











NATIONAL WETLAND ATLAS:

UTTAR PRADESH

Sponsored by

Ministry of Environment and Forests

Government of India

Space Applications centre
Indian Space Research Organisation
Ahmedabad – 380 015









This publication deals with the updated database and status of wetlands, compiled in Atlas format. Increasing concern about how our wetlands are being influenced has led to formulation of a project entitled “National Wetland Inventory and Assessment (NWIA)” to create an updated database of the wetlands of India. The wetlands are categorised under 19 classes and mapped using satellite remote sensing data from Indian Remote Sensing Satellite: IRS P6- LISS III sensor. The results are organised at 1: 50, 000 scales at district, state and topographic map sheet (Survey of India reference) level using Geographic Information System (GIS). This publication is a part of this national work and deals with the wetland status of a particular State/Union Territory of India, through text, statistical tables, satellite images, maps and ground photographs.

The atlas comprises wetland information arranged into nine sections. How the NWIA project work has been executed highlighted in the first six sections viz: Introduction, NWIA project, Study area, Data used, Methodology, and Accuracy. This is the first time that high resolution digital remote sensing data has been used to map and decipher the status of the wetlands at national scale. The methodology highlights how the four spectral bands of LISS III data (green, red, near infra red and short wave infra red) have been used to derive various indices and decipher information regarding water spread, turbidity and aquatic vegetation. Since, the aim was to generate a GIS compatible database, details of the standards of database are also highlighted in the methodology.

The results and finding are organised in three sections; viz: Maps and Statistics, Major wetland types, and Important Wetlands of the area. The Maps and Statistics are shown for state and district level. It gives details of what type of wetlands exists in the area, how many numbers in each type, their area estimates in hectare. Since, the hydrology of wetlands are influenced by monsoon performance, extent of water spread and their turbidity (qualitative) in wet and dry season (post-monsoon and pre-monsoon period) are also given. Similarly the status of aquatic vegetation (mainly floating and emergent types) in two seasons is also accounted for. Status of small wetlands are also accounted as numbers and depicted in maps as points. Wetland map also show important ancillary information like roads/rail, relevant habitations. False Colour Composite (FCC) of the satellite image used (any one season) is shown along with the derived wetland map to give a feeling of manifestation of wetlands in remote sensing data and synoptic view of the area. The status of some of the important wetlands like Ramsar sites, National Parks are shown with recent field photographs.

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NATIONAL WETLAND ATLAS

UTTAR PRADESH

Sponsored by
Ministry of Environment and Forests, Government of India

As a part of the project on National Wetland Inventory and Assessment (NWIA)

Space Applications Centre (ISRO), Ahmedabad

and

Remote Sensing Applications Centre, Uttar Pradesh

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MESSAGE

It gives me great pleasure to introduce this Atlas, the latest in a series, prepared by Space Applications Centre, Ahmedabad in connection with the National Wetland Inventory and Assessment Project.

This Atlas maps and catalogues information on Wetlands across India using the latest in satellite imaging, one of the first of its kind. Wetlands are areas of land critical ecological significance that support a large variety of plant and animal species adapted to fluctuating water levels. Their identification and protection becomes very important.

Utility-wise, wetlands directly and indirectly support millions of people in providing services such as food, fiber and raw materials. They play important roles in storm and flood control, in supply of clean water, along with other educational and recreational benefits. Despite these benefits, wetlands are the first target of human interference and are among the most threatened of all natural resources. Around 50% of the earth's wetlands are estimated to already have disappeared worldwide over the last hundred years through conversion to industrial, agricultural and residential purposes. Even in current scenario, when the ecosystem services provided by wetlands are better understood - degradation and conversion of wetlands continues.

Aware of their importance, the Government of India has formulated several policies and plans for the conservation and preservation of these crucial ecosystems. Realising the need of an updated geospatial data base of these natural resources as the pre-requisite for management and conservation planning, National Wetland Inventory and Assessment (NWIA) project was formulated as a joint vision of Ministry of Environment & Forestry, Govt. India, and Space Applications Centre (ISRO). I am told that the latest remote sensing data from Indian Remote Sensing satellite (IRS P6) have been used to map the wetlands. The present atlas is part of this project and highlights the results of the study state in terms of statistics of various types of wetlands, extent of water, aquatic vegetation and turbidity in pre and post monsoon period. I also note that special efforts are made to provide detailed information of important wetlands like Ramsar sites, National Parks etc.

I am certain that this Atlas will raise the bar in developing such database and will be of great use for researchers, planners, policy makers, and also members of the general public.

(Jairam Ramesh)

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FOREWORD

Wetlands defined as areas of land that are either temporarily or permanently covered by water exhibit enormous diversity according to their genesis, geographical location, water regime and chemistry. Wetlands are one of the most productive ecosystems and play crucial role in hydrological cycle. Utility wise, wetlands directly and indirectly support millions of people in providing services such as storm and flood control, clean water supply, food, fiber and raw materials, scenic beauty, educational and recreational benefits. The Millennium Ecosystem Assessment estimates conservatively that wetlands cover seven percent of the earth's surface and deliver 45% of the world's natural productivity and ecosystem services. However, the very existence of these unique resources is under threat due to developmental activities, and population pressure. This calls for a long term planning for preservation and conservation of these resources. An updated and accurate database that will support research and decision is the first step towards this. Use of advanced techniques like Satellite remote sensing, Geographic Information System (GIS) is now essential for accurate and timely spatial database of large areas. Space Applications Centre (ISRO) took up this challenging task under the project "NWIA" (National Wetland Inventory and Assessment) sponsored by Ministry of Environment & Forests. To account for numerous small yet important wetlands found in the country, mapping at 1:50,000 scales has been taken up. Two date IRS LISS III data acquired during pre and post monsoon season are used for inventory to account for wet and dry season hydrology of wetlands. The map outputs include the status of water spread, aquatic vegetation and turbidity. Ancillary layers like road/rail, habitations are also created. Very small wetlands below the mappable unit are also identified and shown points. The results are complied as Atlases of wetlands for states/Union Territories of India. This Atlas highlights results for a particular state/UT and hopes to improve our understanding of the dynamics and distribution of wetlands and their status in the area.

I congratulate the team for bringing out this informative atlas and sincerely hope that this will serve as a useful source of information to researchers, planners and general public.

January 25, 2010

(Ranganath R. Navalgund)

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1.0 INTRODUCTION

It is increasingly realized that the planet earth is facing grave environmental problems with fast depleting natural resources and threatening the very existence of most of the ecosystems. Serious concerns are voiced among scientists, planners, sociologists, politicians, and economists to conserve and preserve the natural resources of the world. One of the difficulties most frequently faced for decision making is lack of scientific data of our natural resources. Often the data are sparse or unconvincing, rarely in the form of geospatial database (map), thus open to challenges. Thus, the current thrust of every country is to have an appropriate geospatial database of natural resources that is based on unambiguous scientific methods. The wetland atlas of Uttar Pradesh, which is part of the National Wetland Atlas of India, is an attempt in this direction.

1.1 Wetlands

Wetlands are one of the crucial natural resources. Wetlands are areas of land that are either temporarily or permanently covered by water. This means that a wetland is neither truly aquatic nor terrestrial; it is possible that wetlands can be both at the same time depending on seasonal variability. Thus, wetlands exhibit enormous diversity according to their genesis, geographical location, water regime and chemistry, dominant plants and soil or sediment characteristics. Because of their transitional nature, the boundaries of wetlands are often difficult to define. Wetlands do, however, share a few attributes common to all forms. Of these, hydrological structure (the dynamics of water supply, throughput, storage and loss) is most fundamental to the nature of a wetland system. It is the presence of water for a significant period of time which is principally responsible for the development of a wetland. One of the first widely used classifications systems, devised by Cowardin *et al,* (1979), was associated to its hydrological, ecological and geological aspects, such as: marine (coastal wetlands including rock shores and coral reefs, estuarine (including deltas, tidal marshes, and mangrove swamps), lacustarine (lakes), riverine (along rivers and streams), palustarine ('marshy'- marshes, swamps and bogs). Given these characteristics, wetlands support a large variety of plant and animal species adapted to fluctuating water levels, making the wetlands of critical ecological significance. Utility wise, wetlands directly and indirectly support millions of people in providing services such as food, fiber and raw materials, storm and flood control, clean water supply, scenic beauty and educational and recreational benefits. The Millennium Ecosystem Assessment estimates conservatively that wetlands cover seven percent of the earth's surface and deliver 45% of the world's natural productivity and ecosystem services of which the benefits are estimated at $20 trillion a year (Source : www.MAweb.org). The Millennium Assessment (MA) uses the following typology to categorise ecosystem services:

Provisioning services: The resources or products provided by ecosystems, such as food, raw materials (wood), genetic resources, medicinal resources, ornamental resources (skin, shells, flowers).

Regulating services: Ecosystems maintain the essential ecological processes and life support systems, like gas and climate regulation, water supply and regulation, waste treatment, pollination, etc.

Cultural and Amenity services: Ecosystems are a source of inspiration to human culture and education throughout recreation, cultural, artistic, spiritual and historic information,
science and education.

Supporting services: Ecosystems provide habitat for flora and fauna in order to maintain biological and genetic diversity.

Despite these benefits, wetlands are the first target of human interference and are among the most threatened of all natural resources. Around 50% of the earth's wetlands is estimated to already have disappeared worldwide over the last hundred years through conversion to industrial, agricultural and residential developments. Even in current scenario, when the ecosystem services provided by wetlands are better understood - degradation and conversion of wetlands continues. This is largely due to the fact that the 'full value' of ecosystem functions is often ignored in policy-making, plans and corporate evaluations of development projects.

1.2 Mapping and Geospatial technique

To conserve and manage wetland resources, it is important to have inventory of wetlands and their catchments. The ability to store and analyse the data is essential. Digital maps are very powerful tools to achieve this. Maps' relating to the biophysical objects of any given geographical location has a strong visual impact. Maps are thus essential for monitoring and quantifying change over time scale, assist in decision-making. The technique used in the preparation of map started with ground survey. The Survey of India (SOI) topographic maps are the earliest true maps of India showing various land use/cover classes including wetlands. Recent years have seen advances in mapping technique to prepare maps with much more information. Of particular importance is the remote sensing and geographic information system (GIS)

technique. Remote sensing is now recognized as an essential tool for viewing, analyzing, characterizing, and making decisions about land, water and atmospheric components.

From a general perspective, remote sensing is the science of acquiring and analyzing information about objects or phenomena from a distance (Jensen, 1986; Lillesand and Keifer, 1987). Today, we define satellite remote sensing as the use of satellite borne sensors to observe, measure, and record the electromagnetic radiation (EMR) reflected or emitted by the earth and its environment for subsequent analysis and extraction of information. EMR sensors include visible light, near-, mid- and far-infrared (thermal), microwave, and long-wave radio energy. The capability of multiple sources of information is unique to remote sensing. Of specific advantage is the spectral, temporal, and spatial resolution. Spectral resolution refers to the width or range of each spectral band being recorded. Since each target affects different wavelengths of incident energy differently, they are absorbed, reflected or transmitted in different proportions. Currently, there are many land resource remote sensing satellites that have sensors operating in the green, red, near infrared and short wave Infra red regions of the electromagnetic spectrum giving a definite spectral signature of various targets due to difference in radiation absorption and reflectance of targets. These sensors are of common use for land cover studies, including wetlands**.** Figure 1 shows typical spectral signature of few targets from green to SWIR region. Converted to image, in a typical false colour composite (FCC) created using NIR, red and green bands assigned as red, green and blue colour, the features become very distinct as shown in Figure 2. In FCC, the vegetation thus appears invariably red (due to high reflection in NIR from green leaves).

Since the early 1960s, numerous satellite sensors have been launched into orbit to observe and monitor the earth and its environment. Most early satellite sensors acquired data for meteorological purposes. The advent of earth resources satellite sensors (those with a primary objective of mapping and monitoring land cover) occurred, when the first Landsat satellite was launched in July 1972. Currently, more than a dozen orbiting satellites of various types provide data crucial to improving our knowledge of the earth's atmosphere, oceans, ice and snow, and land. Of particular interest to India is the indigenous series of satellites called Indian Remote Sensing satellites (IRS-Series). Since the launch of the first satellite IRS 1A in 1987, India has now a number of satellites providing data in multi-spectral bands with different spatial resolution. IRS P6/RESOURCESAT 1 is the current generation satellite that provides multi-spectral images in spatial resolution of 5.8 m (LISS IV), 23.5 m (LISS III) and 56m (AWiFS). Over the past few decades, Indian remote sensing data has been successfully used in various fields of natural resources (Navalgund et al. 2002).

Development of technologies like Geographic Information System (GIS) has enhanced the use of RS data to obtain accurate geospatial database. GIS specialises in handling related, spatially referenced data, combining mapped information with other data and acts as analytical tool for research and decision making. During the past few decades, technological advances in the field of satellite remote sensing (RS) sensors, computerized mapping techniques, global positioning system (GPS) and geographic information system (GIS) has enhanced the ability to capture more detailed and timely information about the natural resources at various scales catering to local, regional, national and global level study.

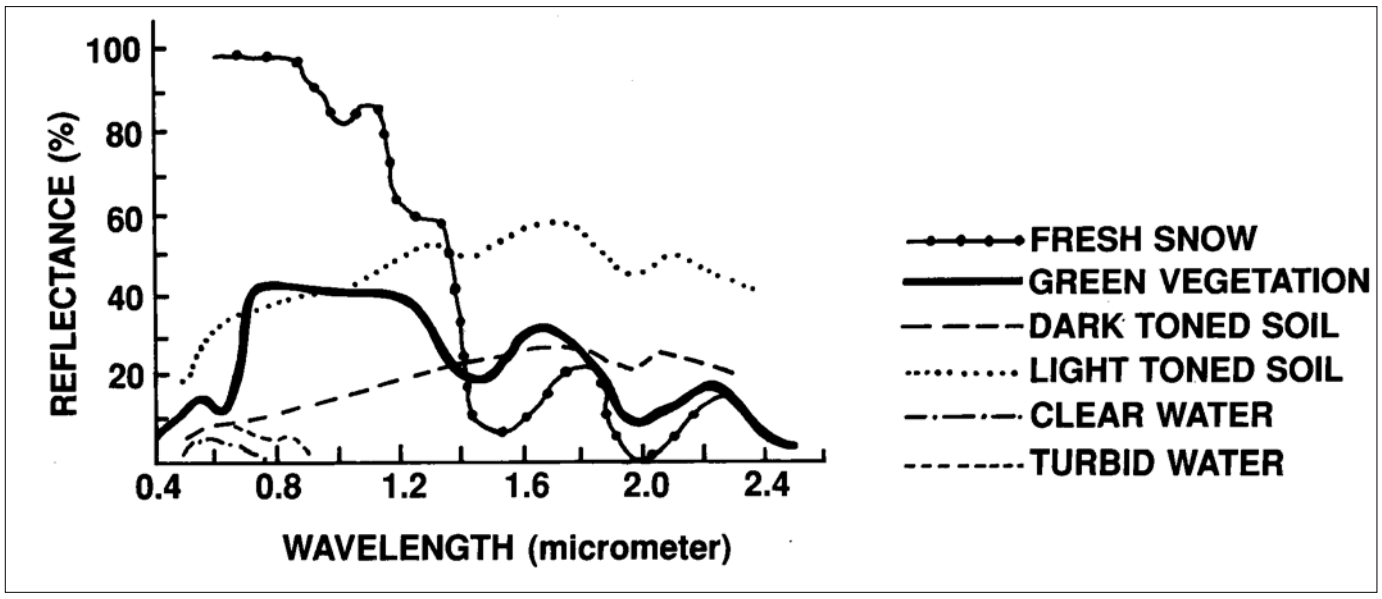


Figure 1: Spectral Signature of various targets

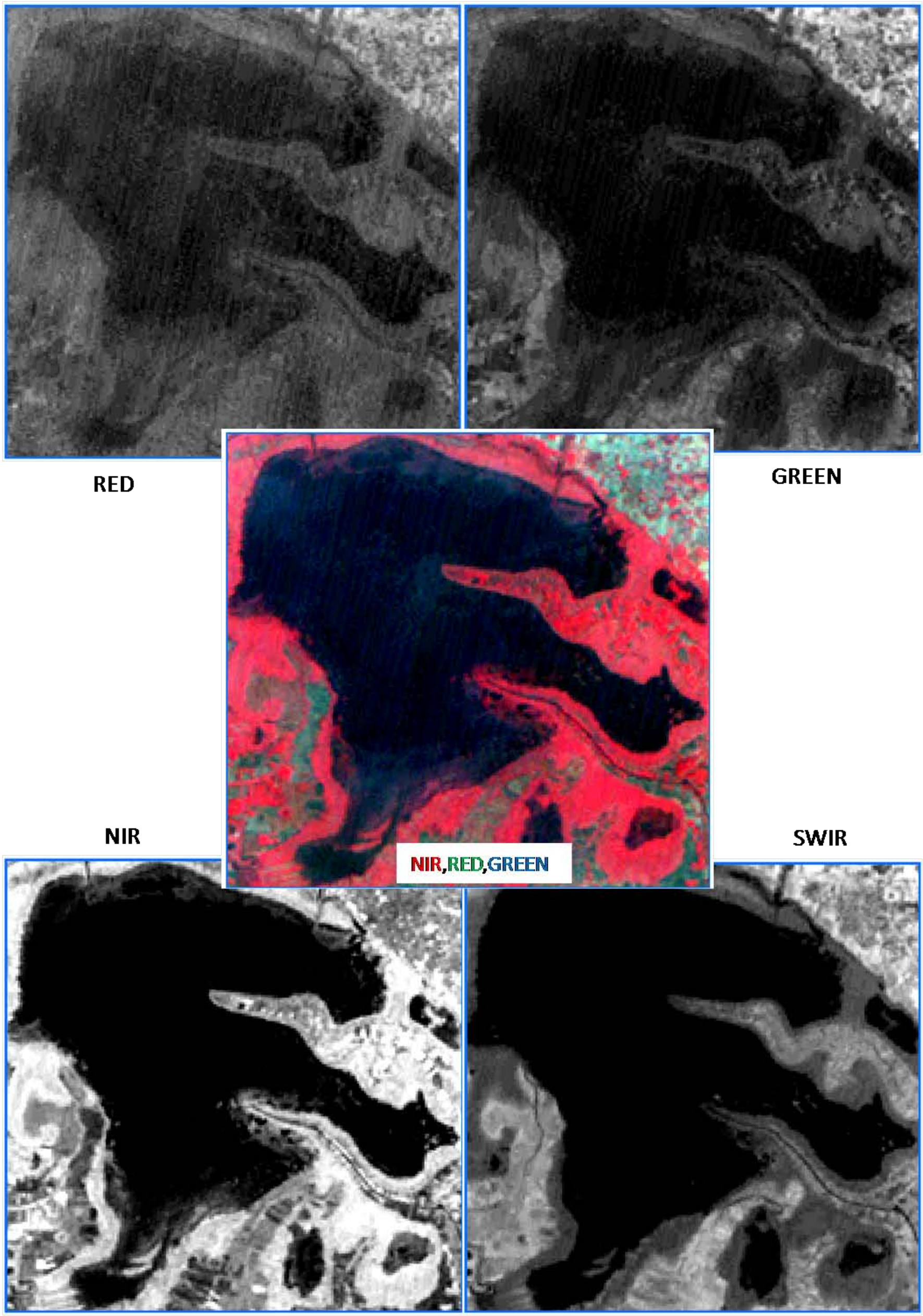


Figure 2: Various wetland features as they appear in four spectral bands and in a typical three band FCC

1.3 Wetland Inventory of India

India with its large geographical spread supports large and diverse wetland classes, some of which are unique. Wetlands, variously estimated to be occupying 1-5 per cent of geographical area of the country, support about a fifth of the known biodiversity. Like any other place in the world, there is a looming threat to the aquatic biodiversity of the Indian wetlands as they are often under a regime of unsustainable human pressures. Sustainable management of these assets therefore is highly relevant. Realising this, Govt. of India has initiated many appropriate steps in terms of policies, programmes and plans for the preservation and conservation of these ecosystems. India is a signatory to the Ramsar Convention for management of wetland, for conserving their biodiversity and wise use extending its scope to a wide variety of habitats, including rivers and lakes, coastal lagoons, mangroves, peat lands, coral reefs, and numerous human-made wetland, such as fish and shrimp ponds, farm ponds, irrigated agricultural land, salt pans reservoirs, gravel pits, sewage farms, and canals. The Ministry of Environment and Forests has identified a number of wetlands for conservation and management under the National Wetland Conservation Programme and some financial assistance is being provided to State Governments for various conservation activities through approval of the Management Action Plans. The need to have an updated map database of wetlands that will support such actions has long been realized.

Mapping requires a standard classification system. Though there are many classification systems for wetlands in the world, the Ramsar classification system is the most preferred one. The 1971 Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat is the oldest conservation convention. It owes its name to its place of adoption in Iran. It came into being due to serious decline in populations of waterfowl (mainly ducks) and conservation of habitats of migratory waterfowl. Convention provides framework for the conservation and 'wise use' of wetland biomes. Ramsar convention is the first modern global intergovernmental treaty on conservation and wise use of natural resources (www.ramsar.org). Ramsar convention entered into force in 1975. Under the text of the Convention (Article 1.1) wetlands are defined as:

"areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters".

In addition, the Convention (Article 2.1) provides that wetlands:

"may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands".

The first scientific mapping of wetlands of India was carried out during1992-93 by Space Applications Centre (ISRO), Ahmedabad, at the behest of the Ministry of Environment and Forests (MoEF), Govt. of India using remote sensing data from Indian Remote Sensing satellites (IRS-Series). The mapping was done at 1:250,000 scale using IRS 1A LISS-I/II data of 1992-93 timeframe under the Nation-wide Wetland Mapping Project. Since, no suitable wetland classification existed for comprehensive inventory of wetlands in the country at that time; the project used a classification system based on Ramsar Convention definition of wetlands. The classification considers all parts of a water mass including its ecotonal area as wetland. In addition, fish and shrimp ponds, saltpans, reservoirs, gravel pits were also included as wetlands. This inventory put the wetland extent (inland as well as coastal) at about 8.26 million ha. (Garg et al, 1998). These estimates (24 categories) do not include rice/paddy fields, rivers, canals and irrigation channels.

Further updating of wetland maps of India was carried out by SAC using IRS P6/Resourcesat LISS-III data of 2004-05 at 1:250000 scale. In recent years, a conservation atlas has been brought out by Salim Ali Centre for Ornithology and Natural History (SACON, 2004), which provide basic information required by stakeholders in both wetland habitat and species conservation. Space Applications Centre has carried out many pilot projects for development of GIS based wetland information system (Patel et al, 2003) and Lake Information system (Singh et al, 2003).

2.0 NATIONAL WETLAND INVENTORY AND ASSESSMENT (NWIA) PROJECT

Realising the importance of many small wetlands that dot the Indian landscape, it has been unanimously felt that inventory of the wetlands at 1:50,000 scale is essential. The task seemed challenging in view of the vast geographic area of our country enriched with diverse wetland classes. Space Applications Centre has wide experience in use of RS and GIS in the field of wetland studies, took up this challenging task. This is further strengthened by the fact that guidelines to create geospatial framework, codification scheme, data base structure etc. for natural resources survey has already been well established by the initiative of ISRO under various national level mapping projects. With this strength, the National Wetland Inventory and Assessment (NWIA) project was formulated by SAC, which was approved and funded by MoEF.

The main objectives of the project are:

- To map the wetlands on 1:50000 scale using two date (pre and post monsoon) IRS LISS III digital data following a standard wetland classification system.
- Integration of ancillary theme layers (road, rail, settlements, drainage, administrative boundaries)
- Creation of a seamless database of the states and country in GIS environment.
- Preparation of State-wise wetland atlases

The project was initiated during 2007. The first task was to have a classification system that can be used by different types of users while amenable to database. An expert/peer group was formed and the peer review was held at SAC on June 2007 where wetland experts and database experts participated and finalized the classification system. It was agreed to follow the classification system that has been used for the earlier project of 1:250,000 scale, with slight modification. Modified National Wetland Classification system for wetland delineation and mapping comprise 19 wetland classes, which are organized under a Level III hierarchical system. The definition of each wetland class and its interpretation method was finalized. The technical/procedure manual was prepared as the standard guideline for the project execution across the country (Garg and Patel, 2007). The present atlas is part of the national level database and deals with the state of Uttar Pradesh.

2.1 Wetland Classification System

In the present project, Modified National Wetland Classification system is used for wetland delineation and mapping comprising 19 wetland classes which are organized under a Level III hierarchical system (Table 1). Level one has two classes: inland and coastal, these are further bifurcated into two categories as: natural and man-made under which 19 wetland classes are suitably placed. Two date data pertaining to pre-monsoon and post monsoon was used to confirm the classes. Wetlands put to agriculture use in any of the two dates are not included as wetland class. Definitions of wetland categories used in the project is given in Annexure-I.

2.2.1 Spatial Framework and GIS Database

The National Spatial Framework) (NSF) has been used as the spatial framework to create the database (Anon. 2007). The database design and creation standard suggested by NRDB/NNRMS guidelines is followed. Feature codification scheme for every input element has been worked out keeping in view the nationwide administrative as well as natural hierarchy (State-district- within the feature class for each of the theme. All data elements are given a unique name, which are self explanatory with short forms.

Following wetland layers are generated for each inland wetland:

- Wetland extent: As wetlands encompass open water, aquatic vegetation (submerged, floating and emergent), the wetland boundary should ideally include all these. Satellite image gives a clear signature of the wetland extent from the imprint of water spread over the years.
- Water spread: There are two independent layers representing post-monsoon and pre-monsoon water spread.

- Aquatic vegetation spread: The presence of vegetation in wetlands provides information about its trophic condition. As is known, aquatic vegetation is of four types, viz. benthic, submerged, floating, and emergent. It is possible to delineate last two types of vegetation using optical remote sensing data. A qualitative layer pertaining to presence of vegetation is generated for each season (as manifested on pre-monsoon and post-monsoon imagery).
- Turbidity level of open water: A layer pertaining to a qualitative turbidity rating is generated. Three qualitative turbidity ratings (low, medium and high) is followed for pre and post-monsoon turbidity of lakes, reservoirs, barrages and other large wetlands.
- Small wetlands (smaller than minimum mappable unit) are mapped as point features.
- Base layers like major road network, railway, settlements, and surface drainage are created (either from the current image or taken from other project data base).

In the case of coastal wetlands only wetland extent is given.

Table 1: Wetland Classification System and coding

Wettcode*	Level I	Level II	Level III
1000	Inland Wetlands		
1100		Natural	
1101			Lakes
1102			Ox-Bow Lakes/ Cut-Off Meanders
1103			High altitude Wetlands
1104			Riverine Wetlands
1105			Waterlogged
1106			River/stream
1200		Man-made	
1201			Reservoirs/ Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
2000	Coastal Wetlands		
2100		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt Marsh
2106			Mangroves
2107			Coral Reefs
2200		Man-made	
2201			Salt pans
2202			Aquaculture ponds

* Wetland type code

3.0 STUDY AREA

The state of Uttar Pradesh is the most populated state of the country having a total population of 166.2 million distributed over 71 districts and occupies an area of 2,40,928 km^2. It lies on the northern most part of the country between 23^0 45' to 30^0 30' N latitude and 77^0 to $84^0$45' E longitude. The Uttar Pradesh state is surrounded by Uttarakhand state and Nepal on its northern border; Haryana, Delhi and Rajasthan on its western boundary; Madhya Pradesh and Chhattisgarh on its southern side and Bihar and Jharkhand on its eastern boundary (Figure-3).

The terrain ranges from undulating Bundelkhand region in the Vindhayan hills on the southern part to tarai area in the north, intervened by indo-gangetic plain in the middle across the state from west to east. Major rivers that flow across the state are the Ganga, Yamuna, Ghaghra, Rapti, Gandak. Other major tributaries draining into these rivers are Ramganga, Gomti, Hindan, Chambal, Saryu, Sai, Kosi, Betwa, Belan, Dhasan, Tons, Son etc. Besides many rivers, there are a large number of lakes, ponds, tanks, reservoirs, dams, canals distributed all over the state. There are about fourteen bird sanctuaries namely Kachhua, Nawabganj, Samaspur, Lakhbahosi, Sandi, Bakhira, Okhala, Saman, Parwati arga, Vijay Sagar, Patna, Surshatal, Sursarovar and Hastinapur.

The state has a tropical climate where the maximum summer temperature reaches at some places up to 47^0C. The minimum temperature in winter has been recorded as low as 4^0C. The state experiences three district seasons i.e. winter, summer and monsoon. The average rainfall varies from 600 mm to 1800 mm Most of the rain occurs during July to September.

The state of Uttar Pradesh is covered in 426 Survey of India topographic maps on 1:50,000 scale that form the spatial frame work for mapping (Figure-4)

A detail of district information followed in the atlas is given in Annexure-II.

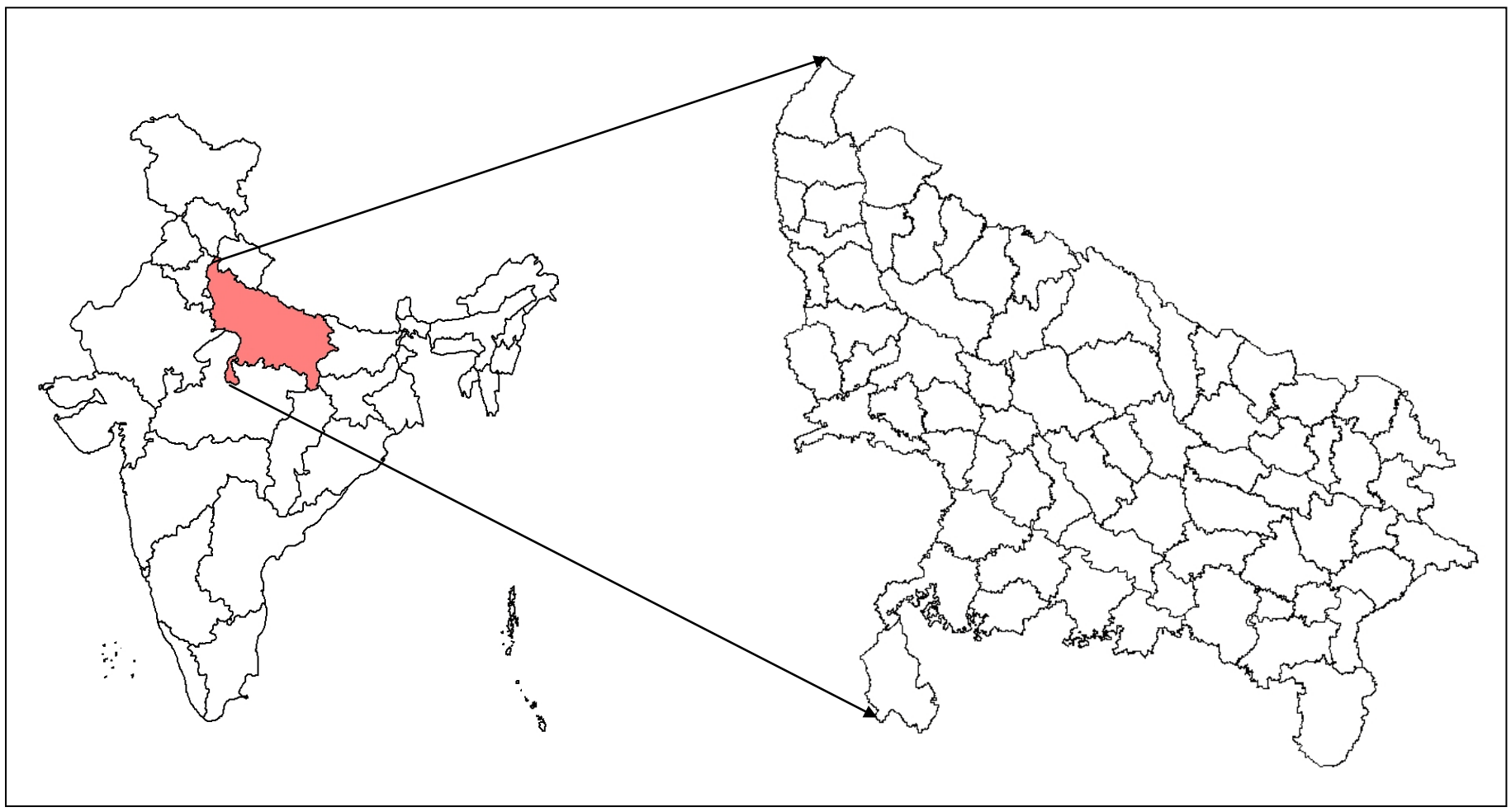


Figure 3: Location Map

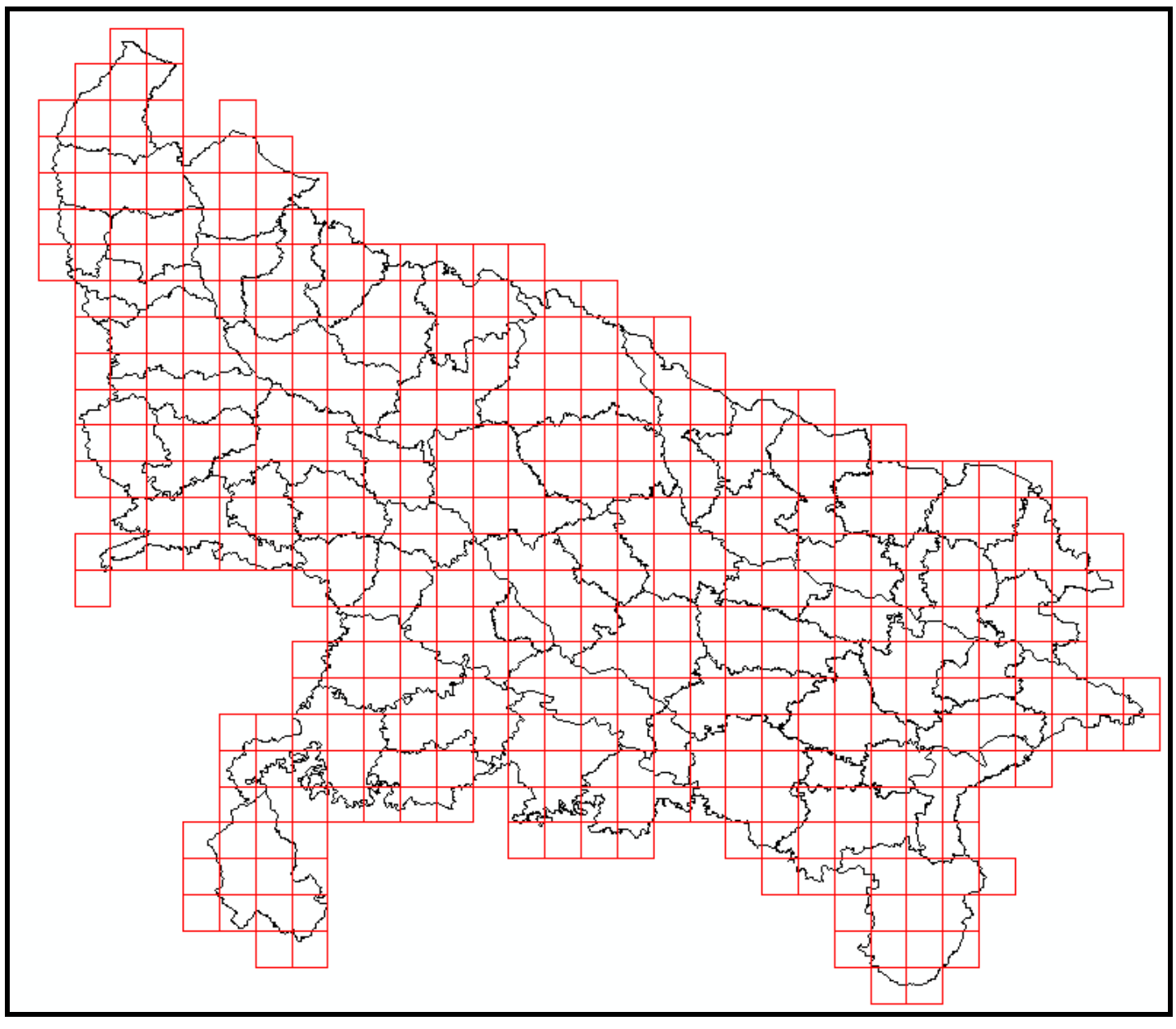


Figure 4: Spatial Framework of Uttar Pradesh

4.0 DATA USED

4.1 Remote sensing data

IRS P6 LISS III data was used to map the wetlands. IRS P6 LISS III provides data in 4 spectral bands; green, red, Near Infra Red (NIR) and Short wave Infra Red (SWIR), with 23 m spatial resolution and 24 day repeat cycle. The spatial resolution is suitable for 1:50 000 scale mapping. The state of Uttar Pradesh is covered in 30 IRS LISS III scenes (Figure 5). Two date-data, one acquired during pre-monsoon (March–July) and post-monsoon (September-January) were used to capture hydrological variability of the wetlands (Table-2). Figure 6 shows the overview of the part of Uttar Pradesh valley as seen in the LISS III FCC of post- monsoon pre-monsoon data respectively.

4.3 Ground truth data

Remote sensing techniques require certain amount of field observations called “ground truth” in order to develop interpretation key and to enhance thematic accuracy. Such work involves visiting a number of test sites, usually taking the satellite data. The location of the features is recorded using the GPS. The standard Performa as per the NWIA manual was used to record the field data. Field photographs are also taken to record the water quality (subjective), status of aquatic vegetation and water spread. All field verification work has been done during 2008-2009.

4.3 Other data

Survey of India topographical maps (SOI) were used for reference purpose. Lineage data of National Wetland Maps at 1:250,000 scale was used for reference.

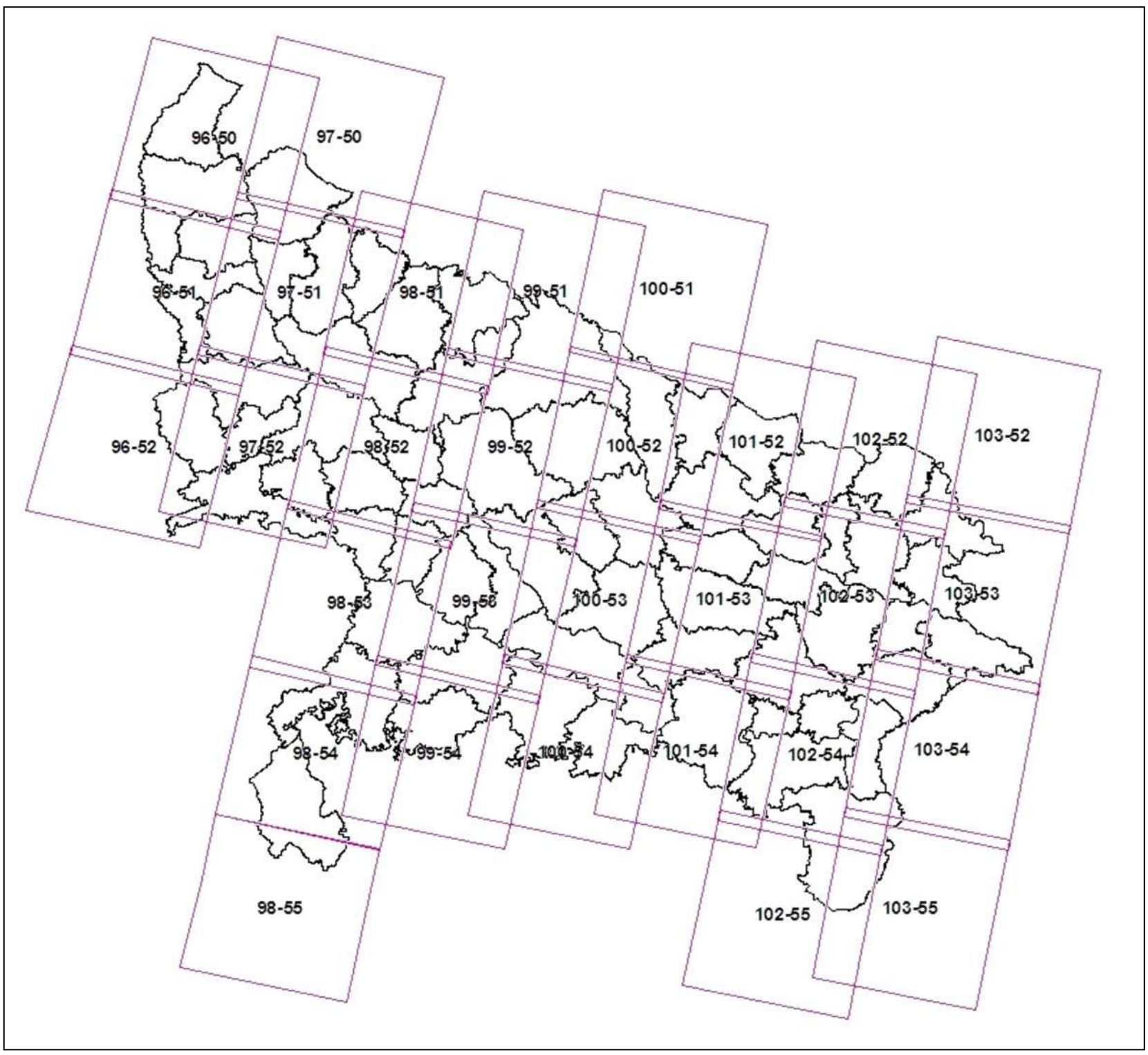


Figure 5: IRS P6 LISS-III coverage (path-row) of Uttar Pradesh

Table-2 : List of Satellite data

Sr. No.	Sensor	Path-Row	Date of acquisition	
			Post-monsoon	Pre-monsoon
1	IRS P6 LISS-III	96-50	10 October,06	14 May,07
2	IRS P6 LISS-III	96-51	10 October,06	14 May,07
3	IRS P6 LISS-III	96-52	10 October,06	14 May,07
4	IRS P6 LISS-III	97-50	15 October,06	25 April,07
5	IRS P6 LISS-III	97-51	15 October,06	19 May,07
6	IRS P6 LISS-III	97-52	15 October,06	1 April,07
7	IRS P6 LISS-III	98-51	15 November,06	24 May,07
8	IRS P6 LISS-III	98-52	26 September,06	24 May,07
9	IRS P6 LISS-III	98-53	26 September,06	24 May,07
10	IRS P6 LISS-III	98-54	26 September,06	24 May,07
11	IRS P6 LISS-III	98-55	26 September,06	24 May,07
12	IRS P6 LISS-III	99-51	18 November,06	11 April,07
13	IRS P6 LISS-III	99-52	25 October,06	11 April,07
14	IRS P6 LISS-III	99-53	25 October,06	11 April,07
15	IRS P6 LISS-III	99-54	25 October,06	11 April,07
16	IRS P6 LISS-III	100-51	6 October,06	10 May.,07
17	IRS P6 LISS-III	100-52	6 October,06	10 May,07
18	IRS P6 LISS-III	100-53	6 October,06	10 May,07
19	IRS P6 LISS-III	100-54	6 October,06	3 June,07
20	IRS P6 LISS-III	101-52	4 November,06	8 June,07
21	IRS P6 LISS-III	101-53	4 November,06	8 June,07
22	IRS P6 LISS-III	101-54	4 November,06	15 May,07
23	IRS P6 LISS-III	102-52	16 October,06	26 April,07
24	IRS P6 LISS-III	102-53	16 October,06	26 April,07
25	IRS P6 LISS-III	102-54	16 October,06	26 April,07
26	IRS P6 LISS-III	102-55	16 October,06	26 April,07
27	IRS P6 LISS-III	103-52	14 November,06	25 May,07
28	IRS P6 LISS-III	103-53	14 November,06	25 May,07
29	IRS P6 LISS-III	103-54	14 November,06	25 May,07
30	IRS P6 LISS-III	103-55	14 November,06	25 May,07

5.0 METHODOLOGY

The methodology to create the state level atlas of wetlands is adhered to NWIA technical guidelines and procedure manual (Garg and Patel, 2007). The overview of the steps used is shown in Figure 7. Salient features of methodology adopted are

- Generation of spatial framework in GIS environment for database creation and organisation.
- Geo-referencing of satellite data
- Identification of wetland classes as per the classification system given in NWIA Manual and mapping of the classes using a knowledge based digital classification and onscreen interpretation
- Generation of base layers (rail, road network, settlements, drainage, administrative boundaries) from satellite image and ancillary data.
- Mosaicing/edge matching to create district and state level database.
- Coding of the wetlands following the standard classification system and codification as per NWIA manual.
- Preparation of map compositions and generation of statistics
- Outputs on A3 size prints and charts for atlas.

Work was carried out using ERDAS Imagine, Arc/Info and Arcgis software.

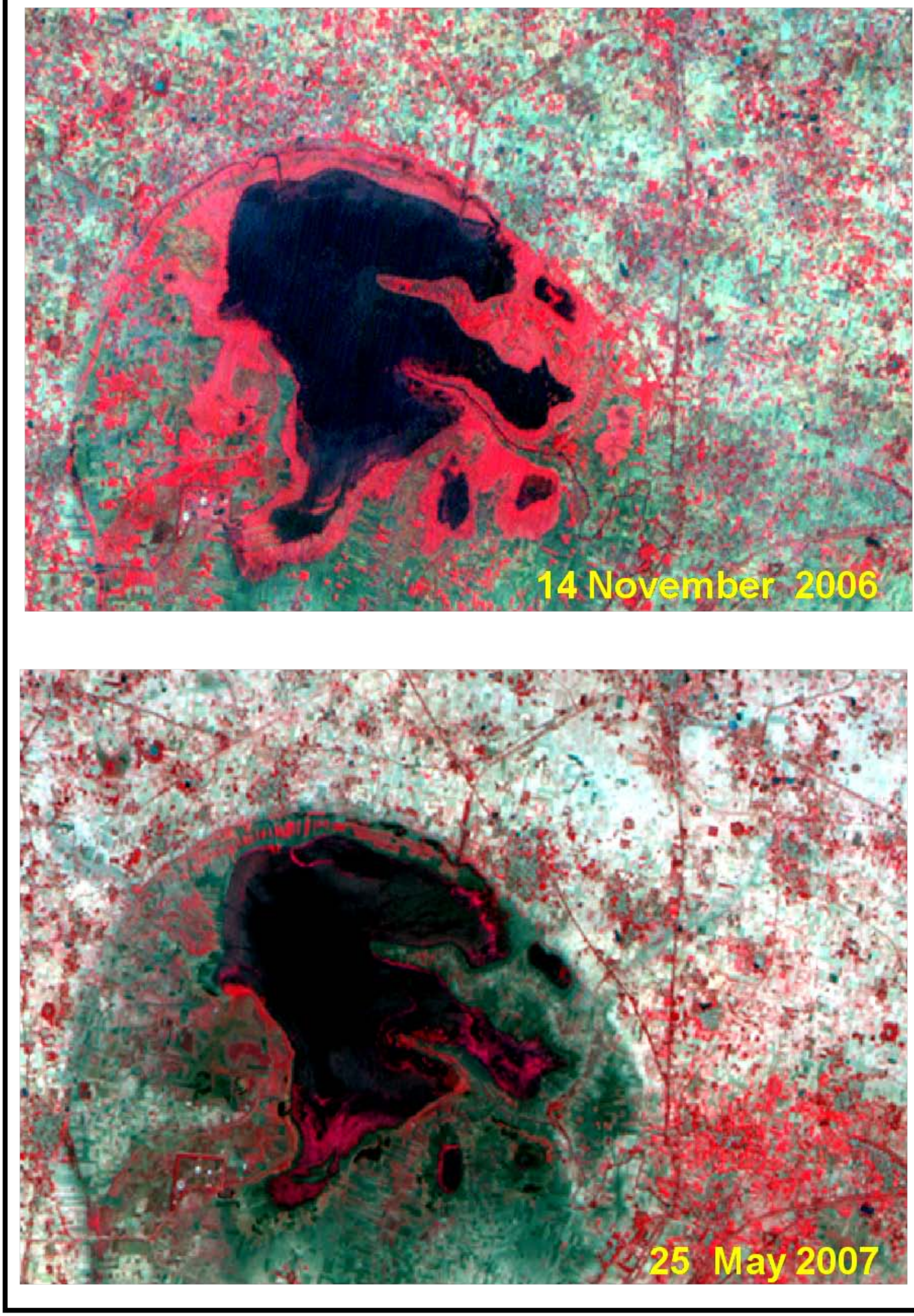


Figure 6: IRS LISS-III FCC (Post-monsoon and Pre-monsoon): Part of Uttar Pradesh state

5.1 Creation of spatial framework

This is the most important task as the state forms a part of the national framework and is covered in multiple map sheets. To create NWIA database, NNRMS/NRDB standards is followed and four corners of the 1:50,000 (15' x 15') grid is taken as the tics or registration points to create each map taking master grid as the reference. Spatial framework details are given in NWIA manual (Garg and Patel 2007). The spatial framework for Uttar Pradesh state is shown in Figure 4.

