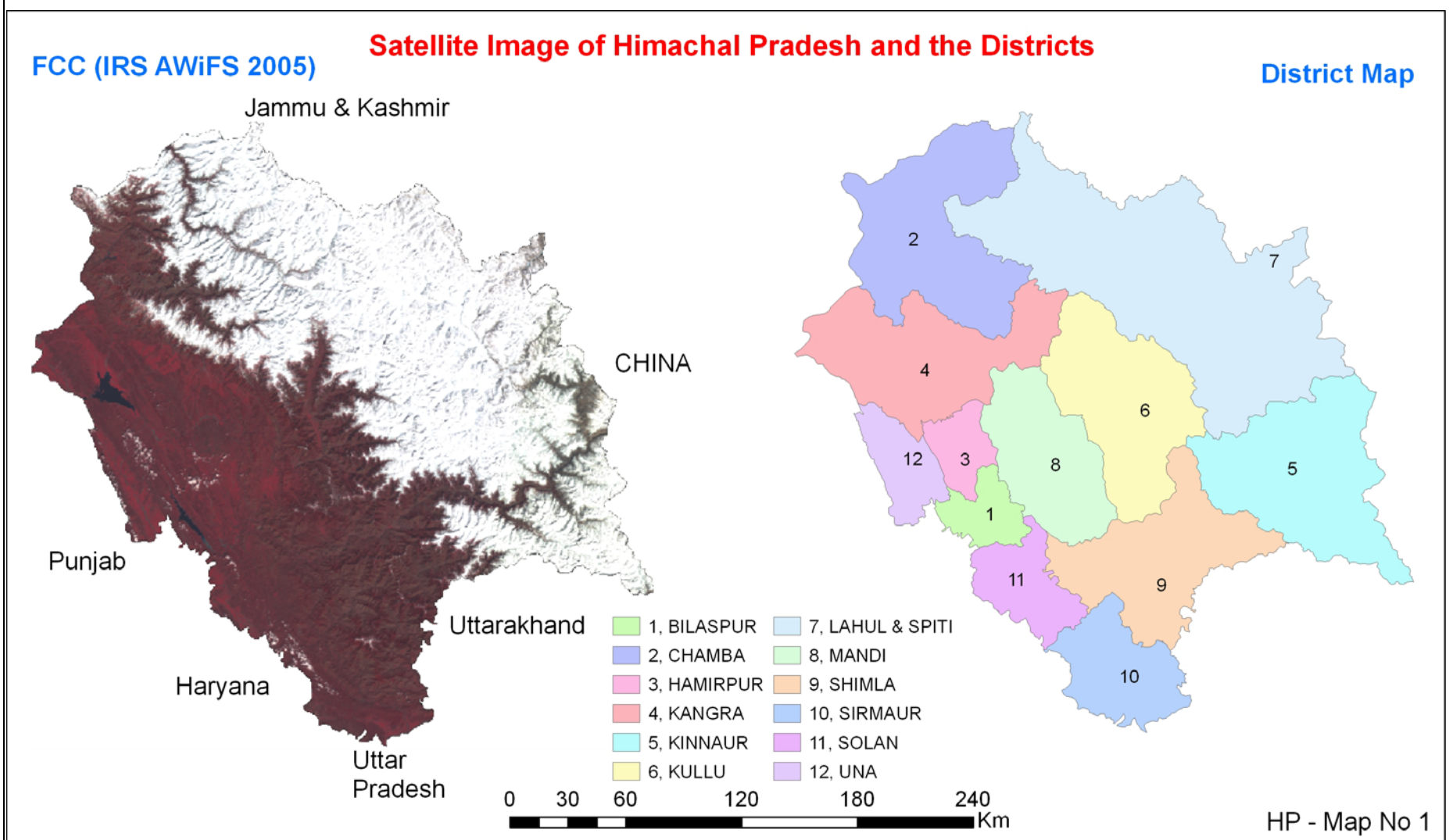
HIMACHAL PRADESH

INTRODUCTION

Location and Administrative Setup: Himachal Pradesh, located in Northern India, share its border with Jammu and Kashmir in the North, Uttarakhand in the Southeast, Uttar Pradesh in the South, Haryana in Southwest and Punjab in the West. It is located between 30°22' and 33°12' North latitude and between 75°47' and 79°04' East longitude. The state is located in altitudes ranging from 450 meters to 6500 meters above mean sea level covering an area of about 5567.300 Th ha (55673 sq. km). The state has 12 districts (Map 1), 109 sub-districts and 20118 total villages. Total number of towns in the state is 57 as per 2001 census. Shimla is the state capital.

