJOR AND MEDIUM IRRIGATION COMMANDS BASED ON SATELLITE REMOTE SENSING

Total waterlogged area in the state is 46.397 Th ha out of which 1.675 Th ha is perennial and 44.722 Th ha is seasonal. Out of 35 irrigation commands, 6 commands have area under waterlogging category with highest in Teesta Barrage command. Salt affected area covers 6.465 Th ha. Total 800 soil samples were collected to check the salinity / alkalinity in the command. Table 2 and Map 3 show the salt affected area and waterlogged areas in major and medium irrigation commands in West Bengal state.

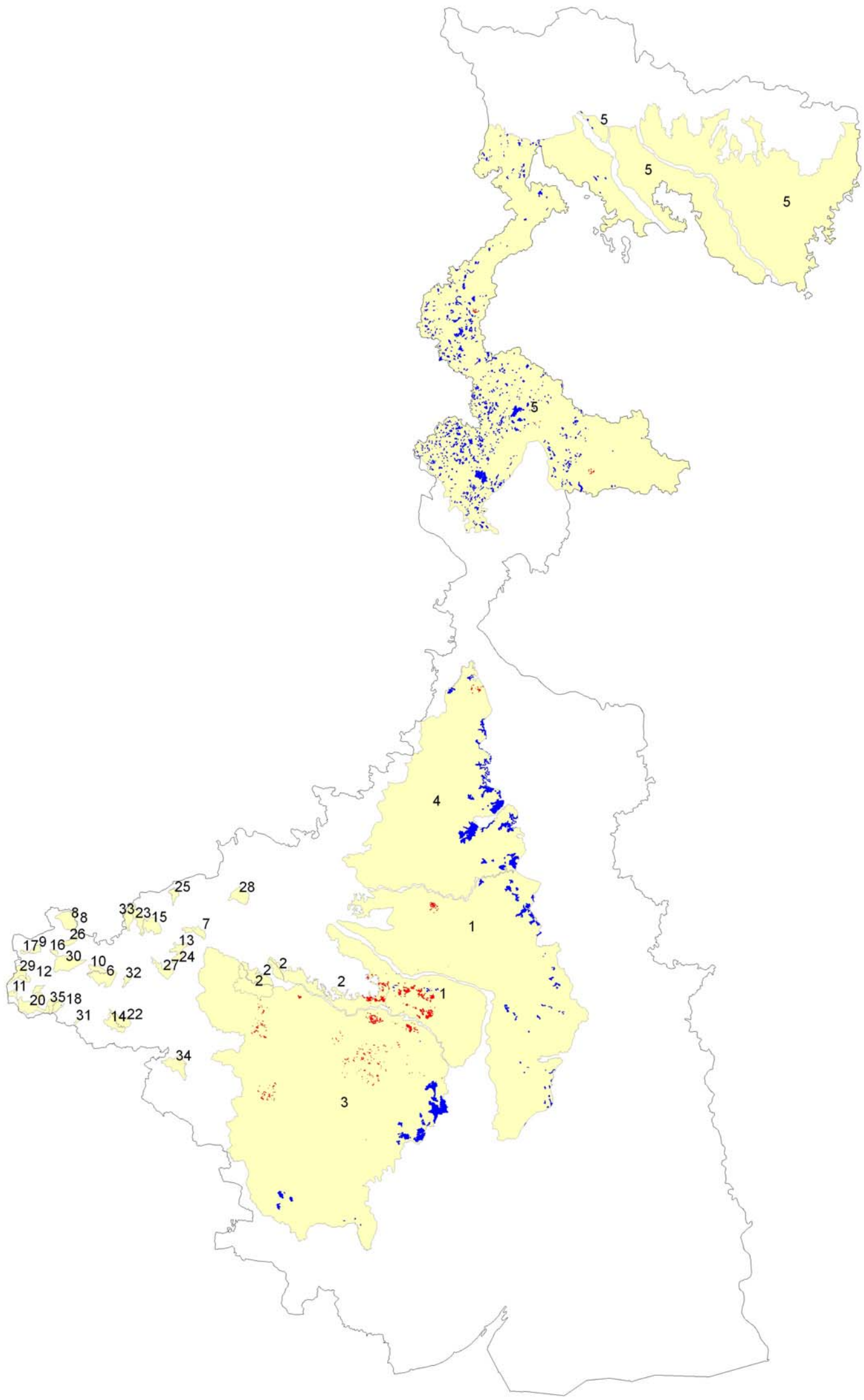
Table 2: Salt Affected and Waterlogged areas in major and medium irrigation commands of state