5.2 Geo-referencing of satellite data

In this step the raw satellite images were converted to specific map projection using geometric correction. This is done using archived geometrically corrected LISS III data (ISRO-NRC-land use / land cover project). Standard image processing software was used for geo-referencing. First one date data was registered with the archived image. The second date data was then registered with the first date data.

5.3 Mapping of wetlands

The mapping of wetlands was done following digital classification and onscreen visual interpretation. Wetlands features include open water, surface aquatic vegetation (floating and emergent), quality of water (subjective) and the boundary of the wetland. In the present project, five indices known in literature that enhances various wetland characteristics were used (McFeetres, 1986; Xu Hanqiu, 2006; Lacaux *et al*, 2007; Townshend and Justice, 1986; Tucker and Sellers, 1986) as given below:

i) Normalised Difference Water Index (NDWI) = (Green-NIR) / (Green + NIR)
ii) Modified Normalised Difference Water Index (MNDWI) = (Green-MIR) / (Green + MIR)
iii) Normalised Difference Vegetation Index (NDVI) = (NIR - Red) / (NIR + Red)
iv) Normalised Difference Pond Index (NDPI) = (MIR – Green / MIR + Green)
v) Normalised Difference Turbidity Index (NDTI) = (Red – Green) / (Red + Green)

The indices were generated using standard image processing software, stacked as layers (Figure 8). Various combinations of the indices/spectral bands were used to identify the wetland features as shown in Figure 9. The following indices were used for various layer extractions:

- Extraction of wetland extent:

  MNDWI, NDPI and NDVI image was used to extract the wetland boundary through suitable hierarchical thresholds.

- Extraction of open water:

  MNDWI was used within the wetland mask to delineate the water and no-water areas.

- Extraction of wetland vegetation:

  NDPI and NDVI image was used to generate the vegetation and no-vegetation areas within a wetland using a suitable threshold.

- Turbidity information extraction:

  NDTI and MNDWI image was used to generate qualitative turbidity level (high, moderate and low) based on signature statistics and standard deviations. In the False Colour Composite (FCC) these generally appear in different hues. (Table-3).

Table 3: Qualitative turbidity ratings

Sr. No.	Qualitative Turbidity	Conditional criteria	Hue on False Colour Composite (FCC)
1.	Low	> $+1\sigma$	Dark blue/blackish
2.	Moderate	> -1σ to <= $+1\sigma$	Medium blue
3.	High/Bottom reflectance	<= $\mu - 1\sigma$	Light blue/whitish blue

5.4 Conversion of the raster (indices) into a vector layer

The information on wetland extent, open water extent, vegetation extent and turbidity information was converted into vector layers using region growing properties or on-screen digitisation.

5.5 *Generation of reference layers*

Base layers like major rail, road network, settlements, drainage are interpreted from the current image or taken from other project database. The administrative boundaries (district, state) are taken from the known reference data.

5.6 Coding and attribute scheme

Feature codification scheme for every input element has been worked out keeping in view the nationwide administrative as well as natural hierarchy (State-district-taluka) within the feature class for each of the theme. All data elements are given a unique name/code, which are self explanatory with short forms.

5.7 Map composition and output

Map composition for atlas has been done at district and state level. A standard color scheme has been used for the wetland classes and other layers. The digital files are made at 1:50 000 scale. The hard copy outputs are taken on A3 size.

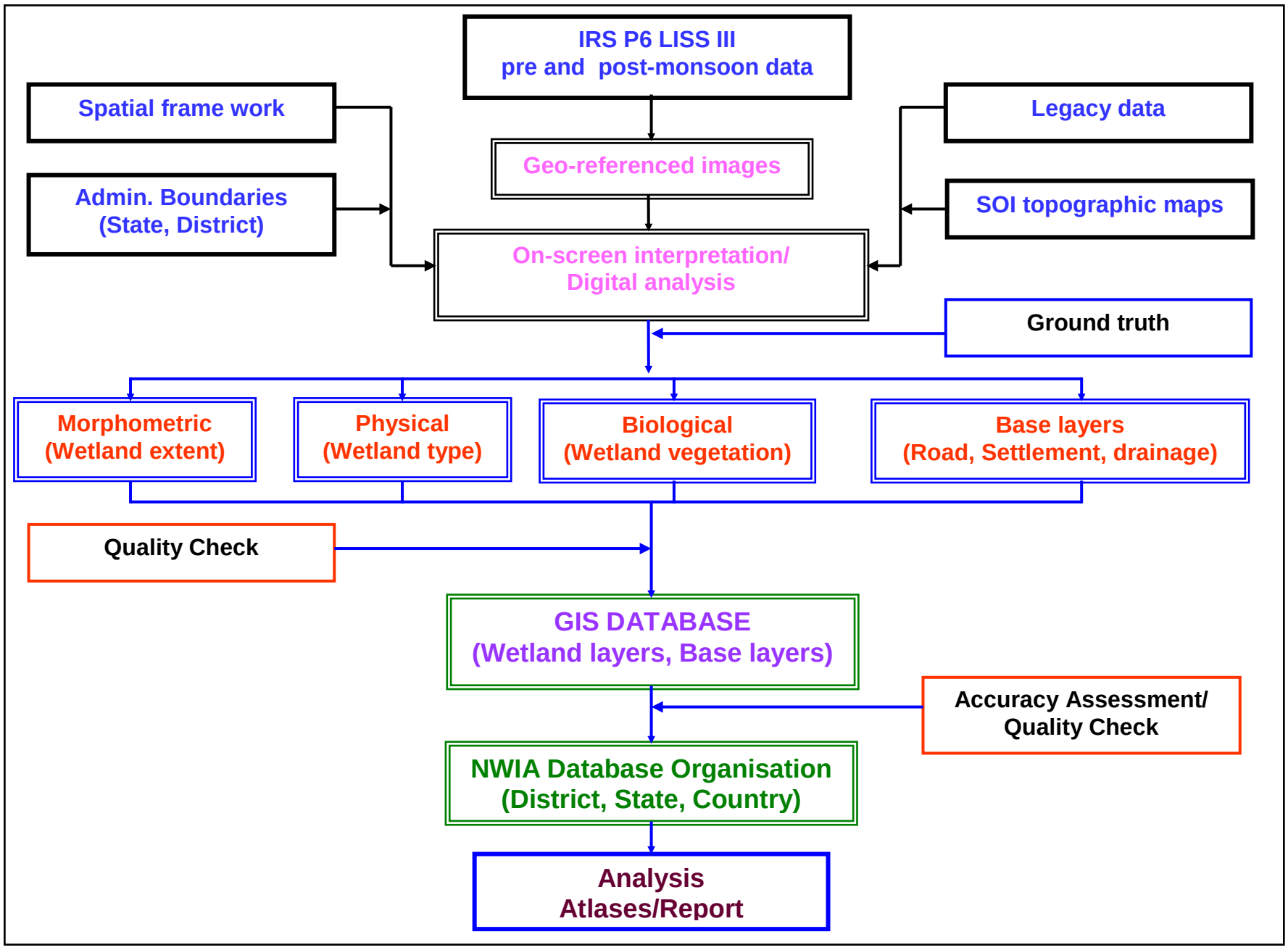


Figure 7: Flow chart of the methodology used

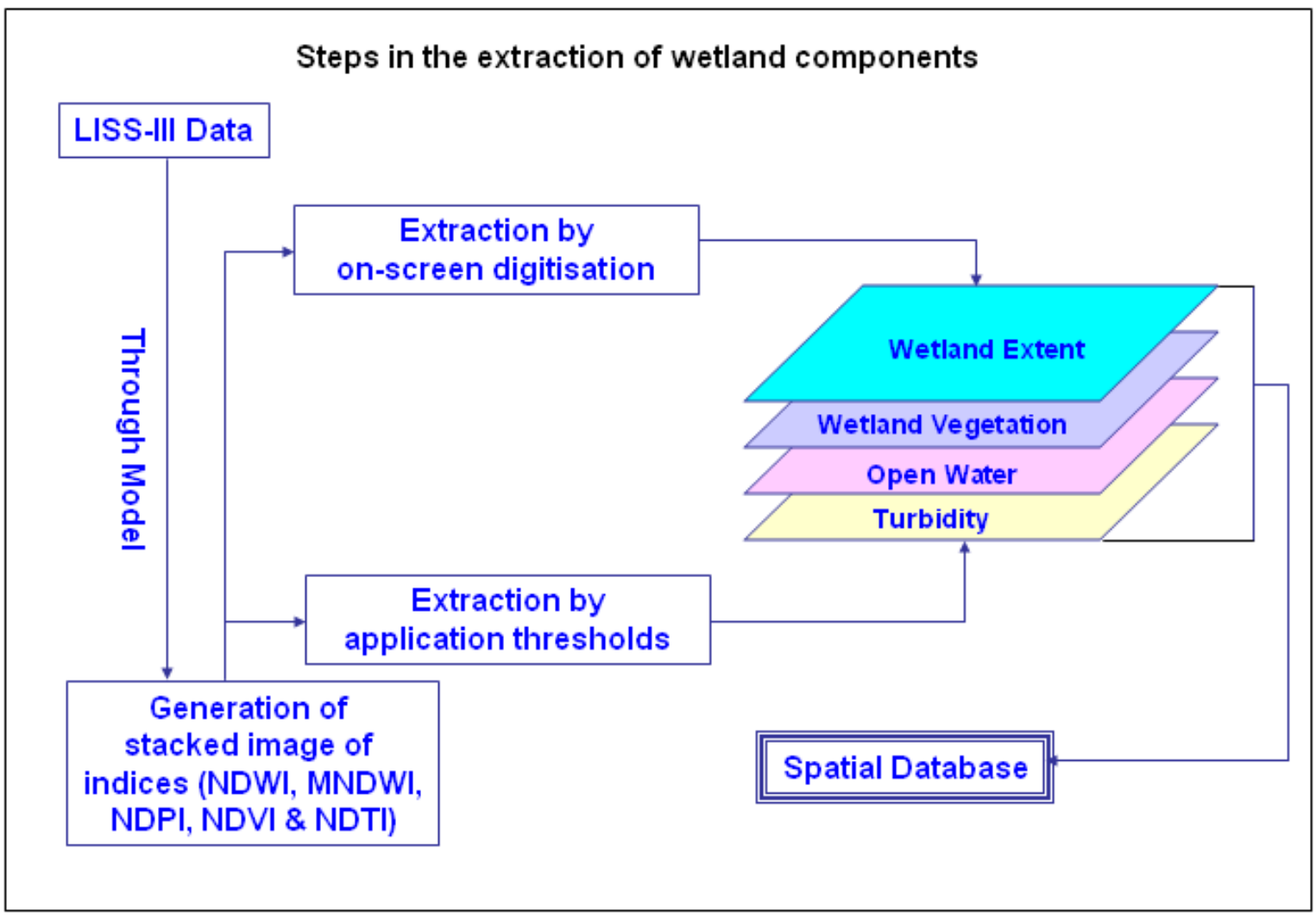
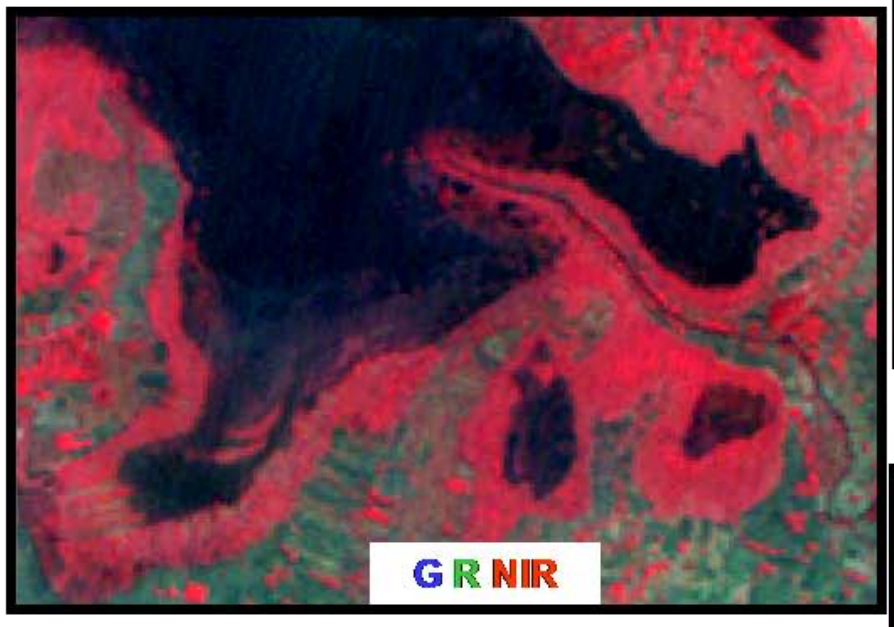
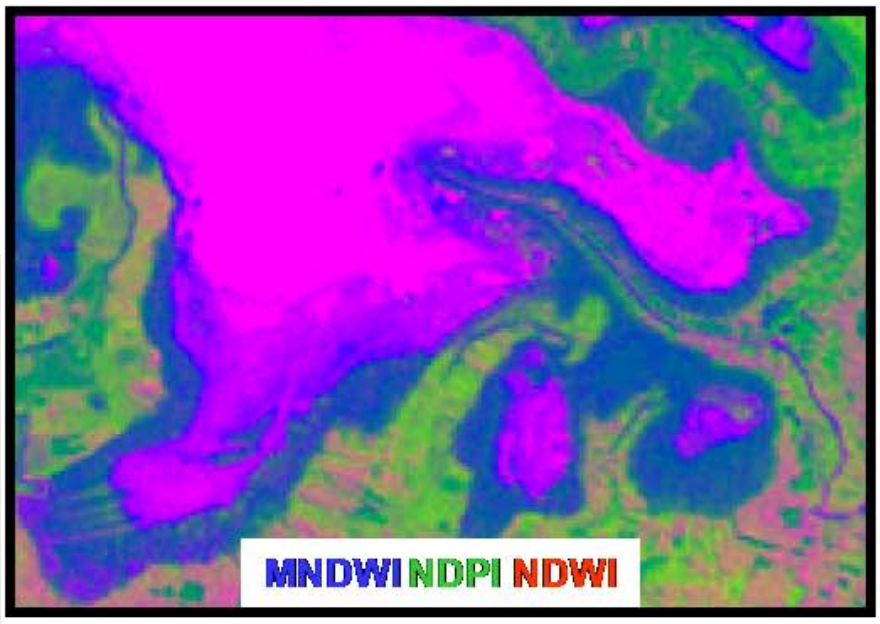
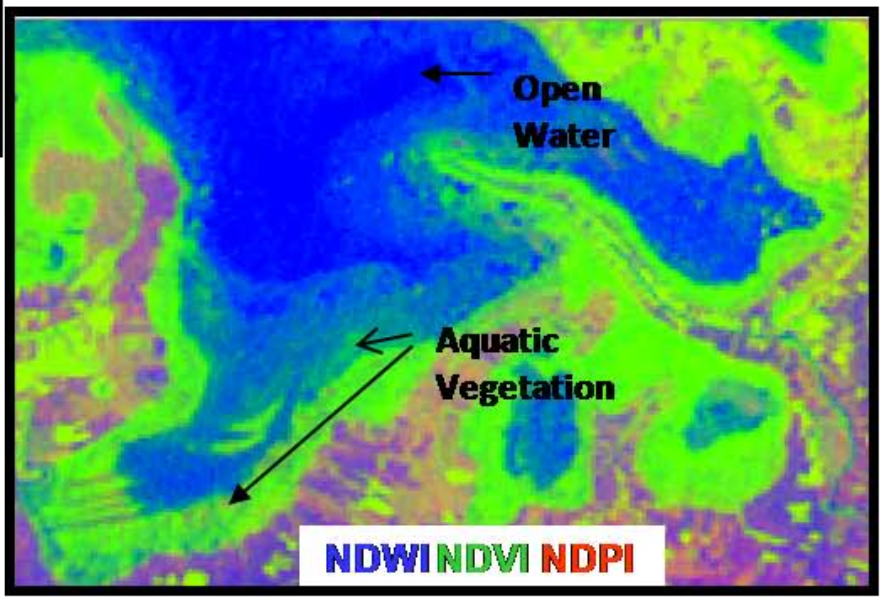


Figure 8: Steps in the extraction of wetland components

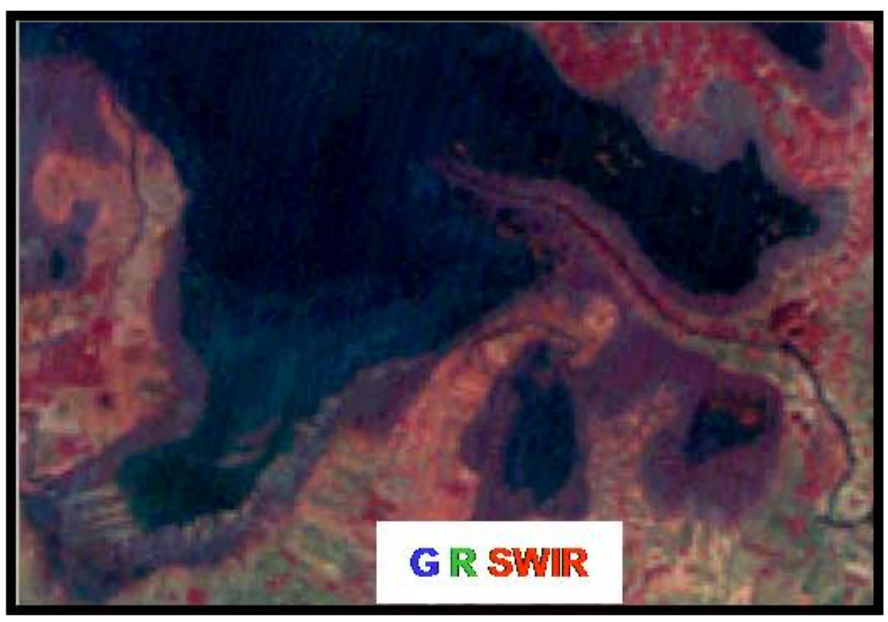


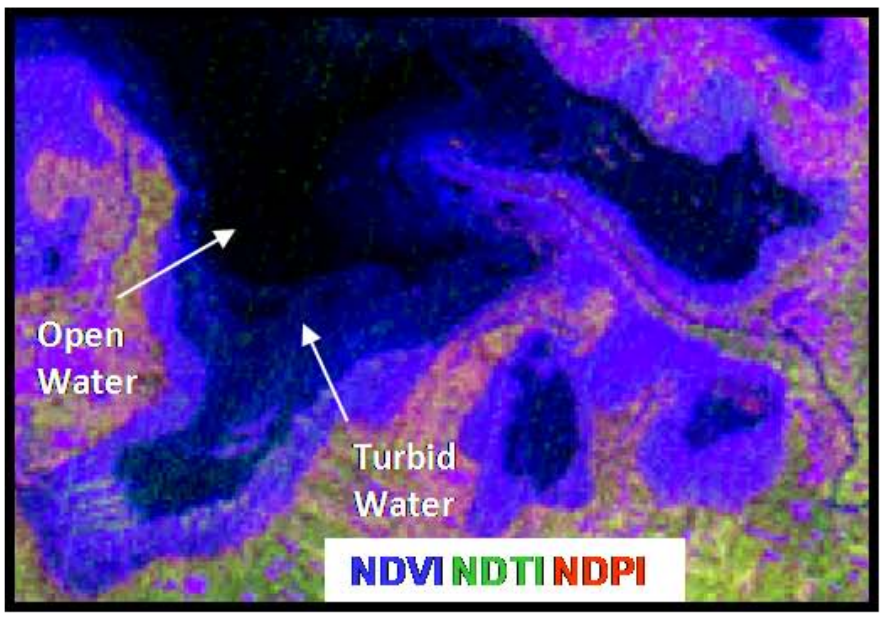


Useful for wetland boundary extraction/delineation



Useful for wetland vegetation & open water features





Useful for qualitative turbidity delineation

Part of Surha Tal, Ballia District, Uttar Pradesh

IRS LISS III data, 14 November 2006

Figure 9: Various combinations of the indices/spectral bands used to identify wetland components

6.0 ACCURACY ASSESSMENT

A comprehensive accuracy assessment protocol has been followed for determining the quality of information derived from remotely sensed data. Accuracy assessment involves determination of thematic (classification) as well as locational accuracy. In addition, GIS database(s) contents have been also evaluated for accuracy. To ensure the reliability of wetland status data, the project adhered to established quality assurance and quality control measures for data collection, analysis, verification and reporting.

This study used well-established, time-tested, fully documented data collection conventions. It employed skilled and trained personnel for image interpretation, processing and digital database creation. Technical expert team checked all interpreted maps for thematic accuracy and wetland code. The reviewing analyst adhered to all standards, quality requirements and technical specifications and reviewed 100 percent of the work. The various stages of quality check include:

1. Image-to-Image Geo-referencing/Data generation
2. Reference layer preparation using NWIA post monsoon and pre-monsoon LISS-III data.
3. Wetland mapping using visual/digital interpretation techniques.
4. Geo-data base creation and organization
5. Output products.

6.1 Data verification and quality assurance of output digital data files

All digital data files were subjected to rigorous quality control inspections. Digital data verification included quality control checks that addressed the geospatial correctness, digital integrity and some cartographic aspects of the data. Implementation of quality checks ensured that the data conformed to the specified criteria, thus achieving the project objectives. There were tremendous advantages in using newer technologies to store and analyze the geographic data. The geospatial analysis capability built into this study provided a complete digital database to better assist analysis of wetland change information. All digital data files were subjected to rigorous quality control inspections. Automated checking modules incorporated in the geographic information system (Arc/GIS) were used to correct digital artifacts including polygon topology. Additional customized data inspections were made to ensure that the changes indicated at the image interpretation stage were properly executed.

MAPS AND STATISTICS

7.0 WETLANDS OF UTTAR PRADESH: MAPS AND STATISTICS

Area estimates of various wetland categories for Uttar Pradesh have been carried out using GIS layers of wetland boundary, water-spread, aquatic vegetation and turbidity. Total 23890 wetlands have been mapped at 1:50,000 scale in the state. In addition, 97352 smaller wetlands (smaller than 2.25 ha) are also identified. Total wetland area estimated is 1242530 ha; this is around 5.16 percent of the geographic area (Table-4). Graphical distribution of wetland type is shown in Figure-10.

The natural wetlands dominated the area with around 74 percent share. The major natural wetland types observed in the state are: rivers/streams, lakes, ox-bow lakes, riverine wetlands and waterlogged areas. The rivers and streams which are perennial, contribute around 49 percent of wetland area of the state. Reservoirs/barrages and waterlogged areas dominated the man made wetlands. Details of estimates of wetlands in Uttar Pradesh are given in Table 4.

Aquatic vegetation is more during post-monsoon season with 219289 ha during post- monsoon and 129228 ha during pre-monsoon season. The open water area of the wetlands decreased by around 28.0 per cent in pre-monsoon compared to post-monsoon season. This is mainly due to change in water spread observed in two major types: rivers/streams (6.0%) and Reservoirs/barrages (37.0%). The turbidity of open water is in general moderate and low in both the seasons.

Table 4: Area estimates of wetlands in Uttar Pradesh

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	3684	122531	9.86	42276	32030
2	1102	Ox-bow lakes/ Cut-off meanders	1672	51371	4.13	22104	14422
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1638	61100	4.92	34229	16968
5	1105	Waterlogged	3951	76263	6.14	41211	21227
6	1106	River/Stream	1278	607315	48.88	376712	315457
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1608	105641	8.50	100309	62883
8	1202	Tanks/Ponds	5441	33263	2.68	19483	11410
9	1203	Waterlogged	4618	87694	7.06	53892	20597
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**23890**	**1145178**	**92.17**	**690216**	**494994**
		Wetlands (<2.25 ha), mainly Tanks	97352	97352	7.83	-	-
		Total	**121242**	**1242530**	**100.00**	**690216**	**494994**

Area under Aquatic Vegetation	219289	129228

Area under turbidity levels		
Low	212518	190992
Moderate	415651	216623
High	62047	87379

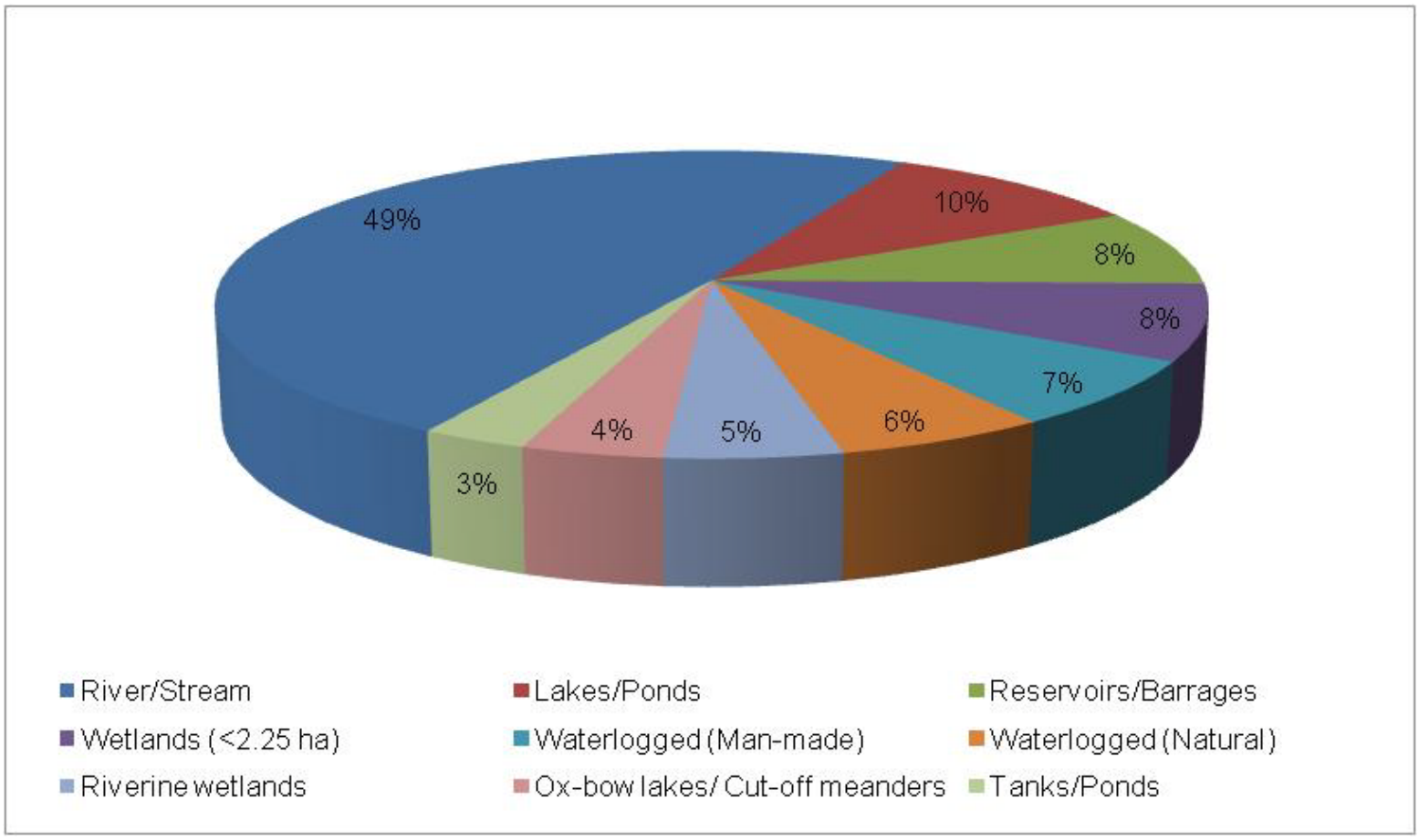


Figure 10: Type-wise wetland distribution in Uttar Pradesh

7.1 DISTRICT-WISE WETLAND MAPS AND STATISTICS

The state has seventy-one districts. The geographic area of districts varied from 1015 to 7680 sq.km. District-wise distribution of wetlands showed that there are many districts having wetland area more than 5 percent of their geographic area. Wetland area varied from 11.7 per cent (Bahraich district) to as low as 1.22 per cent (Hathras district) of geographic area. In terms of wetland area, Sonbhadra district has highest share (5.08 per cent) of total wetland area of the state. This is mainly due to a number of reservoirs present in this district. There are 699 Reservoirs/Barrages in this district, including Rihand, constructed over Rihand River, that account for 66 per cent of total wetland area of the district. The other major contribution is from Rivers/streams, Son River being the main one. Thus, this is mainly a wetland district belonging to man made category.

Baghpat and Hathras districts have the least share of wetlands. The districts with very high concentration of small wetlands (< 2.25 ha) are Siddharthnagar, Azamgarh and Jaunpur with 3657, 3406 and 3301 numbers respectively, while Baghpat district has the lowest with 365 such wetlands.

Wetland statistics followed by wetland map and corresponding satellite data for each district is given to have a fairly good idea about the distribution pattern and density of wetlands in the district.

District-wise wetland area estimates are given in Table-5 and figure 11.

Table-5: District-wise wetland statistics

Sr. No.	District	Geographic Area (sq. km)	Wetland Area (ha)	% of total wetland area	% of district geographic area
1	Agra	4027	10502	0.85	2.61
2	Aligarh	3650	7984	0.64	2.19
3	Allahabad	5137	27487	2.21	5.35
4	Ambedkar nagar	2337	14947	1.20	6.40
5	Auraiya	2015	7148	0.58	3.55
6	Azamgarh	4234	25472	2.05	6.02
7	Baghpat	1321	2277	0.18	1.72
8	Bahraich	4420	51618	4.15	11.68
9	Ballia	3349	32047	2.58	9.57
10	Balrampur	2981	21348	1.72	7.16
11	Banda	4532	20432	1.64	4.51
12	Barabanki	4402	27290	2.20	6.20
13	Bareilly	4120	10896	0.88	2.64
14	Basti	2688	18335	1.48	6.82
15	Bijnor	4561	17879	1.44	3.92
16	Budaun	5168	20288	1.63	3.93
17	Bulandshahr	2910	9193	0.74	3.16
18	Chandauli	2549	16961	1.37	6.65
19	Chitrakoot	3092	12153	0.98	3.93
20	Deoria	2538	17408	1.40	6.86
21	Etah	2486	5204	0.42	2.09
22	Etawah	2311	10946	0.88	4.74
23	Faizabad	2174	23050	1.86	10.60
24	Farrukhabad	2181	22309	1.80	10.23
25	Fatehpur	4152	20432	1.64	4.92
26	Firozabad	2361	3695	0.30	1.57
27	Gautambudh Nagar	1442	4153	0.33	2.88
28	Ghaziabad	2590	4116	0.33	1.59
29	Ghazipur	3377	23581	1.90	6.98
30	Gonda	4003	22427	1.80	5.60
31	Gorakhpur	3321	27916	2.25	8.41
32	Hamirpur	4282	15283	1.23	3.57
33	Hardoi	5986	37108	2.99	6.20
34	Hathras	1840	2236	0.18	1.22
35	Jalaun	4565	12719	1.02	2.79
36	Jaunpur	4038	13709	1.10	3.39
37	Jhansi	5024	15711	1.26	3.13
38	Jyotiba Phule Nagar	2249	11026	0.89	4.90
39	Kannauj	2093	8190	0.66	3.91
40	Kanpur (dehat)	3021	11603	0.93	3.84
41	Kanpur (nagar)	3155	14770	1.19	4.68
42	Kansiramnagar	1960	15237	1.23	7.77
43	Kaushambi	2124	9485	0.76	4.47
44	Kushinagar	2906	18506	1.49	6.37
45	Lakhimpur	7680	48267	3.88	6.28
46	Lalitpur	5039	34122	2.75	6.77
47	Lucknow	2528	9607	0.77	3.80
48	Maharajganj	2952	10532	0.85	3.57
49	Mahoba	2884	9647	0.78	3.35
50	Mainpuri	2760	12887	1.04	4.67
51	Mathura	3340	9536	0.77	2.86
52	Mau	1713	10841	0.87	6.33
53	Meerut	2590	7922	0.64	3.06
54	Mirzapur	4521	30291	2.44	6.70
55	Moradabad	3718	7174	0.58	1.93
56	Muzaffarnagar	4008	12589	1.01	3.14
57	Pilibhit	3499	18216	1.47	5.21
58	Pratapgrah	3717	16441	1.32	4.42
59	Raebareli	4609	38522	3.10	8.36
60	Rampur	2367	5376	0.43	2.27
61	Saharanpur	3689	11537	0.93	3.13
62	Shahjahanpur	4575	19803	1.59	4.33
63	Shrawasti	2458	16930	1.36	6.89
64	Siddharthnagar	2895	24029	1.93	8.30
65	Sitapur	5743	23174	1.87	4.04
66	Sonbhadra	6788	63068	5.08	9.29
67	St.kabir Nagar	1646	15443	1.24	9.38
68	St.Ravidas Nagar	1015	5767	0.46	5.68
69	Sultanpur	4436	20503	1.65	4.62
70	Unnao	4558	27759	2.23	6.09
71	Varanasi	1528	7470	0.60	4.89
	Total	**240928**	**1242530**	**100.00**	**5.16**

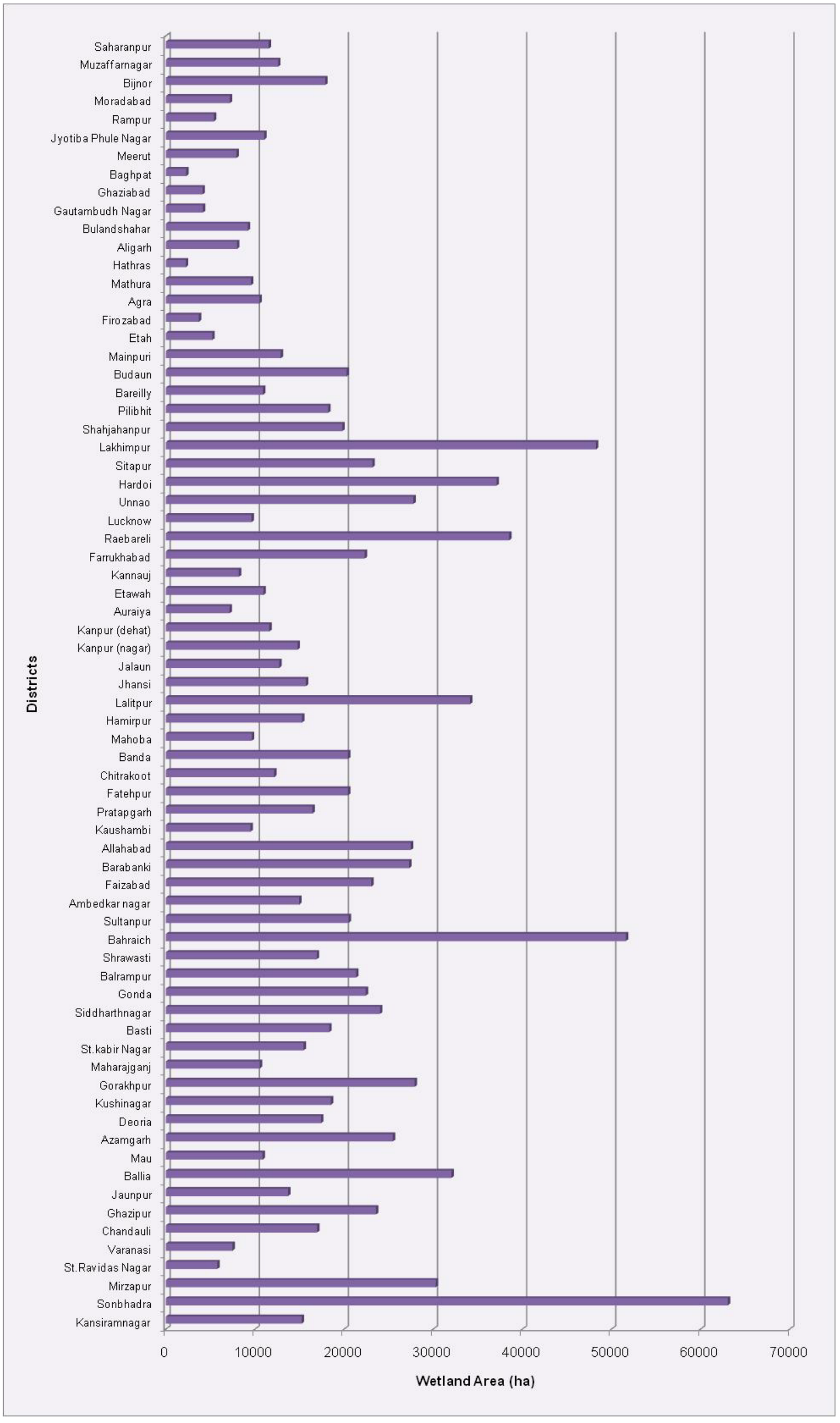


Figure 11: District-wise wetland distribution

State : Uttar Pradesh

WETLAND MAP

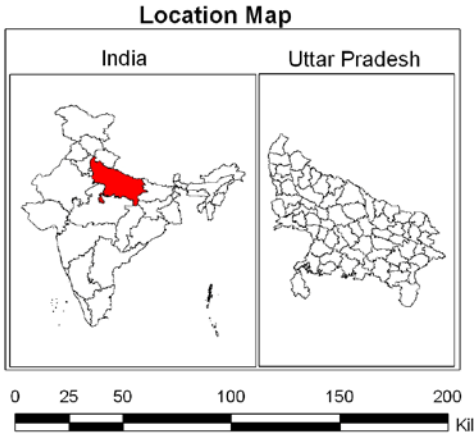


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Riverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
and
Space Applications Centre (ISRO), Ahmedabad

Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh



IRS-P6 AWiFS Post-monsoon data (2005)

7.1.1 **Saharanpur**

Saharanpur is located at 29°58′ to 29.97°N latitude and 77°33′ to 77.55°E longitude. It has an average elevation of 269 metres. Yamuna is the important river of the district besides Solani, Hindon, Ratmau, Nagdev. All the rivers of the district submerge either in Yamuna or in the Ganges. As per 2001 census, the district has a population of 1499068. It has 4 tehsils, 11 blocks and 1607 villages. Average rainfall is 901 mm.

The total wetland area in the district is 11537 ha. The most dominate wetland type in the district is River/Stream, occupying around 90.5 per cent. The second major type is man made tanks/ponds (3.48%). There are 610 small wetlands (<2.25 ha) identified and demarcated as point feature. Details of estimates of wetlands in Saharanpur are given in Table 6.

Area under aquatic vegetation is very less, around 71 ha during post-monsoon season and 59 ha during pre-monsoon. Seasonal fluctuation of water is not significant. Water spread area in post-monsoon season is 4644 ha where as in pre-monsoon season it is 4287 ha. Qualitative turbidity of water is mainly moderate in both the seasons.

Table 6: Area estimates of wetlands in Saharanpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	4	60	0.52	40	113
2	1102	Ox-bow lakes/ Cut-off meanders	2	10	0.09	8	8
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	-	-	-	-	-
6	1106	River/Stream	64	10440	90.49	4288	3949
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	108	413	3.58	304	217
9	1203	Waterlogged	1	4	0.03	4	-
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**179**	**10927**	**94.71**	**4644**	**4287**
		Wetlands (<2.25 ha), mainly Tanks	610	610	5.29	-	-
		Total	**789**	**11537**	**100.00**	**4644**	**4287**

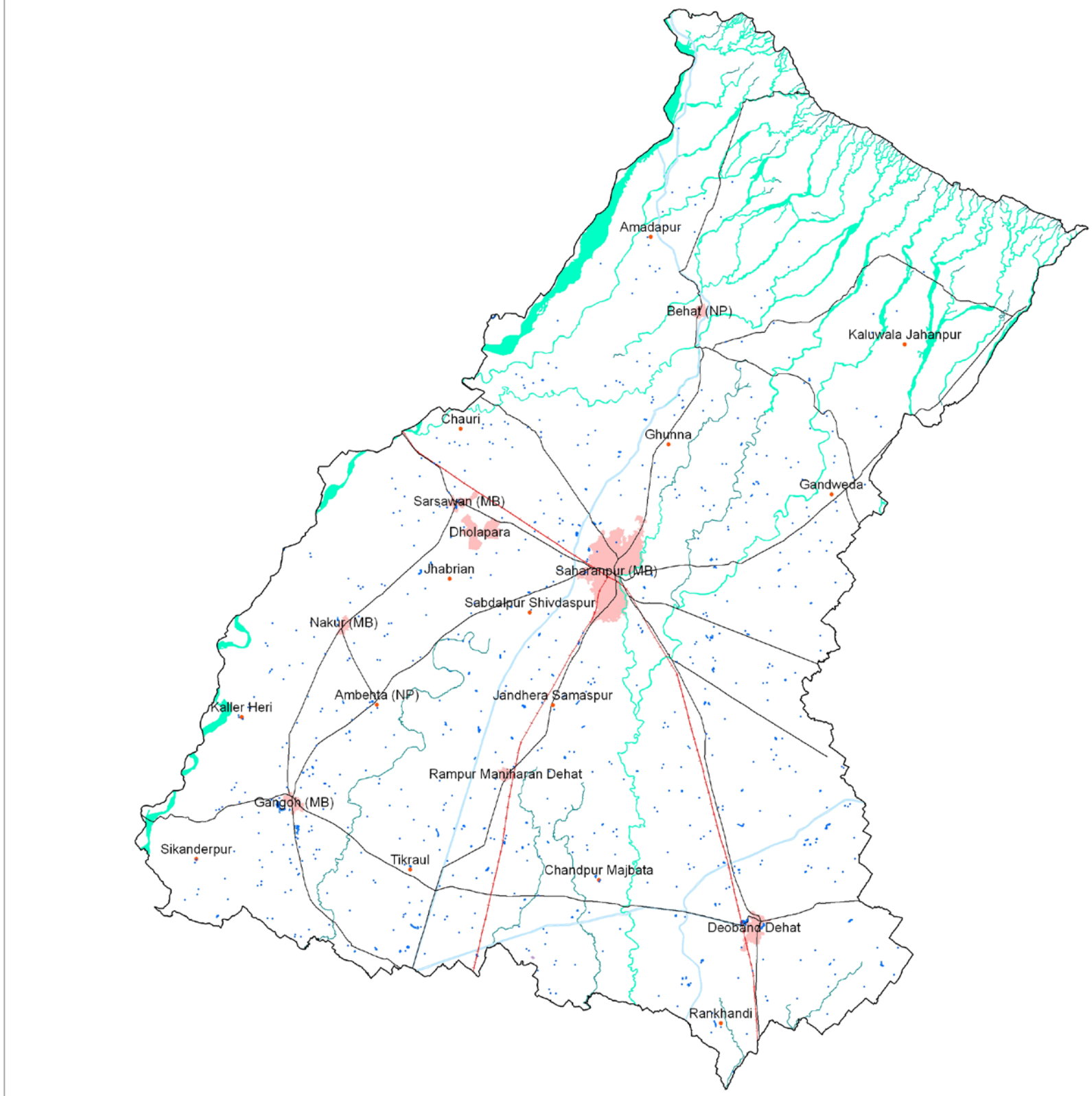
Area under Aquatic Vegetation	71	59

Area under turbidity levels		
Low	791	56
Moderate	3792	4104
High	61	127

State : Uttar Pradesh

WETLAND MAP

District : Saharanpur

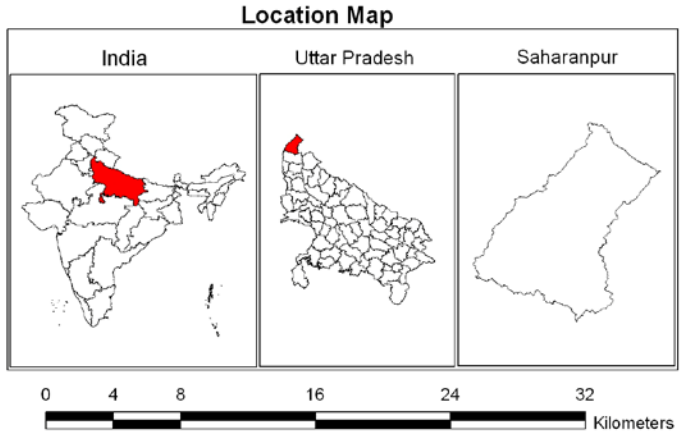


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4 8 16 24 32 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

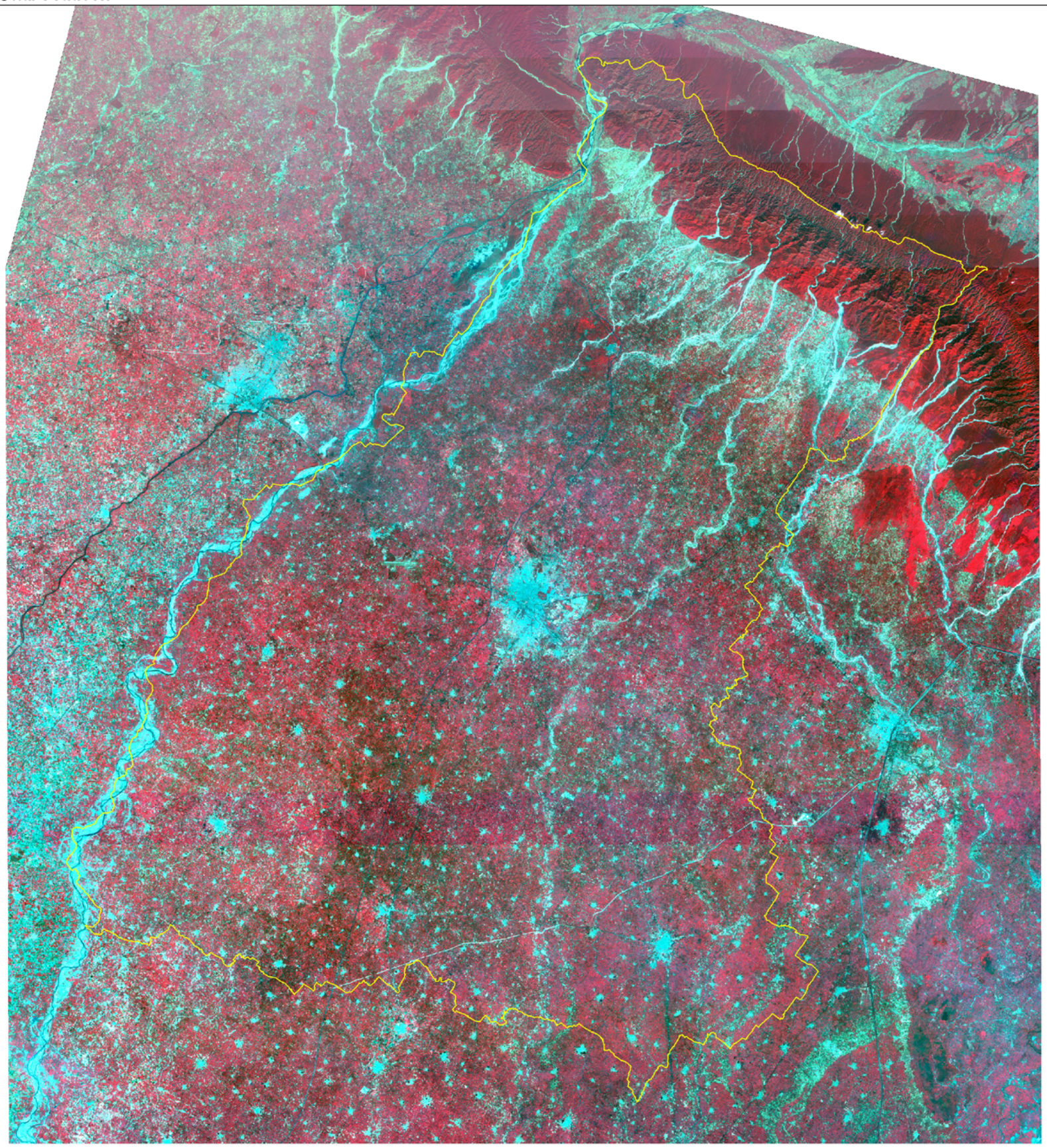
Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
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Space Applications Centre (ISRO), Ahmedabad

Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Saharanpur



IRS P6 LISS-III post monsoon data (2006)

7.1.2 **Muzaffarnagar**

Muzaffarnagar is located at 29°28′ to 29.47°N latitude and 77°41′ to 77.68°E longitude. Muzaffarnagar is surrounded by the districts of Meerut on the South and Saharanpur on the North. On the west, the river Jamuna separates it from the Panipat district and Karnal district of Haryana; and on the east the river Ganges forms the boundary between this district and the Bijnor district. As per 2001 census, the district has a population of 3543362. It has 5 tehsils, 14 blocks and 1031 villages.