According to 2001 census, total population of the state is 6077248 out of which 3085256 are male. Decadal growth in population is 17.51%. The state has population density of 109 persons/sq km. The overall sex ratio is 970 i.e. 970 females per 1000 males showing an increase from previous census.



Climate: There is great diversification in the climatic conditions of Himachal Pradesh due to variation in elevation. It varies from hot and sub-humid tropical to warm and temperate to cool and temperate to cold alpine and glacial in different parts of the state. The maximum temperature goes upto 22°C in the month of June–July and the minimum temperature around 3°C in the month of January. Average annual rainfall varies largely in the state with 454 mm in Lahul & Spiti and 1565mm in Kangra.

Land use: Land use statistics for the year 2003–'04 is given in Table 1.

Table 1: Major Land Use (Th ha)

PARTICULARS	2003-'04
Forest	1099.100
Not Available for Cultivation	
A-Land put to Non Agriculture Uses	453.500
B-Barren and Uncultivable Land	672.500
Other Uncultivable Land Excluding Fallow Land	
A-Permanent Pastures & Grazing Land	1515.000
B-Land under Misc. Tree Crops & Groves	62.500
C-Cultivable Wastelands	128.400
Fallow Land	
A-Current Fallow	56.100
B-Old Fallow	16.500
Cropped Area	
A-Net Area Sown	540.500
B-Area Sown More Then Once	415.100
Gross Cropped Area	955.600
Cropping Intensity (%)	176.80

(Source: www.indiastat.com)

Satellite Data: IRS 1D 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 Himachal Pradesh.

WATER RESOURCES AND COMMAND AREAS

Water Resources: The major river systems of the region are the Chandrabhaga or Chenab, Ravi, Beas, Sutllej and Yamuna. These perennial rivers are fed by snow and rainfall. The annual replenishable groundwater resource in the state is 0.43BCM and the stage of ground water development is 30%.

Command Areas: There are 7 irrigation commands in Himachal Pradesh. Number of major and medium irrigation commands are 1 and 6, respectively (Map 2).