Code	Command name	Type	Waterlogged area (Th ha)	Salt affected area (Th ha)
1	DVC	Major	4.550	2.540
2	Dwarkeshwar-Gandheswari	Major	0.000	0.669
3	Kansabati	Major	9.593	2.891
4	Mayurakshi	Major	13.970	0.172
5	Teesta Barrage	Major	18.275	0.187
6	Bandhu	Medium	0.000	0.000
7	Beko	Medium	0.000	0.007
8	Dambera	Medium	0.000	0.000
9	Dimu	Medium	0.000	0.000
10	Extension of Bandhu	Medium	0.000	0.000
11	Extension of Dangra	Medium	0.000	0.000
12	Fakidi	Medium	0.007	0.000
13	Futiary	Medium	0.000	0.000
14	Hanumata	Medium	0.000	0.000
15	Horai	Medium	0.000	0.000
16	Kansai	Medium	0.000	0.000
17	Karior	Medium	0.000	0.000
18	Kestobazar	Medium	0.002	0.000
19	Koirabera-I	Medium	0.000	0.000
20	Koirabera-II	Medium	0.000	0.000
21	Kulbera	Medium	0.000	0.000
22	Kumari	Medium	0.000	0.000
23	Lipaniyajore	Medium	0.000	0.000
24	Majra	Medium	0.000	0.000
25	Moutorjor	Medium	0.000	Negligible
26	Parga	Medium	0.000	0.000
27	Patloi	Medium	0.000	0.000
28	Ramchandrapur	Medium	0.000	0.000
29	Rapai	Medium	0.000	0.000
30	Saharajor	Medium	0.000	0.000
31	Sankha	Medium	0.000	0.000
32	Tara	Medium	0.000	0.000
33	Taragonia	Medium	0.000	0.000
34	Tatko	Medium	0.000	0.000
35	Turga	Medium	0.000	0.000
	TOTAL		**46.397**	**6.465**

Distribution of Major and Medium Irrigation Commands in West Bengal



Waterlogged and Salt Affected Areas in the Commands of All Major and Medium Irrigation Projects of West Bengal Using Satellite Remote Sensing