The total wetland area in the district is 12589 ha. Major wetland types of the district are River/Stream, and riverine wetlands. These two wetland categories accounts for 64 per cent wetland area of the district. The other major types are Reservoirs/barrages and tanks/ponds belonging to man made category. There are 751 small wetlands (<2.25 ha) identified and demarcated. Details of estimates of wetlands in Muzaffarnagar are given in Table 7.

Area under aquatic vegetation is more during pre-monsoon season. The area occupied during post-monsoon season is 2893 ha and in pre-monsoon season is 4754 ha. Water spread area in post-monsoon season is 7343 ha where as in pre-monsoon season the area is 4155 ha. Moderate turbidity is mostly prevalent in both seasons.

Table 7: Area estimates of wetlands in Muzaffarnagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	-	-	-	-	-
2	1102	Ox-bow lakes/ Cut-off meanders	6	186	1.48	160	8
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	16	3011	23.92	620	224
5	1105	Waterlogged	6	227	1.80	148	9
6	1106	River/Stream	39	5013	39.82	3464	3140
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	3	2252	17.89	2070	53
8	1202	Tanks/Ponds	219	920	7.31	757	612
9	1203	Waterlogged	7	229	1.82	124	109
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**296**	**11838**	**94.03**	**7343**	**4155**
		Wetlands (<2.25 ha), mainly Tanks	751	751	5.97	-	-
		Total	**1047**	**12589**	**100.00**	**7343**	**4155**

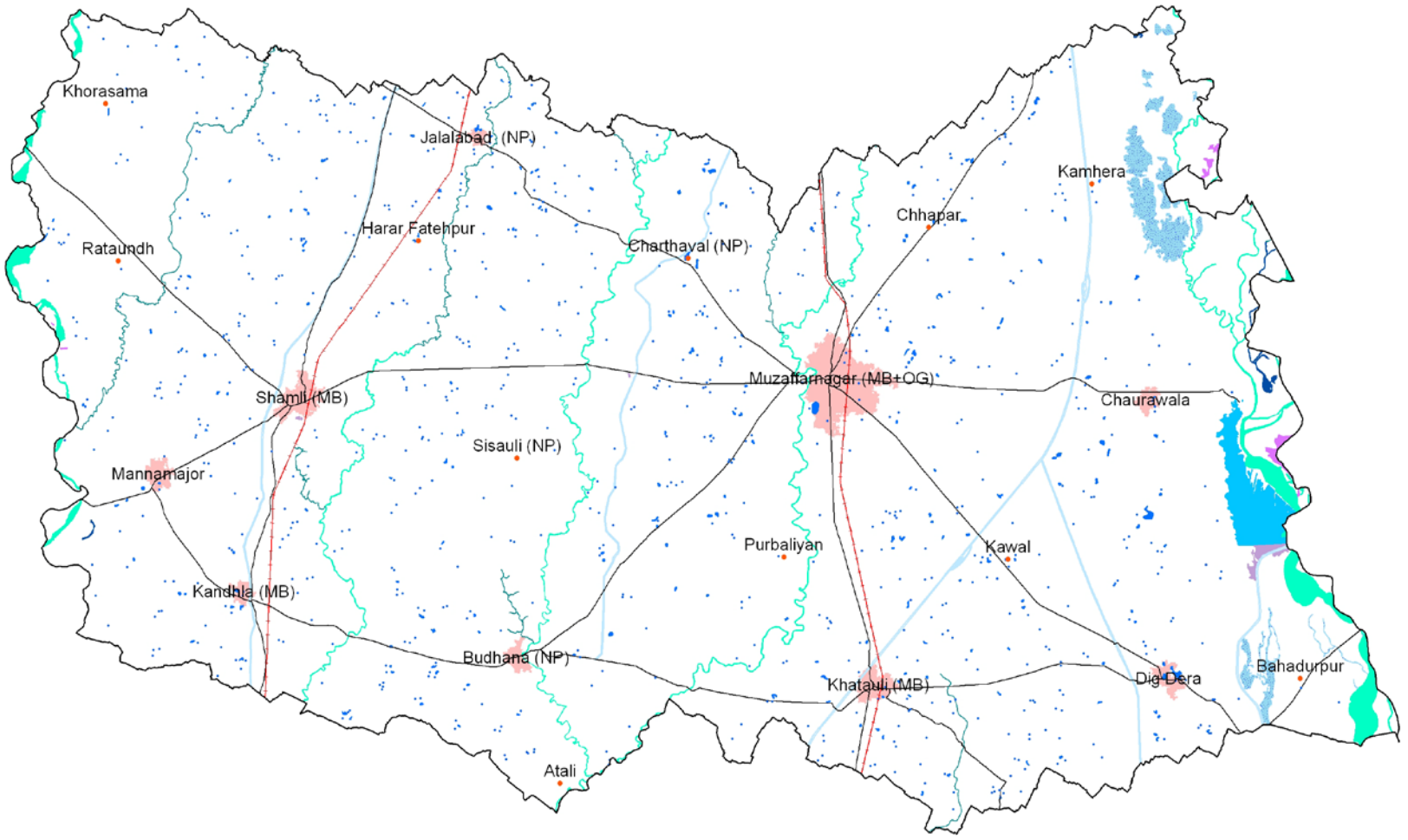
Area under Aquatic Vegetation	2893	4754

Area under turbidity levels		
Low	1190	576
Moderate	5882	2959
High	271	620

State : Uttar Pradesh

WETLAND MAP

District : Muzaffarnagar

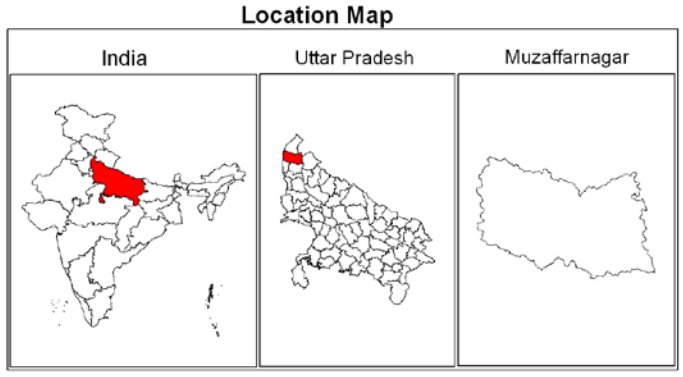


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

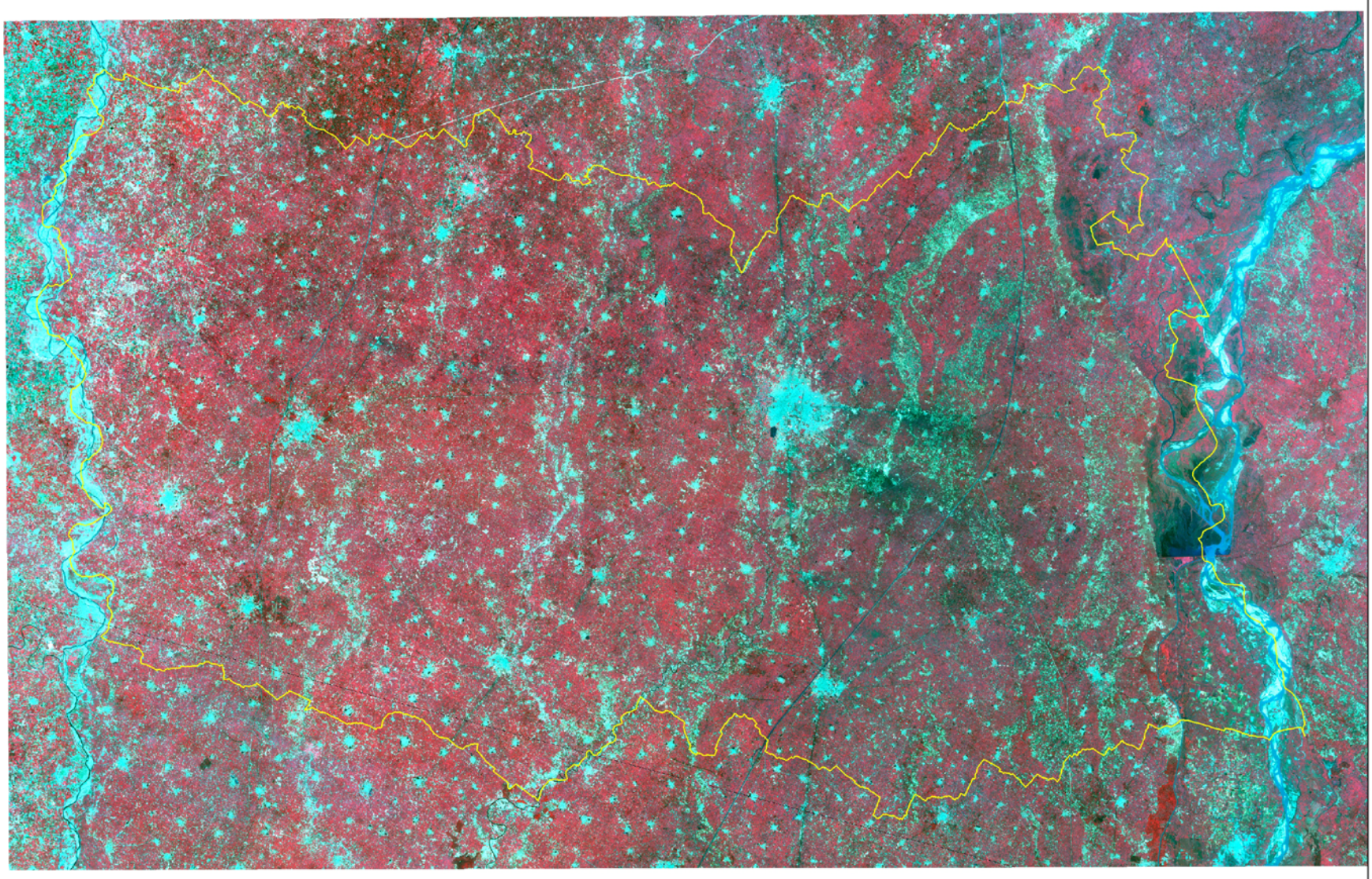
Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
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Space Applications Centre (ISRO), Ahmedabad

Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Muzaffarnagar



IRS P6 LISS-III post monsoon data (2006)

7.1.3 Bijnor

The Bijnor is located at 29° 2' and 29° 58' N latitude and 29° 2' and 29° 58' E longitude. The western boundary is formed by the deep stream of the river Ganges, beyond which lie the four districts of Dehradun, Saharanpur, Muzaffarnagar and Meerut. As per 2001 census, the district has a population of 3131619. It has 5 tehsils, 11 blocks and 3029 villages. Average maximum and minimum temperatures are 41.9^{o} C and 3.2^{o} C respectively. Average rainfall is 1122mm.

The total wetland area of the district is 17879 ha. Major wetland types of the district are River/Stream, riverine wetlands and Reservoir/barrages. There are 1359 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table 8.

Area under aquatic vegetation in post-monsoon season is 1476 ha and in pre-monsoon season is 1306 ha. This is mainly observed in case of lakes, ox-bow lakes, waterlogged areas. Water spread area in post-monsoon season is 10883 ha, and in pre-monsoon season it is 8698 ha. Moderate turbidity is mostly prevalent in many wetlands.

Table 8: Area estimates of wetlands in Bijnor

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	21	118	0.66	39	57
2	1102	Ox-bow lakes/ Cut-off meanders	16	243	1.36	203	141
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	16	962	5.38	359	122
5	1105	Waterlogged	24	383	2.14	289	119
6	1106	River/Stream	64	12826	71.74	8709	7370
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	6	931	5.21	706	350
8	1202	Tanks/Ponds	186	786	4.40	467	452
9	1203	Waterlogged	16	271	1.52	111	87
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**349**	**16520**	**92.40**	**10883**	**8698**
		Wetlands (<2.25 ha), mainly Tanks	1359	1359	7.60	-	-
		Total	**1708**	**17879**	**100.00**	**10883**	**8698**

Area under Aquatic Vegetation	1476	1306

Area under turbidity levels		
Low	2016	1664
Moderate	7551	4298
High	1316	2736

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State : Uttar Pradesh

WETLAND MAP

District : Bijnor

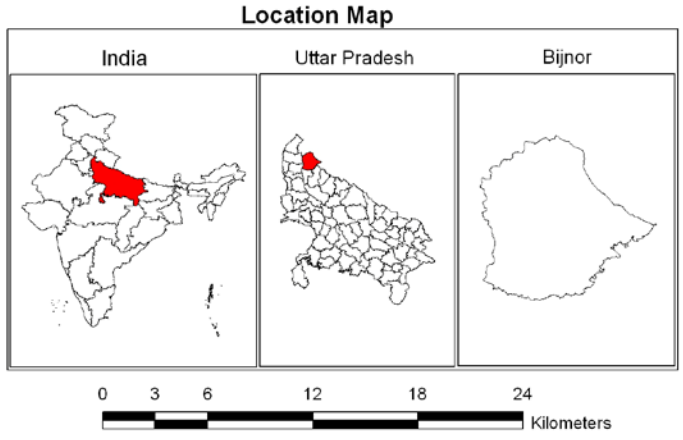


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

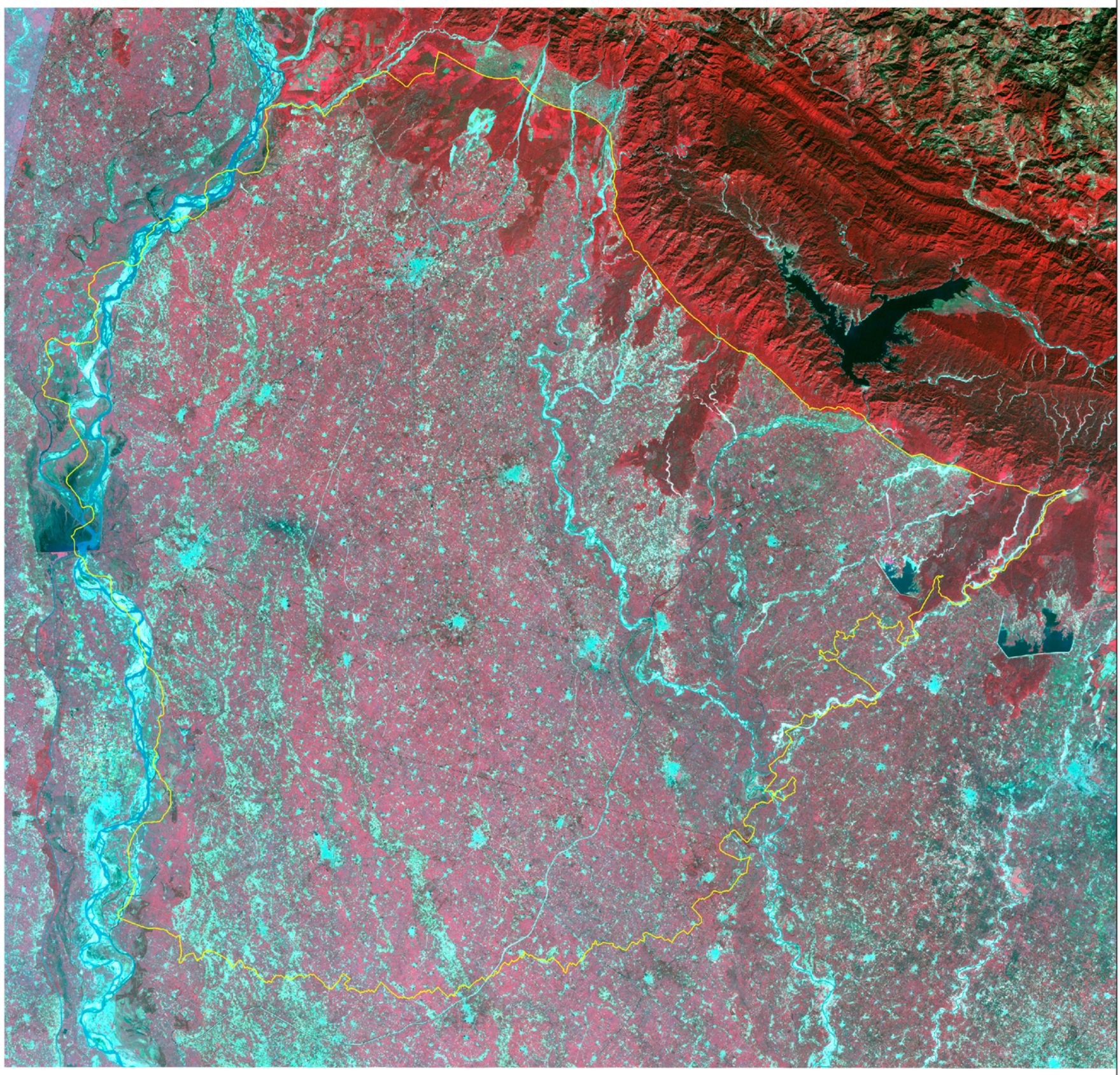
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Bijnor



IRS P6 LISS-III post monsoon data (2006)

7.1.4 Moradabad

Moradabad is located at 28° 21´ to 28° 16´N latitude and 78° 4´ to 79° E longitude. It has an average elevation of 486 metres. The district is bounded on the north by Bijnor district, on the south by Budaun district, on the east by Rampur district and on the west by Jyotiba Phule Nagar district. As per 2001 census, the district has a population of 3810983. It has 6 tehsils, 13 blocks and 1797 villages. Average maximum and minimum temperatures are 42.2^{o} C and 4.0^{o}C respectively. Average rainfall is 967 mm.

The total wetland area in the district is 7174 ha. Major wetland type of the district is River/Stream and accounts for 67 per cent wetland area of the district. The other major types are: ox-bow lakes, tanks/pond and water logged. Manmade water logged category is mainly associated with canals and the area is 185 ha. There are 1083 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table 9.

The area under aquatic vegetation in post-monsoon season is 386 ha and in pre-monsoon season it is 68 ha. Water spread area in post-monsoon season is 3013 ha where as in pre-monsoon season it is 2203 ha. Moderate turbidity is mostly prevalent in many wetlands.

Table 9: Area estimates of wetlands in Moradabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	28	224	3.12	83	63
2	1102	Ox-bow lakes/ Cut-off meanders	24	268	3.74	189	116
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	4	22	0.31	22	13
5	1105	Waterlogged	27	242	3.37	168	184
6	1106	River/Stream	52	4874	67.94	3013	2203
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	61	276	3.85	193	116
9	1203	Waterlogged	21	185	2.58	147	72
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**217**	**6091**	**84.90**	**3815**	**2767**
		Wetlands (<2.25 ha), mainly Tanks	1083	1083	15.10	-	-
		Total	**1300**	**7174**	**100.00**	**3815**	**2767**

Area under Aquatic Vegetation	386	68

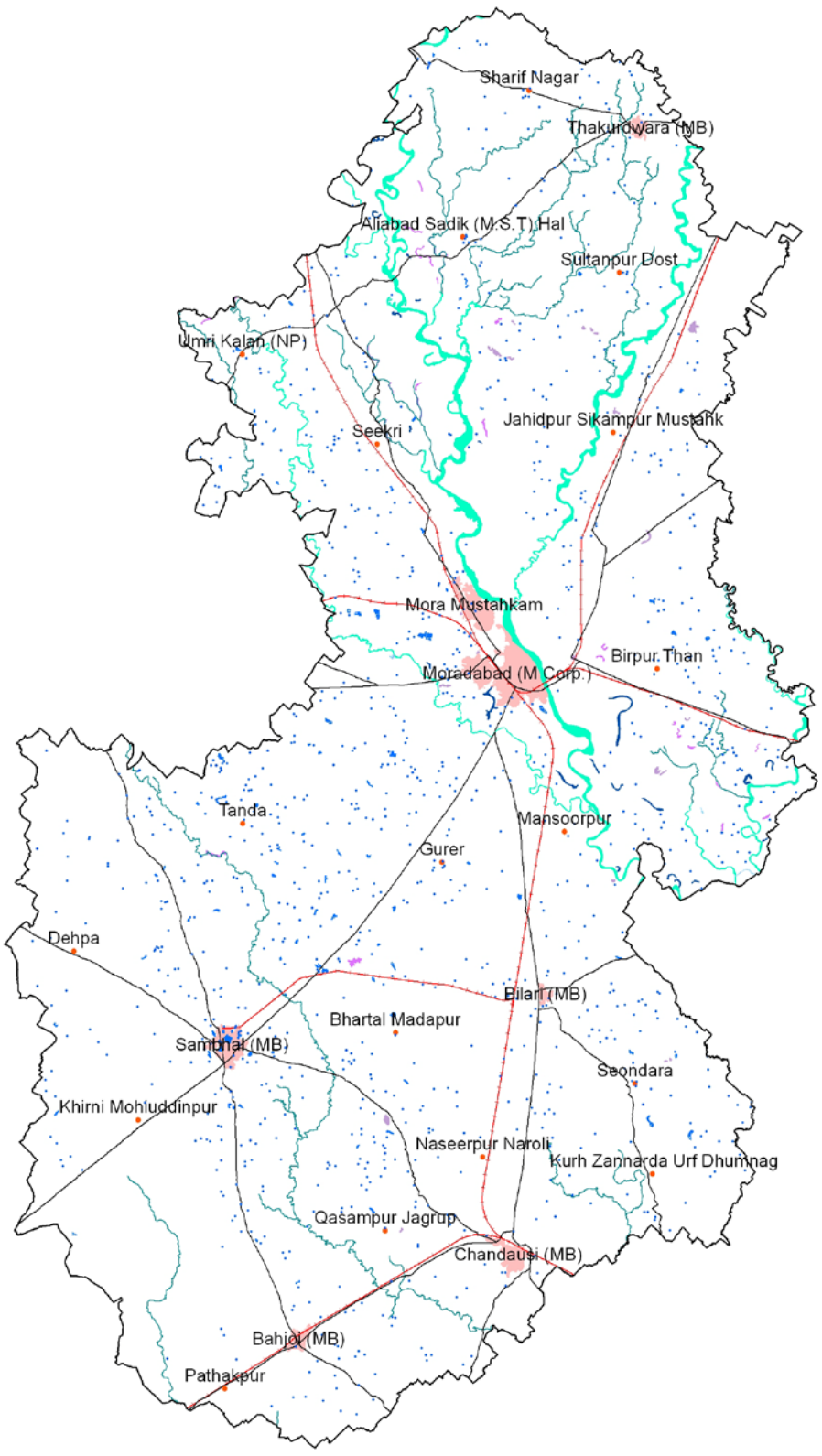
Area under turbidity levels		
Low	477	585
Moderate	3250	1210
High	88	972

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State : Uttar Pradesh

WETLAND MAP

District : Moradabad

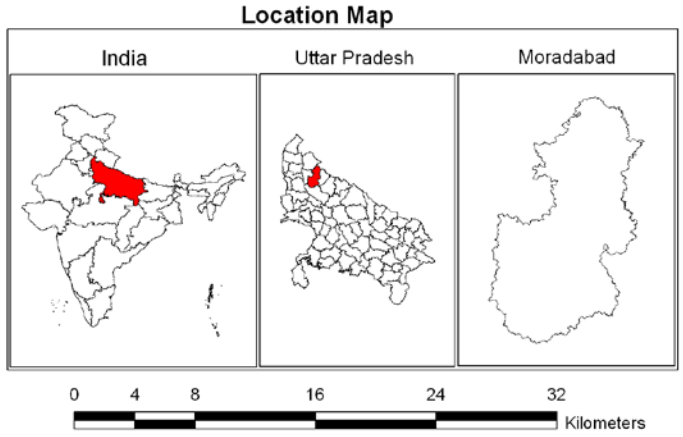


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

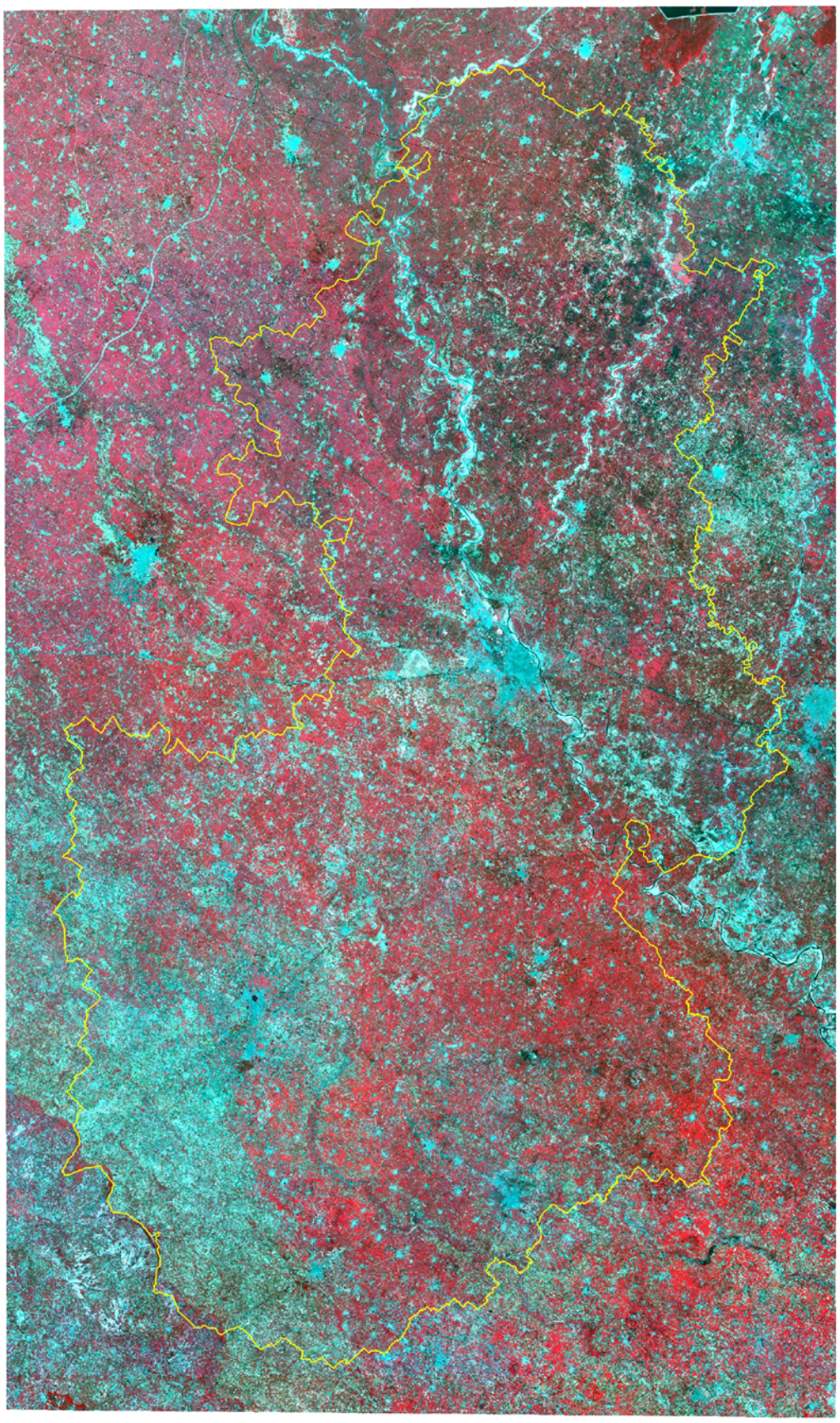
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Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Moradabad



IRS P6 LISS-III post monsoon data (2006)

7.1.5 Rampur

Rampur is located at 28°48′ to 28.8°N latitude and 79°00′ to 79.00°E longitude. It has an average elevation of 88 metres. The district is bounded by District Udham Singh Nagar in North, Bareilly in East, Moradabad in West and Badaun in South. As per 2001 census, the district has a population of 1923739. It has 5 tehsils, 6 blocks and 1153 villages.

The total wetland area in the district is 5376 ha. Major wetland type of the district is River/Stream, and accounts for 73 per cent area of the district. There are 684 small wetlands (<2.25 ha) identified and demarcated. Man-made waterlogged category is mainly associated with canals and the area is 179 hectors. Details of estimates of wetlands in the district are given in Table 10.

The area under aquatic vegetation in post-monsoon season is 150 ha and in pre-monsoon season it is 74 ha. Seasonal fluctuation of water is very less. Water spread area in post-monsoon season is 2855 ha where as in pre-monsoon season it is 2269 ha. Moderate turbidity is mostly prevalent in both the seasons.

Table 10: Area estimates of wetlands in Rampur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	22	126	2.34	108	70
2	1102	Ox-bow lakes/ Cut-off meanders	17	203	3.78	160	83
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	7	78	1.45	41	36
5	1105	Waterlogged	28	202	3.76	144	74
6	1106	River/Stream	49	3899	72.53	2855	2269
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	1	5	0.09	-	-
9	1203	Waterlogged	26	179	3.33	162	108
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**150**	**4692**	**87.28**	**3470**	**2640**
		Wetlands (<2.25 ha), mainly Tanks	684	684	12.72	-	-
		Total	**834**	**5376**	**100.00**	**3470**	**2640**

Area under Aquatic Vegetation	150	74

Area under turbidity levels		
Low	263	139
Moderate	3202	2002
High	5	499

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State : Uttar Pradesh

WETLAND MAP

District : Rampur

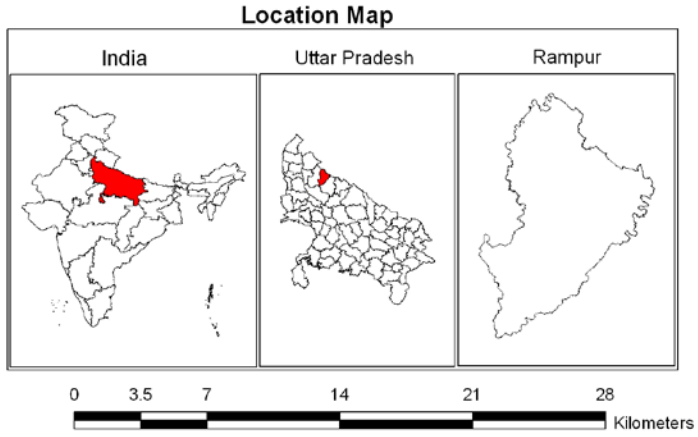


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

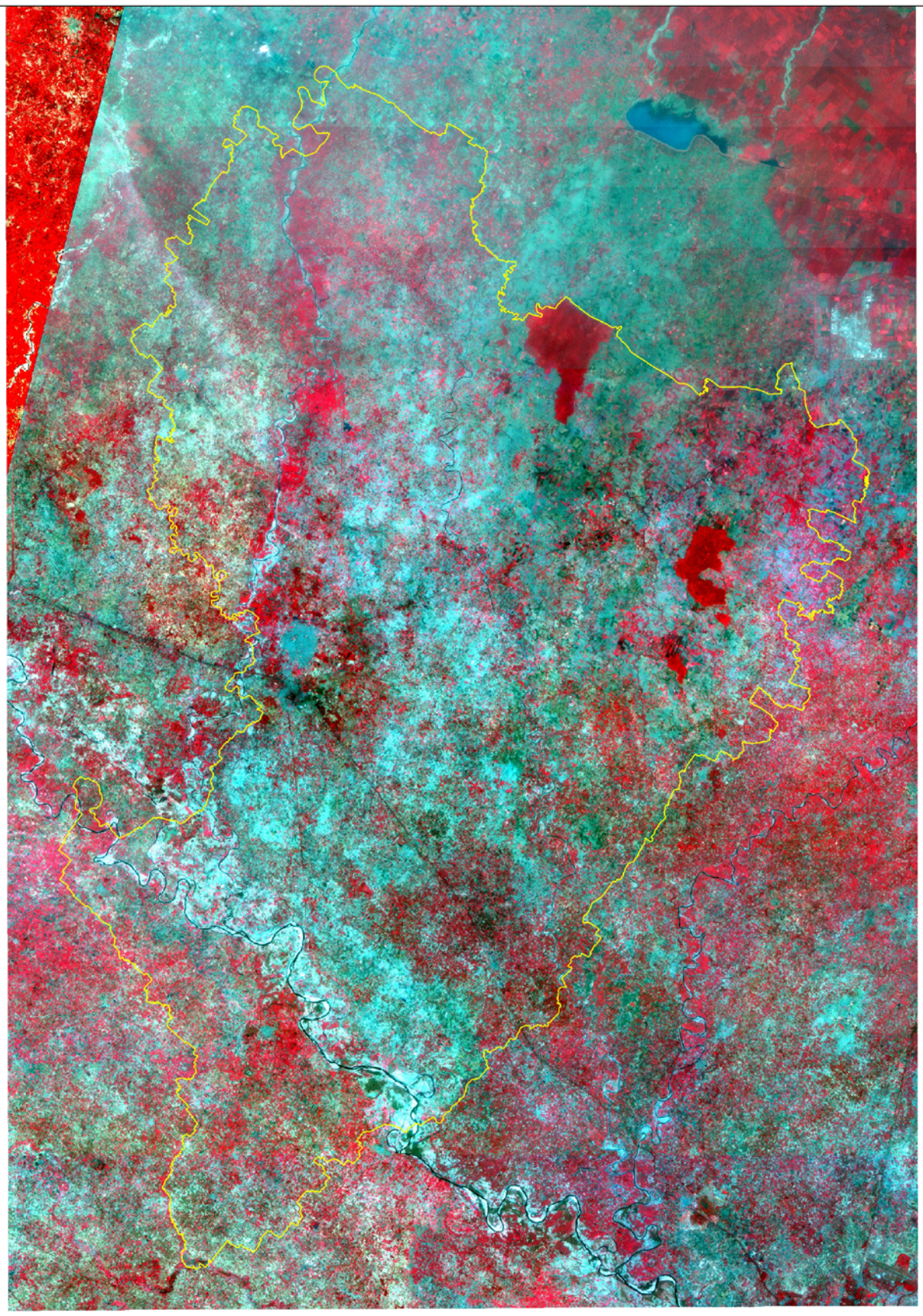
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Rampur



IRS P6 LISS-III post monsoon data (2006)

7.1.6 Jyotiba Phule Nagar

The district Jyotiba Phule Nagar has its headquarters at Amroha. Amroha is located at 28°55′ to 28.92°N latitude and 78°28′ to 78.47°E longitude. It has an average elevation of 211 metres. The district shares common boundaries with the district of Bijnore in the north; tehsil Sambhal of Moradabad in the south, tehsil Sadar of Moradabad in the east and in the west are situated districts Meerut, Ghaziabad & Buland Shahar. River Ganga separates the district from district Ghaziabad, Meerut & Buland Shahar. As per 2001 census, the district has a population of 1499068. It has 3 tehsils, 6 blocks and 1133 villages.

The total wetland area in the district is 11026 ha. Major wetland type of the district is River/Stream, and accounts for 88 per cent wetland area of the district. There are no reservoirs in the district. There are 425 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table11.

The area under aquatic vegetation in post-monsoon season is 339 ha and in pre-monsoon season it is 227 ha. Water spread area in post-monsoon season is 4875 ha. Where as in pre-monsoon season the water spread area is 4437 ha. Moderate turbidity is mostly prevalent in many wetlands and observed in both the season.

Table11: Area estimates of wetlands in Jyotiba Phule Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	8	52	0.47	38	22
2	1102	Ox-bow lakes/ Cut-off meanders	12	111	1.01	81	50
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	5	140	1.27	11	29
5	1105	Waterlogged	23	293	2.66	127	98
6	1106	River/Stream	33	9744	88.37	4375	4064
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	30	132	1.20	118	55
9	1203	Waterlogged	6	129	1.17	125	119
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**117**	**10601**	**96.15**	**4875**	**4437**
		Wetlands (<2.25 ha), mainly Tanks	425	425	3.85	-	-
		Total	**542**	**11026**	**100.00**	**4875**	**4437**

Area under Aquatic Vegetation	339	227

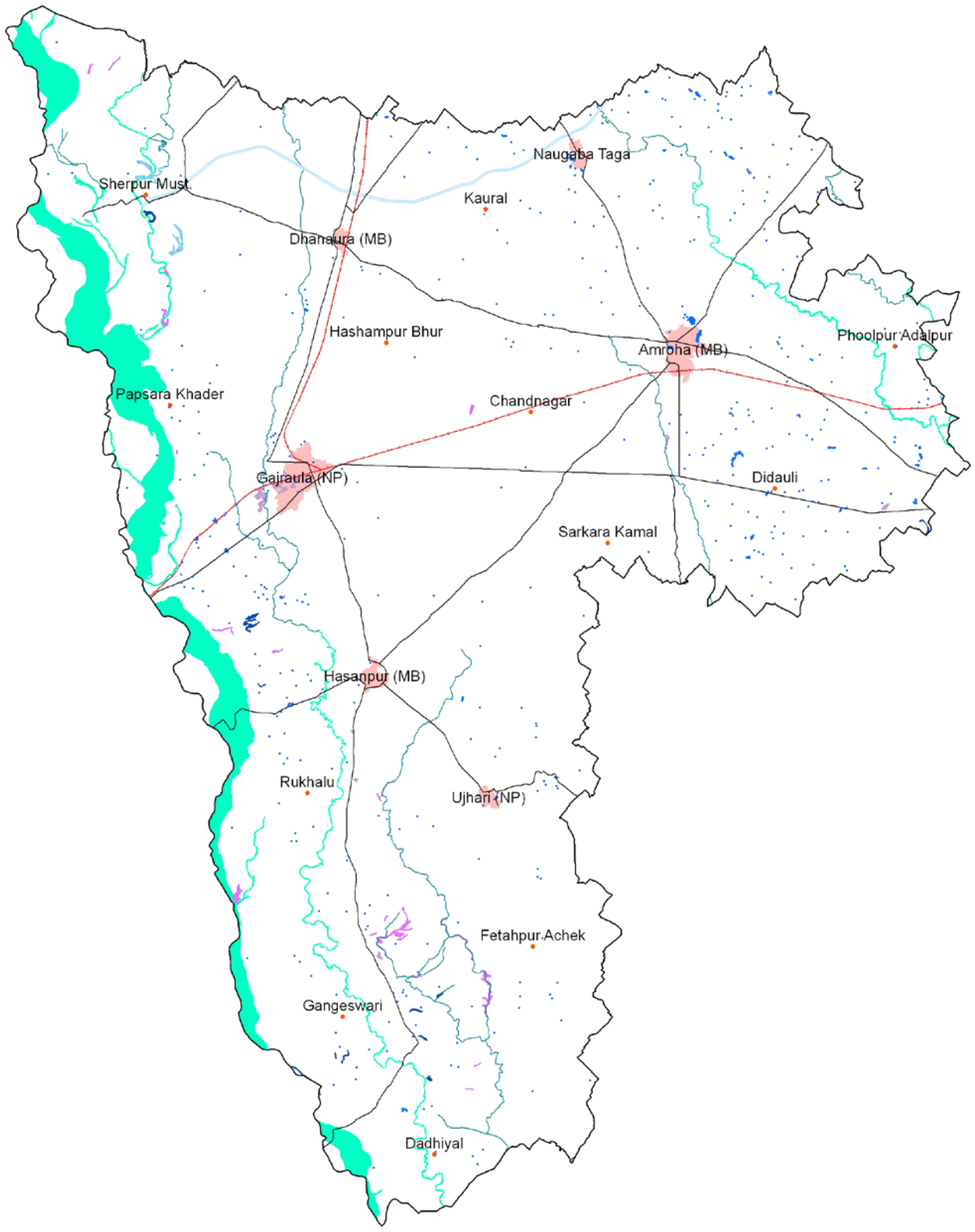
Area under turbidity levels		
Low	697	769
Moderate	4091	3647
High	87	21

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State : Uttar Pradesh

WETLAND MAP

District : Jyotiba Phule Nagar

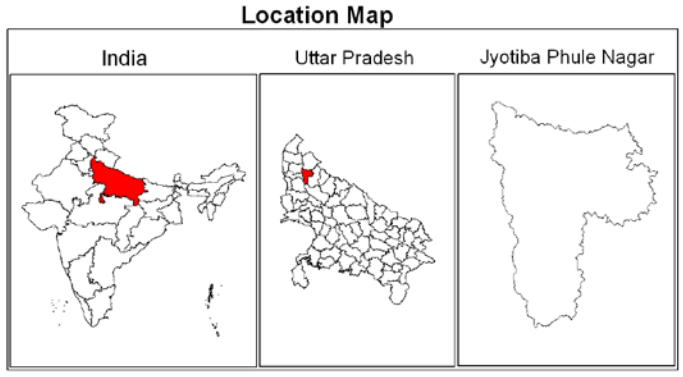


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3 6 12 18 24 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

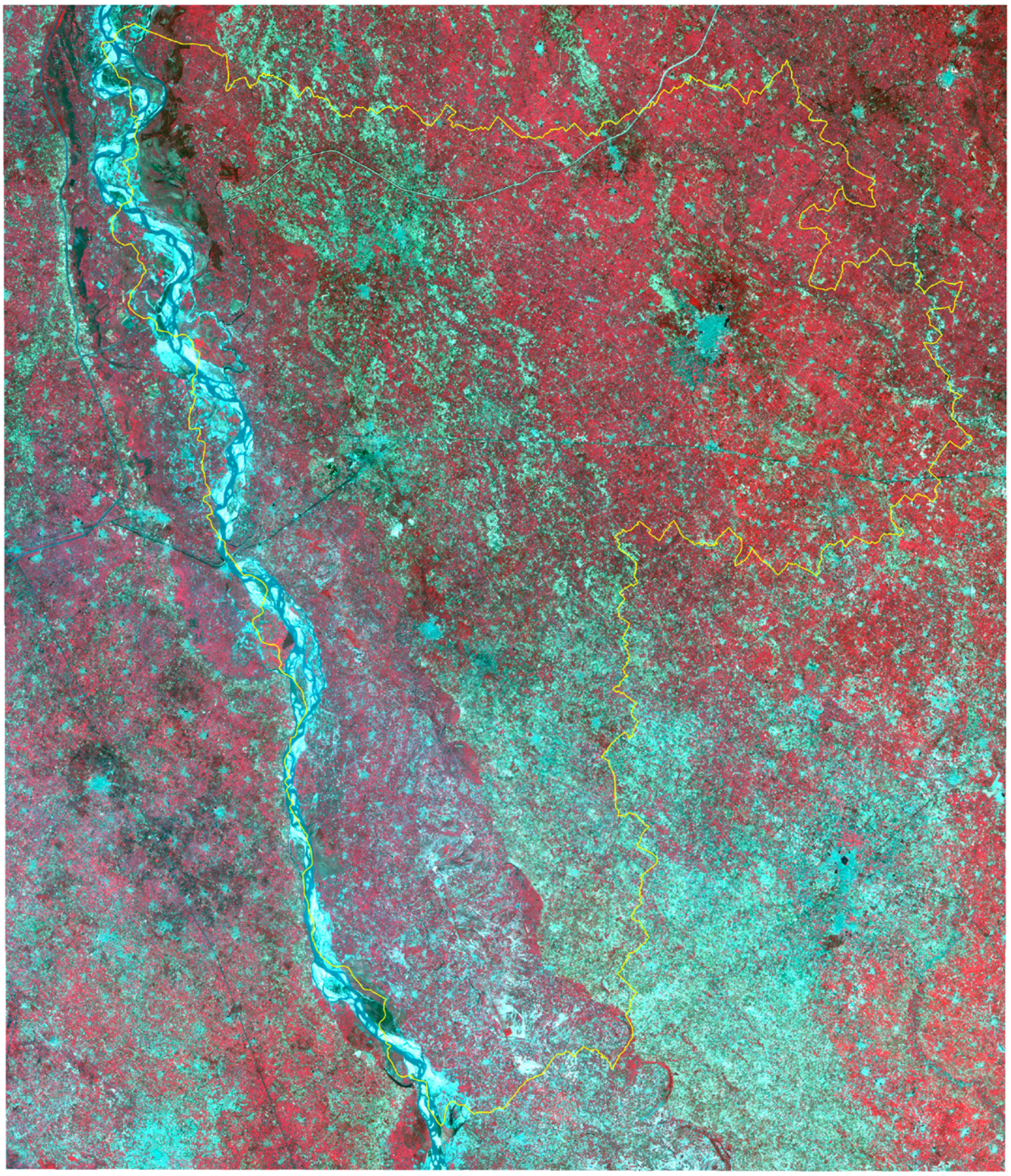
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Government of India

State : Uttar Pradesh

District : Jyotiba Phule Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.7 Meerut

Meerut is located at 28°47' and 29°18' N latitude and 77° 7' and 78° 7' E longitude.The district is bounded on the north by district Muzaffarnagar, on the south by Bulandshahar district and on the west by district Baghpat. River Ganga forms its eastern boundary and separates it from the districts of Moradabad and Bijnore. As per 2001 census, the district has a population of 2997361. It has 3 tehsils, 12 blocks and 676 villages.

The total wetland area in the district is 7922 ha. Major wetland types of the district are: River/Stream (52.26 %), and riverine wetlands (27.88%). Tanks/pond is the major man made wetland. There are no reservoirs in this district. There are 702 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table 12.

The area under aquatic vegetation in post-monsoon season is less (826 ha) compare to pre-monsoon season (1951 ha). Water spread area in post-monsoon season is 5079 ha where as in pre-monsoon season the water spread area is 2829 ha. Low and moderate turbidity is mostly prevalent in many wetlands in both the season.