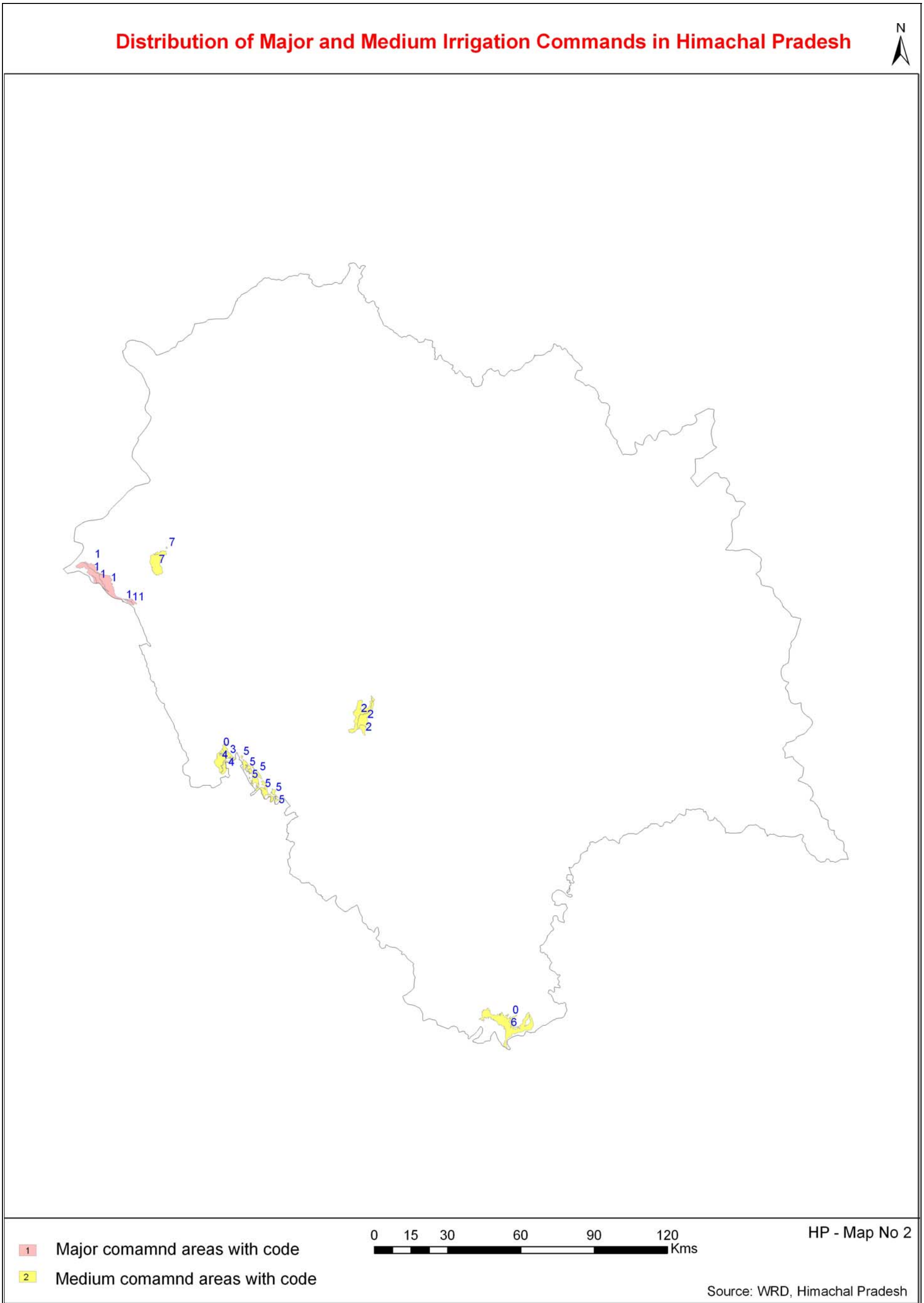
WATER LOGGING AND SALT AFFECTED AREAS IN MAJOR AND MEDIUM IRRIGATION COMMANDS BASED ON SATELLITE REMOTE SENSING

Total waterlogged area in the state is 0.261 Th ha out of which 0.006 Th ha perennial and 0.255 Th ha seasonal. Out of 7 irrigation commands, 3 commands have area under waterlogging category. There is no area under salt affected category in the state. Total 28 soil samples were collected to check the salinity / alkalinity in the command. Table 2 and Map 3 show the waterlogged areas in major and medium irrigation commands in Himachal Pradesh state.