Salt Affected Area
Waterlogged Area
Command Area

0 20 40 80 120 160 Kms

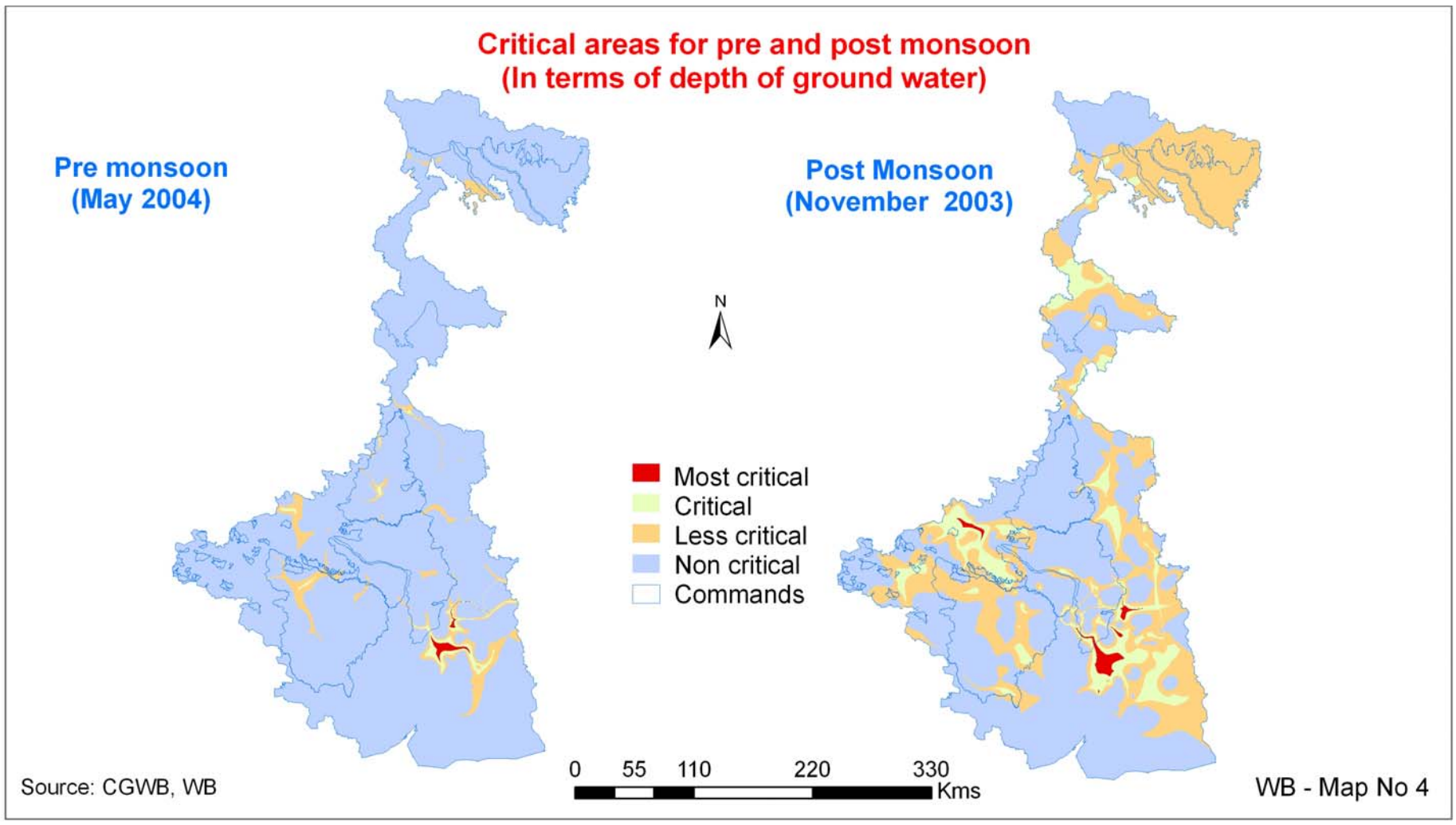
WB - Map No 3

Source: RRSSC/ISRO Jodhpur

For demarcation of critical waterlogged area due to rise in water table depth, ground water table data of monitoring stations of CGWB were used. Table 3 and Map 4 show the critical area of depth of ground water for pre (May, 2004) and post (November, 2003) monsoon.

Table 3: Critical Area of Depth of Ground Water for Pre (May, 2004) and Post (November, 2003) Monsoon

	Most critical (< 1m)		Critical (1 – 2 m)		Less critical (2 – 3 m)		Non-critical (> 3 m)	
	(Th ha)	(%)	(Th ha)	(%)	(Th ha)	(%)	(Th ha)	(%)
Pre Monsoon (May, 2004)	0.028	0.00	10.899	0.32	140.749	4.12	3260.817	95.56
Post Monsoon (November, 2003)	3.005	0.09	201.540	5.91	1377.850	40.38	1830.100	53.62



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