Table 12: Area estimates of wetlands in Meerut

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	1	5	0.06	-	-
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	7	2209	27.88	1524	184
5	1105	Waterlogged	16	156	1.97	105	34
6	1106	River/Stream	65	4140	52.26	2856	2200
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	155	649	8.19	550	384
9	1203	Waterlogged	8	61	0.77	44	27
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**252**	**7220**	**91.14**	**5079**	**2829**
		Wetlands (<2.25 ha), mainly Tanks	702	702	8.86	-	-
		Total	**954**	**7922**	**100.00**	**5079**	**2829**

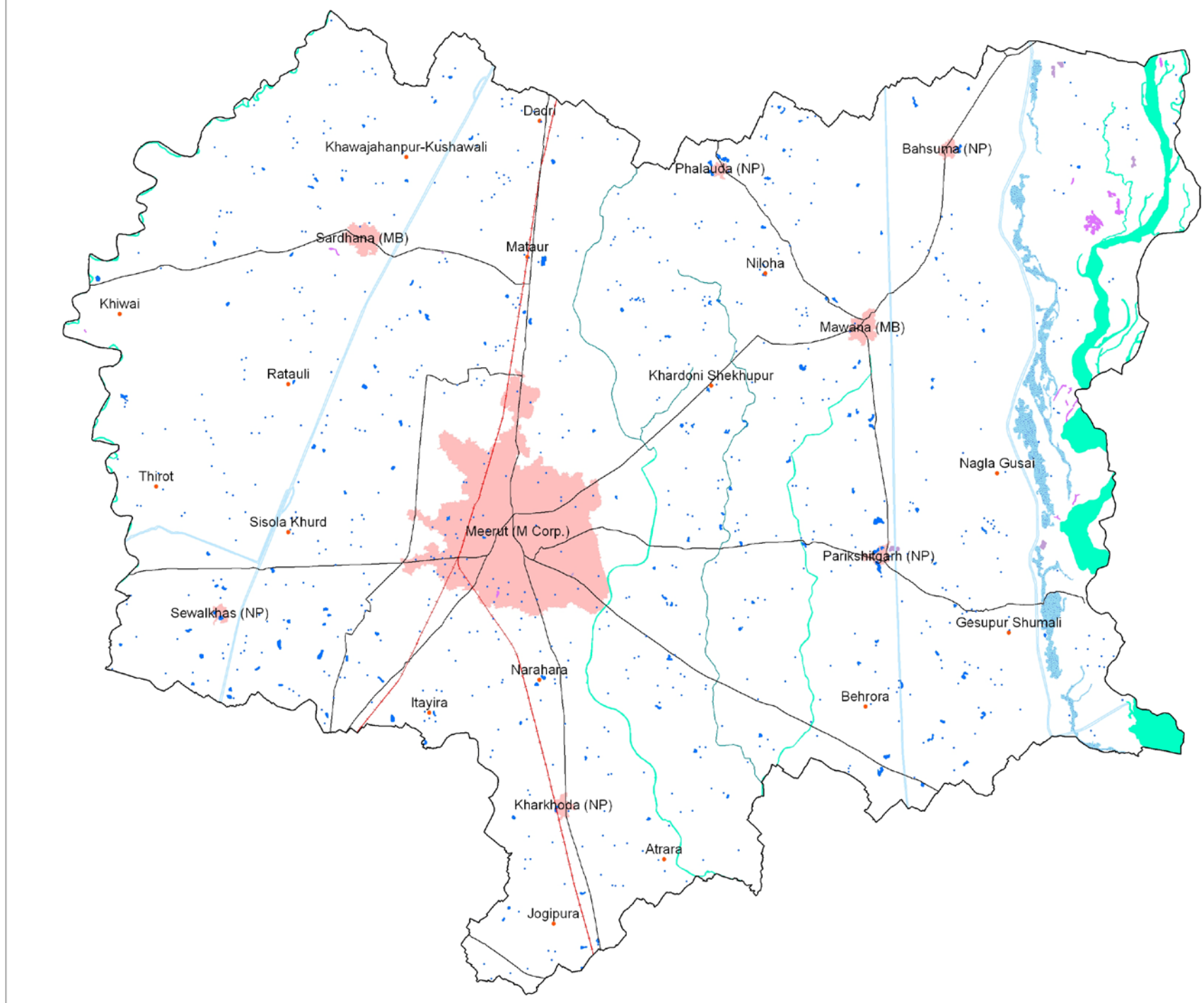
Area under Aquatic Vegetation	826	1951

Area under turbidity levels		
Low	2478	665
Moderate	2597	2150
High	4	14

State : Uttar Pradesh

WETLAND MAP

District : Meerut

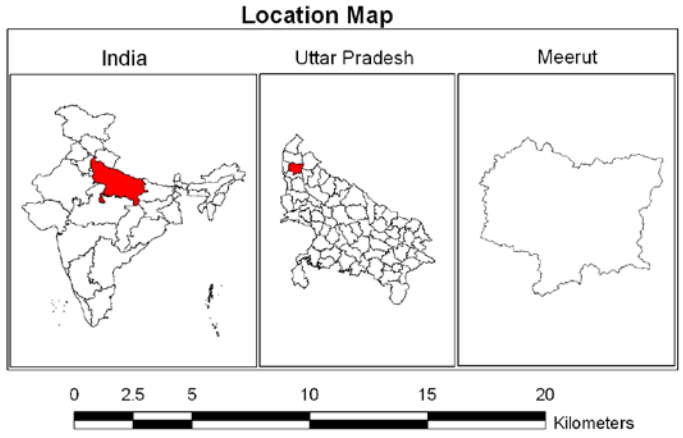


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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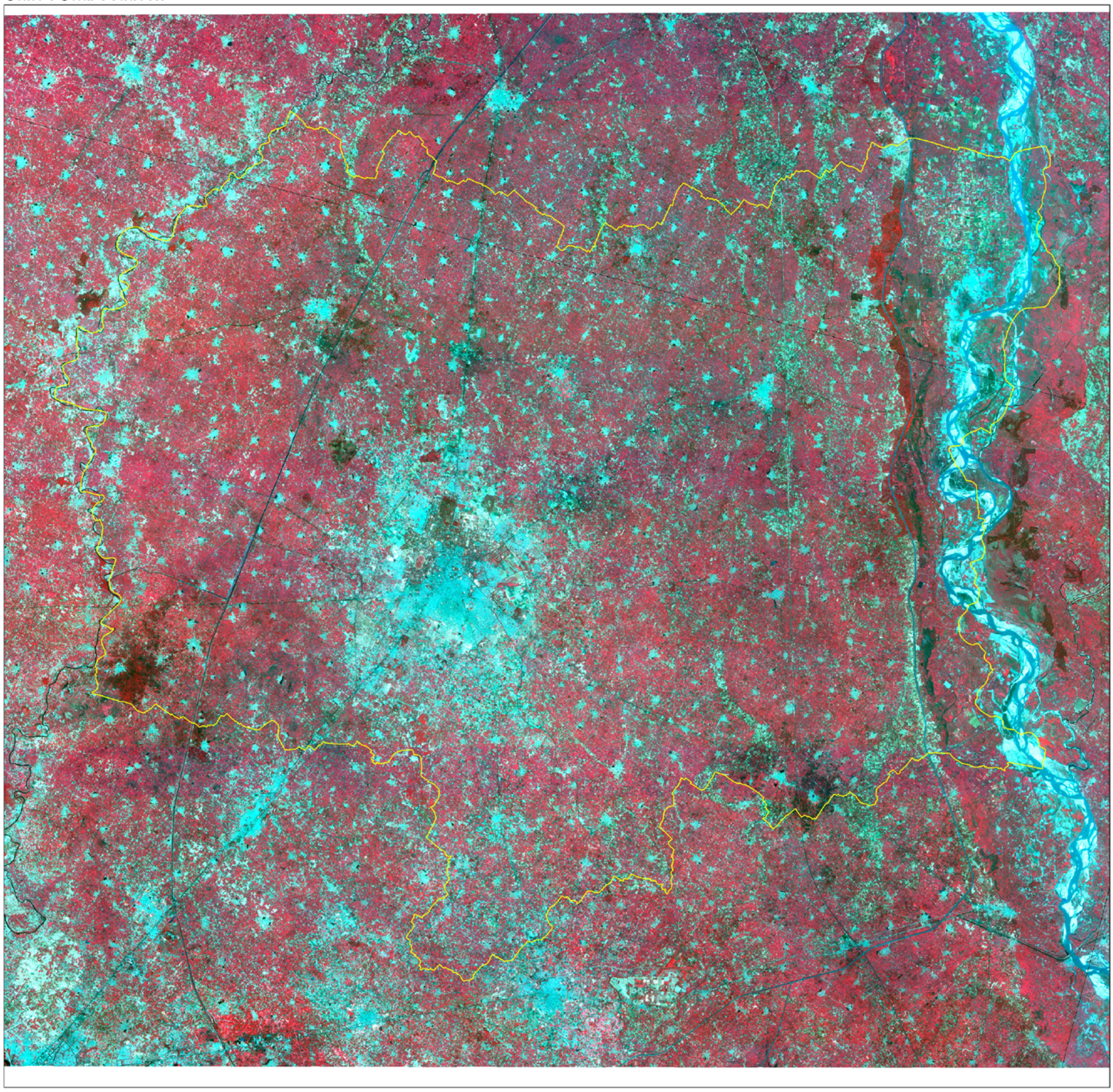
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Government of India

State : Uttar Pradesh

District : Meerut



IRS P6 LISS-III post monsoon data (2006)

7.1.8 Baghpat

The Baghpat city is located on the banks of river Yamuna at 28.95°N latitude and 77.22°E longitude. It is surrounded by Muzaffarnagar in the North, Ghaziabad district in the south, and district Rohtak of Harayana in the west. It has an average elevation of 223 metres. Bagpat had a population of 1163991. It has 3 tehsils, 6 blocks and 515 villages.

The total wetland area in the district is 2277 ha. Apart from River/Streams accounting for 73.0 % of wetland area, the other major category is man made tanks/ponds (9.57%) in this district. There are 365 small wetlands (<2.25 ha) identified and demarcated. Details of estimates of wetlands in Baghpat are given in Table 13.

Area under aquatic vegetation is very less (<20 ha in both the seasons). Water spread area in post-monsoon season is 1305 ha where as in pre-monsoon season the water spread area is 1362 ha. Low and moderate turbidity is mostly prevalent in many wetlands in both the season. The area under low turbidity is more during post-monsoon season (892 ha) compare to pre-monsoon season (234 ha).

Table 13: Area estimates of wetlands in Baghpat

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	-	-	-	-	-
2	1102	Ox-bow lakes/ Cut-off meanders	3	9	0.40	3	6
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	5	10	0.44	7	5
6	1106	River/Stream	54	1663	73.03	1087	1160
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	64	218	9.57	201	184
9	1203	Waterlogged	3	12	0.53	7	7
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**129**	**1912**	**83.97**	**1305**	**1362**
		Wetlands (<2.25 ha), mainly Tanks	365	365	16.03	-	-
		Total	**494**	**2277**	**100.00**	**1305**	**1362**

Area under Aquatic Vegetation	19	11

Area under turbidity levels		
Low	892	234
Moderate	413	1128
High	-	-

State : Uttar Pradesh

WETLAND MAP

District : Baghpat

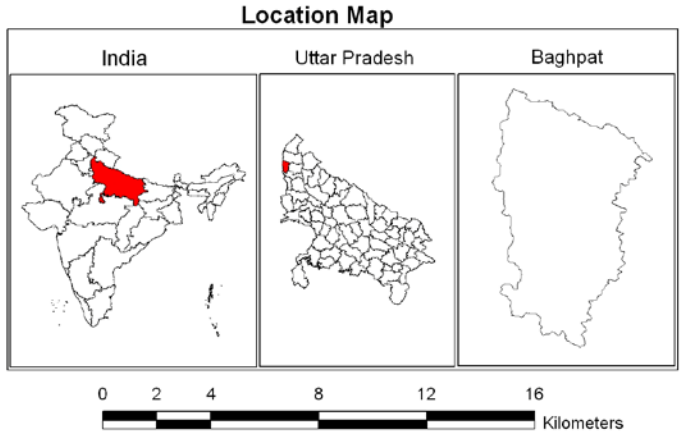


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

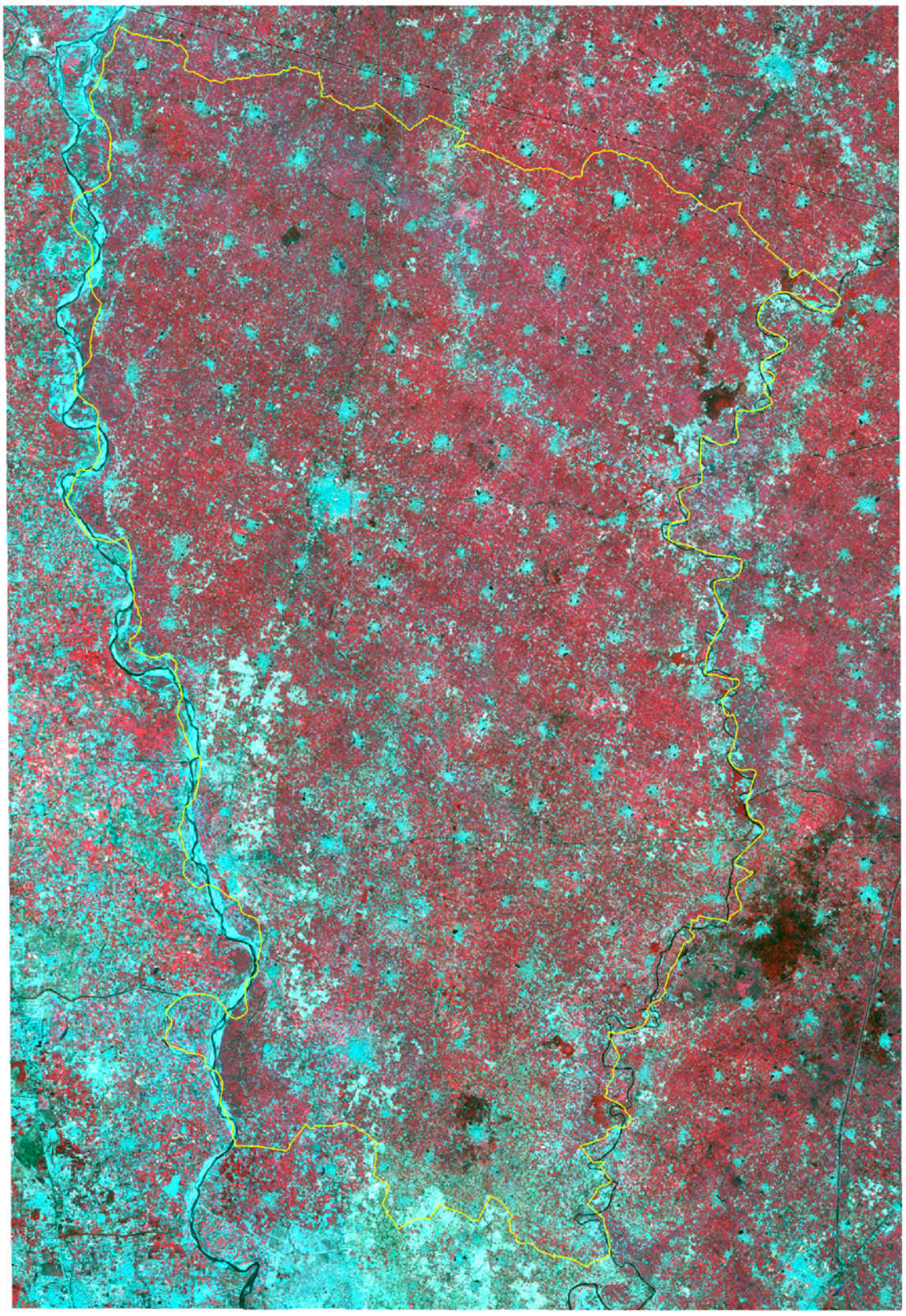
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Government of India

State : Uttar Pradesh

District : Baghpat



IRS P6 LISS-III post monsoon data (2006)

7.1.9 Ghaziabad

Ghaziabad city lies at 28° 40' N latitude and 77° 25' E longitude on the Grand Trunk road about a mile east of the Hindon River. Ghaziabad district is bounded on the north by the district of Meerut, on the south by that of Bulandshahar & Gautambudh Nagar and on the south- west by the national capital Delhi State and on the east by the district Jyotibaphule Nagar. As per 2001 census, the district has a population of 3290586. It has 4 tehsils, 8 blocks and 580 villages. The monsoon usually arrives at the end of the June or the first week of July and normally the rainy season lasts till October. Temperatures range from 10-20 degrees Celsius in winters and 30-40 degrees in summers.

The total wetland area in the district is 4116 ha. Apart from River/Stream, the other major natural type observed is riverine wetlands (8.58%) and Lakes (3.98%). Under man made category, waterlogged dominated (18.76%) contributed by the well developed canal network of the district. The other major type is Tanks/pond (8.02%). There are 688 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table14.

The area under aquatic vegetation in post-monsoon season is 3785 ha while during pre-monsoon season , it is reduced to 101 ha. Water spread area in post-monsoon season is 2567 ha where as in pre-monsoon season it is reduced to 1911 ha. Moderate turbidity is mostly prevalent in both the season. Low turbidity is mostly observed in lakes and ponds riverine and tanks/ponds.

Table 14: Area estimates of wetlands in Ghaziabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	12	164	3.98	81	86
2	1102	Ox-bow lakes/ Cut-off meanders	4	7	0.17	4	6
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	13	353	8.58	217	118
5	1105	Waterlogged	7	31	0.75	31	16
6	1106	River/Stream	25	1771	43.03	1333	1315
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	85	330	8.02	288	206
9	1203	Waterlogged	76	772	18.76	613	164
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**222**	**3428**	**83.28**	**2567**	**1911**
		Wetlands (<2.25 ha), mainly Tanks	688	688	16.72	-	-
		Total	**910**	**4116**	**100.00**	**2567**	**1911**

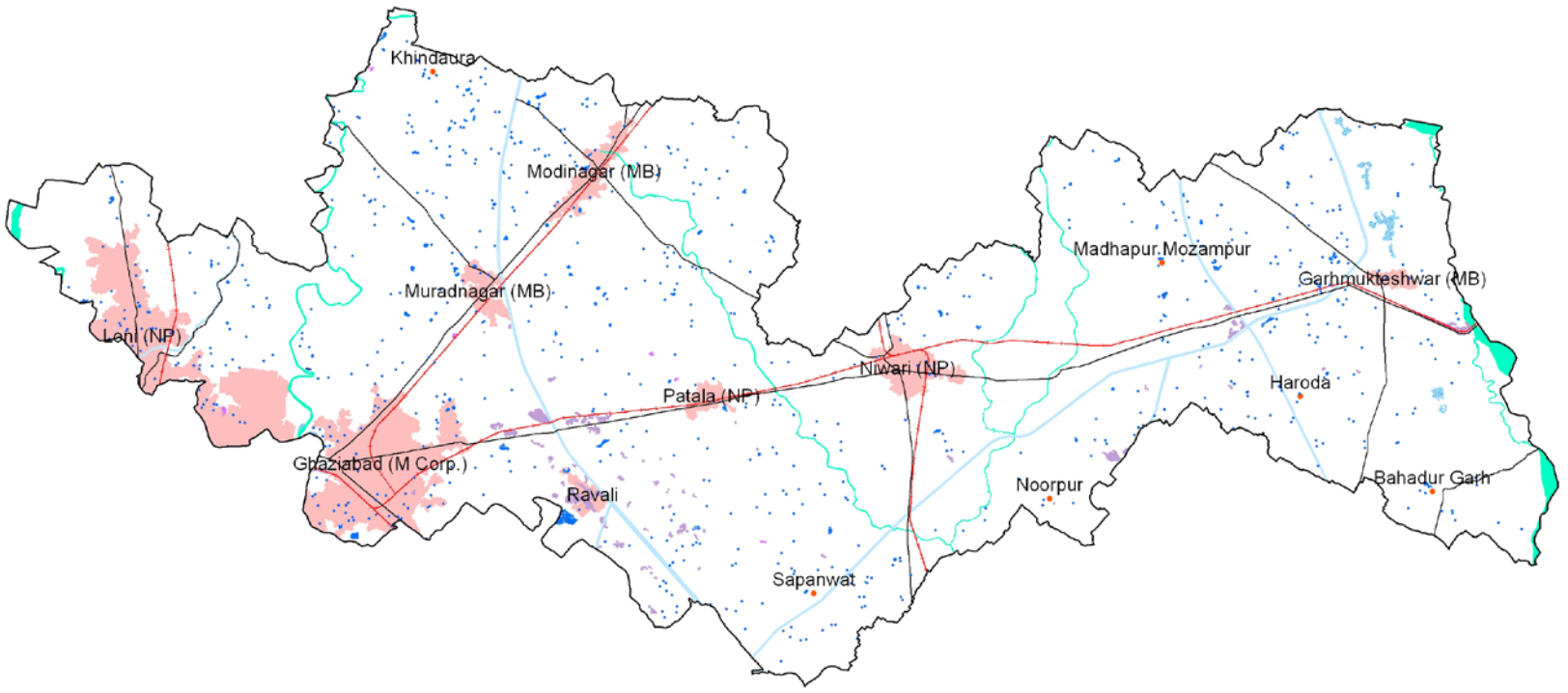
Area under Aquatic Vegetation	375	101

Area under turbidity levels		
Low	772	222
Moderate	1653	1675
High	142	13

State : Uttar Pradesh

WETLAND MAP

District : Ghaziabad

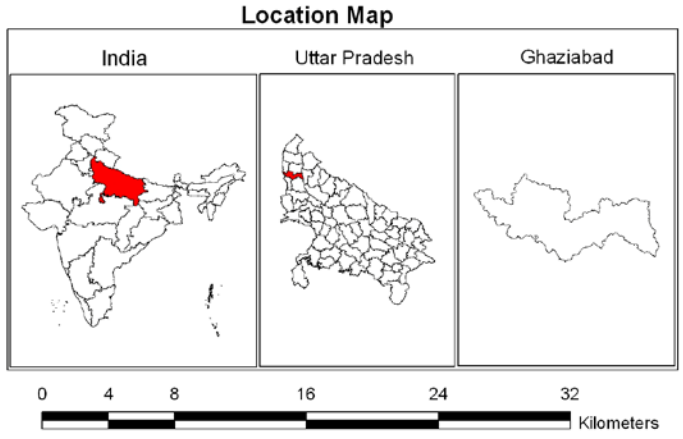


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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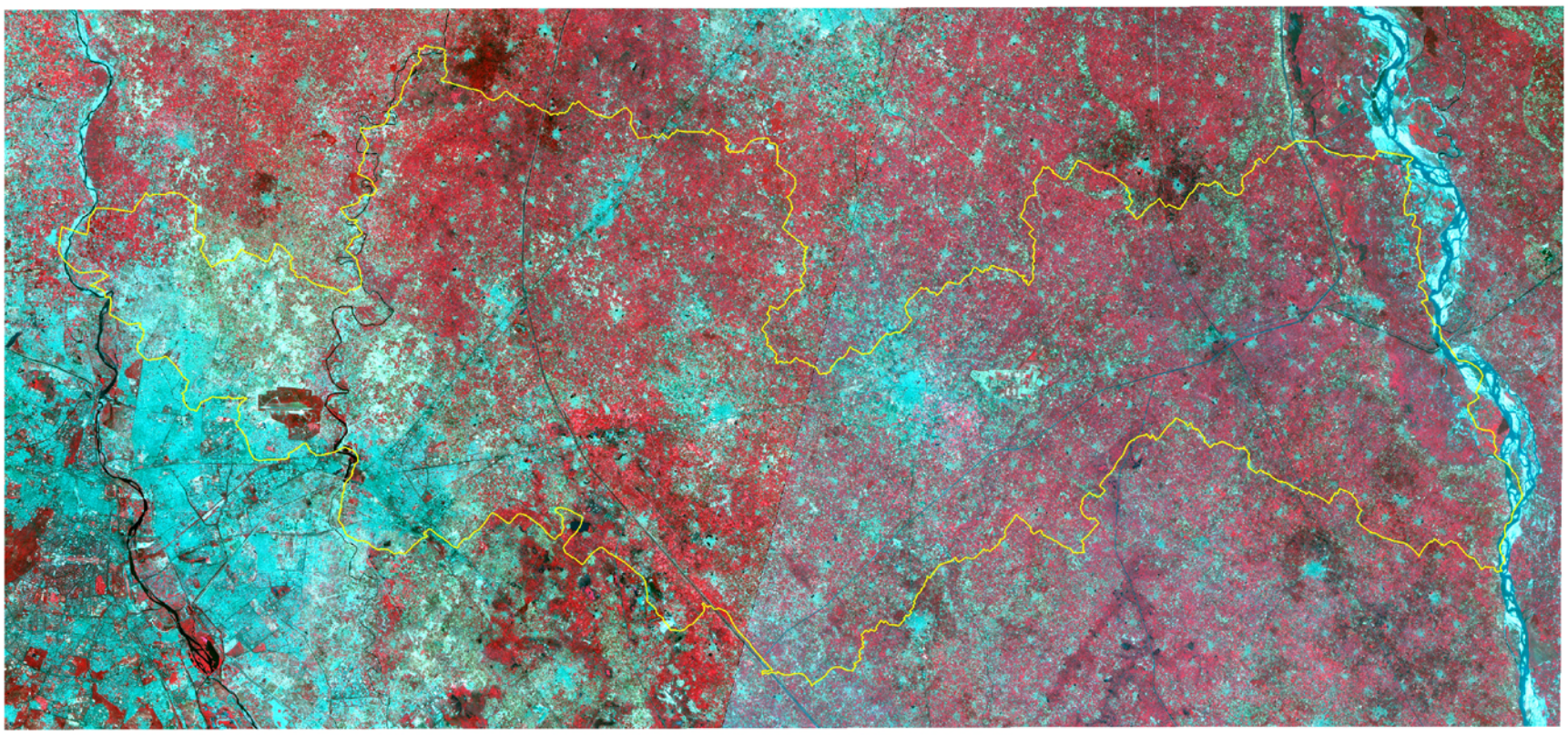
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Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Ghaziabad



IRS P6 LISS-III post monsoon data (2006)

7.1.10 Gautam Buddha Nagar

Gautam Buddha Nagar is located at 28.35° N latitude and 77.20° E longitude. The Yamuna River separates the district from Haryana state and Delhi to the west. The district is bounded by Ghaziabad District to the north, Bulandshahr District to the east, and Aligarh District to the south. As per 2001 census, the district has a population of 1202030. It has 3 tehsils, 4 blocks and 371 villages. Average maximum and minimum temperatures are 44.4^{o} C and 2.2^{o} C respectively. Average rainfall is 1035 mm.

The total wetland area in the district is 4153 ha. The district has diverse types of wetlands belongingto both natural and man made category. Apart from the Rivers/streams (24.87%), the other major natural wetlands are: Lakes/ponds (17.29%), Waterlogged (6.65%) and Ox-bow lakes. The major man made wetlands are: waterlogged, reservoirs and tanks/pond. There are 702 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table 15.

The area under aquatic vegetation in post-monsoon season is less (720 ha) compare to pre-monsoon season (295 ha). Water spread area in post-monsoon season is 2567 ha where as in pre-monsoon season it is 1464 ha. Low and moderate turbidity is mostly prevalent in many wetlands in both the season. Low turbidity is mostly observed in tanks and oxbow/cut-off meanders

Table 15: Area estimates of wetlands in Gautam Buddha Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	42	718	17.29	494	210
2	1102	Ox-bow lakes/ Cut-off meanders	22	191	4.60	108	12
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	18	0.43	-	-
5	1105	Waterlogged	13	276	6.65	163	30
6	1106	River/Stream	17	1033	24.87	814	800
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	10	424	10.21	202	230
8	1202	Tanks/Ponds	65	320	7.71	267	94
9	1203	Waterlogged	90	690	16.61	519	88
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**260**	**3670**	**88.37**	**2567**	**1464**
		Wetlands (<2.25 ha), mainly Tanks	483	483	11.63	-	-
		Total	**743**	**4153**	**100.00**	**2567**	**1464**

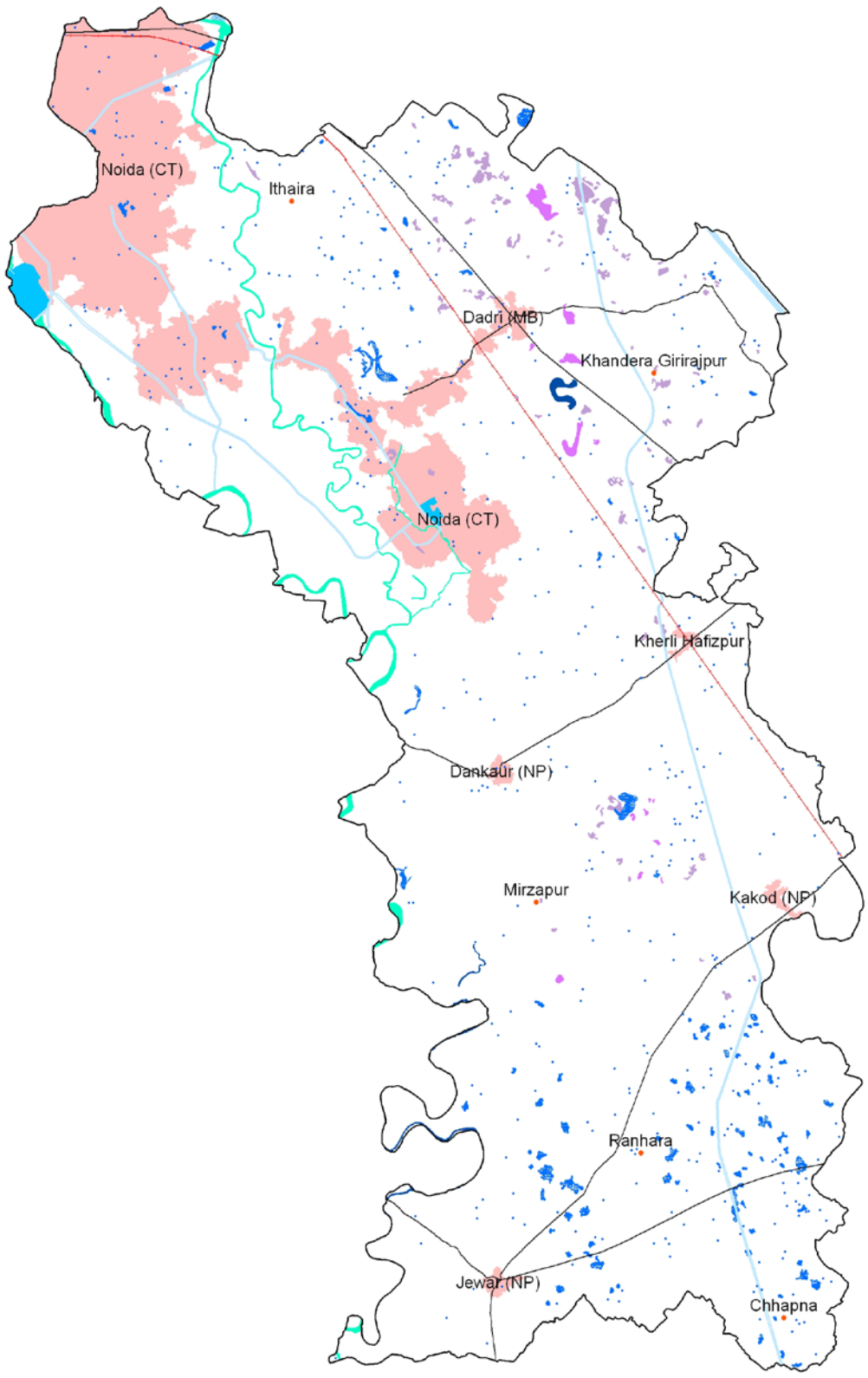
Area under Aquatic Vegetation	720	295

Area under turbidity levels		
Low	1480	132
Moderate	1079	1002
High	8	330

State : Uttar Pradesh

WETLAND MAP

District : Gautam Buddha Nagar

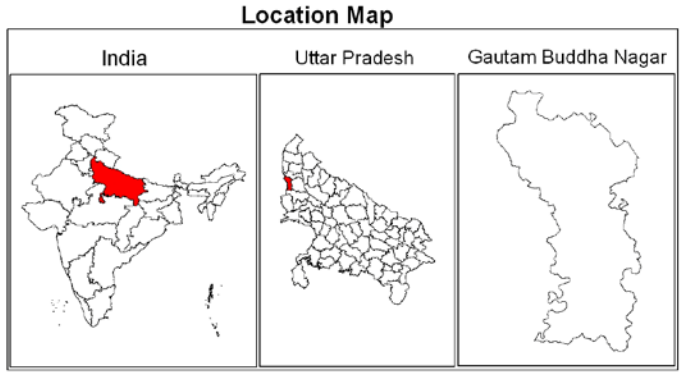


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3 6 12 18 24 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

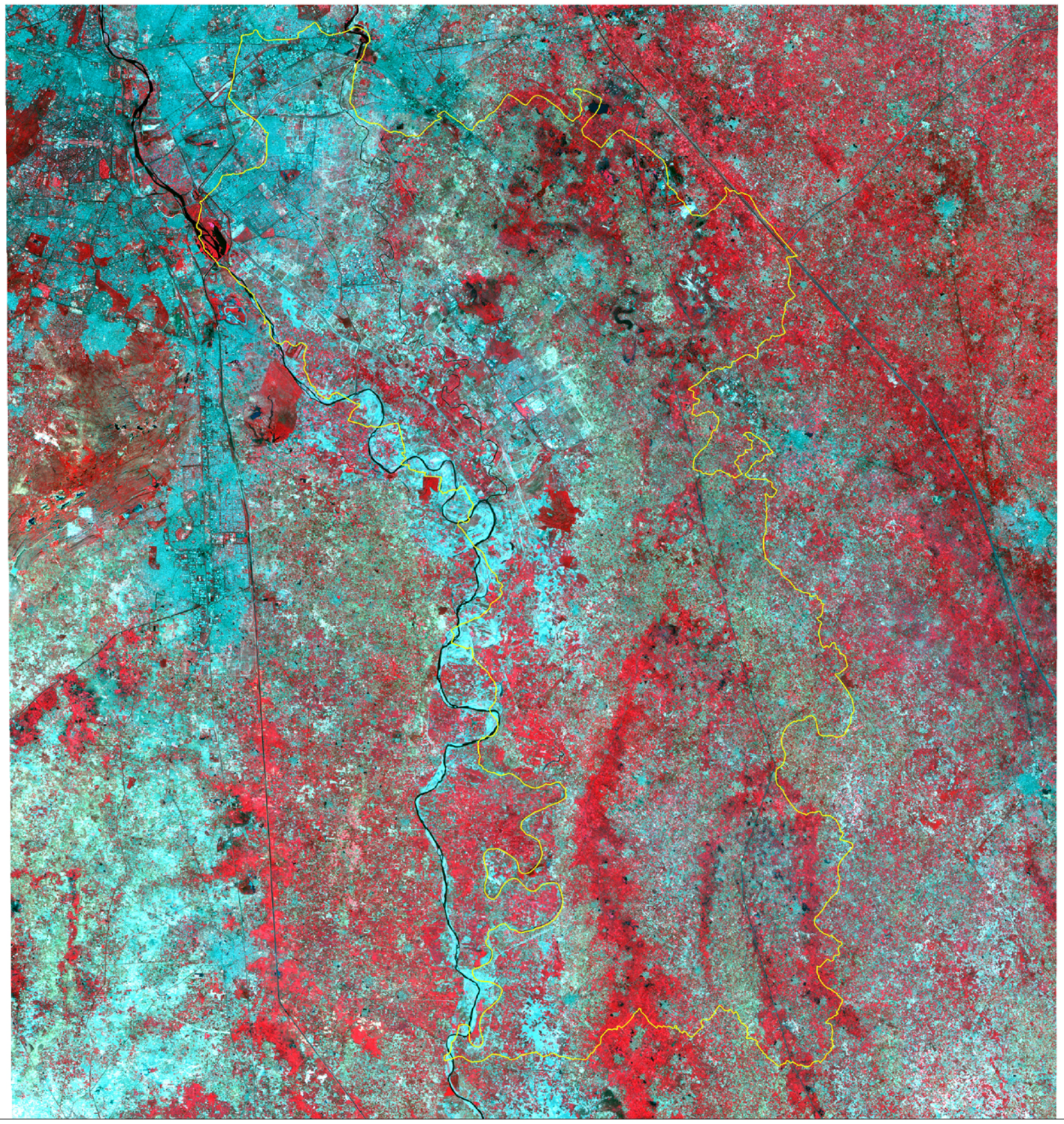
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Gautam Buddha Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.11 Bulandshahar

Bulandshahr is located at 28.4°N latitude and 77.85°E longitude. It has an average elevation of 196 metres. The district shares common boundaries with New Delhi, Meerut, Ghaziabad, Gautam Budh Nagar (NOIDA) and Aligarh districts on various sides. The river Ganga separates it from Moradabad and Badaun district and river Yamuna separates the district from Haryana state and Delhi. As per 2001 census, the district has a population of 2913122. It has 7 tehsils and 15 blocks.

The total wetland area in the district is 9193 ha. Major wetland types of the district are River/Stream, and man made waterlogged and accounts for 76 per cent wetland area of the district. There are 674 lakes/ponds in the district and contribute around 7 per cent wetland area of the district. There are 967 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in the district are given in Table 16.

The area under aquatic vegetation in post-monsoon season is less (829 ha) compare to pre-monsoon season (290 ha). Water spread area in post-monsoon season is 5141 ha where as in pre-monsoon season the water spread area is 3498 ha. Low and moderate turbidity is mostly prevalent in many wetlands in both the season.

Table 16: Area estimates of wetlands in Bulandshahar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	37	674	7.33	438	256
2	1102	Ox-bow lakes/ Cut-off meanders	3	49	0.53	49	28
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	2	11	0.12	11	0
5	1105	Waterlogged	4	102	1.11	23	50
6	1106	River/Stream	10	5009	54.49	2806	2786
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	90	382	4.16	335	142
9	1203	Waterlogged	130	1999	21.74	1480	236
10	1204	Salt pans	-	-	-	-	-
		Wetlands (<2.25 ha), mainly Tanks	967	967	10.52	-	-
		Total	**1243**	**9193**	**100.00**	**5142**	**3498**

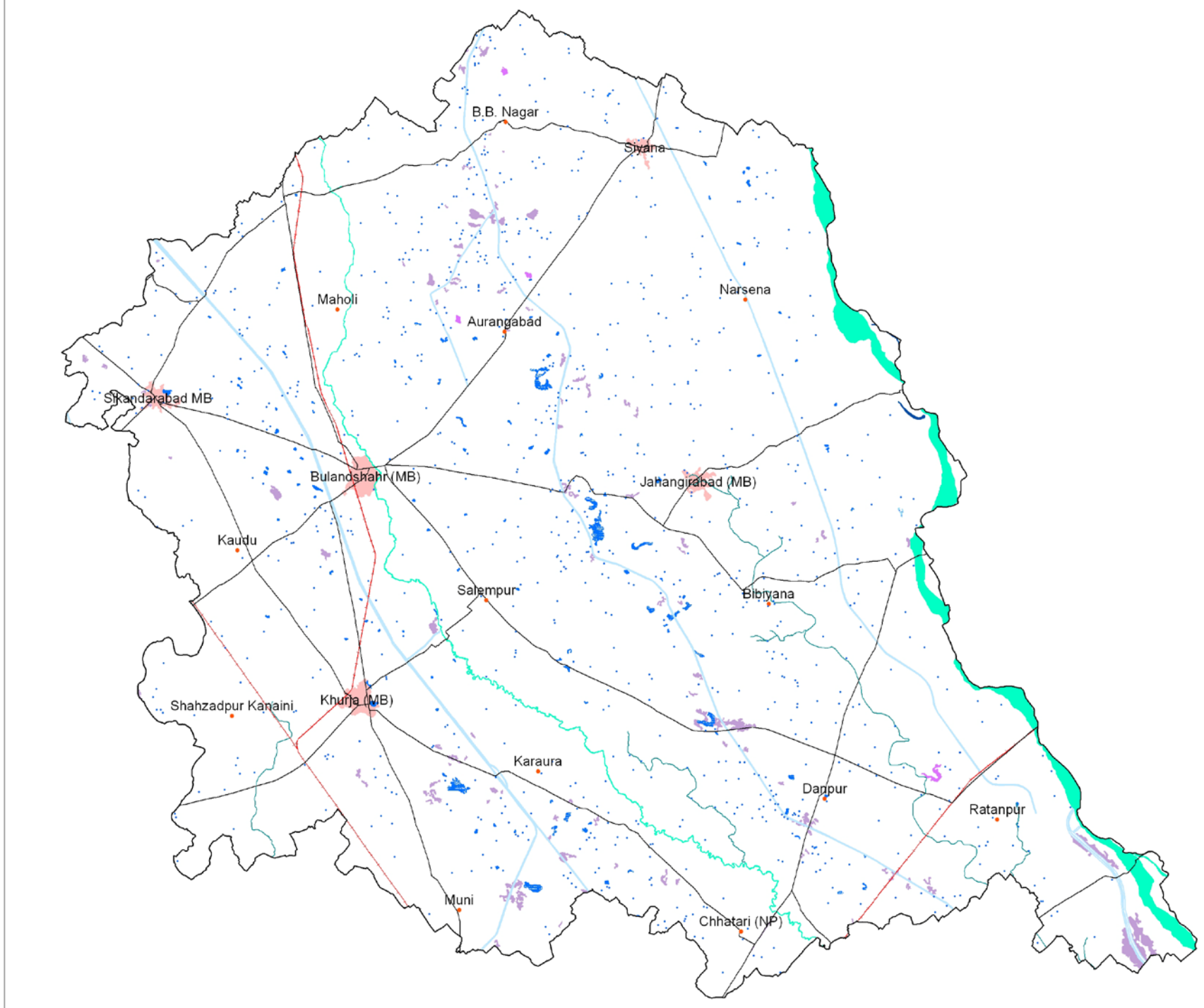
Area under Aquatic Vegetation	829	290

Area under turbidity levels		
Low	1224	438
Moderate	3833	2893
High	85	167

State : Uttar Pradesh

WETLAND MAP

District : Bulandshahar

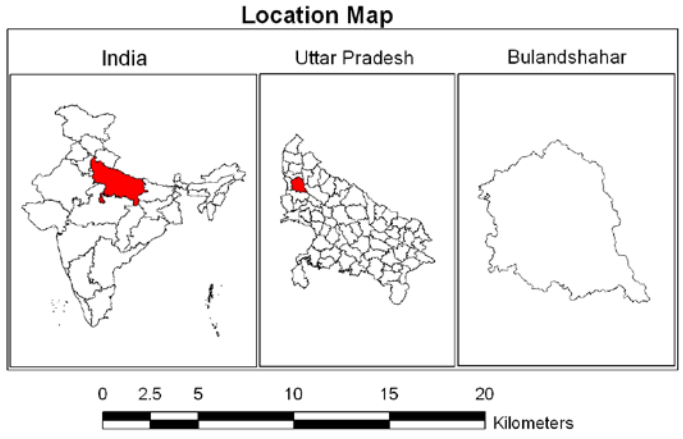


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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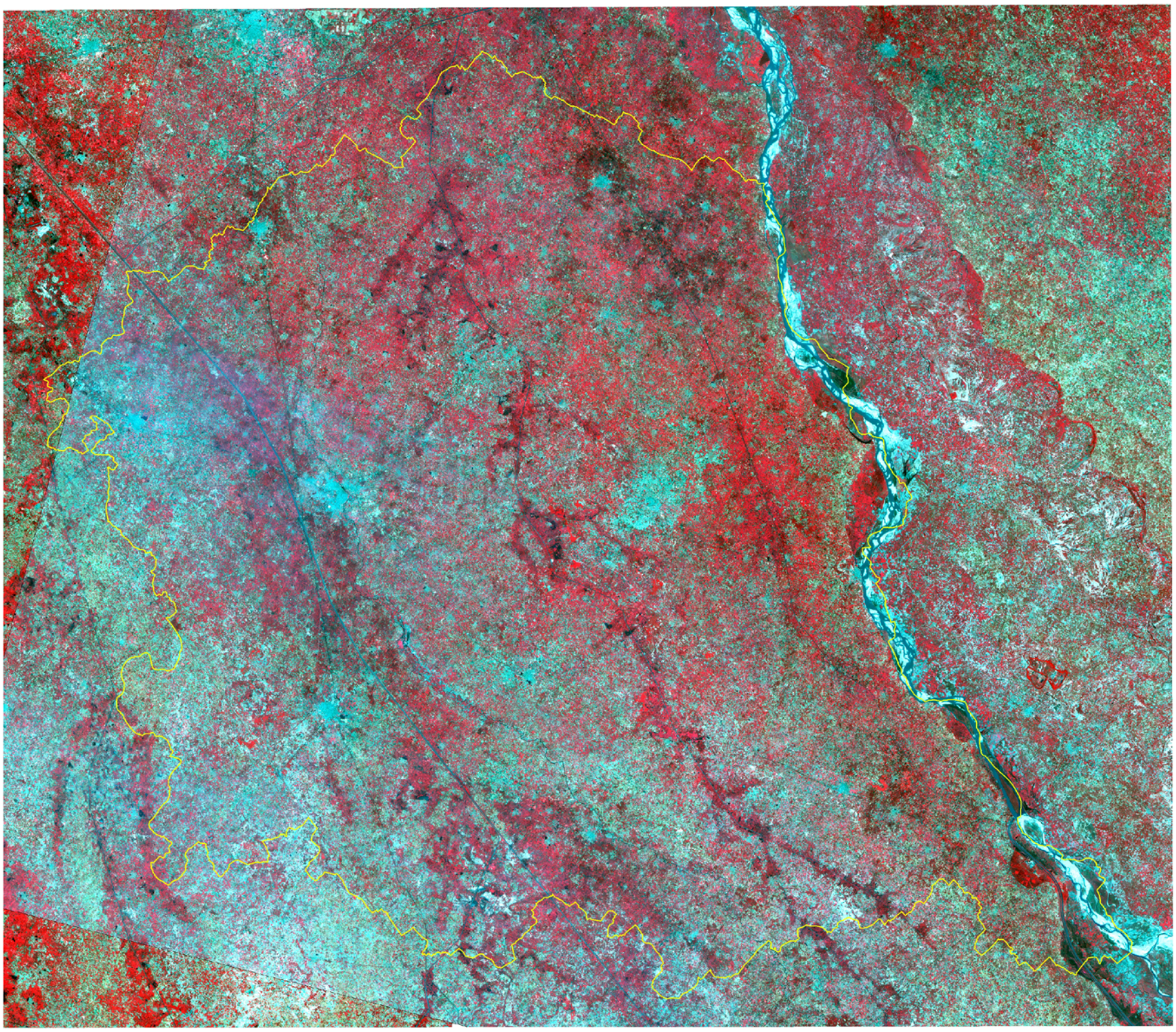
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Bulandshahar



IRS P6 LISS-III post monsoon data (2006)

7.1.12 Aligarh

Aligarh is located at 27.88°N latitude 78.08°E longitude.It has an average elevation of 178 metres. The city is situated in between the Ganges and Yamuna Rivers. Aligarh is bounded by Bulandshahr in the north, Etah in the east, Mathura in the west and Hathras (Mahamaya Nagar) in the south. The Aligarh district is divided into 5 Tehsils and 12 Blocks and 1212 villages. Total Population is 2992286. The city is hot and dry. The coldest months of the year here are in December and January, when the mean temperature ranges between 15 degrees Celsius and 10 degrees Celsius. The hottest months of the year are in May and June when the mean temperature lies between 35 degrees Celsius and 40 degrees Celsius, in the shade.

The total wetland area in the district is 7984 ha. Major wetland types of the district are manmade waterlogged area (36%), River/Stream (23.7%) and Lakes/ponds (12%). There are 1301 small wetlands (<2.25 ha) identified and demarcated as point features. These are mainly tanks. Area estimates of wetlands in Aligarh are in table 17.

Area under aquatic vegetation did not vary much in pre and post monsoon. Significant fluctuations in water-spread area of wetlands are observed in pre and post monsoon season, it is mainly due to fluctuations in waterlogged area. Moderate and low turbidity is mostly prevalent in many wetlands. High turbidity is observed in rivers.

Table 17: Area estimates of wetlands in Aligarh

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	29	955	11.96	442	314
2	1102	Ox-bow lakes/ Cut-off meanders	1	7	0.09	7	0
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	6	281	3.52	46	39
5	1105	Waterlogged	17	205	2.57	122	66
6	1106	River/Stream	28	1895	23.73	1256	1327
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	4	0.05	0	3
8	1202	Tanks/Ponds	87	467	5.85	419	249
9	1203	Waterlogged	178	2869	35.93	2685	467
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**347**	**6683**	**83.70**	**4977**	**2465**
		Wetlands (<2.25 ha), mainly Tanks	1301	1301	16.30	-	-
		Total	**1648**	**7984**	**100.00**	**4977**	**2465**

Area under Aquatic Vegetation	953	963

Area under turbidity levels		
Low	1360	697
Moderate	3602	1245
High	15	523

State : Uttar Pradesh

WETLAND MAP

District : Aligarh

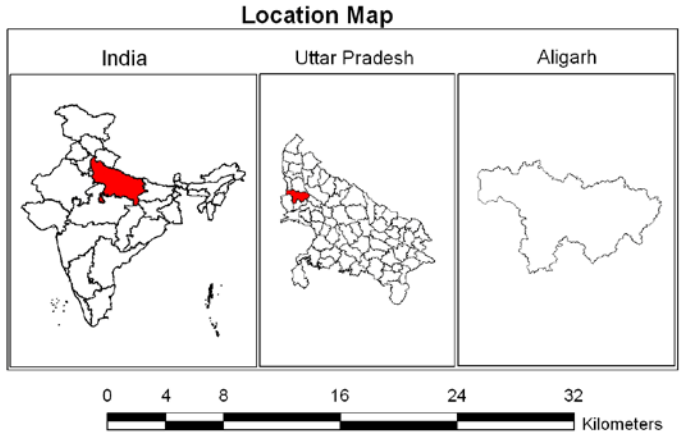


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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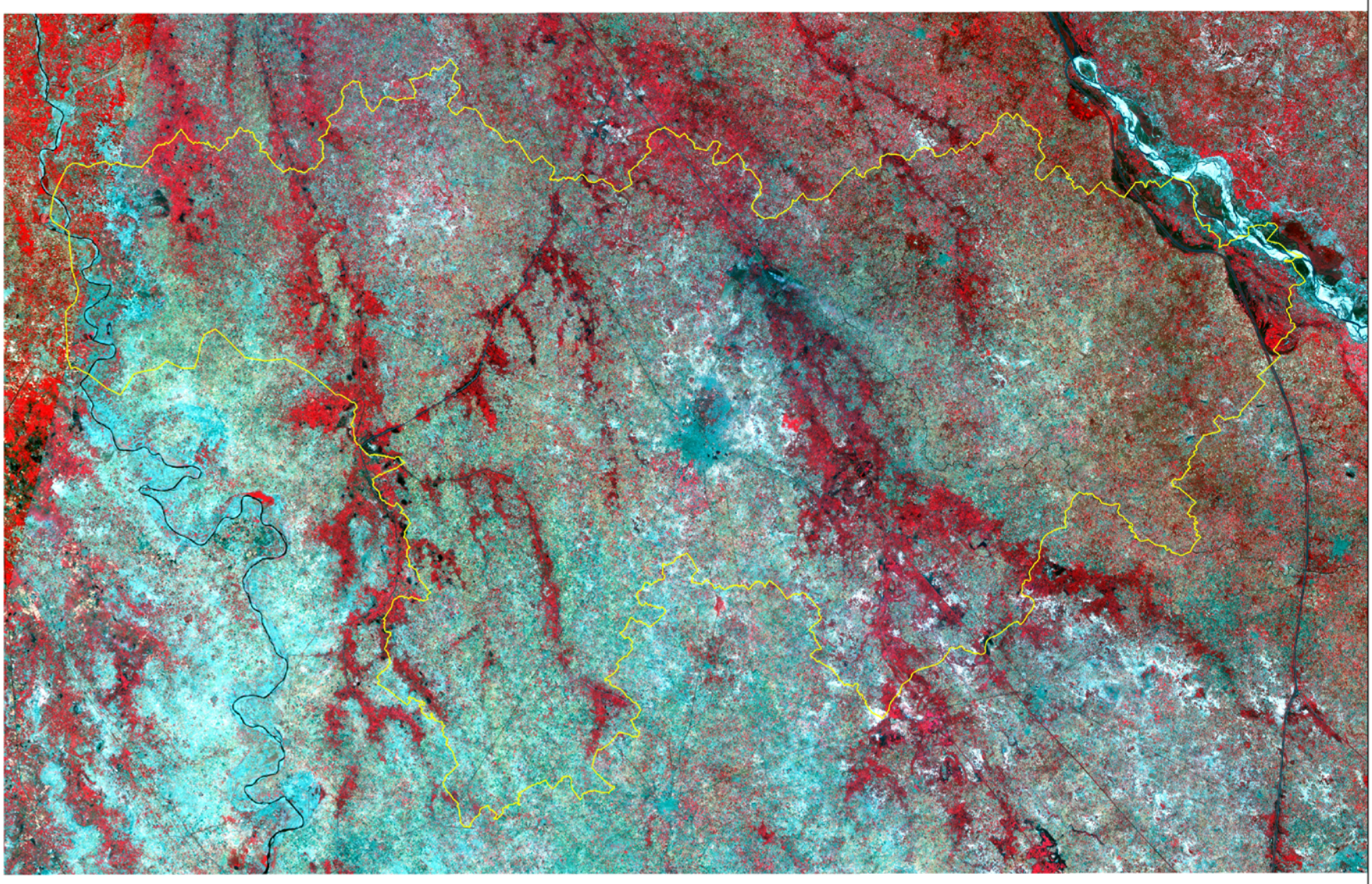
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Aligarh



IRS P6 LISS-III post monsoon data (2006)

7.1.13 Hathras

Hathras is located at 27.6°N latitude and 78.05°E longitude. It has an average elevation of 185 metres. The district is surrounded by district Aligarh in the North, district Etah in the East, Firozabad in the South and district Mathura in the West. As per 2001 census, the district has a population of 1336031. It has 4 tehsils, 7 blocks and 672 villages.