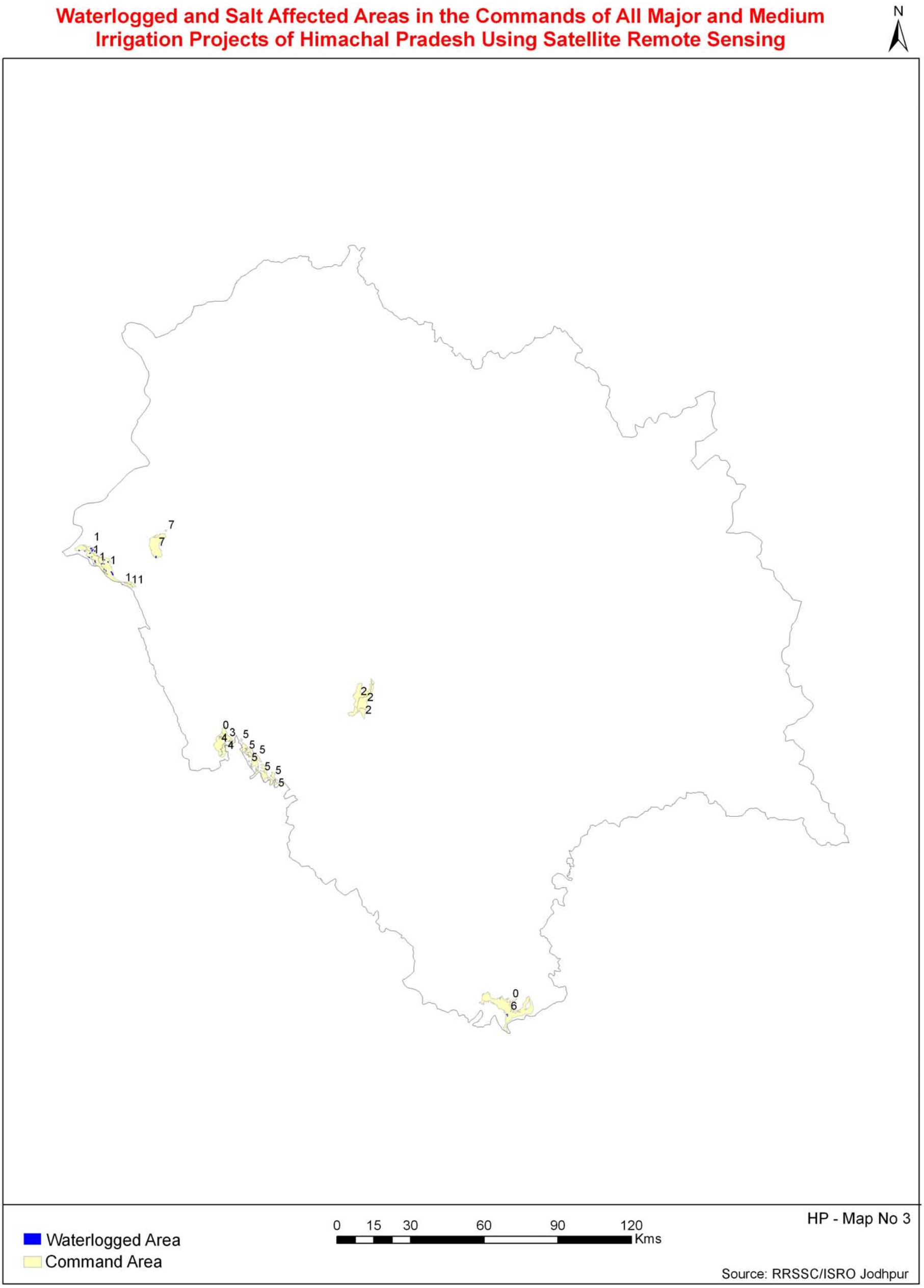
Table 2: Waterlogged and Salt Affected Area in major and medium irrigation commands of state

Code	Command name	Type	Waterlogged area (Th ha)	Salt affected area (Th ha)
1	Shahnehar Irrigation Project	Major	0.224	0.000
2	Balh Valley	Medium	0.000	0.000
3	Bhabour Sahib Lift Phase-1	Medium	0.000	0.000
4	Bhabour Sahib Lift Phase-2	Medium	0.000	0.000
5	Changer Lift Irrigation Project	Medium	0.000	0.000
6	Giri	Medium	0.019	0.000
7	Sidhata Irrigation Project	Medium	0.018	0.000
	TOTAL		**0.261**	**0.000**