The total wetland area in the district is 2236 ha. Major wetland types of the district are Lakes/ponds constituting around 37 per cent of total area, followed by waterlogged (man made) and river/streams. There are 646 small wetlands (<2.25 ha) identified and demarcated as point features. The area under aquatic vegetation in post-monsoon season is 765 ha and in pre-monsoon season is 683 ha Area estimates of wetlands in Hathras are in table 18.

Significant fluctuation of open water was observed between pre and post monsoon season. Moderate turbidity is mostly prevalent in many wetlands. The area under moderate turbidity is more during post-monsoon season (710 ha) compare to pre-monsoon season (323 ha)

Table 18: Area estimates of wetlands in Hathras

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	7	826	36.94	307	30
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	6	26	1.16	25	16
6	1106	River/Stream	11	248	11.09	249	247
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	13	133	5.95	104	38
9	1203	Waterlogged	18	357	15.97	143	26
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**55**	**1590**	**71.11**	**828**	**357**
		Wetlands (<2.25 ha), mainly Tanks	646	646	28.89	-	-
		Total	**701**	**2236**	**100.00**	**828**	**357**

Area under Aquatic Vegetation	765	683

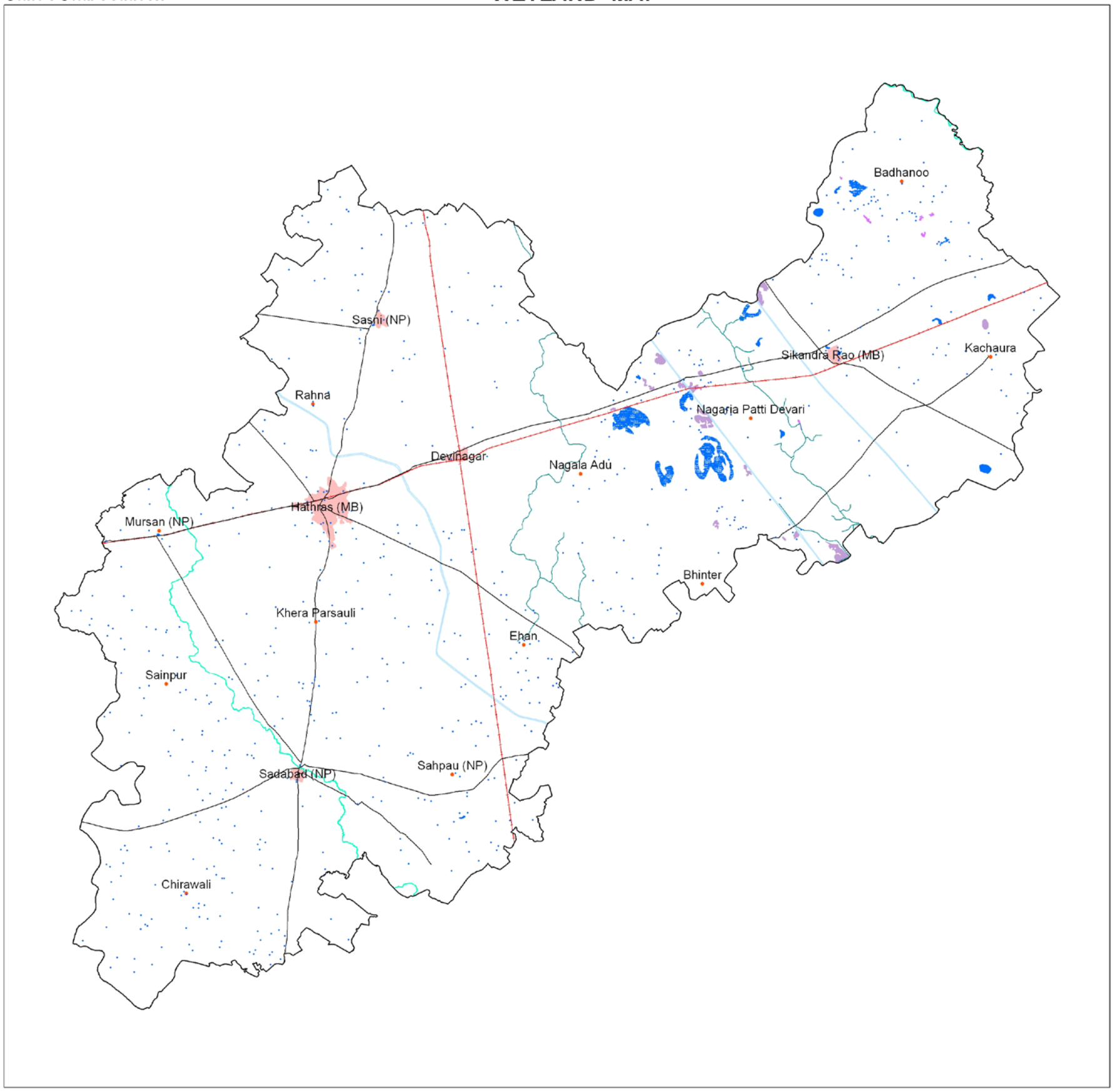
Area under turbidity levels		
Low	108	15
Moderate	710	323
High	10	19

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State : Uttar Pradesh

WETLAND MAP

District : Hathras

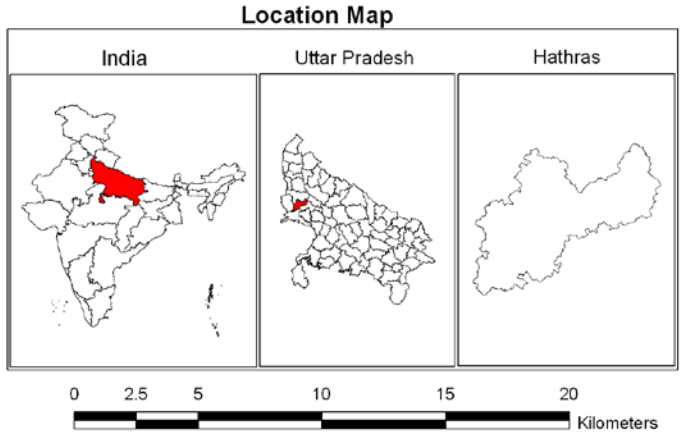


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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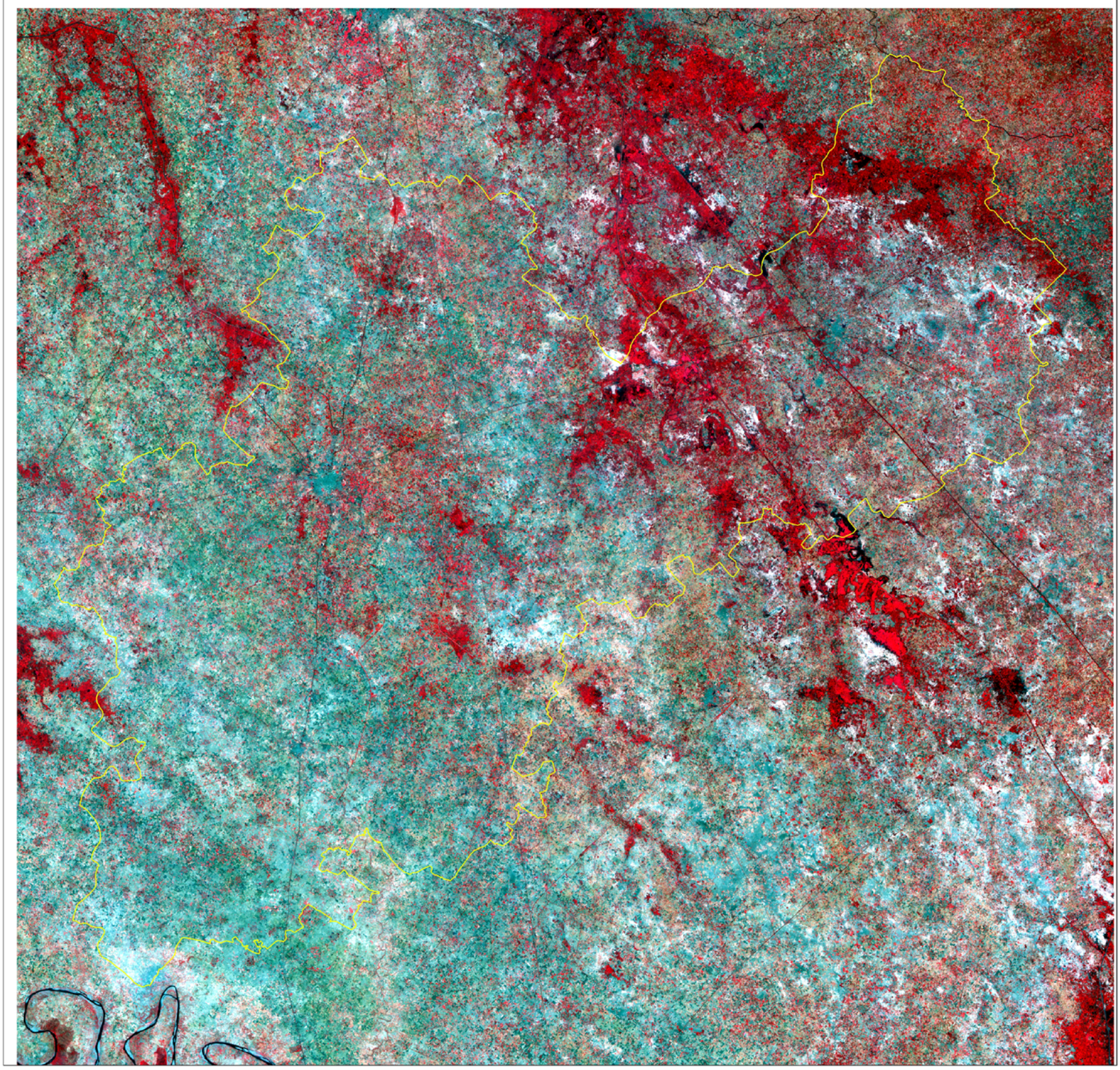
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Hathras



IRS P6 LISS-III post monsoon data (2006)

7.1.14 Mathura

Mathura is located at 27°30′ to 27.5°N latitude and 77°41′ to 77.68°E longitude. It has an average elevation of 174 metres The district is bounded on the northeast by Aligarh District, on the southeast by Hathras District, on the south by Agra District, and on the west and northwest by Haryana state. As per 2001 census, the district has a population of 2074516. It has 3 tehsils, 10 blocks and 886 villages. Average maximum and minimum temperatures are 45.0^{o} C and 4.2^{o}C respectively. Average rainfall is 650 mm.

Total five categories of Natural wetland and two categories of manmade wetlands are found in the district. The total wetland area in the district is 9536 ha. There are 1520 small wetlands (<2.25 ha) are identified and demarcated. Majority of wetland categories are distributed in north and northwest part of the district. Major wetland types of the district are River/Stream occupying around 46 per cent area, followed by waterlogged and Tanks/ponds. Area estimates of wetlands in Mathura are in table 19.

Most of the lakes/ponds and tanks/ponds are infested by aquatic vegetation. The area under aquatic vegetation in post-monsoon season is 467 ha and in pre-monsoon season it is 199 ha. Water spread area in pre-monsoon season is 4438 ha that increased to 5888 ha in post monsoon. Moderate turbidity is mostly prevalent in many wetlands. The area under moderate turbidity is more during post-monsoon season (4949 ha) compare to pre-monsoon season (1056 ha). Low turbidity is mostly observed in deeper portion of the lakes and ponds. High turbidity is mainly observed in rivers.

Table 19: Area estimates of wetlands in Mathura

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	15	817	8.57	605	260
2	1102	Ox-bow lakes/ Cut-off meanders	5	24	0.25	20	11
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	16	168	1.76	68	101
5	1105	Waterlogged	21	181	1.90	162	27
6	1106	River/Stream	7	4429	46.45	2843	3231
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	181	1098	11.51	1023	611
9	1203	Waterlogged	112	1299	13.62	1167	197
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**357**	**8016**	**84.06**	**5888**	**4438**
		Wetlands (<2.25 ha), mainly Tanks	1520	1520	15.94	-	-
		Total	**1877**	**9536**	**100.00**	**5888**	**4438**

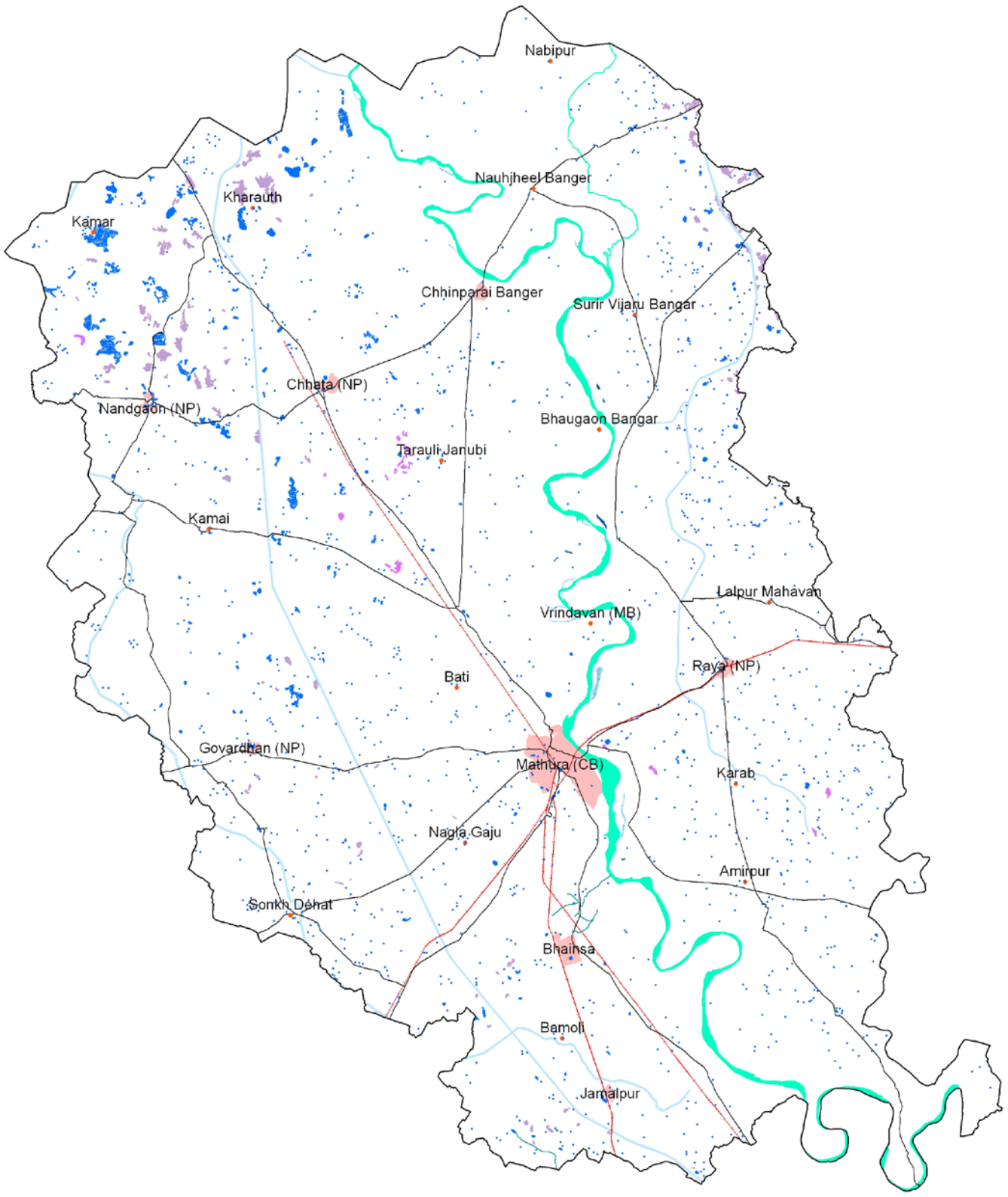
Area under Aquatic Vegetation	467	199

Area under turbidity levels		
Low	820	196
Moderate	4949	1056
High	119	3186

State : Uttar Pradesh

WETLAND MAP

District : Mathura

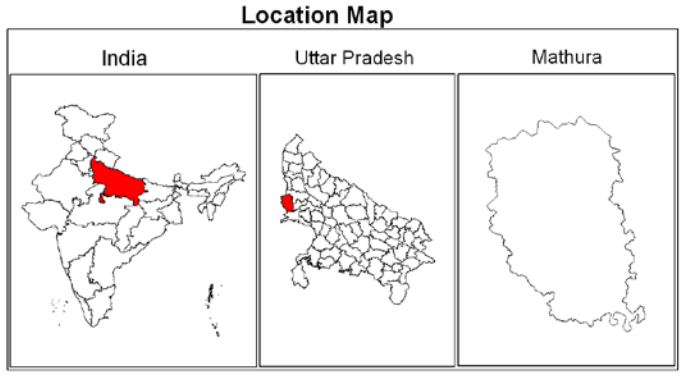


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

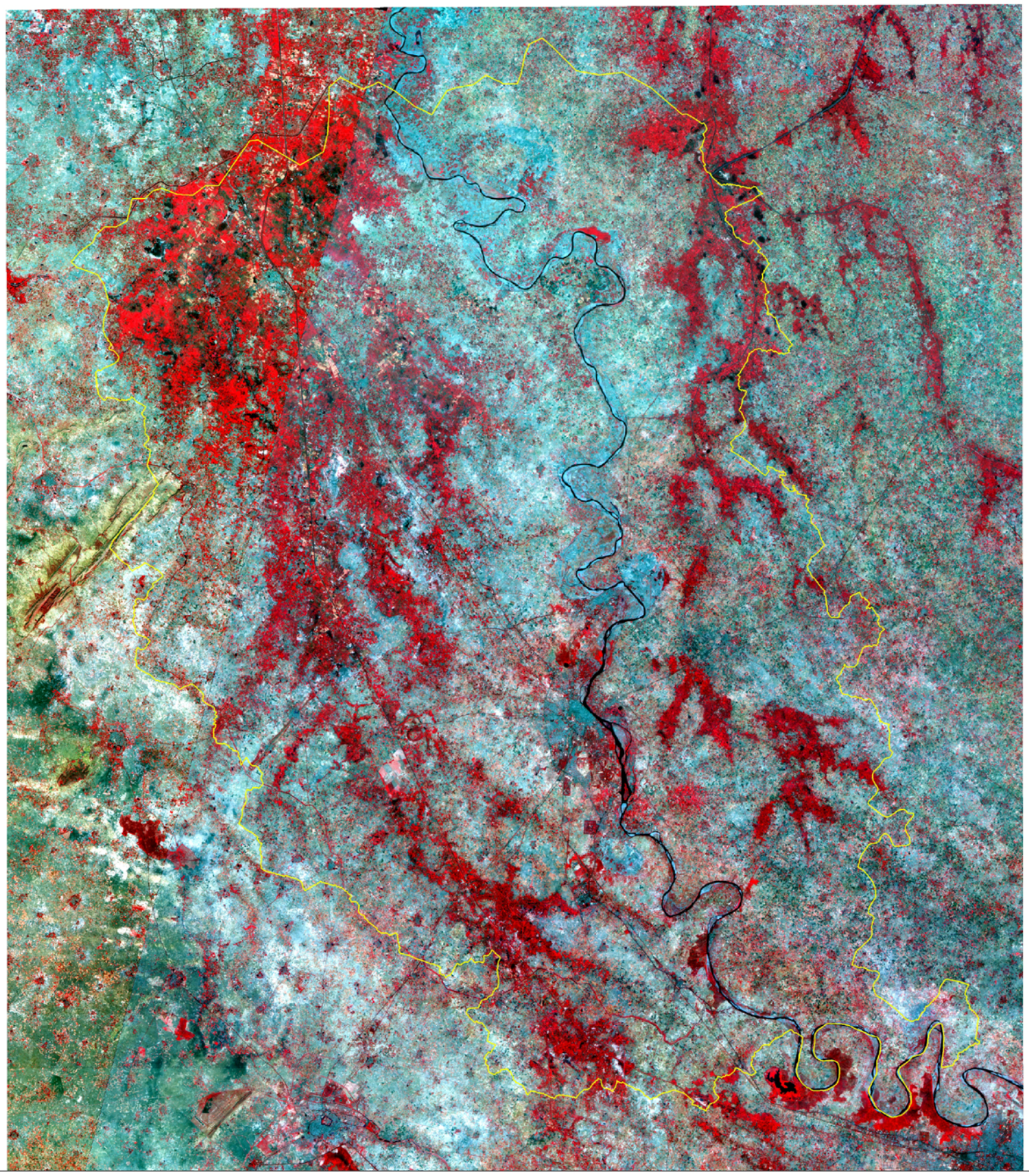
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Mathura



IRS P6 LISS-III post monsoon data (2006)

7.1.15 Agra

The Agra is located at 27.2^{o} N latitude and 78.0^{o} E longitude. Its altitude is 171 meters above mean sea level. It is bounded by Mathura in the north, Firozabad in the east, Bharatpur in the west and Dhaulpur in the south. Agra city, the district headquarter is located on the bank of river Yamuna. As per 2001 census, the district has a population of 3620436. It has 6 tehsils, 15 blocks and 940 villages. Average maximum and minimum temperatures are 45^{o} C and 4.2^{o} C respectively. Average rainfall is 751mm.

Three types of wetland classes are observed under both man-made and natural category. The total wetland area in the district is 10502 ha. There are 1210 small wetlands (<2.25 ha) were identified and demarcated as point feature. Major wetland types of the district are River/Stream with around 79 per cent area, followed by Reservoirs and Barrages. Area under aquatic vegetation is 532 ha in post monsoon and 481 ha in pre monsoon. Details of estimates of wetlands in Agra district are in table 20.

Not much fluctuation is observed in the open water spread in two seasons, with 6420 ha and 6746 ha area in post and pre-monsoon respectively. Moderate turbidity is observed in most of the wetlands. Around 532 ha aquatic vegetation area observed in post-monsoon, which reduced to 481 in pre monsoon

Table 20: Area estimates of wetlands in Agra

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	-	-	-	-	-
2	1102	Ox-bow lakes/ Cut-off meanders	2	13	0.12	13	13
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	1	6	0.06	6	0
6	1106	River/Stream	94	8337	79.38	5845	6270
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	12	787	7.49	426	381
8	1202	Tanks/Ponds	26	123	1.17	104	76
9	1203	Waterlogged	5	26	0.25	26	6
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**140**	**9292**	**88.48**	**6420**	**6746**
		Wetlands (<2.25 ha), mainly Tanks	1210	1210	11.52	-	-
		Total	**1350**	**10502**	**100.00**	**6420**	**6746**

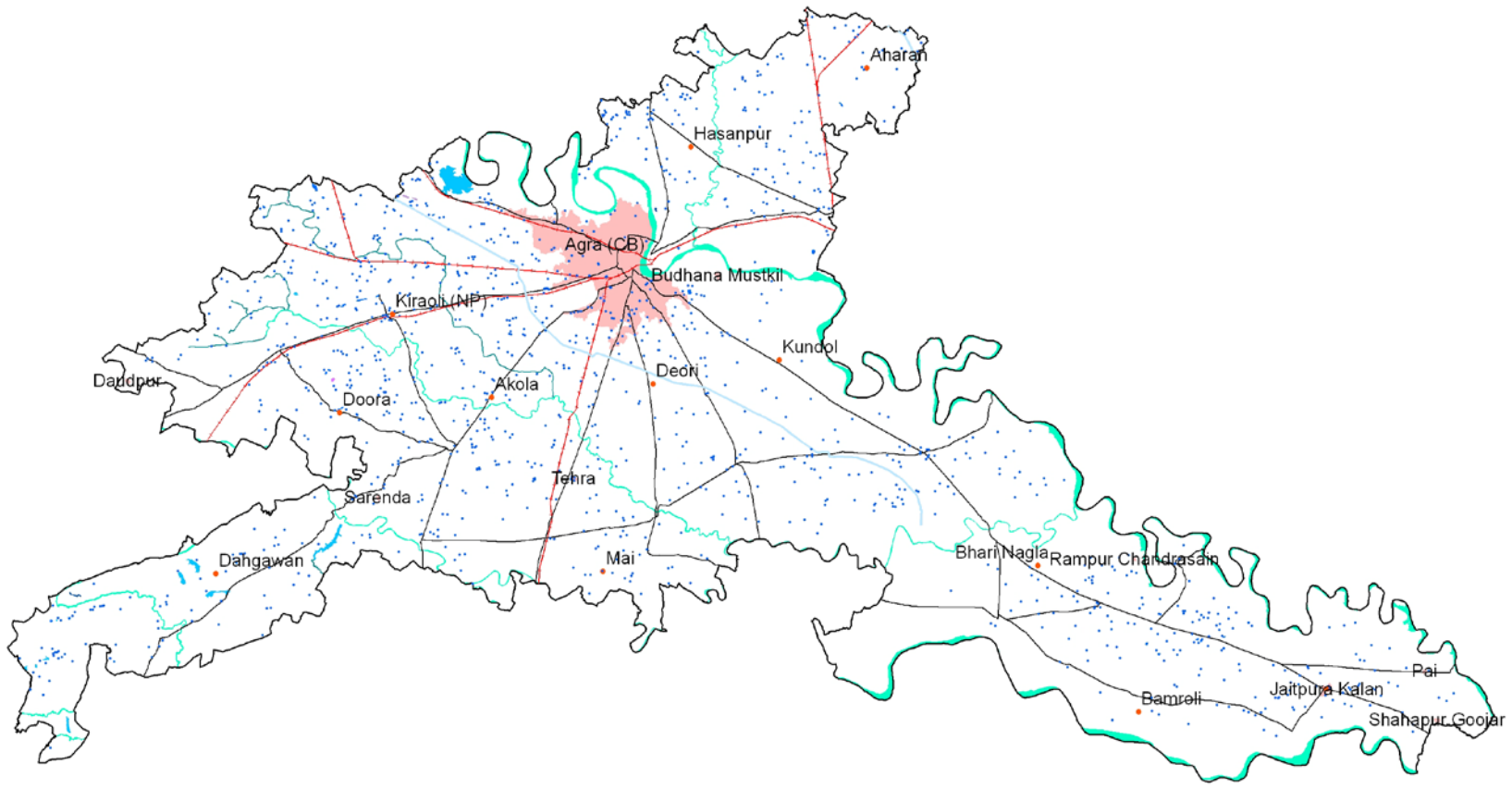
Area under Aquatic Vegetation	532	481

Area under turbidity levels		
Low	218	197
Moderate	5703	3035
High	499	3514

State : Uttar Pradesh

WETLAND MAP

District : Agra

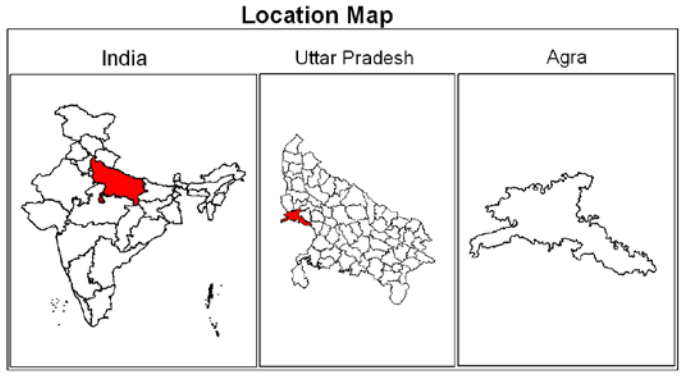


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

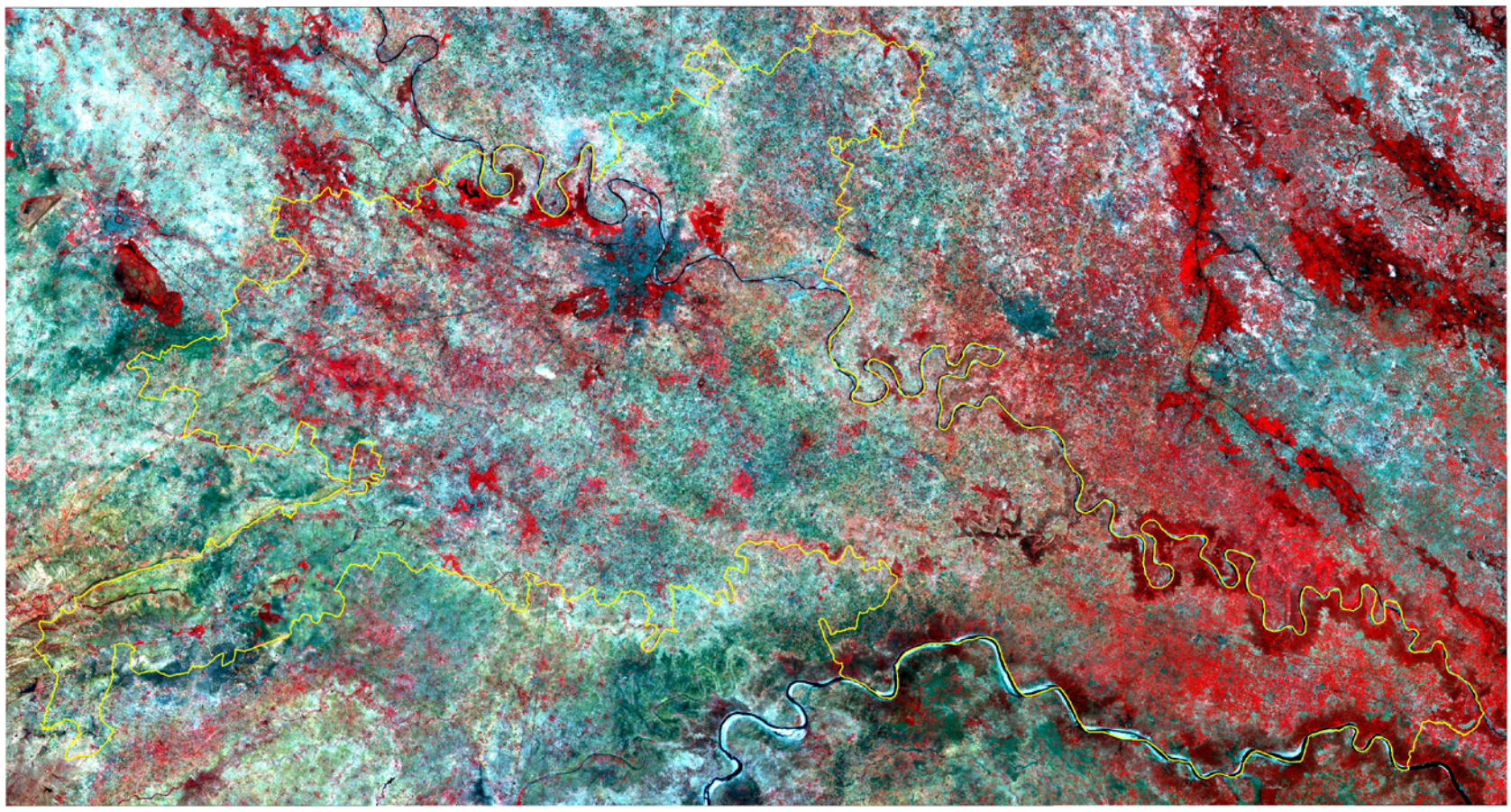
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Government of India

State : Uttar Pradesh

District : Agra



IRS P6 LISS-III post monsoon data (2006)

7.1.16 Firozabad

Firozabad is located at 27.15°N latitude and 78.42°E longitude. It has an average elevation of 164 metres. The boundaries of district touch Etawah district in north and Mainpuri and Etawah in east. The Yamuna river makes its southern boundary. As per 2001 census, the district has a population of 2052958. It has 4 tehsils, 9 blocks and 815 villages. The lowest recorded temperature in Agra was −1 °C; the highest was 48 °C.

Five categories of wetlands are found in the district, three under natural and two under man-made. The total wetland area in the district is 3695 ha. Major wetland types of the district are River/Stream with around 51 per cent share, followed by waterlogged (man-made). There are 1040 small wetlands (<2.25 ha) identified and demarcated. Area estimates of wetlands in Firozabad are given table 21.

Area under open water varied slightly in two seasons, from 1657 ha in post-monsoon to 1499 ha in pre monsoon. Turbidity of open water was moderate in post-monsoon but high in pre-monsoon. High turbidity is observed in rivers during pre-monsoon season and accounts for an area of 1451 ha. Significant seasonal fluctuation in area under aquatic vegetation was observed. The area was 215 ha in post monsoon and reduced to 78 ha in pre monsoon.

Table 21: Area estimates of wetlands in Firozabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	3	33	0.89	3	0
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	2	5	0.14	4	0
6	1106	River/Stream	33	1880	50.88	1135	1446
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	33	186	5.03	96	40
9	1203	Waterlogged	76	551	14.91	419	13
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**147**	**2655**	**71.85**	**1657**	**1499**
		Wetlands (<2.25 ha), mainly Tanks	1040	1040	28.15	-	-
		Total	**1187**	**3695**	**100.00**	**1657**	**1499**

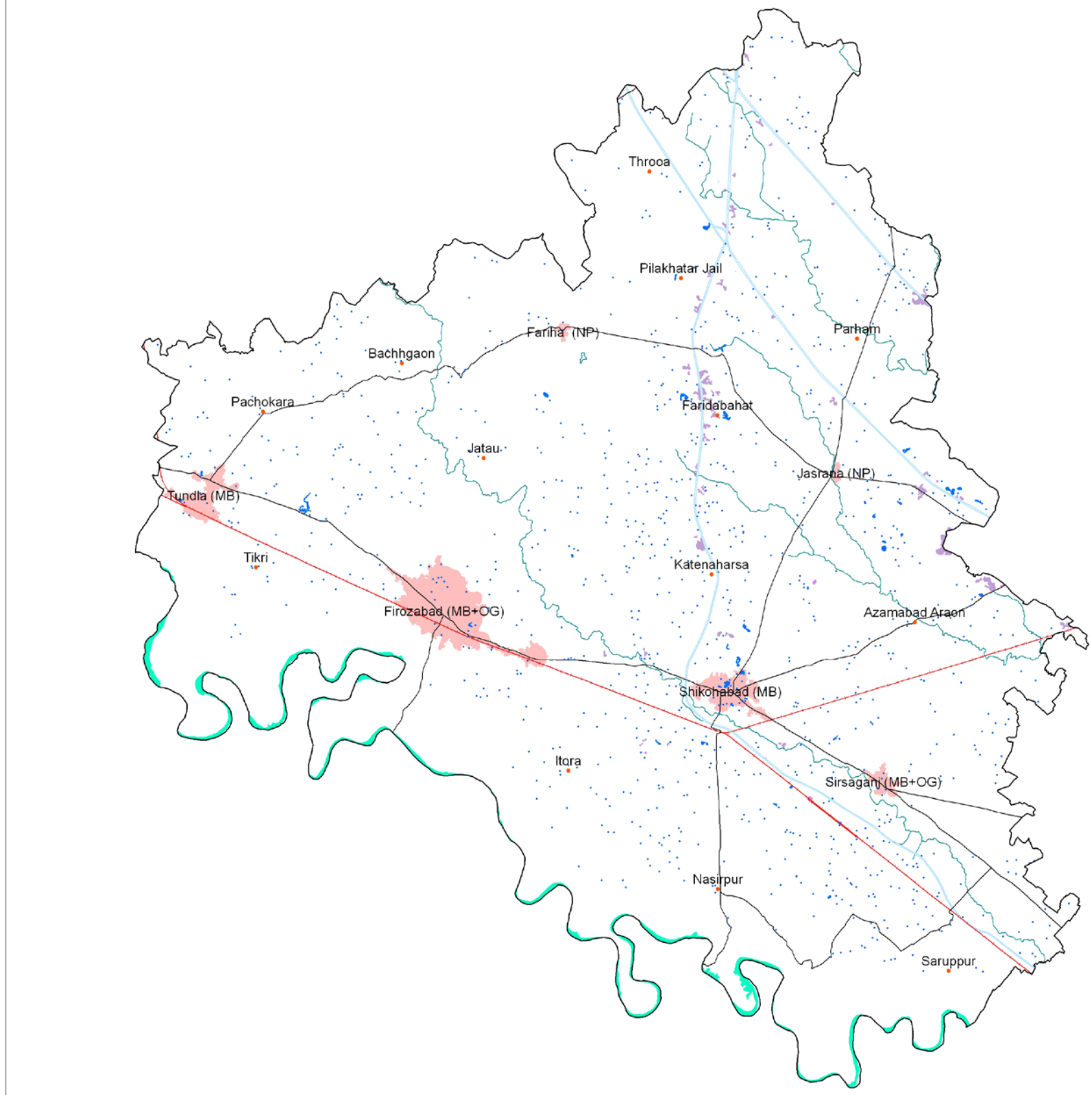
Area under Aquatic Vegetation	215	78

Area under turbidity levels		
Low	85	2
Moderate	1570	46
High	2	1451

State : Uttar Pradesh

WETLAND MAP

District : Firozabad

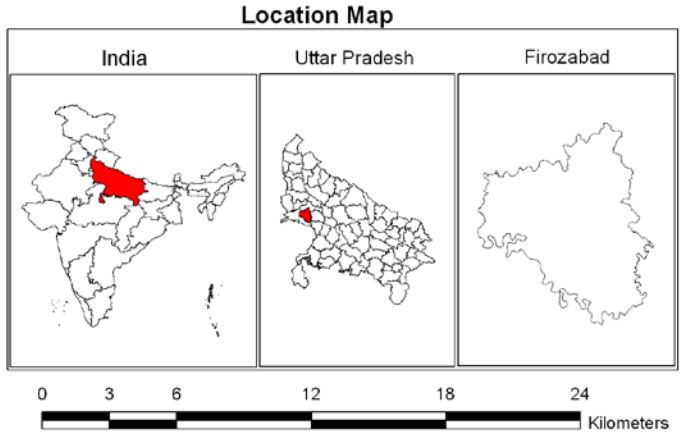


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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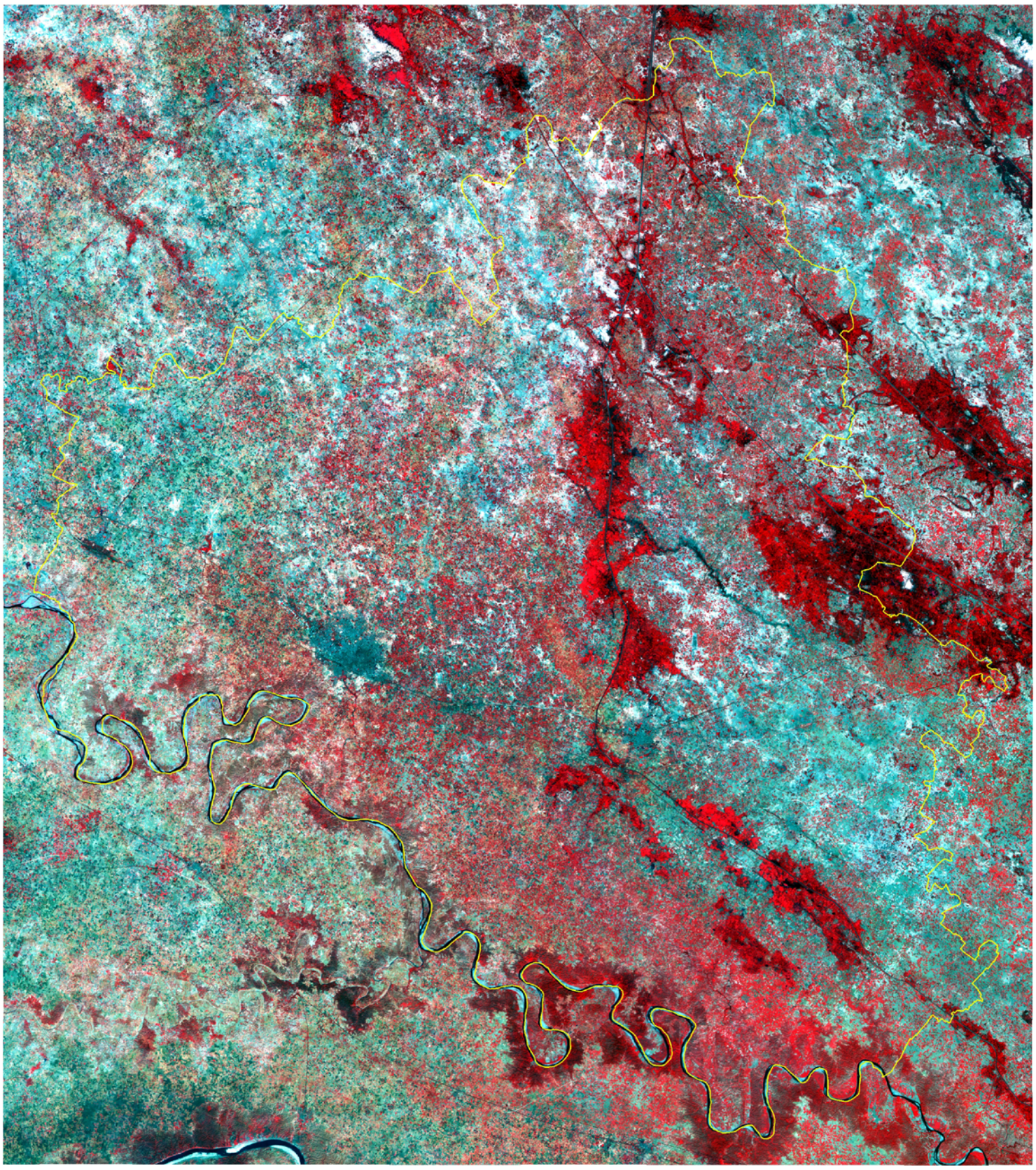
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Government of India

State : Uttar Pradesh

District : Firozabad



IRS P6 LISS-III post monsoon data (2006)

7.1.17 Etah

Etah is located at 27.63°N latitude and 78.67°E longitude. The district is bounded on the North by the Badaun district, on the West by district of Aligarh, Hathras, Mathura and Agra, on the South by Mainpuri and Firozabad, and on the East by Farrukhabad. It has an average elevation of 170 metres. As per 2001 census, the district has a population of 107098. It has 3 tehsils, 8 blocks. Average rainfall is 722mm.

Total five classes of wetlands under Natural category and two classes under Man-made category are mapped in the district. There are 782 small wetlands (<2.25 ha) identified. The total wetland area in the district is 5204 ha. Major wetland types of the district are Waterlogged (man made and natural) with around 26 and 12 per cent share, followed by Natural Lakes/pond with 20 per cent share. Area estimates of wetlands in Etah are given table 22.

The area under aquatic vegetation in post-monsoon season is 1859 ha and in pre-monsoon season is 891 ha. Water spread area in post-monsoon season is 2526 ha and reduced to 1284 ha in pre-monsoon. Moderate turbidity is mostly prevalent in many wetlands. The area under moderate turbidity is more during post-monsoon season (2150 ha) compare to pre-monsoon season (1051ha). Low turbidity is mostly observed in deeper portion of the Lanks/ponds. High turbidity is observed in rivers.

Table 22: Area estimates of wetlands in Etah

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	14	1022	19.64	288	318
2	1102	Ox-bow lakes/ Cut-off meanders	15	429	8.24	342	12
3	1103	High altitude wetlands	0	0	0.00	0	0
4	1104	Riverine wetlands	2	5	0.10	1	1
5	1105	Waterlogged	41	637	12.24	380	64
6	1106	River/Stream	83	732	14.07	732	695
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	0	0	0.00	0	0
8	1202	Tanks/Ponds	47	252	4.84	135	92
9	1203	Waterlogged	82	1345	25.85	648	102
10	1204	Salt pans	0	0	0.00	0	0
		Sub-Total	**284**	**4422**	**84.97**	**2526**	**1284**
		Wetlands (<2.25 ha), mainly Tanks	782	782	15.03	0	0
		Total	**1066**	**5204**	**100.00**	**2526**	**1284**

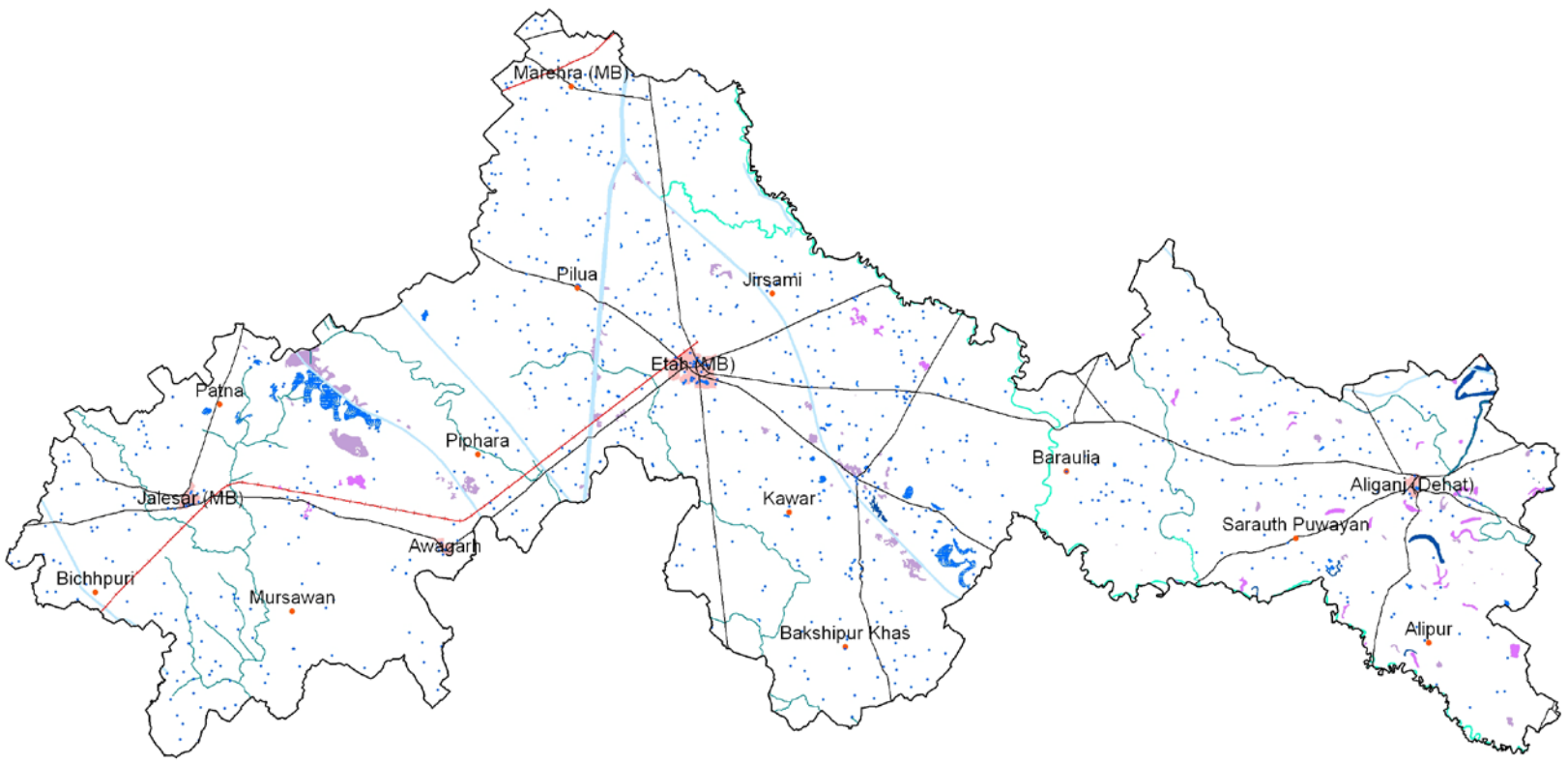
Area under Aquatic Vegetation	1859	891

Area under turbidity levels		
Low	200	76
Moderate	2150	1051
High	176	157

State : Uttar Pradesh

WETLAND MAP

District : Etah

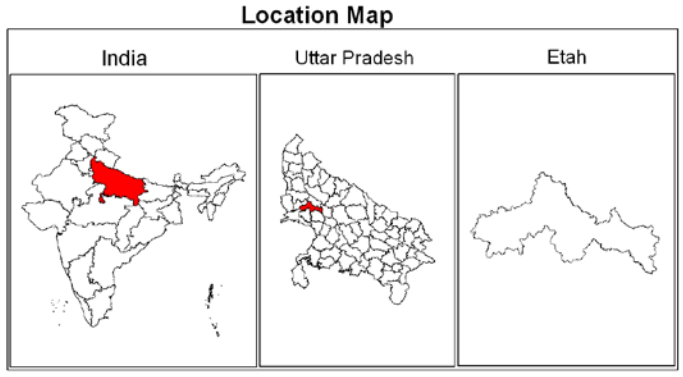


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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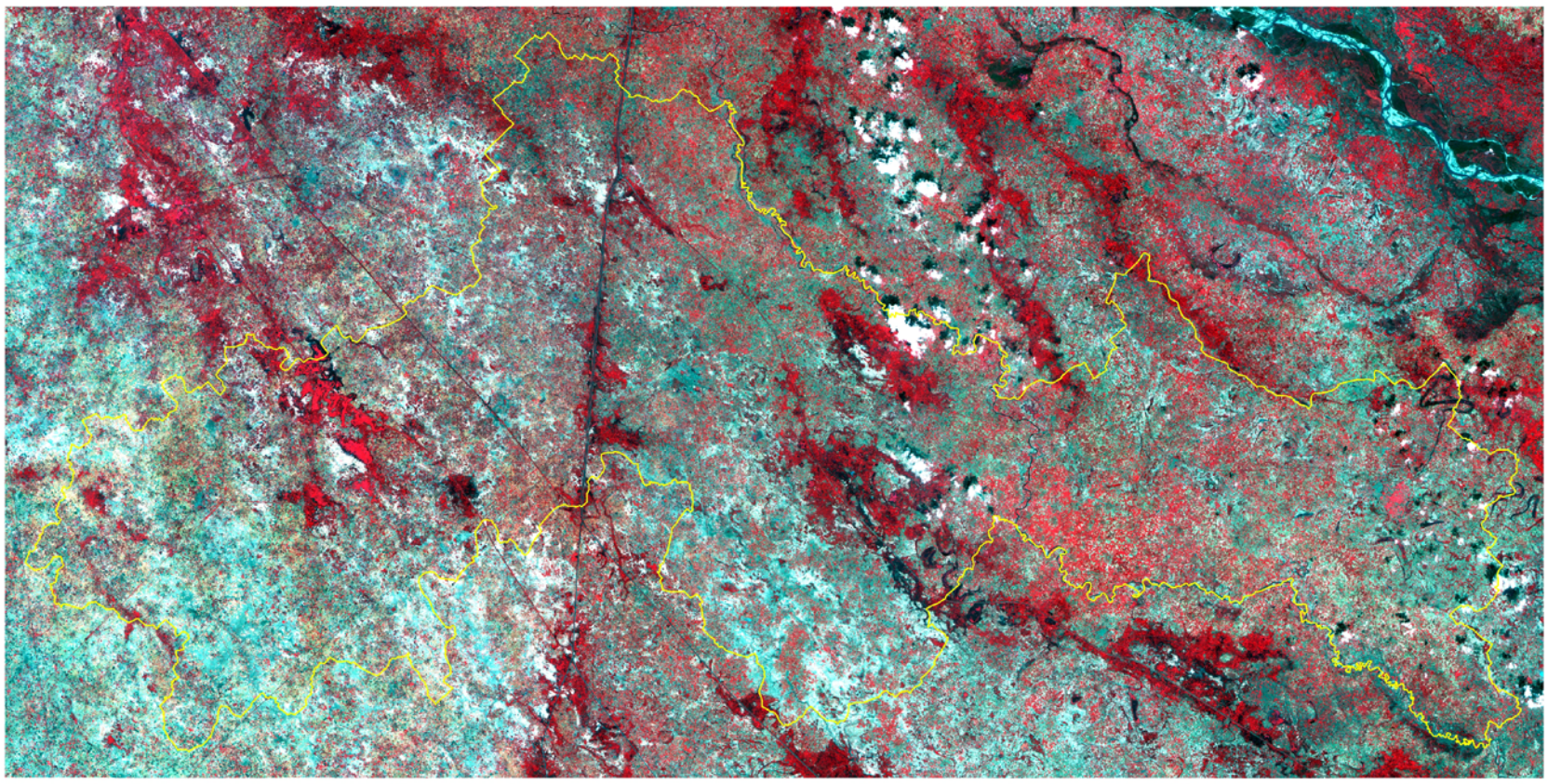
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Sponsored by

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Government of India

State : Uttar Pradesh

District : Etah



IRS P6 LISS-III post monsoon data (2006)

7.1.18 Mainpuri

Mainpuri is located at 27°14′ to 27.23°N latitude and 79°01′ to 79.02°E longitude. It has an average elevation of 153 metres. The district is bounded by Etah District on the north, District Farrukkhabad and Kannauj on the East, District Etawah on the South and District Firozabad on the West. As per 2001 census, the district has a population of 1596718. It has 3 tehsils, 9 blocks and 856 villages.

District Mainpuri is rich in wetland resources. Wetland type belonging to Waterlogged (man made) dominated with 48.0 % share. The second major type is Lakes/ponds (17.43%), followed by Rivers/streams (14.44%). The total wetland area in the district is 12887 ha. There are 594 small wetlands (<2.25 ha) identified and demarcated as point feature. Area estimates of wetlands in Mainpuri are given table 23.

Significant fluctuation of area under aquatic vegetation is observed in two seasons from 5491 ha in post monsoon to 1431 ha in pre monsoon. Water spread area in post-monsoon season is 6781 ha. Where as in pre-monsoon season the water spread area is 3192 ha. Moderate and low turbidity is mostly prevalent in many wetlands. The area under moderate turbidity is more during post-monsoon season (4002 ha) compare to pre-monsoon season (1181 ha). Low turbidity is mostly observed in waterlogged areas and accounts for 2769 ha during post-monsoon season.

Table 23: Area estimates of wetlands in Mainpuri

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	50	2246	17.43	1044	462
2	1102	Ox-bow lakes/ Cut-off meanders	27	914	7.09	263	215
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	4	80	0.62	10	10
5	1105	Waterlogged	33	558	4.33	198	91
6	1106	River/Stream	82	1861	14.44	1852	1424
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	52	444	3.45	219	226
9	1203	Waterlogged	241	6190	48.03	3195	764
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**490**	**12293**	**95.39**	**6781**	**3192**
		Wetlands (<2.25 ha), mainly Tanks	594	594	4.61	-	-
		Total	**1084**	**12887**	**100.00**	**6781**	**3192**

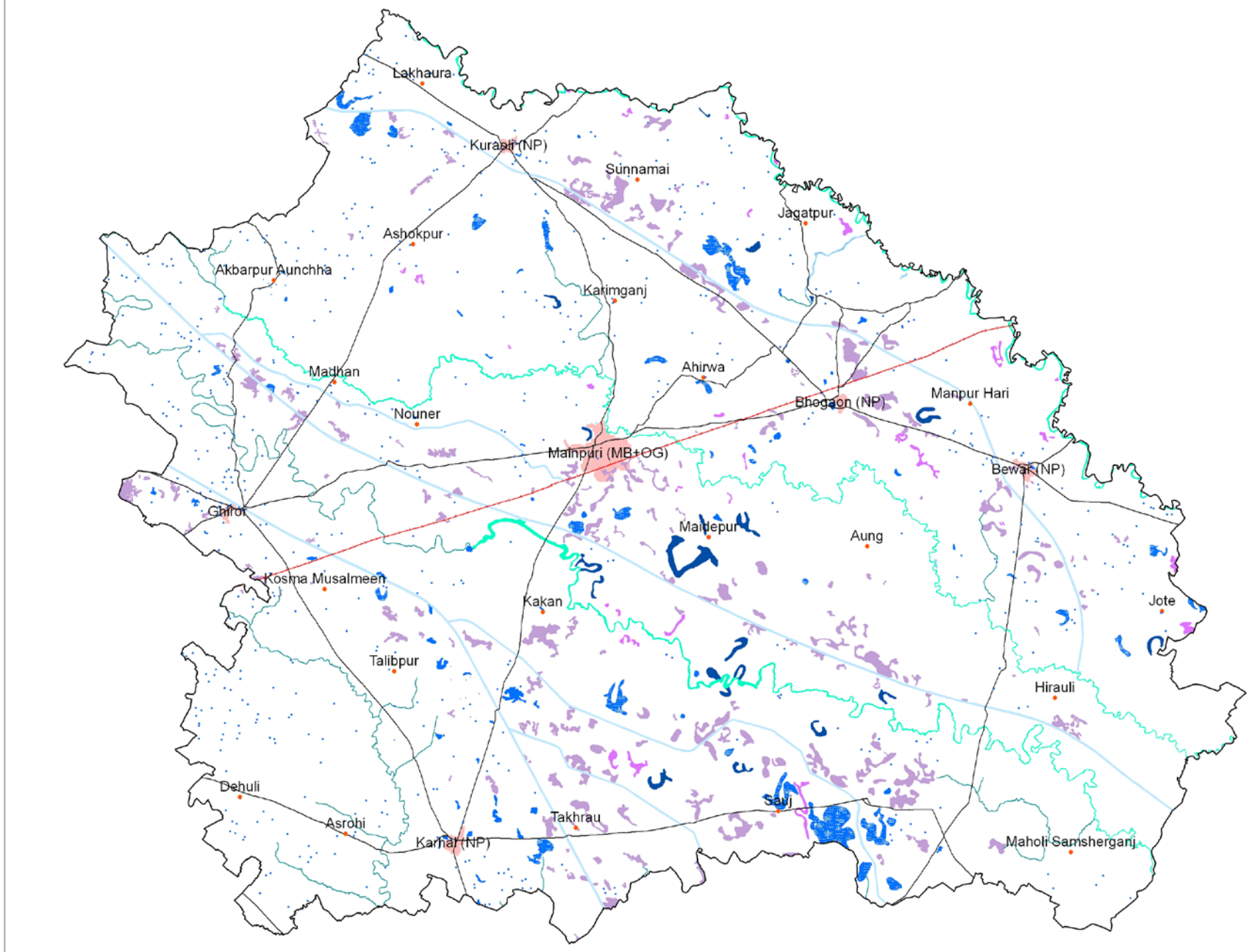
Area under Aquatic Vegetation	5491	1431

Area under turbidity levels		
Low	2769	1181
Moderate	4002	1870
High	10	141

State : Uttar Pradesh

WETLAND MAP

District : Mainpuri

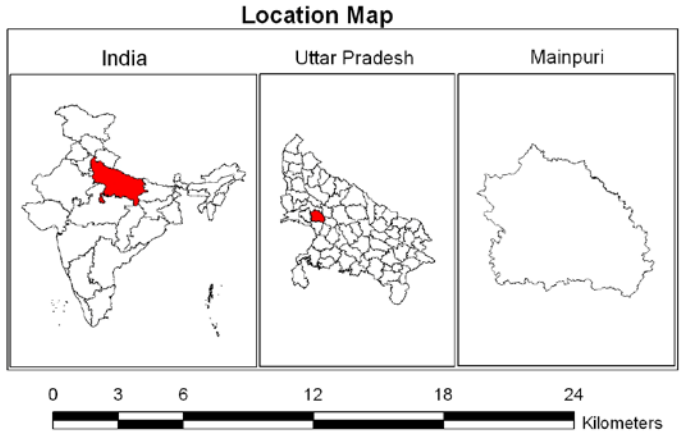


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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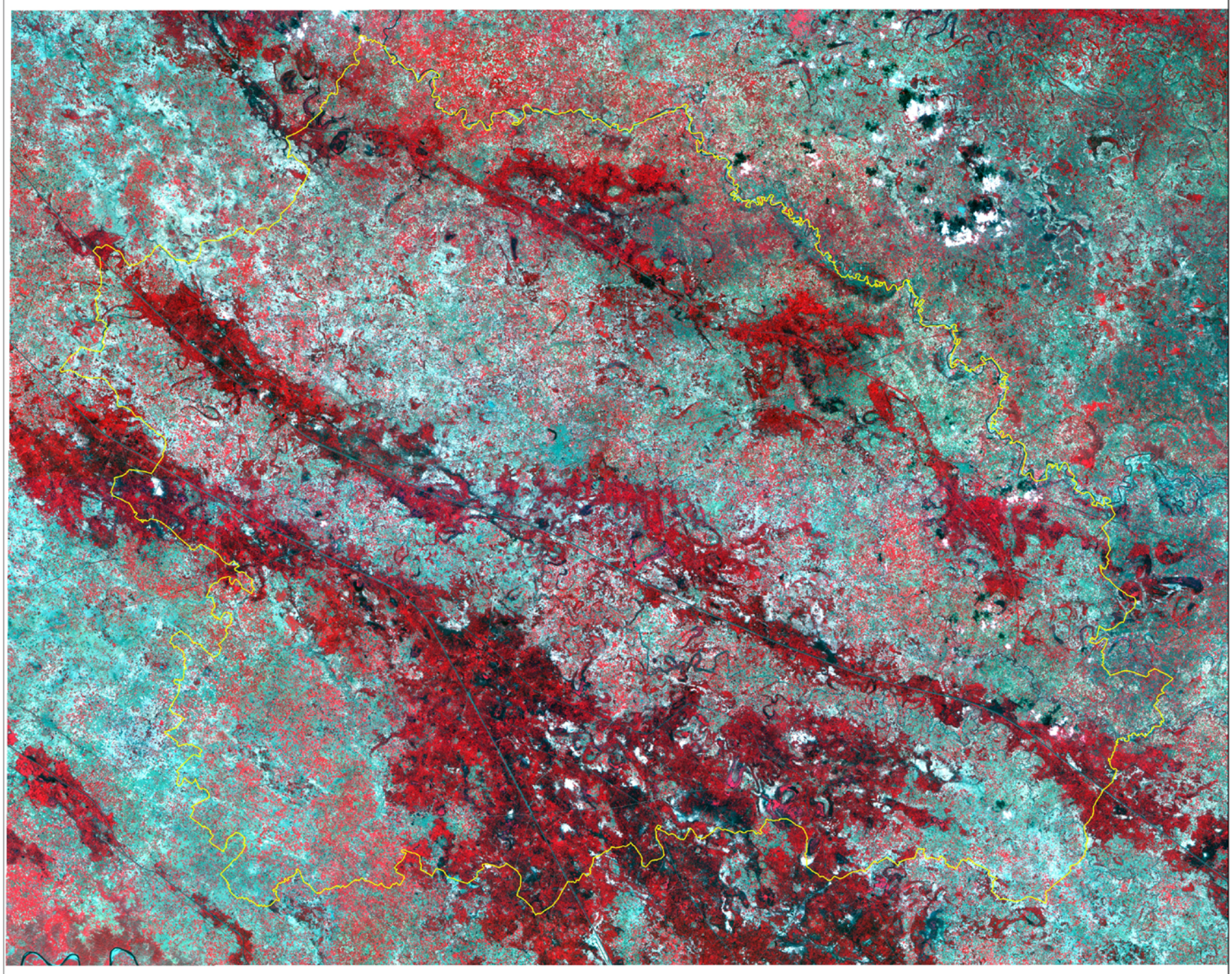
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Mainpuri



IRS P6 LISS-III post monsoon data (2006)

7.1.19 Budaun

Budaun is an administrative district of Uttar Pradesh with its headquarters located at Budaun town. The town is located on the bank of the holy river Ganga. Budaun is located at 28.05°N Latitude and 79.12°E Longitude. It has an average elevation of 169 meters. Budaun had a population of 3069426. It has 6 tehsils, 18 blocks and 2081 villages. Average maximum and minimum temperatures are 45.5^{o} C and 4.8^{o} C respectively. Average rainfall is 861mm.

Total five classes of wetlands under Natural category and three classes under Man made category was observed in the district. The total wetland area in the district is 20288 ha. There are 913 small wetlands (<2.25 ha) identified. Major wetland types of the district are River/Stream with 60 per cent share, followed by riverine wetlands (19.86%) and Ox-bow lakes. Area estimates of wetlands in Budaun are given table 24.

Area under aquatic vegetation in post monsoon is 2448 ha and in pre-monsoon season it reduced slightly to 1985 ha. Water spread area in post-monsoon season is 10267 ha and reduced to 6150 ha in pre-monsoon season. Moderate turbidity is observed in most of the wetlands.

Table 24: Area estimates of wetlands in Budaun

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-Monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	45	897	4.42	333	227
2	1102	Ox-bow lakes/ Cut-off meanders	57	969	4.78	649	189
3	1104	Riverine wetlands	59	4030	19.86	2403	1691
4	1105	Waterlogged	68	939	4.63	579	219
5	1106	River/Stream	85	12215	60.21	6026	3718
	1200	**Inland Wetlands -Man-made**					
6	1201	Reservoirs/Barrages	1	4	0.02	4	-
7	1202	Tanks/Ponds	25	110	0.54	84	26
8	1203	Waterlogged	32	211	1.04	189	80
		Sub-Total	**372**	**19375**	**95.50**	**10267**	**6150**
		Wetlands (<2.25 ha), mainly Tanks	913	913	4.50	-	-
		Total	**1285**	**20288**	**100.00**	**10267**	**6150**

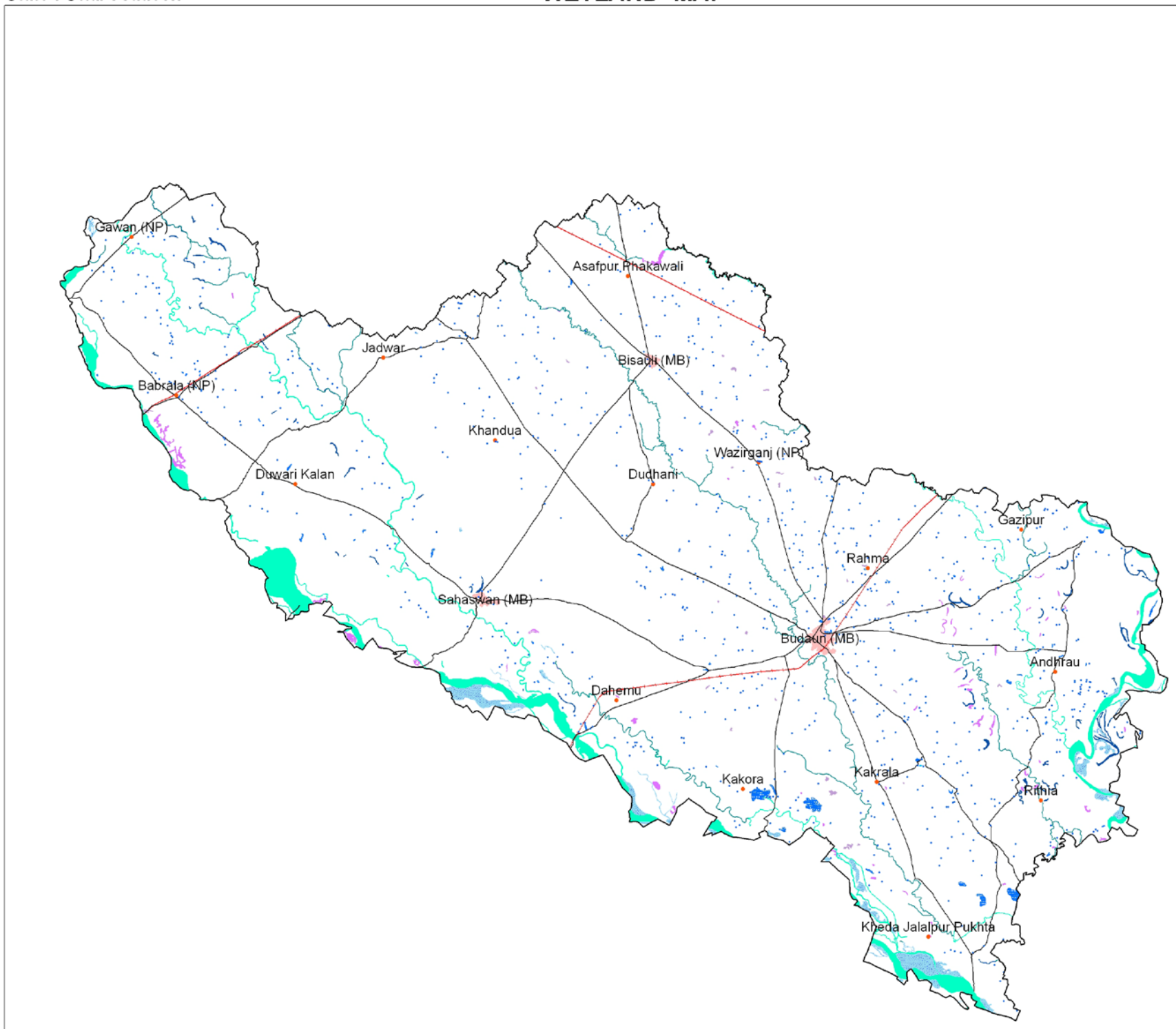
Area under Aquatic Vegetation	2448	1985

Area under turbidity levels		
Low	911	505
Moderate	8779	4747
High	577	898

State : Uttar Pradesh

WETLAND MAP

District : Budaun

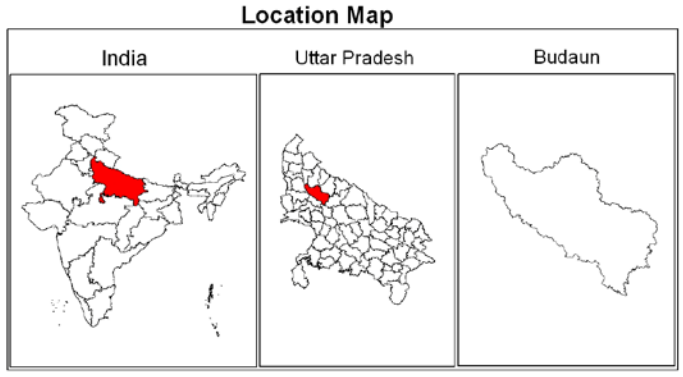


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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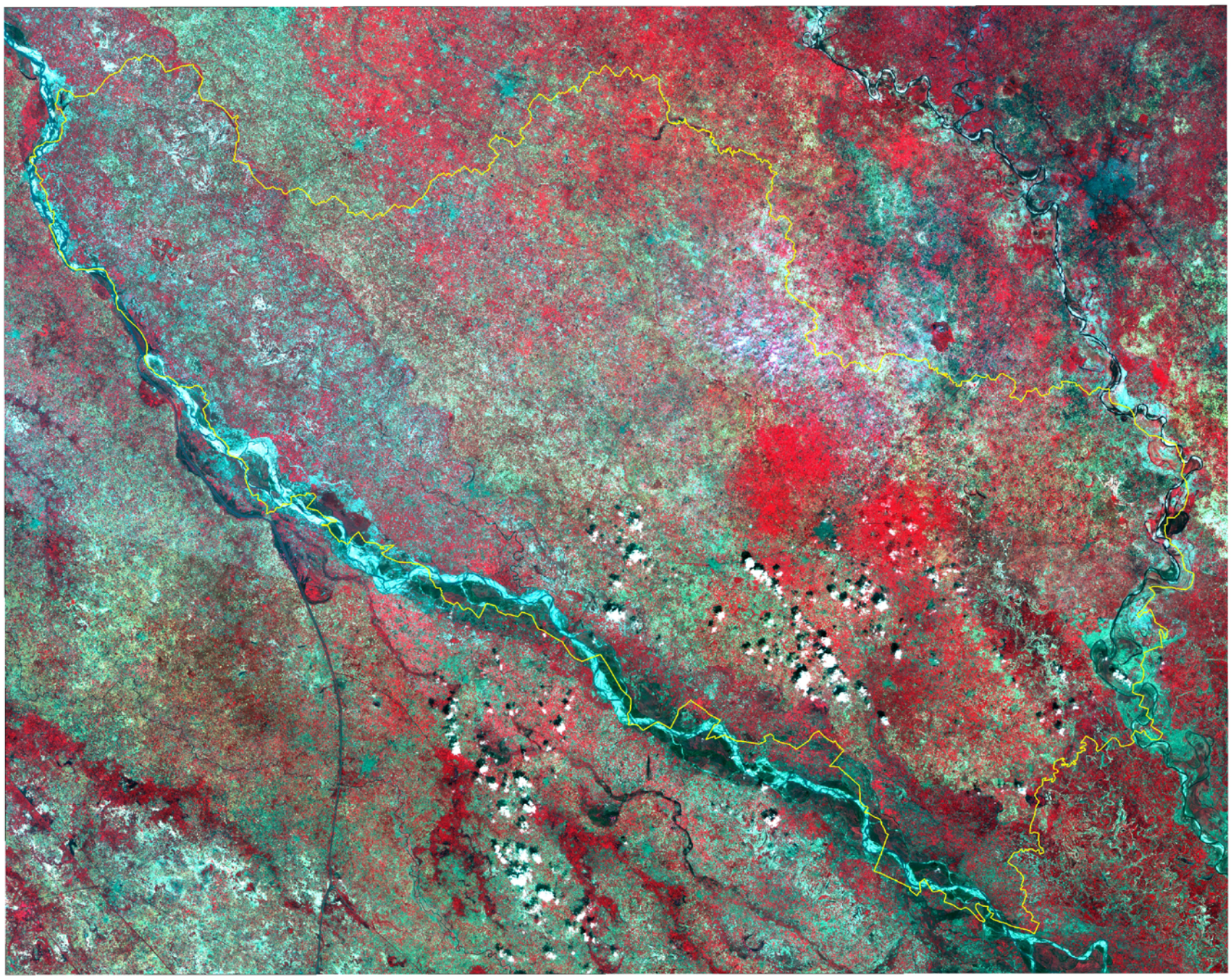
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Government of India

State : Uttar Pradesh

District : Budaun



IRS P6 LISS-III post monsoon data (2006)

7.1.20 Bareilly

Bareilly is located at 28°10′N latitude and 78°23′E longitude. It borders Pilibhit and Shahjahanpur on East and Rampur on west, Udham Singh Nagar (Uttarakhand) in North and Badaun in South. Bareilly lies entirely in the Gangetic plains. The Ramganga River forms the natural boundary of the district. For Administrative convenience, the district of Bareilly has been divided into 6 tehsils and 15 blocks and 2072 villages. Total Population is 3618589. Bareilly has a semi-arid climate with high variation between summer and winter temperatures. Summers are long, from early April to October, with the monsoon season in between. Winter starts in October and peaks in January and is notorious for its heavy fog. Extreme temperatures range from 4 °C to 47 °C. The annual mean temperature is 25 °C; monthly mean temperatures range from 14 °C to 33 °C. The average annual rainfall is approximately 1096 mm, most of which is during the monsoons in July and August.

The total wetland area in the district is 10896 ha. Natural wetlands dominate the area having five types of wetlands. River/stream is the dominant class with 58 per cent share, followed by Riverine wetlands (12.57%). In addition there are 1148 small wetlands (<2.25 ha) identified. Area estimates of wetlands in Firozabad are given table 25.

Area under aquatic vegetation showed significant seasonal fluctuation, from 1101 ha in post monsoon to 545 ha in pre monsoon. Significant fluctuation in open water area is observed in two seasons, with 7381 ha during post monsoon and 4640 ha in pre monsoon. In general turbidity of water is moderate.

Table 25 Area estimates of wetlands in Bareilly

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	43	473	4.34	144	139
2	1102	Ox-bow lakes/ Cut-off meanders	37	574	5.27	362	195
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	42	1370	12.57	1116	294
5	1105	Waterlogged	54	391	3.59	274	138
6	1106	River/Stream	95	6269	57.53	5030	3630
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	13	59	0.54	56	32
9	1203	Waterlogged	69	612	5.62	399	212
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**353**	**9748**	**89.46**	**7381**	**4640**
		Wetlands (<2.25 ha), mainly Tanks	1148	1148	10.54	-	-
		Total	**1501**	**10896**	**100.00**	**7381**	**4640**

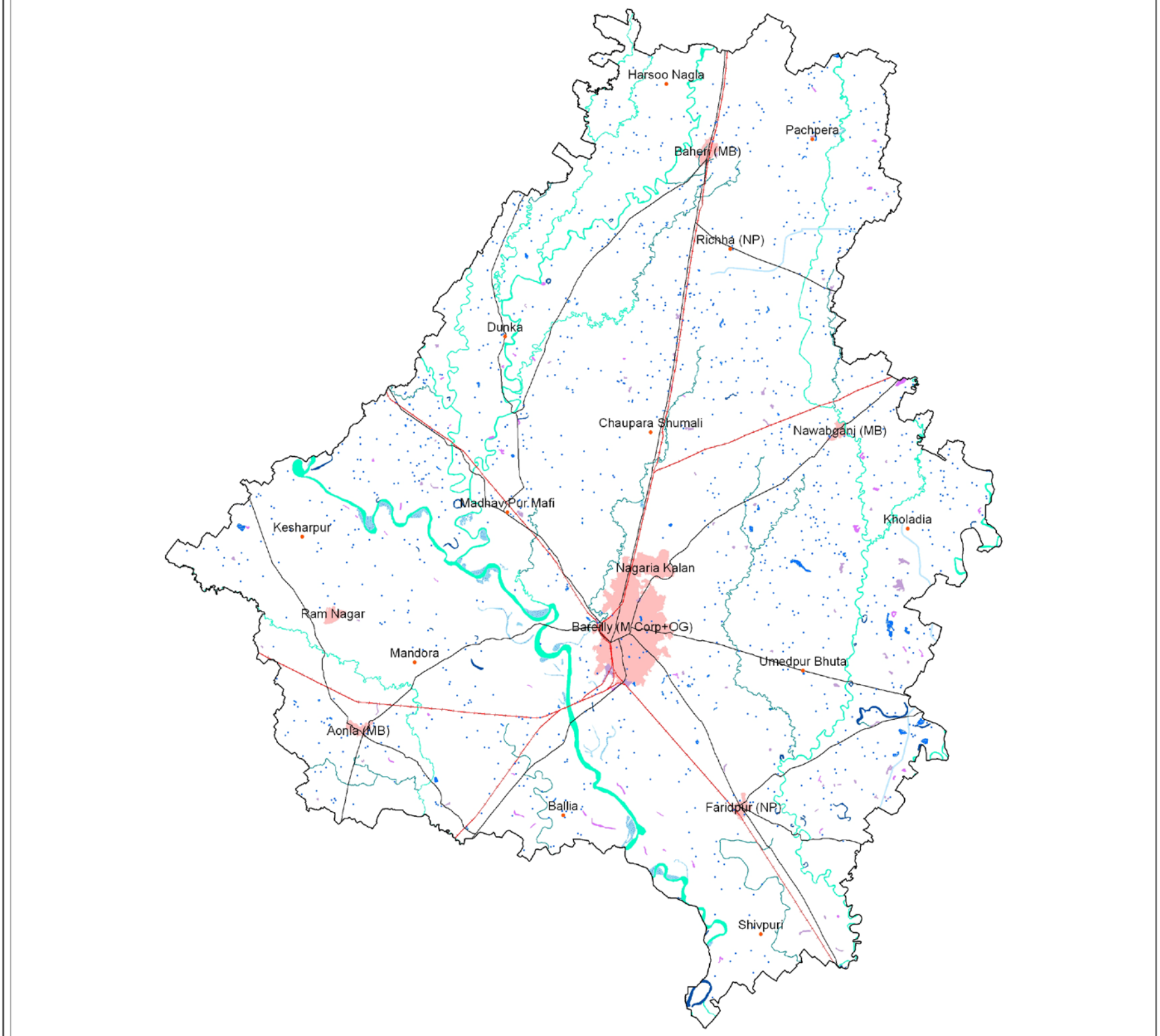
Area under Aquatic Vegetation	1101	545

Area under turbidity levels		
Low	620	427
Moderate	6532	3204
High	229	1009

State : Uttar Pradesh

WETLAND MAP

District : Bareilly

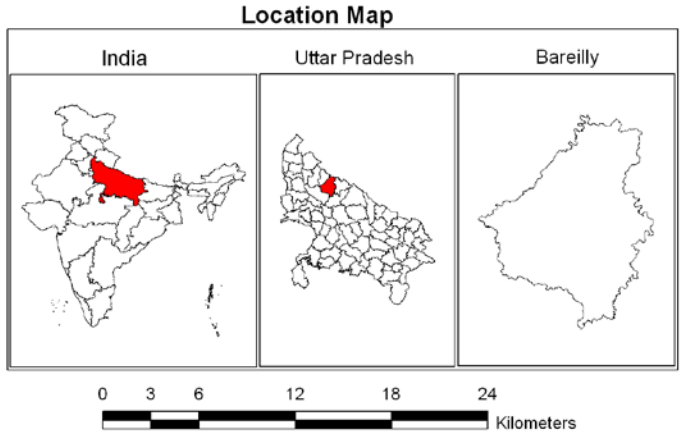


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

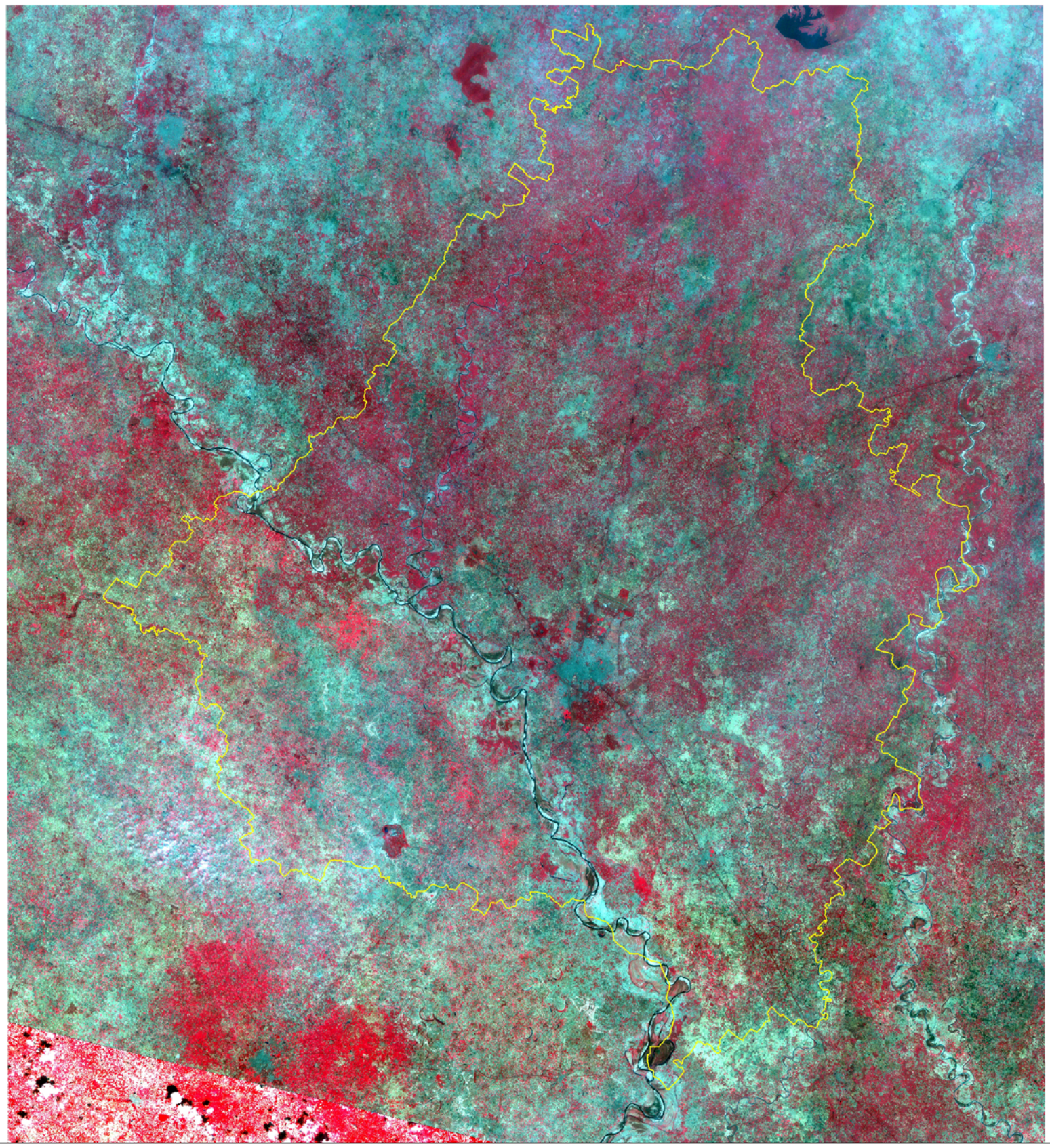
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Government of India

State : Uttar Pradesh

District : Bareilly



IRS P6 LISS-III post monsoon data (2006)

7.1.21 Pilibhit

Pilibhit lies between 28^{0}64' and 29^{0}53' N latitude and 79^{0}57' and 81^{0}37' E longitude. The district is surrounded on the north by the district Udhamsingh Nagar and the territory of Nepal, on the south lies the Shahjahanpur district, on the east the district is flanked for a short distance by district Kheri and for the remaining distance by the Shahjahanpur district and on the west the district of Bareilly. As per 2001 census, the district has a population of 1645183. Pilibhit experiences three distinct seasons: summer, monsoon and winter. Typical summer months are from March end to June, with maximum temperatures ranging from 36 °C to 42 °C. Pilibhit receives excessive rainfall in the month of August & September. The city receives an annual rainfall of 723-mm. The day temperature hovers around 14 °C while night temperature is below 7 °C for most of December and January, often dropping to 3 °C or 4 °C.

The total wetland area in the district is 11678 ha. Major wetland type of the district is River/Stream with 64.1% area. Reservoirs/barrage is the next major one. There is only one Reservoir with 3337 ha area and occupying 18.3% area. There are 601 small wetlands (<2.25 ha) identified. Area estimates of wetlands in Pilibhit are given table 26.

The area under aquatic vegetation in post-monsoon season is 1418 ha and in pre-monsoon season it is 686 ha. Not much seasonal variation is observed in open water spreads, which are 12041 ha in post-monsoon season and 11046 ha in pre-monsoon season. Low and moderate turbidity classes were observed in these wetlands. The area under low turbidity is 3919 ha during post-monsoon season and 8121 ha during pre-monsoon season. Moderate turbidity covers an area of 8122 ha during post-monsoon and 2925 ha during pre-monsoon season.

Table 26: Area estimates of wetlands in Pilibhit

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	34	486	2.67	169	153
2	1102	Ox-bow lakes/ Cut-off meanders	46	846	4.64	344	330
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	2	34	0.19	34	28
5	1105	Waterlogged	40	679	3.73	308	286
6	1106	River/Stream	130	11678	64.11	7513	6850
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	3337	18.32	3337	3165
8	1202	Tanks/Ponds	3	19	0.10	0	8
9	1203	Waterlogged	47	536	2.94	336	226
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**303**	**17615**	**96.70**	**12041**	**11046**
		Wetlands (<2.25 ha), mainly Tanks	601	601	3.30	-	-
		Total	**904**	**18216**	**100.00**	**12041**	**11046**

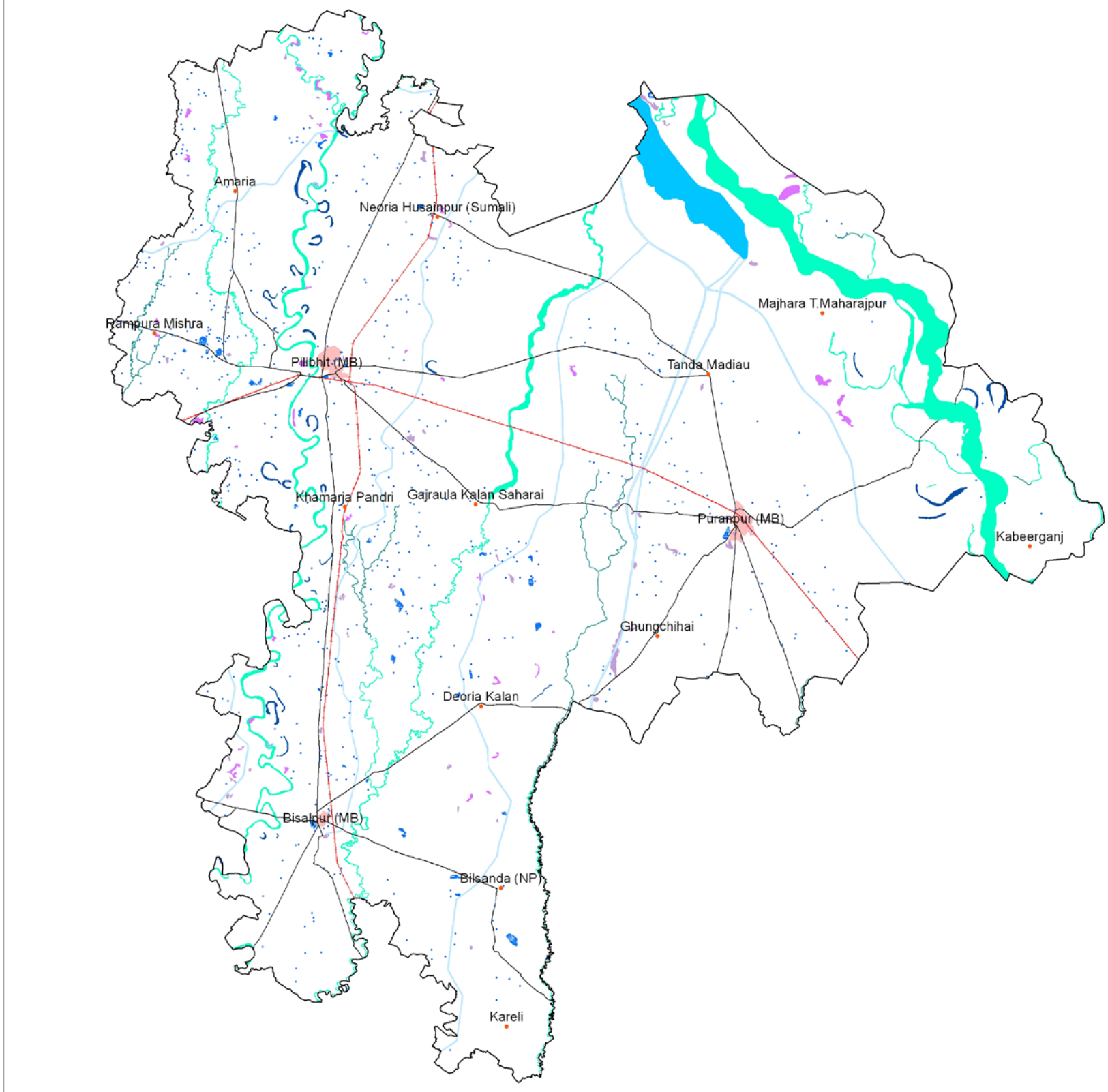
Area under Aquatic Vegetation	1418	686

Area under turbidity levels		
Low	3919	8121
Moderate	8122	2925
High	0	0

State : Uttar Pradesh

WETLAND MAP

District : Pilibhit

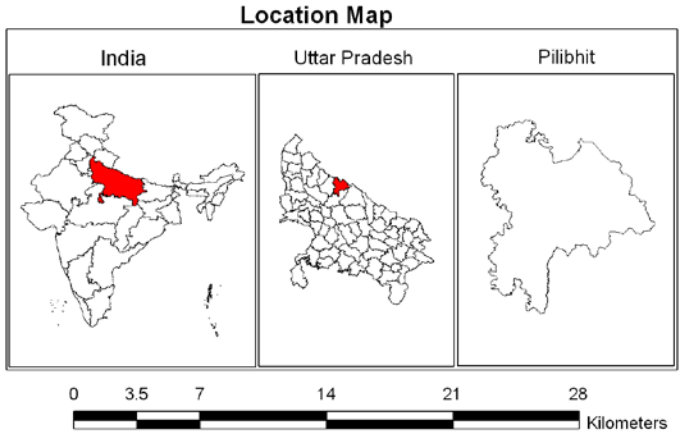


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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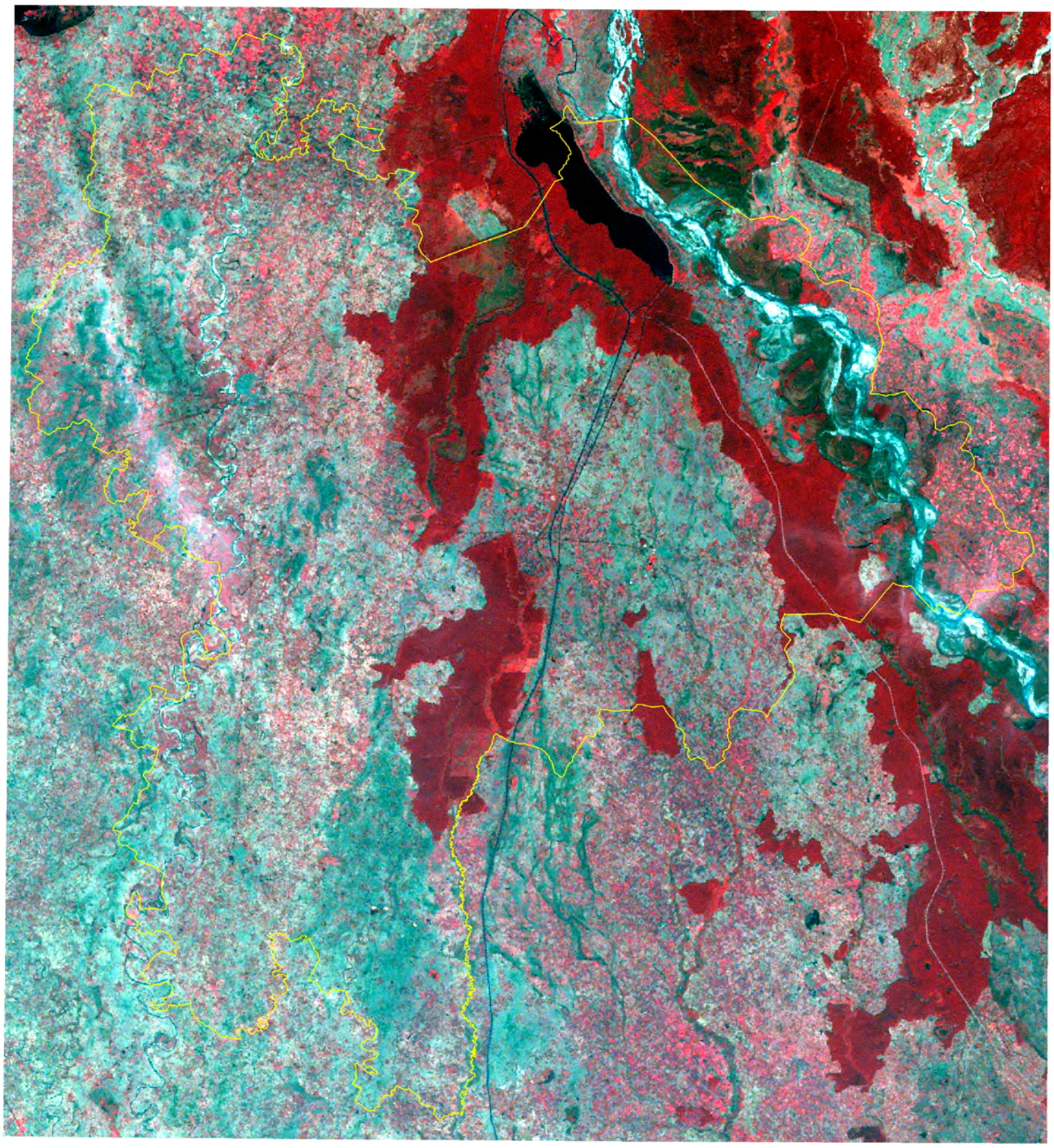
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State : Uttar Pradesh

District : Pilibhit



IRS-P6 AWiFS post monsoon data (2005)

7.1.22 Shahjahanpur

Shahjahanpur is located at 27°53′ to 27.88°N latitude and 79°55′ to 79.92°E longitude. It has an average elevation of 144 metres. The district Shahjahanpur is adjoined by the districts of Lakhimpur Khiri, Hardoi, Farrukhabad, Bareilly, Budaun & Pilibhit. Ramganga, Garrah & Gomti are the main rivers of district. As per 2001 census, the district has a population of 2547855. It has 4 tehsils and 15 blocks.