Distribution of Major and Medium Irrigation Commands in Himachal Pradesh



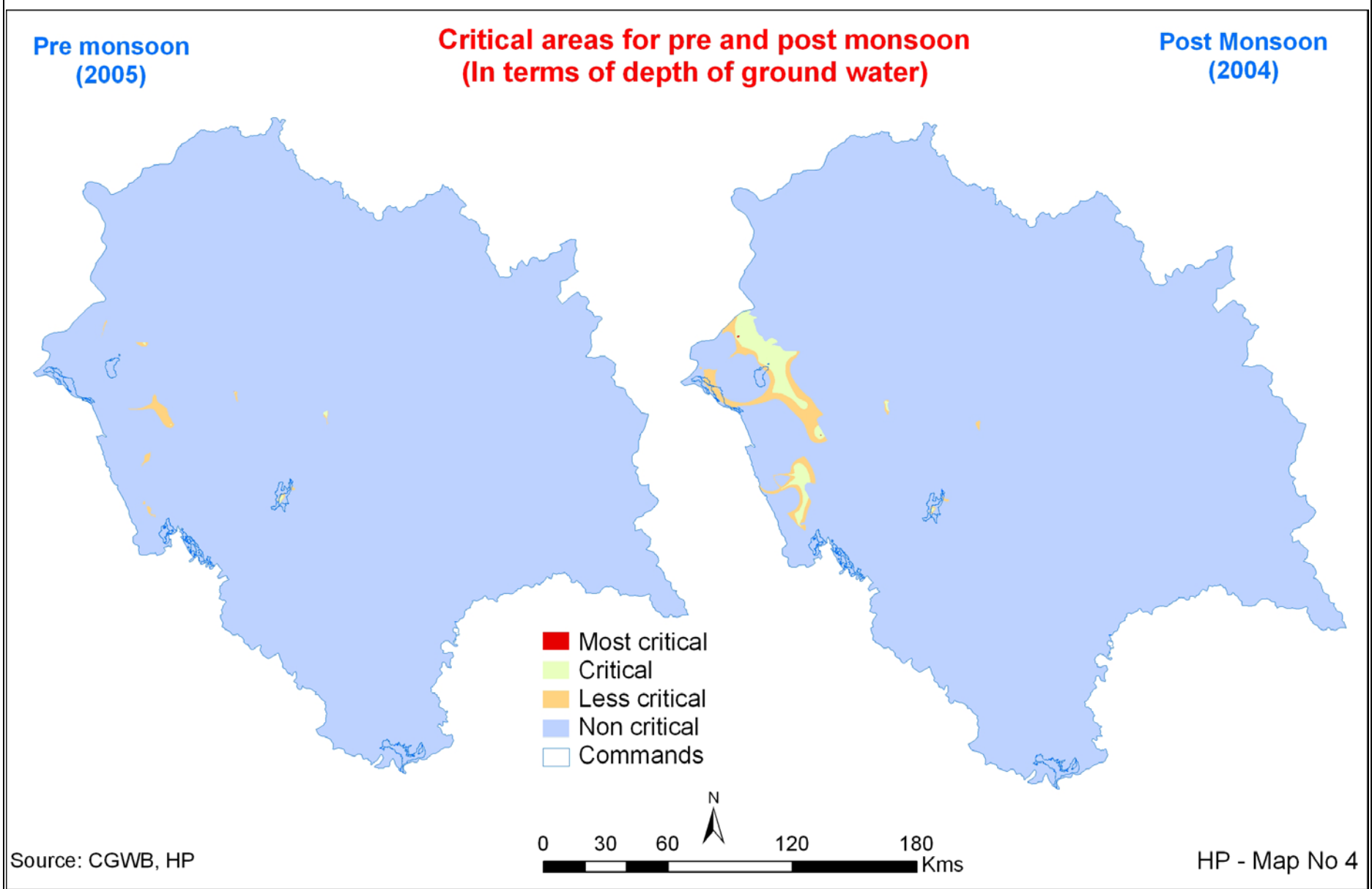
Waterlogged and Salt Affected Areas in the Commands of All Major and Medium Irrigation Projects of Himachal Pradesh Using Satellite Remote Sensing



For demarcation of critical waterlogged areas 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, 2005) and post (November, 2004) monsoon.

Table 3: Critical Area of Depth of Ground Water for Pre (May, 2005) and Post (November, 2004) 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, 2005)	0.000	0.00	0.386	1.08	0.620	1.73	34.824	97.19
Post Monsoon (November, 2004)	0.014	0.04	0.291	0.81	4.246	11.85	31.279	87.30



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