The total wetland area in the district is 19803 ha. Natural wetlands dominated. Besides River/Stream, the major natural wetland types are Riverine wetlands (23.2%), waterlogged (10.4%) and Lakes/ponds (8.7%). In ma made category, waterlogged is the major one. In addition there are 1089 small wetlands (<2.25 ha). Detailed estimates of wetlands in Shahjahanpur are given in table no.27,

Area under aquatic vegetation in pre-monsoon season is 1948 ha. Water spread area in post-monsoon season is 11717 ha, where as in pre-monsoon season it is 6291 ha. Moderate turbidity is observed in most of the wetlands. High turbidity is observed in river/stream during post-monsoon season.

Table 27 Area estimates of wetlands in Shahjahanpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	75	1728	8.73	682	376
2	1102	Ox-bow lakes/ Cut-off meanders	38	789	3.98	494	207
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	130	4597	23.21	3524	1655
5	1105	Waterlogged	94	2066	10.43	874	398
6	1106	River/Stream	178	8285	41.84	5517	3376
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	11	55	0.28	50	41
9	1203	Waterlogged	75	1194	6.03	577	239
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**601**	**18714**	**94.50**	**11718**	**6292**
		Wetlands (<2.25 ha), mainly Tanks	1089	1089	5.50	-	-
		Total	**1690**	**19803**	**100.00**	**11718**	**6292**

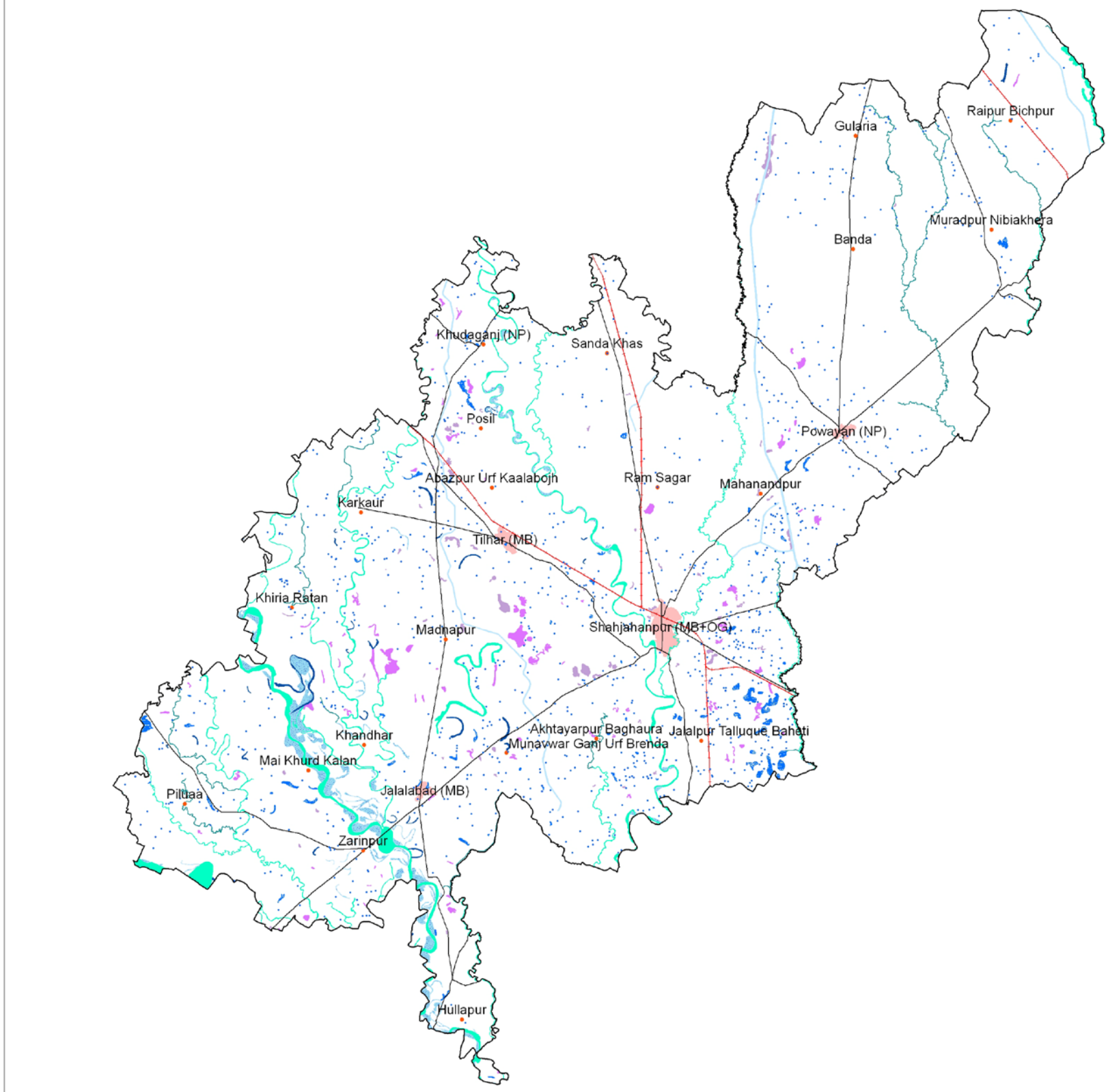
Area under Aquatic Vegetation	4239	1948

Area under turbidity levels		
Low	1543	1263
Moderate	10175	4122
High	0	907

State : Uttar Pradesh

WETLAND MAP

District : Shahjahanpur

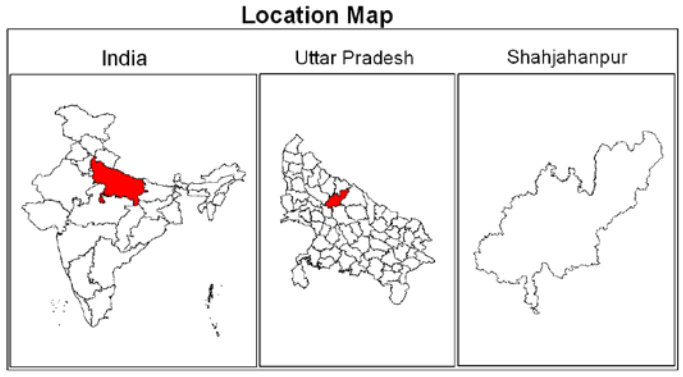


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 5 10 20 30 40 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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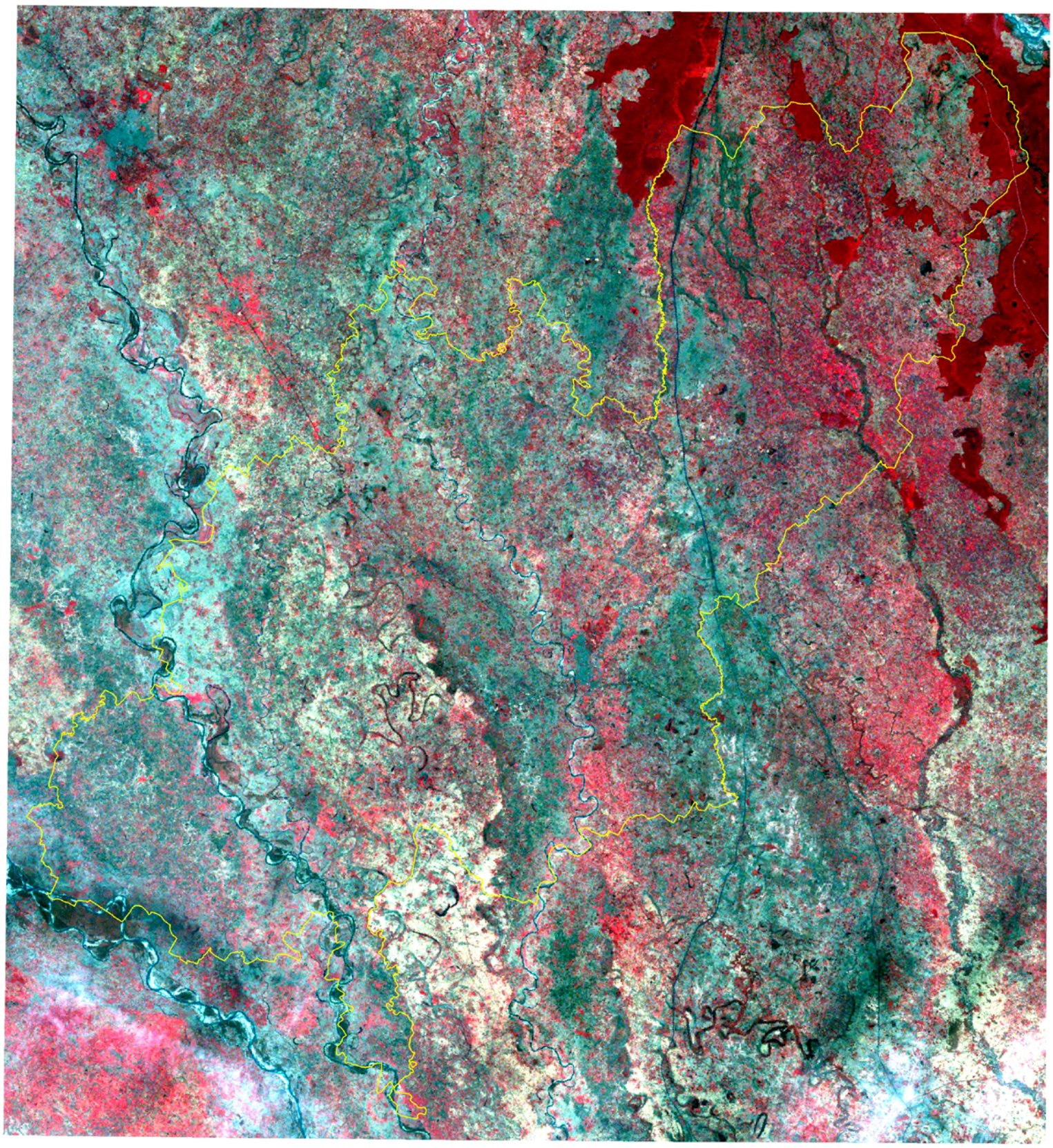
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Government of India

State : Uttar Pradesh

District : Shahjahanpur



IRS-P6 AWiFS post monsoon data (2005)

7.1.23 Lakhimpur (Kheri)

Lakhimpur Kheri is located at 27.6° to 28.6° N latitude and 80.34°to 81.30° E longitude. It has an average elevation of 147 metres.The district shares an international border with Nepal in the North. Districts Shahjahanpur & Pilibhit are located in the west, Behraich district in the east and district Hardoi in the South. As per 2001 census, the district has a population of 3207232. It has 6 tehsils, 15 blocks and 1797 villages. Average maximum and minimum temperatures are 43.0^{o} C and 4.0^{o}C respectively. Average rainfall is 1093 mm.

The total wetland area in the district is 48267 ha. Major wetland types of the district are River/Stream (78.9%), followed waterlogged (5.7%) and ox-bow lakes (3.8%). In addition there are 1673 small wetlands (<2.25 ha). Detailed estimates of wetlands in Lakhimpur are given in table no.28.

Area under aquatic vegetation in post monsoon is 3101 ha and in pre-monsoon season 2982 ha. Water spread area in post-monsoon season is 26859 ha. Where as in pre-monsoon season the water spread area is 25957 ha. Moderate turbidity is observed in most of the wetlands.

Table 28: Area estimates of wetlands in Lakhimpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	72	1122	2.32	619	736
2	1102	Ox-bow lakes/ Cut-off meanders	80	1839	3.81	928	614
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	36	1588	3.29	554	750
5	1105	Waterlogged	117	2783	5.77	2094	1284
6	1106	River/Stream	188	38119	78.98	21616	21750
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	2	212	0.44	212	212
8	1202	Tanks/Ponds	12	74	0.15	64	56
9	1203	Waterlogged	43	857	1.78	772	556
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**550**	**46594**	**96.53**	**26859**	**25958**
		Wetlands (<2.25 ha), mainly Tanks	1673	1673	3.47	-	-
		Total	**2223**	**48267**	**100.00**	**26859**	**25958**

Area under Aquatic Vegetation	3101	2982

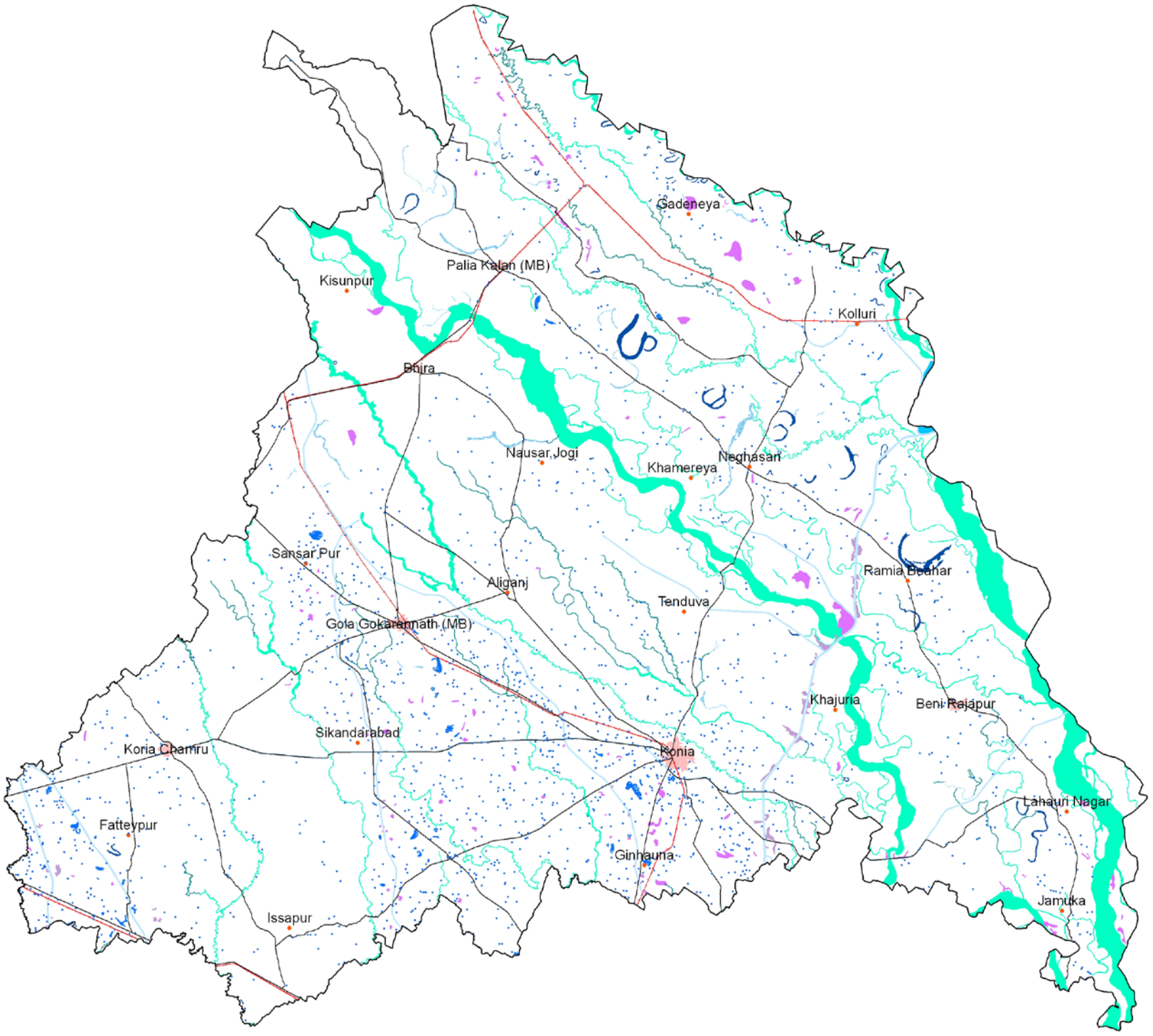
Area under turbidity levels		
Low	9404	21618
Moderate	17455	4331
High	0	9

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State : Uttar Pradesh

WETLAND MAP

District : Lakhimpur

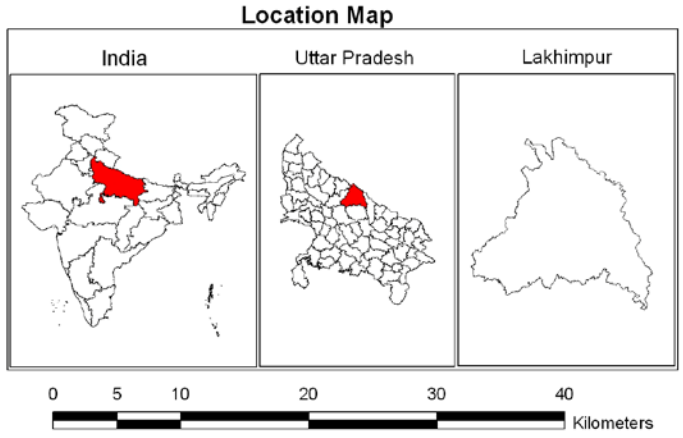


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

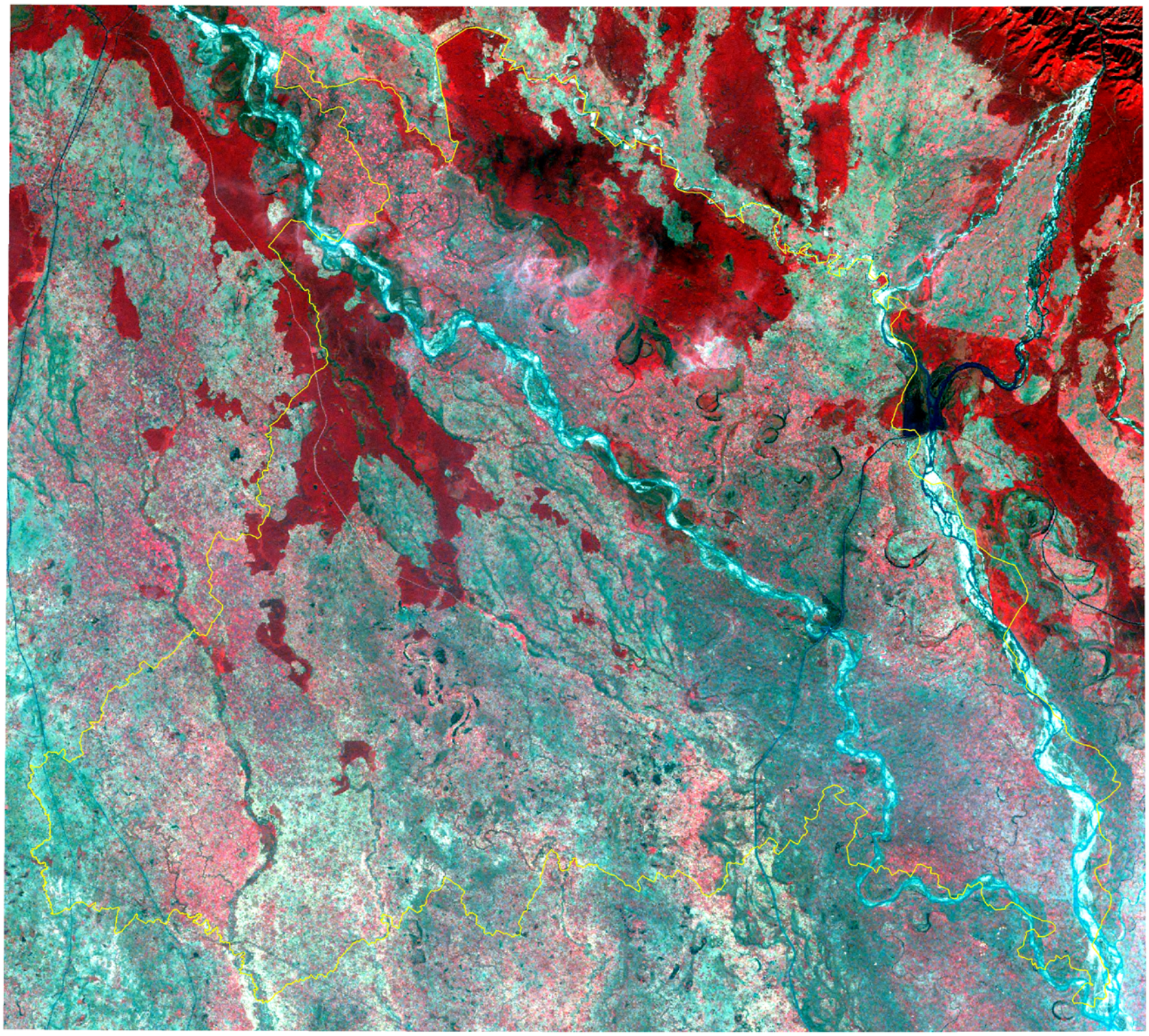
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Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Lakhimpur



IRS-P6 AWiFS post monsoon data (2005)

7.1.24 Sitapur

Sitapur is located at 27.57°N latitude and 80.68°E longitude. It has an average elevation of 138 metres. The district is bounded by River Gomti which makes the boundary from west to south of Sitapur & Hardoi. In the east river Ghagra which separates district Bahraich from Sitapur. On the north side is district Kheri. Main Rivers of this district are Gomti, Chowka, Ghagra. As per 2001 census, the district has a population of 3619661. It has 6 tehsils and 19 blocks. Average maximum and minimum temperatures are 43.3^{o} C and 6.0^{o}C respectively. Northern part of the district receives more rain because it is situated near to hills.

The total wetland area in the district is 23174 ha. Major wetland types of the district are River/Stream, waterlogged (natural) and lakes/ponds. There are 207 natural waterlogged sites amounting to 6692 ha area which account for around 29.0 per cent of wetlands. There are 62 Lakes/pond with 7.0% area. Waterlogged is also the major wetland type under man made category (5.88%). In addition there are 2406 small wetlands (<2.25 ha). Detailed estimates of wetlands in Sitapur are given in table no.29

Significant seasonal variation of area under aquatic vegetation is observed; from 4716 ha in post monsoon to 2429 ha in pre-monsoon. Water spread area in post-monsoon season is 13475 ha. Where as in pre-monsoon season the water spread area is 11017 ha. Low turbidity is observed in most of the wetlands in both the seasons

Table 29: Area estimates of wetlands in Sitapur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	62	1623	7.00	654	1332
2	1102	Ox-bow lakes/ Cut-off meanders	16	416	1.80	295	156
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	11	216	0.93	110	69
5	1105	Waterlogged	207	6692	28.88	3651	3130
6	1106	River/Stream	153	10094	43.56	7603	5347
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	45	364	1.57	226	178
9	1203	Waterlogged	59	1363	5.88	936	806
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**553**	**20768**	**89.62**	**13475**	**11018**
		Wetlands (<2.25 ha), mainly Tanks	2406	2406	10.38	-	-
		Total	**2959**	**23174**	**100.00**	**13475**	**11018**

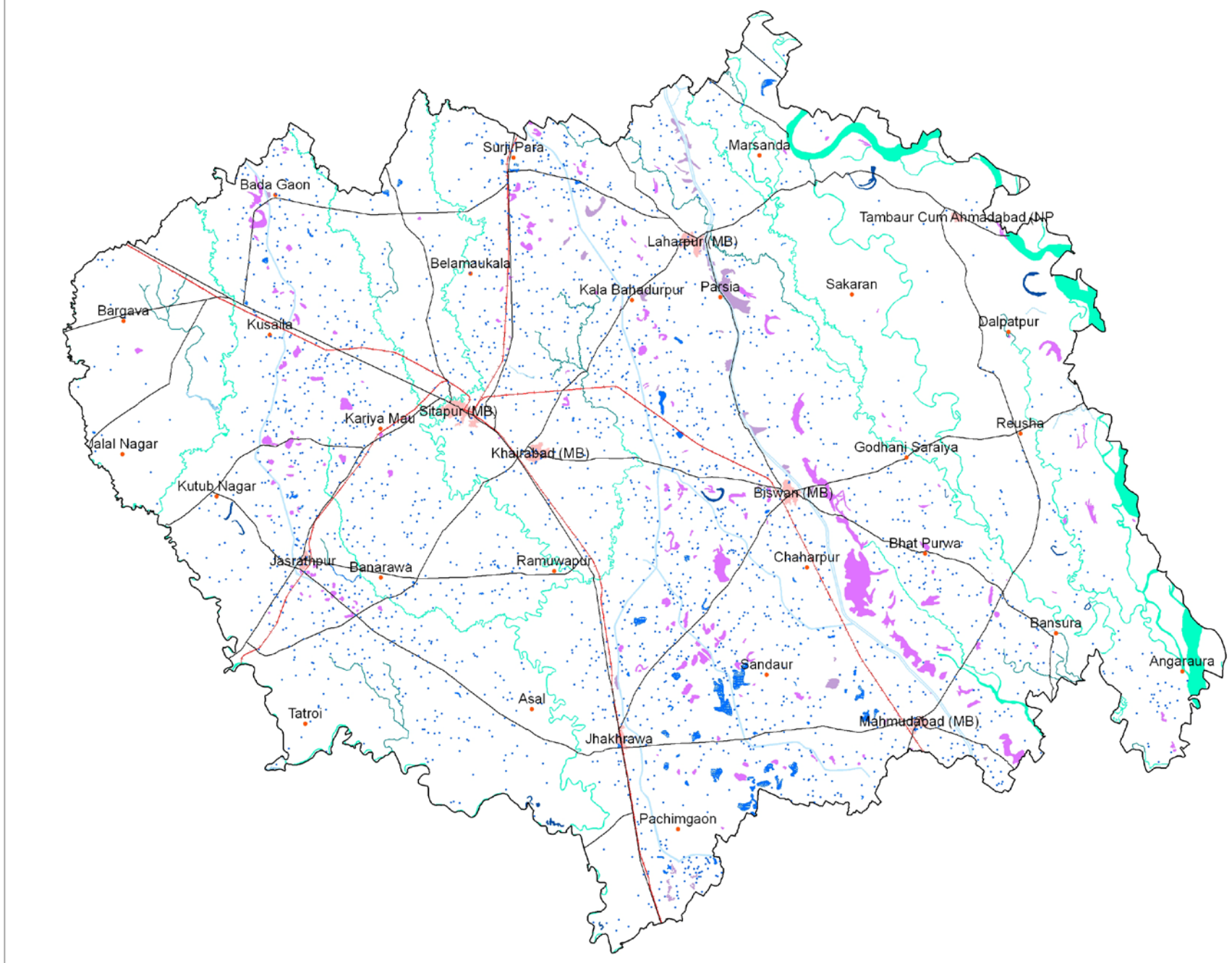
Area under Aquatic Vegetation	4716	2429

Area under turbidity levels		
Low	9253	9838
Moderate	4222	1180
High	0	0

State : Uttar Pradesh

WETLAND MAP

District : Sitapur

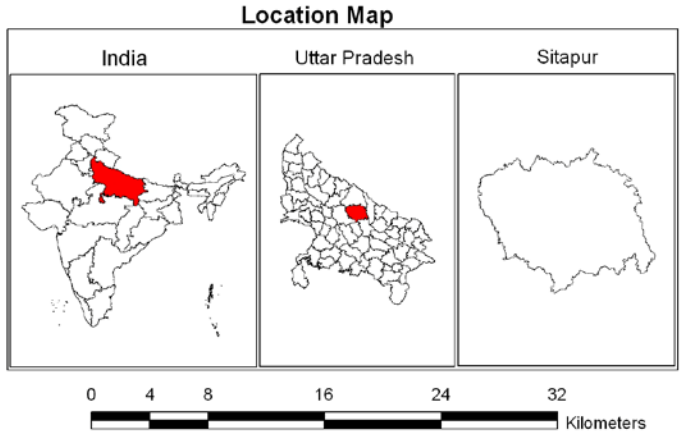


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

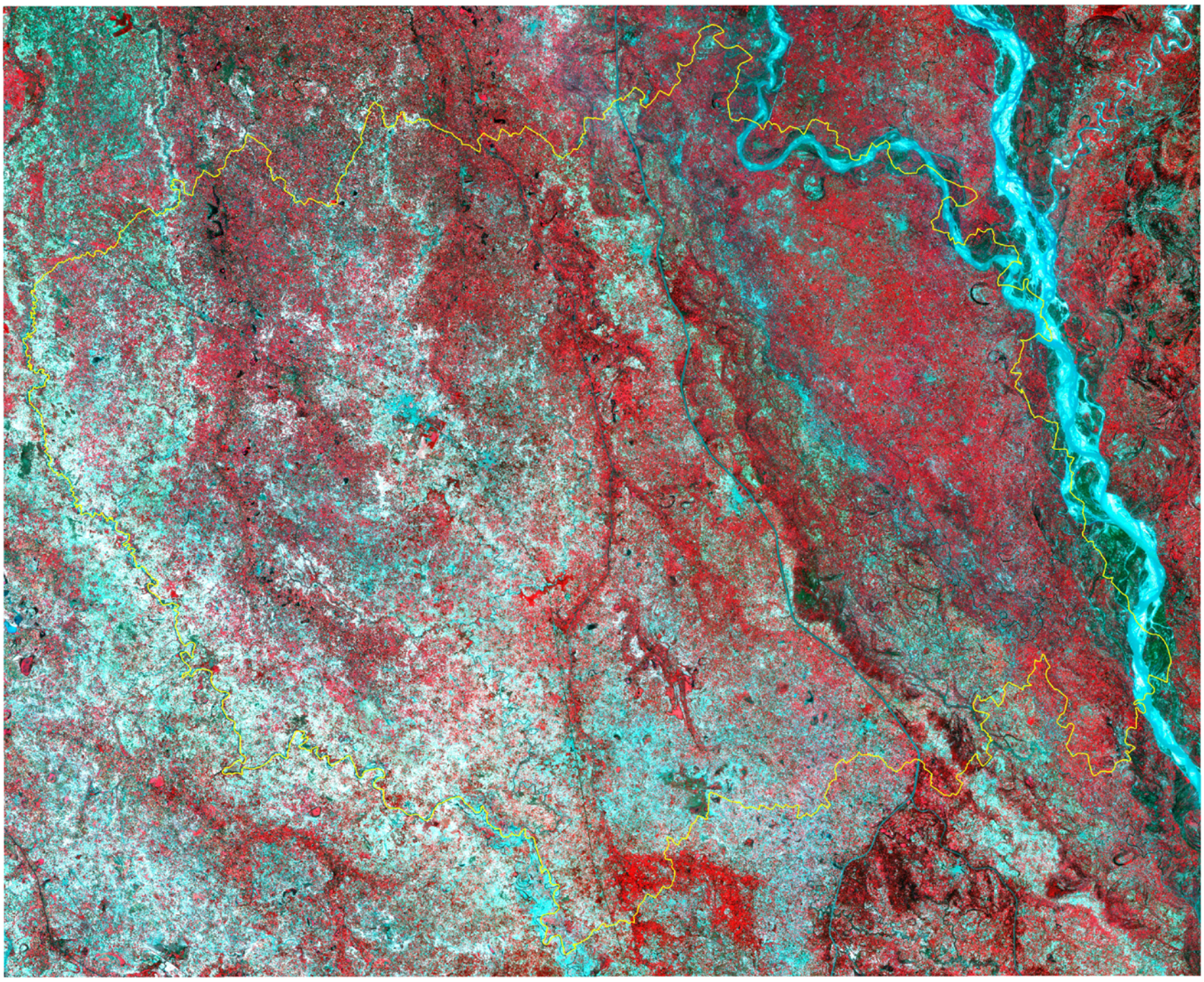
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Sitapur



IRS P6 LISS-III post monsoon data (2006)

7.1.25 Hardoi

Hardoi is located at 27.42°N latitude and 80.12°E longitude. It has an average elevation of 134 metres. The district shares common boundaries with the districts of Shahjahanpur & Lakhimpur Kheri districts in the North, Lucknow & Unnao in the South, Kanpur & Farrukhabad in the West and river Gomati separates the district from Sitapur on the eastern border. As per 2001 census, the district has a population of 3398306. It has 5 tehsils, 19 blocks.

The total wetland area in the district is 37108 ha. Major wetland types of the district are River/Stream and Lakes/ponds. There are 301 Lakes/ponds in the district spread over 9503 ha area. Tanks/pond and waterlogged area are the major man made wetlands of the district. In addition there are 2993 small wetlands (<2.25 ha). Detailed estimates of wetlands in Hardoi are given in table no.30.

Aquatic vegetation was observed in many wetlands and covered an area of3067 ha in post-monsoon season while3071 ha in pre-monsoon season. Water spread area in post-monsoon season is 15995 ha. Where as in pre-monsoon season the water spread area is 9866 ha. Moderate turbidity is observed in most of the wetlands. High turbidity is observed in river/stream during post-monsoon season.

Table 30: Area estimates of wetlands in Hardoi

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	301	9503	25.61	3239	2150
2	1102	Ox-bow lakes/ Cut-off meanders	76	2665	7.18	1044	523
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	87	2771	7.47	2011	598
5	1105	Waterlogged	149	3318	8.94	1238	463
6	1106	River/Stream	157	12426	33.49	7330	5296
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	3	0.01	3	0
8	1202	Tanks/Ponds	201	1600	4.31	372	495
9	1203	Waterlogged	111	1829	4.93	758	343
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**1083**	**34115**	**91.93**	**15995**	**9868**
		Wetlands (<2.25 ha), mainly Tanks	2993	2993	8.07	-	-
		Total	**4076**	**37108**	**100.00**	**15995**	**9868**

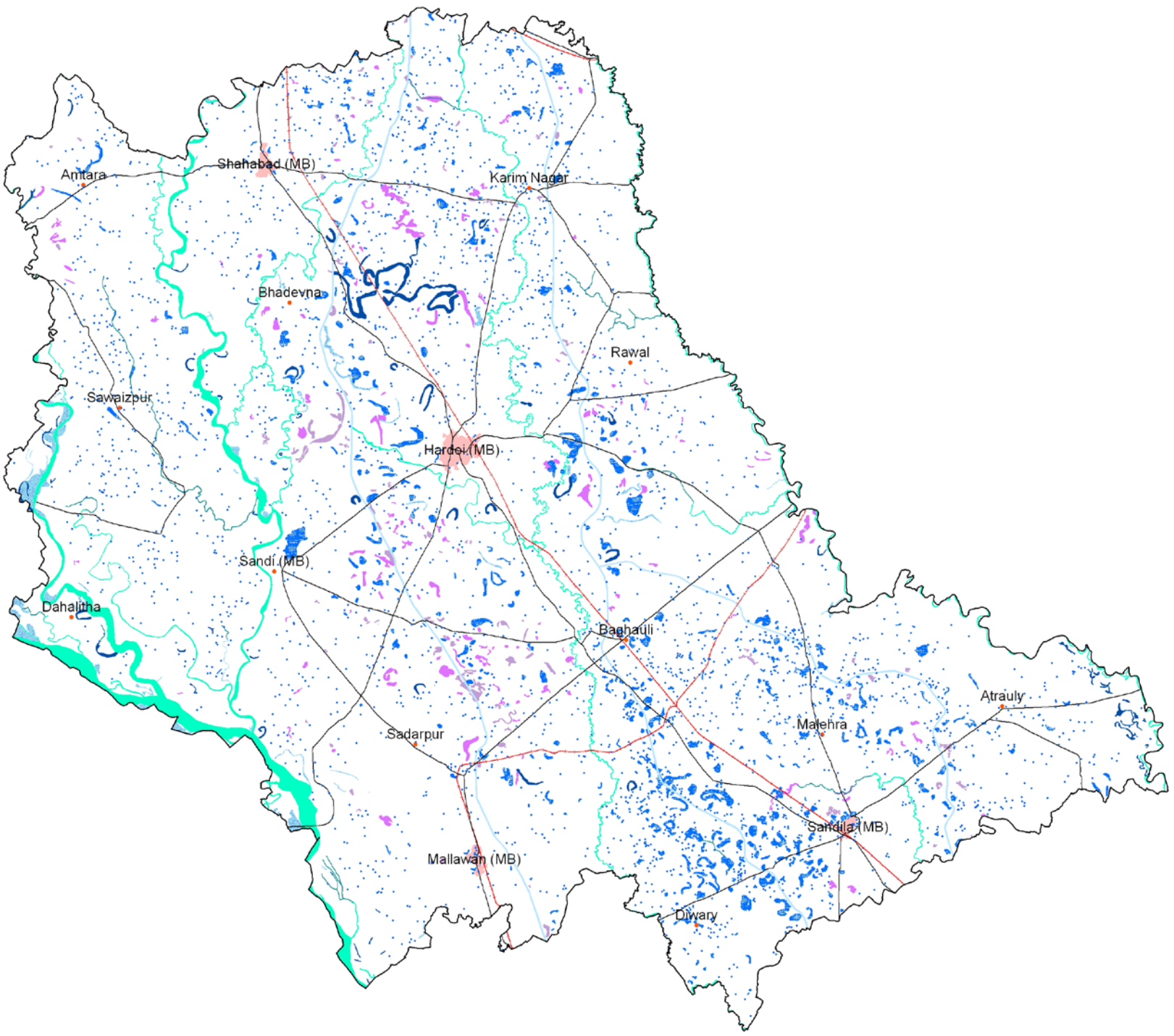
Area under Aquatic Vegetation	12426	6480

Area under turbidity levels		
Low	3067	3071
Moderate	12875	5935
High	53	862

State : Uttar Pradesh

WETLAND MAP

District : Hardoi

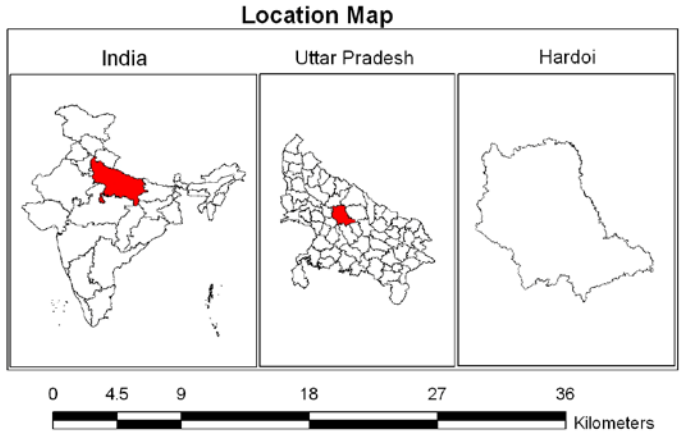


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

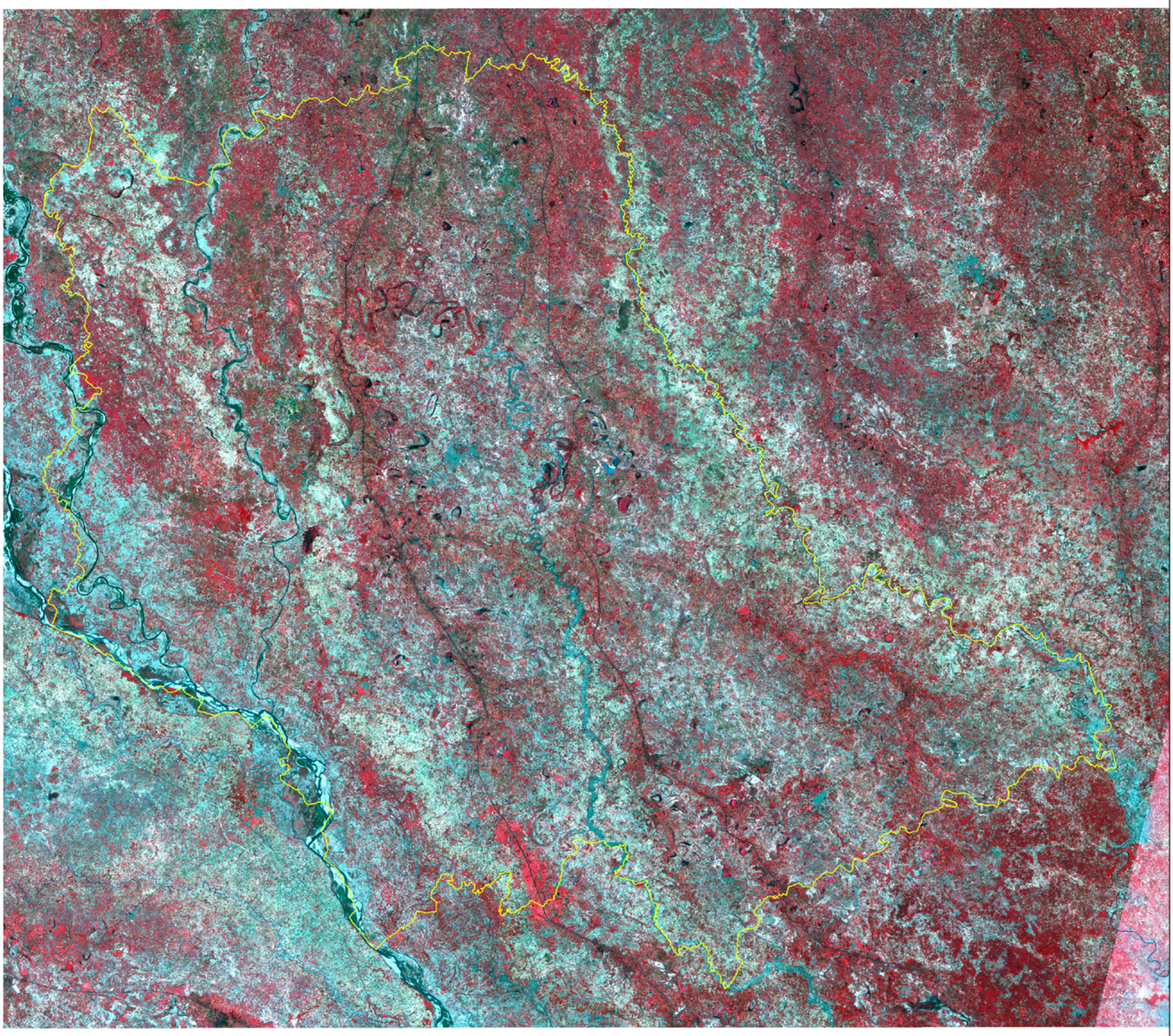
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Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Hardoi



IRS P6 LISS-III post monsoon data (2006)

7.1.26 Unnao

Unnao is located at 26.53°N latitude and 80.5°E longitude. It has an average elevation of 127 metres. It is bounded on the North by District Hardoi , on the East by District Lucknow, on the South by District Rae Bareli and on the West by the Ganga which separates it from districts of Kanpur & Fatehpur. The Ganga and the Sai are the main rivers of the district. As per 2001 census, the district has a population of 2700324. It has 5 tehsils and 17 blocks. Average maximum and minimum temperatures are 45.0^{o}C and 3.0^{o}C respectively.

The total wetland area in the district is 27759 ha. Major wetland types of the district are River/streams (44.4%), Lakes/Ponds (14.2%), and Ox-bow lakes/cut off meanders (14.7%). There are 108 Lakes/ponds in the district with 1529 ha area. In addition there are 1895 small wetlands (<2.25 ha). Detailed estimates of wetlands in Unnao are given in table no.31.

Significant fluctuation in area under aquatic vegetation is observed; from 7367 in post monsoon to 3187 ha in pre-monsoon season. Water spread area in post-monsoon season is 11945 ha and in pre-monsoon season it is reduced to 8896 ha. Moderate turbidity is observed in most of the wetlands.

Table 31: Area estimates of wetlands in Unnao

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	108	3967	14.29	1037	1188
2	1102	Ox-bow lakes/ Cut-off meanders	104	4097	14.76	1770	1221
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	17	159	0.57	71	86
5	1105	Waterlogged	19	419	1.51	332	42
6	1106	River/Stream	92	12349	44.49	5907	5112
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	193	1529	5.51	587	652
9	1203	Waterlogged	133	3344	12.05	2241	597
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**666**	**25864**	**93.17**	**11945**	**8898**
		Wetlands (<2.25 ha), mainly Tanks	1895	1895	6.83	-	-
		Total	**2561**	**27759**	**100.00**	**11945**	**8898**

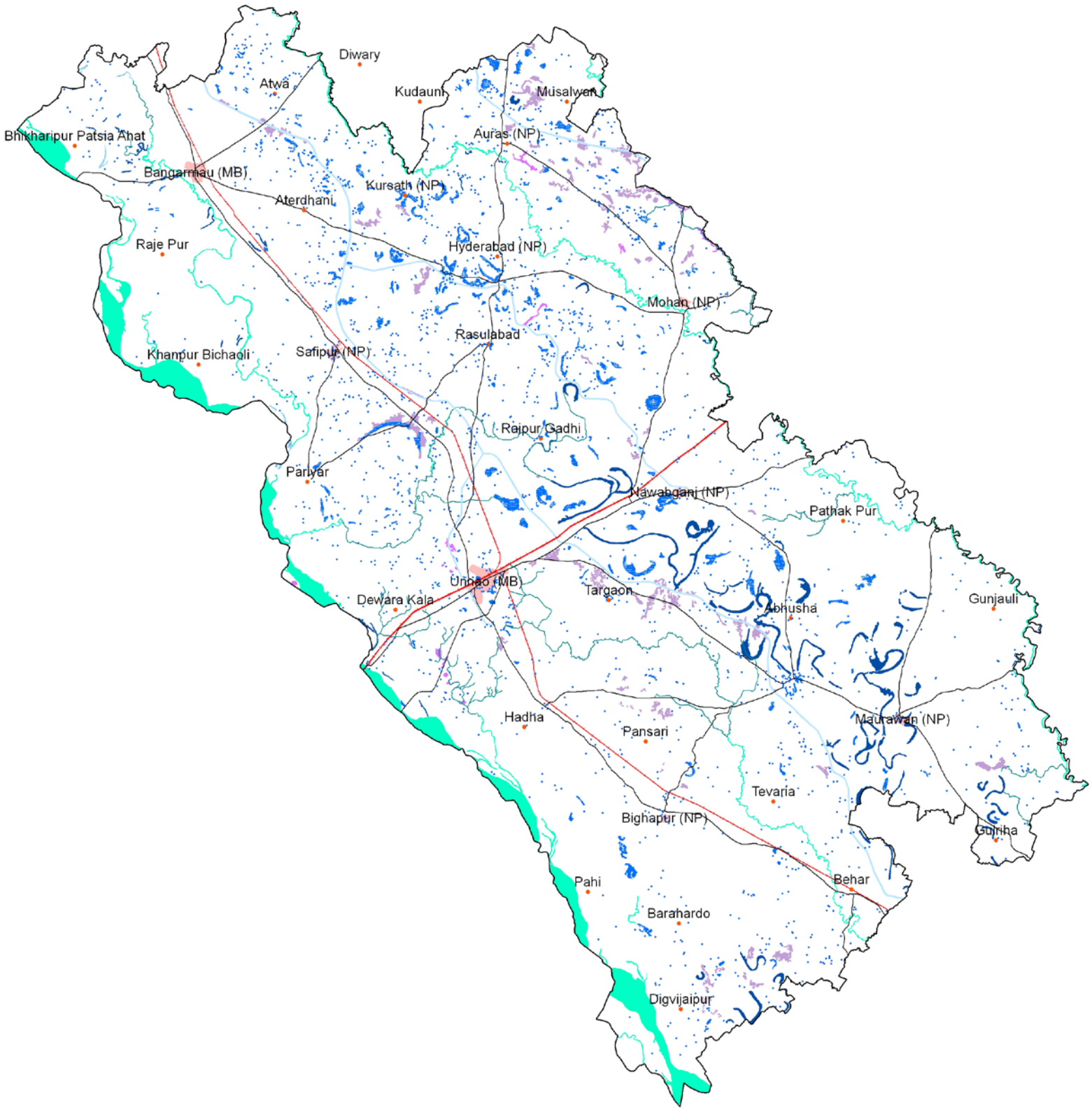
Area under Aquatic Vegetation	7367	3187

Area under turbidity levels		
Low	3772	2625
Moderate	7482	5850
High	691	423

State : Uttar Pradesh

WETLAND MAP

District : Unnao

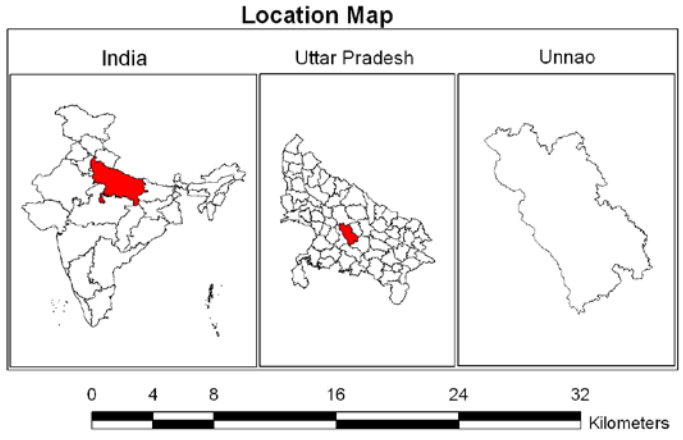


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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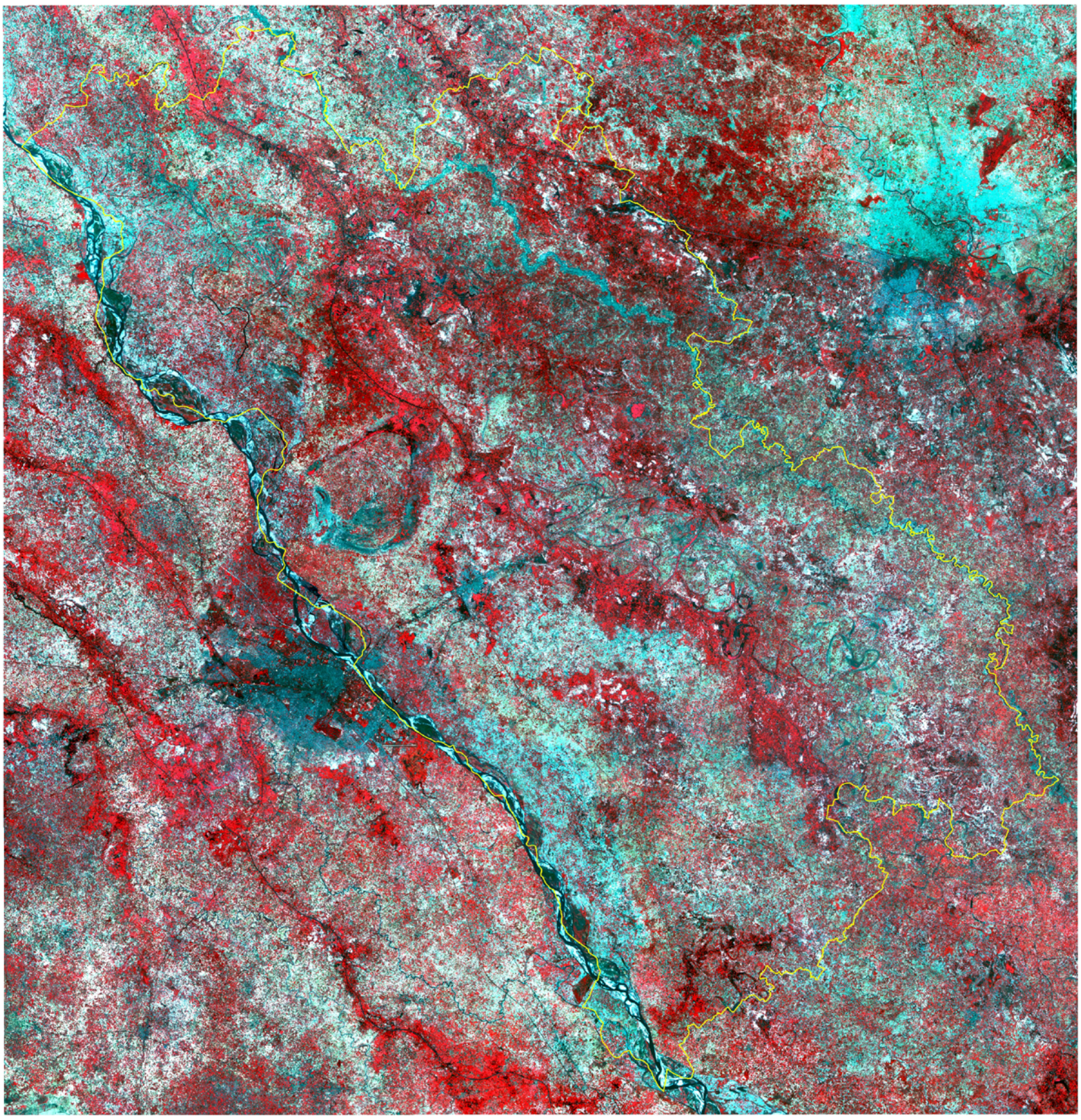
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Unnao



IRS P6 LISS-III post monsoon data (2006)

7.1.27 Lucknow

Lucknow is located at 26°30’ to 27°10’ N latitude and 80°30’ to 81°13’ E longitude. Lucknow is the capital of Uttar Pradesh. It has an average elevation of 128 metres.The district is surrounded on the eastern side by District Barabanki, on the western side by district Unnao, on the southern side by Raebareli and on the northern side by Sitapur and Hardoi districts. It has 4 tehsils, 8 blocks and 823 villages. Lucknow has a warm humid subtropical climate with cool, dry winters from December to February and dry, hot summers from April to June. The rainy season is from mid-June to mid-September, when Lucknow gets an average rainfall of 1010 mm. In winter the maximum temperature is around 21 degrees Celsius and the minimum is in the 3 to 4 degrees Celsius range.

The total wetland area in the district is 9607 ha. Lakes/Ponds, River/Stream, and ox-bow lakes/ cut-off meanders are the major natural wetlands. Waterlogged and Tanks/ponds are the major man made wetlands of the district. In addition, 775 small wetlands (<2.25ha) mainly ponds are identified. Detailed estimates of wetlands in Lucknow are given in table no.32.

Aquatic vegetation was observed in many wetlands and covered an area of 3573 ha in post-monsoon season while 1363 ha in pre-monsoon season. Water spread area in post-monsoon season is 3573 ha. Where as in pre-monsoon season the water spread area is 1363 ha. Low turbidity is observed in most of the wetlands.

Table 32: Area estimates of wetlands in Lucknow

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	67	1948	20.28	687	471
2	1102	Ox-bow lakes/ Cut-off meanders	50	1308	13.62	251	283
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	3	0.03	0	3
5	1105	Waterlogged	21	385	4.01	186	17
6	1106	River/Stream	61	2073	21.58	1968	1850
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	193	2.01	112	39
8	1202	Tanks/Ponds	102	908	9.45	297	198
9	1203	Waterlogged	90	2014	20.96	1589	837
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**393**	**8832**	**91.93**	**5090**	**3698**
		Wetlands (<2.25 ha), mainly Tanks	775	775	8.07	-	-
		Total	**1168**	**9607**	**100.00**	**5090**	**3698**

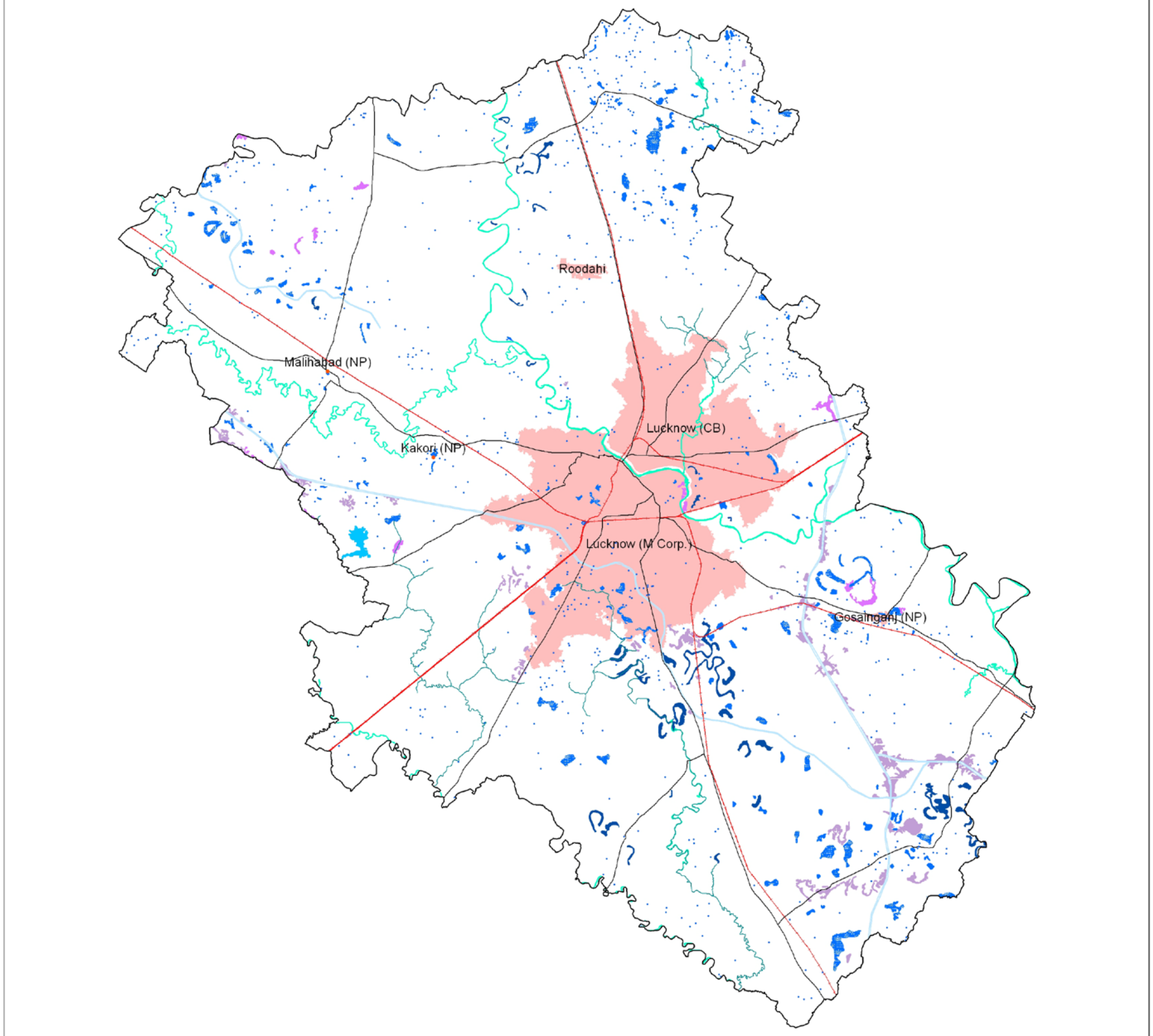
Area under Aquatic Vegetation	3573	1363

Area under turbidity levels		
Low	3565	2266
Moderate	1353	1101
High	172	331

State : Uttar Pradesh

WETLAND MAP

District : Lucknow

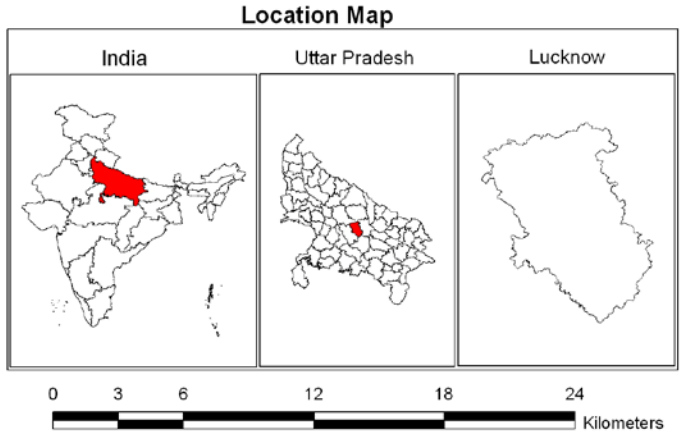


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

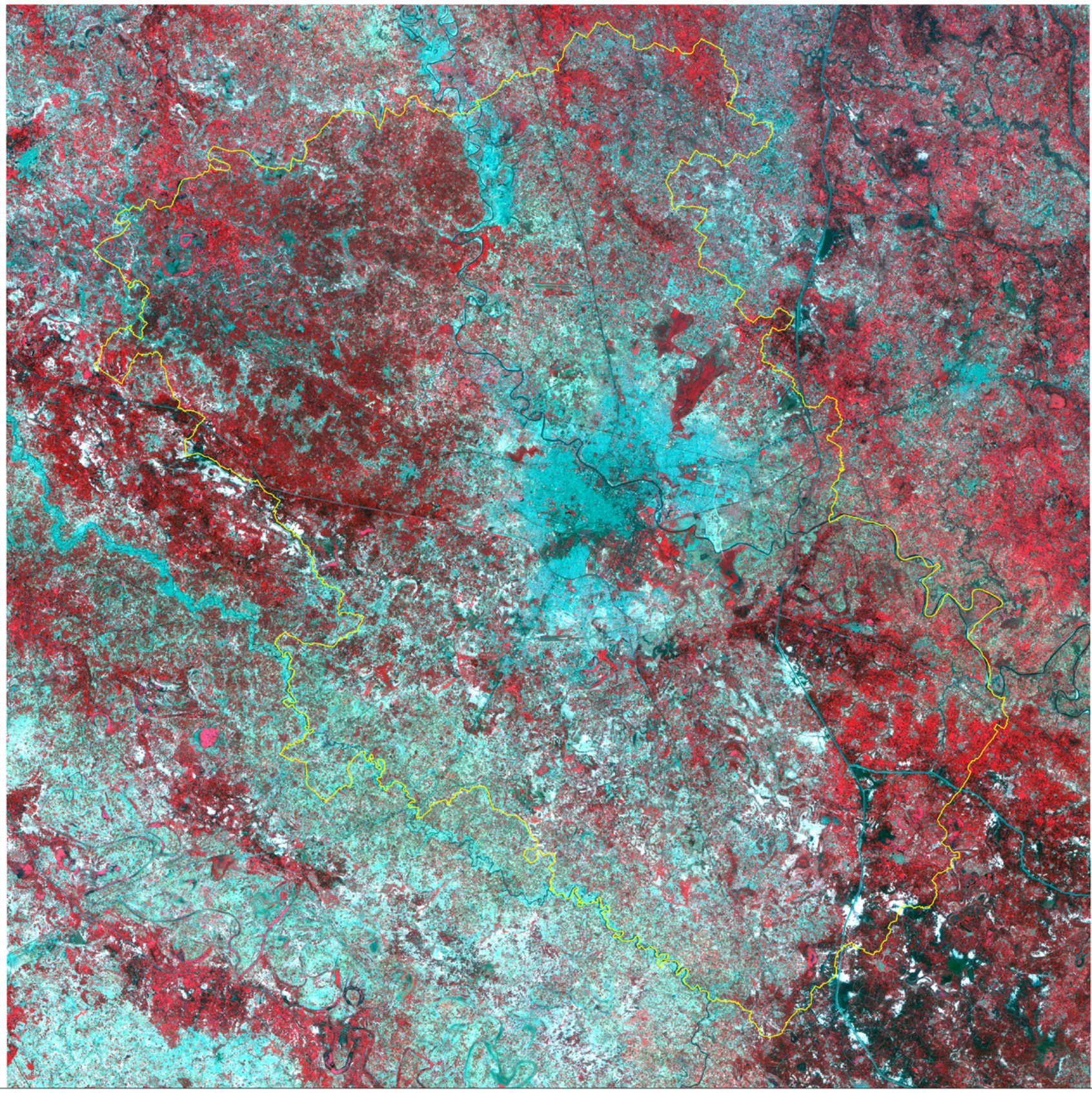
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Government of India

State : Uttar Pradesh

District : Lucknow



IRS P6 LISS-III post monsoon data (2006)

7.1.28 Rae Bareli

Rae Bareli is the adjoining district of Lucknow district (located on the southern side).

The total wetland area in the district is 38522 ha. Waterlogged (man made) is the dominant type with 12813 ha area (33.26%). Major natural wetland types of the district are River/Stream, ox-bow lakes / cut off meanders and Lakes/Ponds. There are 136 Ox-bow lakes occupying 14.17% area and 90 Lakes/ponds with 11.49% area. In addition, 2035 small wetlands (<.25ha) are identified, mainly belonging to tanks/ponds. Detailed estimates of wetlands in Rae Bareli are given in table no.33.

Aquatic vegetation was observed in many wetlands and covered an area of 10249 ha in post-monsoon season while 4565 ha in pre-monsoon season. This seasonal variation in aquatic vegetation could be attributed to seasonal variations in water spread. Water spread area in post-monsoon season is 20075 ha and in pre-monsoon season it is reduced to 11430 ha. Moderate turbidity is observed in most of the wetlands. High turbidity is observed in river/stream during post-monsoon season

Table 33: Area estimates of wetlands in Rae Bareli

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	90	4428	11.49	1999	1541
2	1102	Ox-bow lakes/ Cut-off meanders	136	5457	14.17	2204	2281
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	7	577	1.50	307	15
5	1105	Waterlogged	17	414	1.07	259	36
6	1106	River/Stream	35	11123	28.87	4934	3906
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	119	0.31	100	117
8	1202	Tanks/Ponds	133	1556	4.04	804	669
9	1203	Waterlogged	585	12813	33.26	9468	2867
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**1004**	**36487**	**94.72**	**20075**	**11432**
		Wetlands (<2.25 ha), mainly Tanks	2035	2035	5.28	-	-
		Total	**3039**	**38522**	**100.00**	**20075**	**11432**

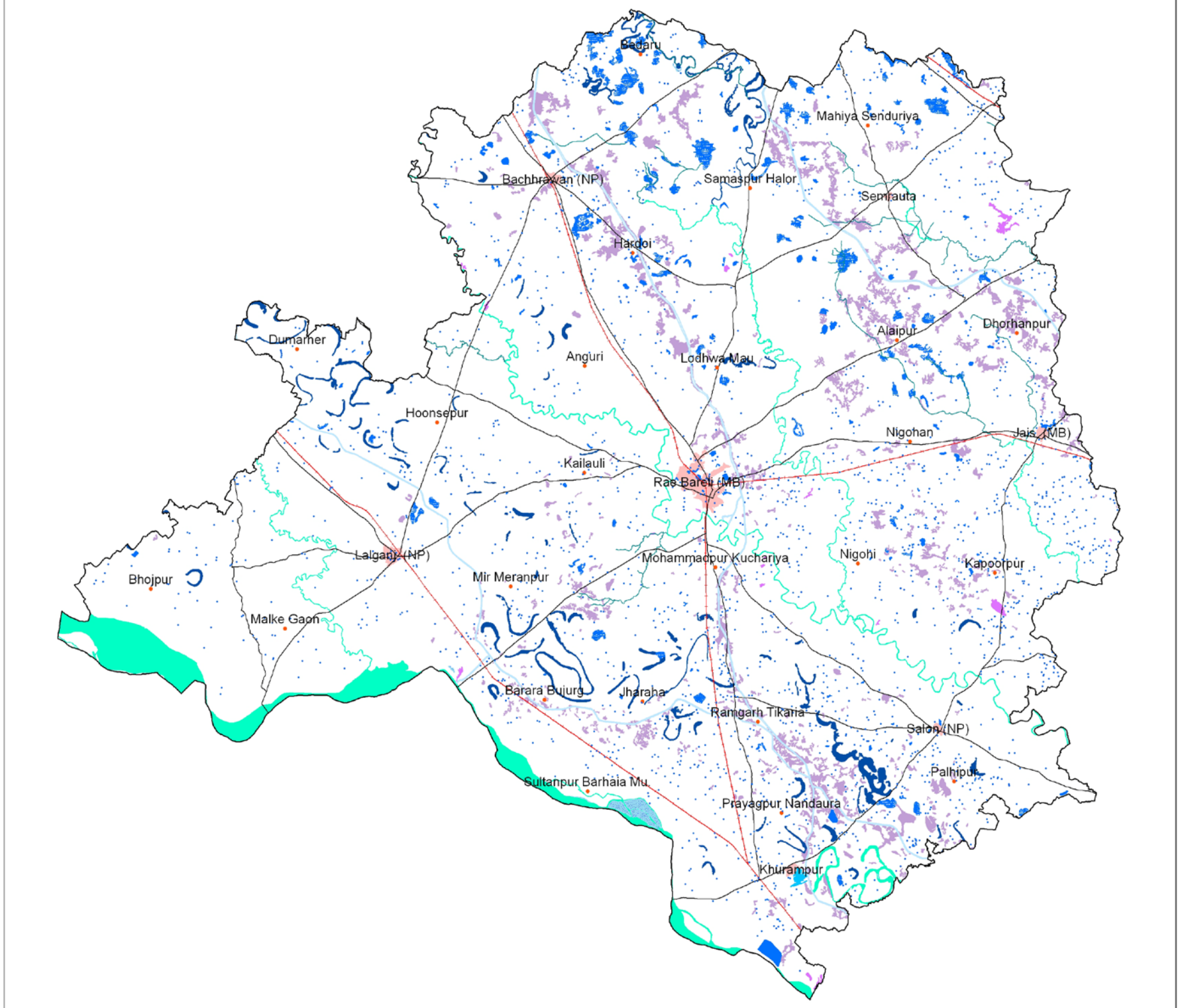
Area under Aquatic Vegetation	10249	4565

Area under turbidity levels		
Low	7269	3711
Moderate	12140	7277
High	666	444

State : Uttar Pradesh

WETLAND MAP

District : Rae Bareli

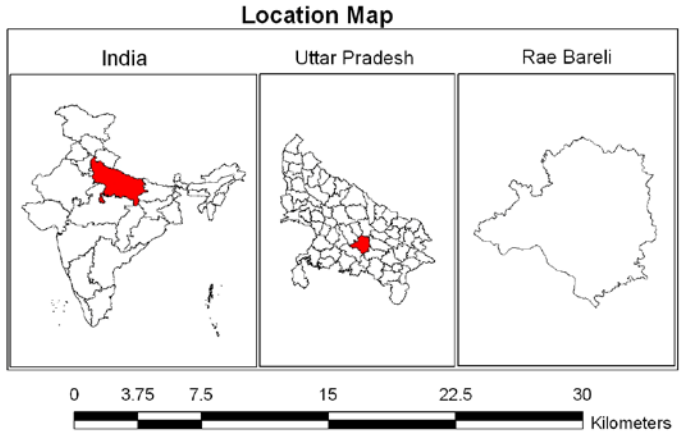


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

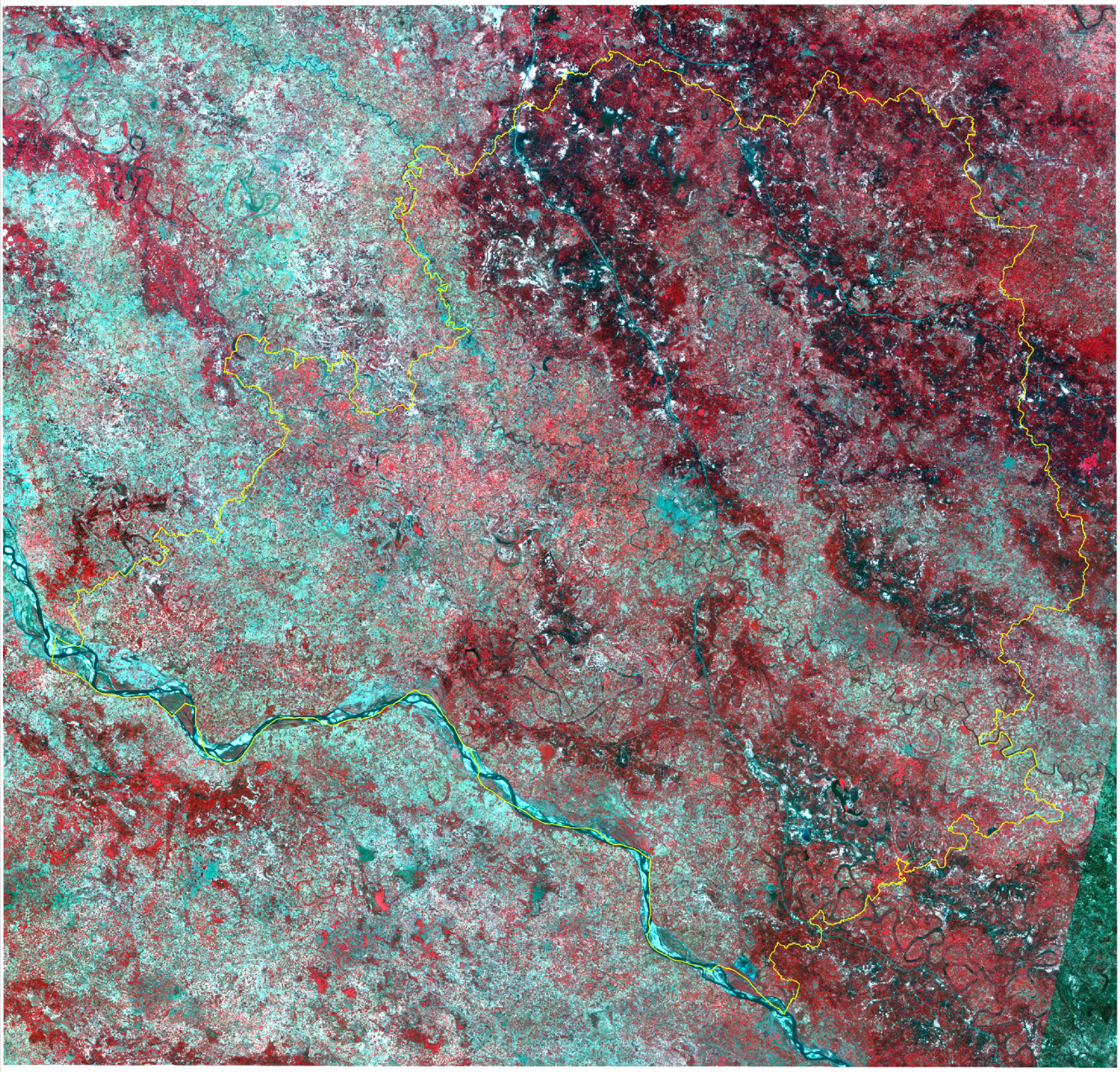
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State : Uttar Pradesh

District : Rae Bareli



IRS P6 LISS-III post monsoon data (2006)

7.1.29 Farrukhabad

Farrukhabad is located at 27.37°N latitude and 79.63°E longitude. It has an average elevation of 138 metres. The district is bounded by Badaun and Shahjahanpur on the north, Hardoi District on the east, Kannauj District on the south, and Etah and Mainpuri districts on the west. The Ganga River and Ramganga River are located to the east and the Kali Nadi River to the south. As per 2001 census, the district has a population of 1570408. It has 3 tehsils, 7 blocks and 1010 villages.

The total wetland area in the district is 22309 ha. Natural wetlands dominated the scenario. Major wetland types of the district are Riverine wetlands, River/Stream with 31.7 and 54.14 per cent share respectively of total wetland area. There are 170 Riverine wetland sites spread over 7073 ha area. In addition there are 285 small wetlands (<2.25 ha). Detailed estimates of wetlands in Farrukhabad are given in table no.34.

Aquatic vegetation was observed in many wetlands and covered an area of 1759 ha in post-monsoon season and reduced to 516 ha in pre-monsoon season. This seasonal variation of aquatic vegetation could be attributed to seasonal variations in water spread. Water spread area in post-monsoon season is 13961 ha. Where as in pre-monsoon season the water spread area is 7544 ha. Mainly, moderate turbidity of open water is observed in both the season.

Table 34: Area estimates of wetlands in Farrukhabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	23	658	2.95	456	310
2	1102	Ox-bow lakes/ Cut-off meanders	107	589	2.64	448	163
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	170	7073	31.70	6041	3680
5	1105	Waterlogged	54	1142	5.12	912	245
6	1106	River/Stream	81	12078	54.14	5813	3101
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	6	28	0.13	19	9
9	1203	Waterlogged	44	456	2.04	272	36
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**485**	**22024**	**98.72**	**13961**	**7544**
		Wetlands (<2.25 ha), mainly Tanks	285	285	1.28	-	-
		Total	**770**	**22309**	**100.00**	**13961**	**7544**

Area under Aquatic Vegetation	1759	516

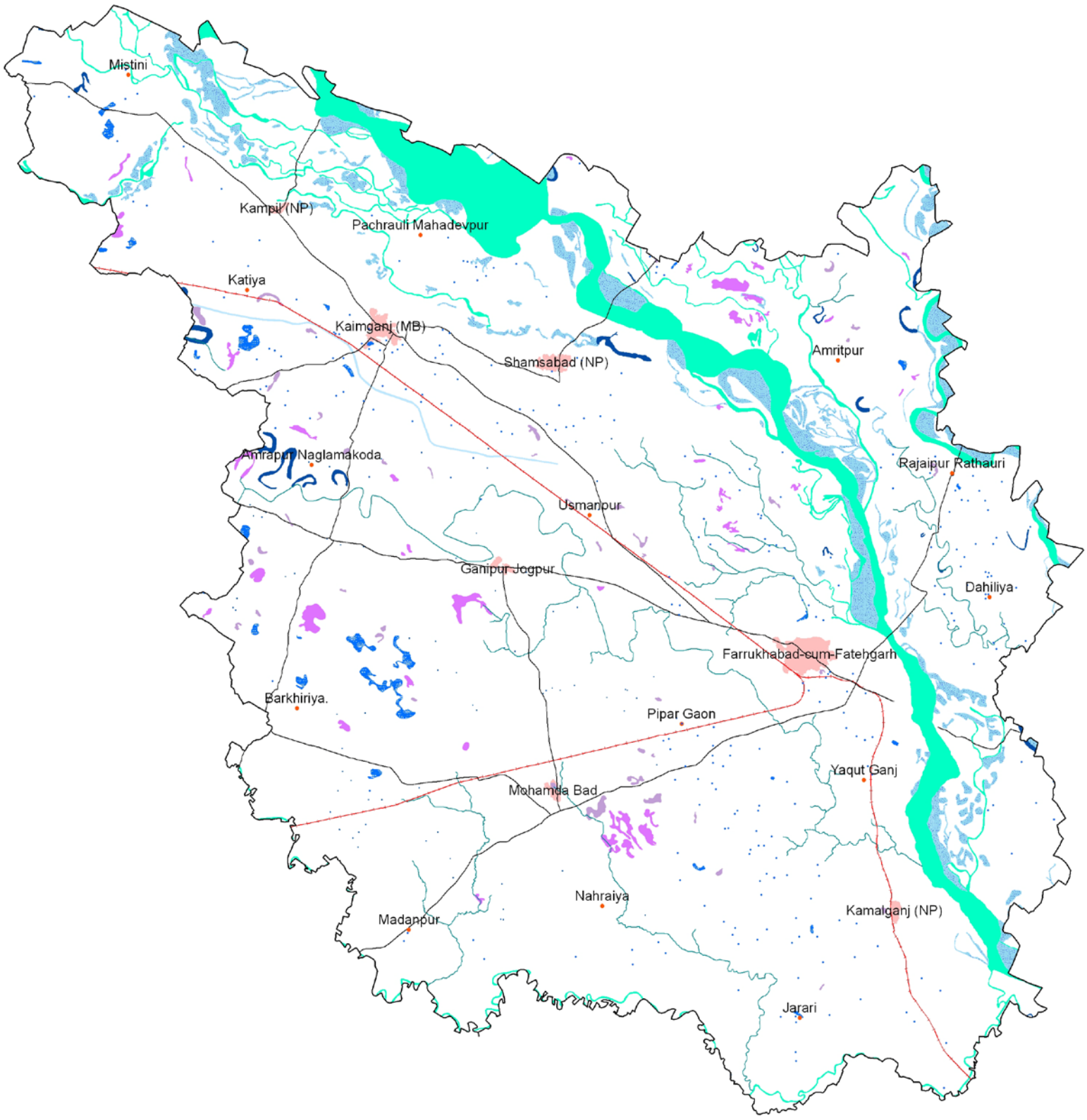
Area under turbidity levels		
Low	2072	1086
Moderate	11502	6193
High	387	265

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State : Uttar Pradesh

WETLAND MAP

District : Farrukhabad

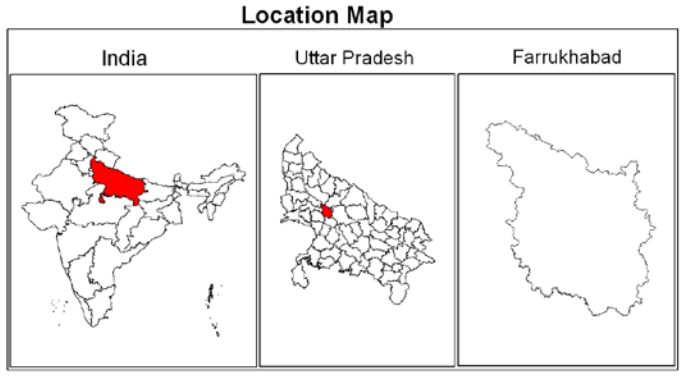


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 2.5 5 10 15 20 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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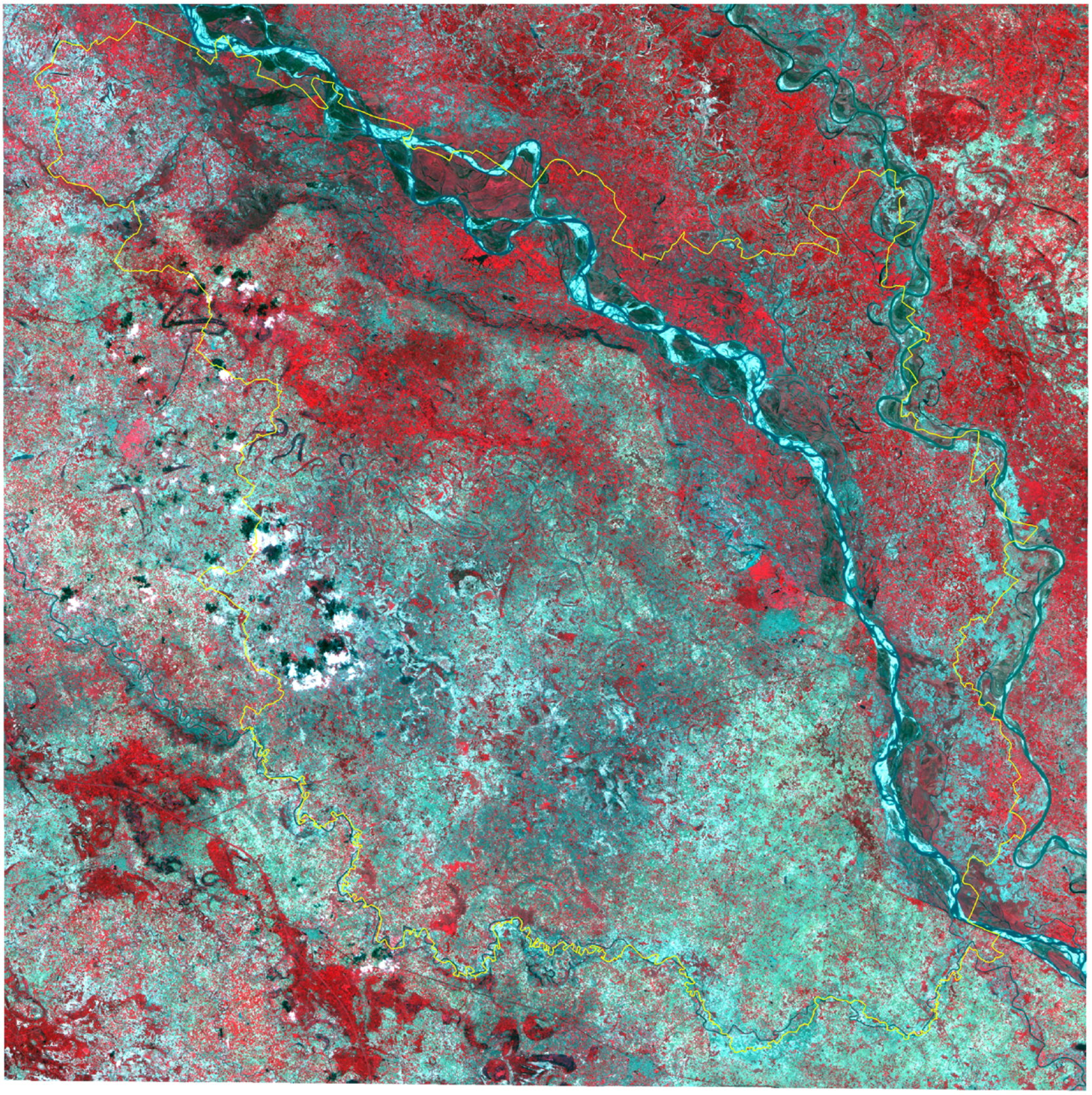
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Government of India

State : Uttar Pradesh

District : Farrukhabad



IRS P6 LISS-III post monsoon data (2006)

7.1.30 Kannauj

Kannauj is located at 27.07°N latitude and 79.92°E longitude. It has an average elevation of 139 metres. The district is bounded by the districts of Farrukhabad to the north, Hardoi to the northeast, Kanpur Nagar to the east, Kanpur Dehat to the southeast, Auraiya to the south, Etawah to the southwest, and Mainpuri to the west. As per 2001 census, the district has a population of 1388923. It has 3 tehsils, 7 blocks and 754 villages. The climate is characterized by a hot dry summer and a pleasant cold season.

The total wetland area in the district is 8190 ha. Natural wetland type dominated in the district. River/Stream is the major one accounting around 43 per cent of wetland. The other major natural wetland types are: Lakes/pond (16.4%), Waterlogged (7.7 %) and Riverine (6.7%). Waterlogged category is the dominant man made wetland (19.0%). In addition there are 368 small wetlands (<2.25 ha). Detailed estimates of wetlands in Kannnauj are given in table no.35.

Aquatic vegetation was observed in many wetlands and covered an area of 2403 ha in post-monsoon season and reduced to 712 ha in pre-monsoon season. This variation in aquatic vegetation area could be attributed to seasonal variations in water spread. Water spread area in post-monsoon season is 4457 ha and in pre-monsoon season it is 2421 ha. Moderate turbidity prevailed in both the seasons.

Table 35: Area estimates of wetlands in Kannauj

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	32	1345	16.42	456	368
2	1102	Ox-bow lakes/ Cut-off meanders	10	193	2.36	55	50
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	9	554	6.76	487	72
5	1105	Waterlogged	43	634	7.74	239	125
6	1106	River/Stream	65	3489	42.60	2562	1669
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	10	0.12	10	0
8	1202	Tanks/Ponds	10	36	0.44	26	6
9	1203	Waterlogged	54	1561	19.06	622	131
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**224**	**7822**	**95.51**	**4457**	**2421**
		Wetlands (<2.25 ha), mainly Tanks	368	368	4.49	-	-
		Total	**592**	**8190**	**100.00**	**4457**	**2421**

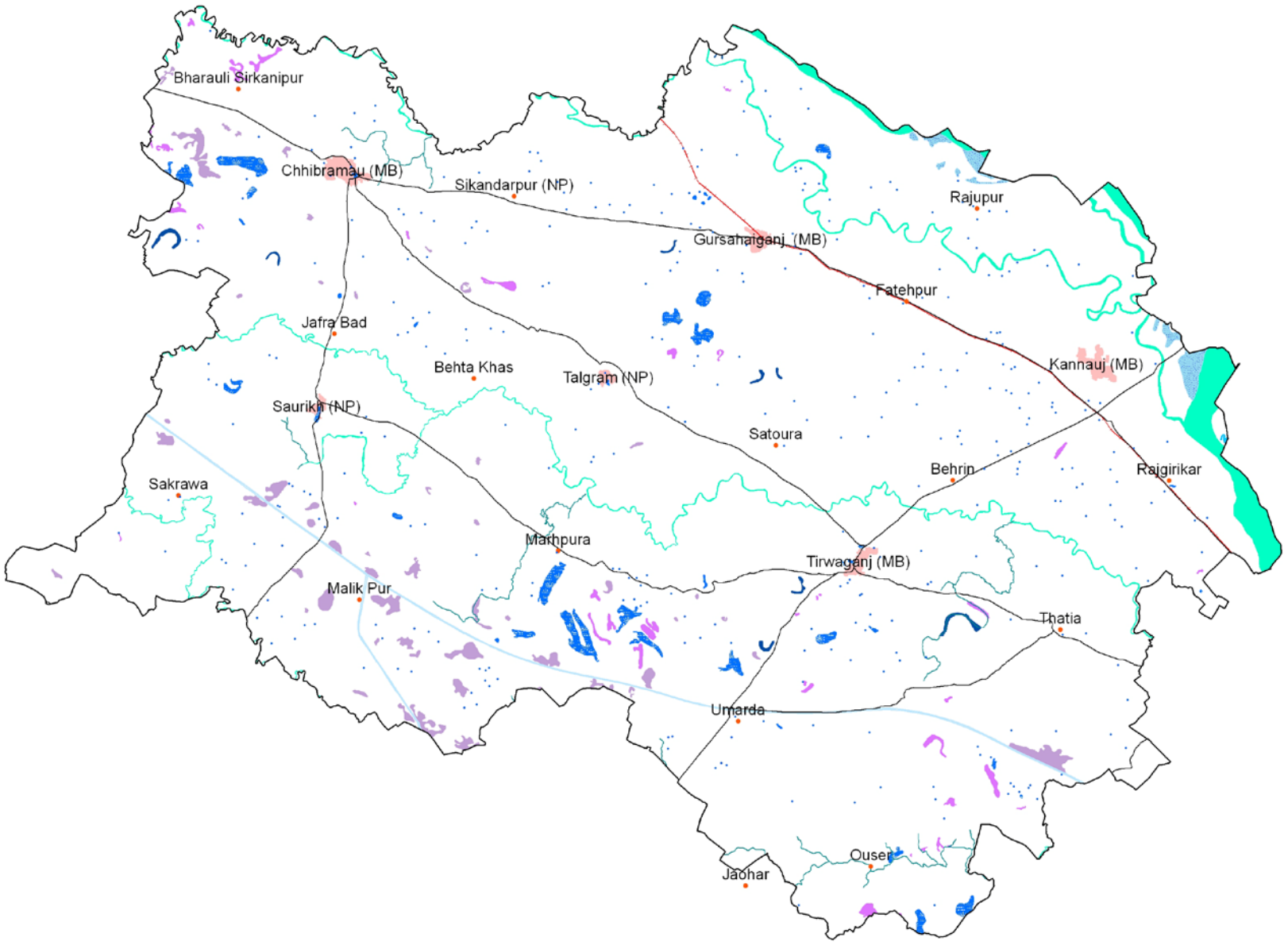
Area under Aquatic Vegetation	2403	712

Area under turbidity levels		
Low	824	202
Moderate	3633	2037
High	0	182

State : Uttar Pradesh

WETLAND MAP

District : Kannauj

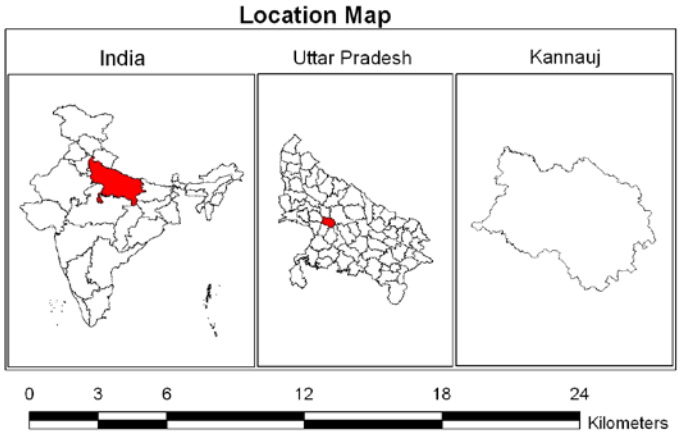


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

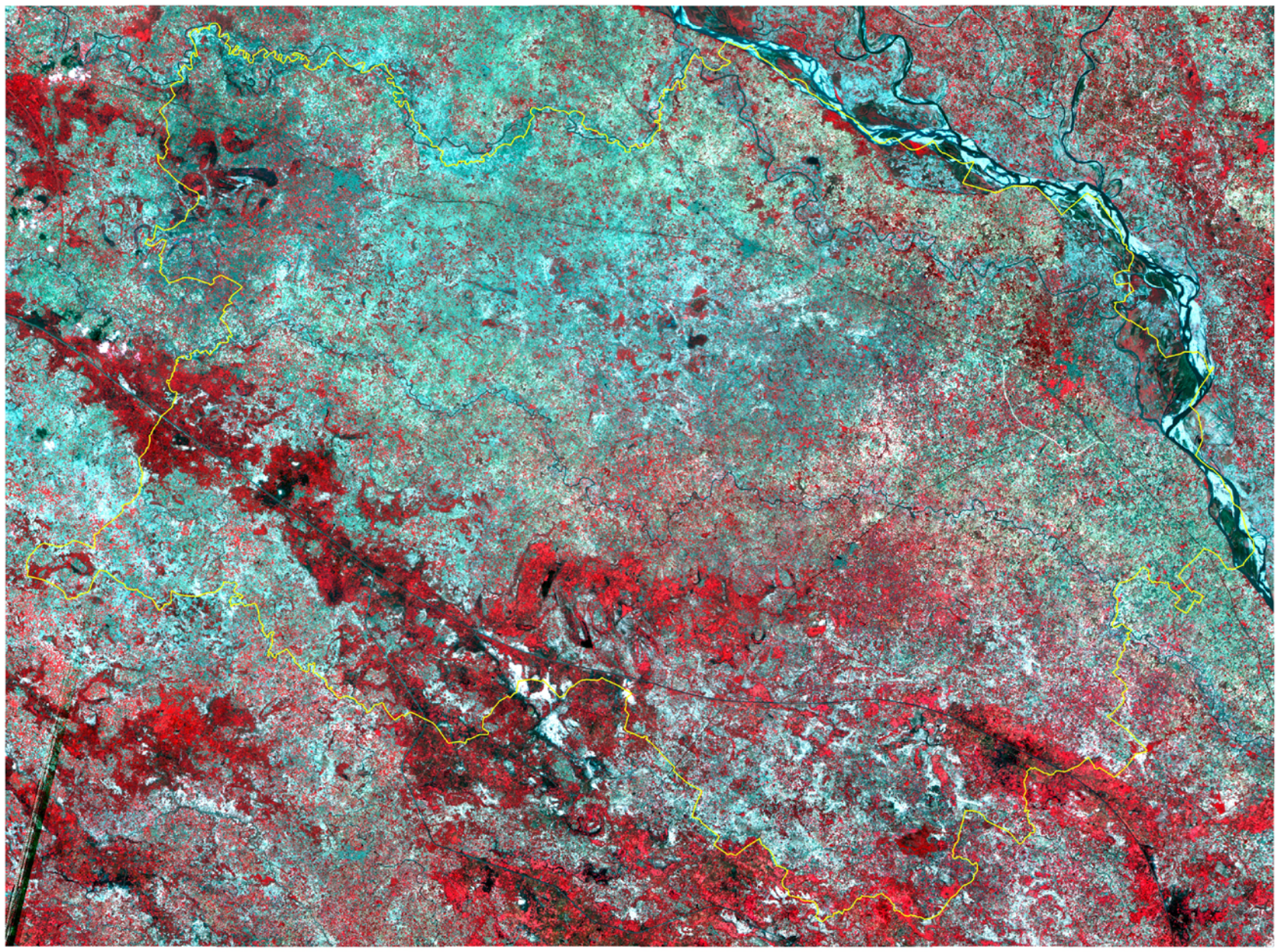
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Government of India

State : Uttar Pradesh

District : Kannauj



IRS P6 LISS-III post monsoon data (2006)

7.1.31 Etawah

Etawah district forms the northern boundary with the districts of Farrukhabad and Mainpuri, while the small extent of western border adjoins the Agra district. The eastern boundary is formed with the district of Auraiya, and along the south lie Jalaun and the district of Gwalior. Etawah is a city on the Yamuna River at 26.77°N latitude and 79.03°E longitude. It has an average elevation of 139 metres. As per 2001 census, the district has a population of 1338871. Average maximum and minimum temperatures are 44.0^{o} C and 3.0^{o} C respectively. Average rainfall is 792mm.

The total wetland area in the district is 10946 ha. Major wetland types of the district are river/Stream (63.4%) and waterlogged. Man made waterlogged occupied 1799 ha area accounting 16.44 per cent and Natural waterlogged occupied 668 ha area (6.1%). There are 14 Lakes/ponds with 609 ha area (5.56%). In addition there are 677 small wetlands (<2.25 ha). Detailed estimates of wetlands in Etawah are given in table no.36.

Area under aquatic vegetation in pre-monsoon season is 413 ha where as area in post-monsoon is 770 ha. Water spread area in post-monsoon season is 5646 ha and in pre-monsoon it is reduced to 4810 ha. Moderate turbidity is observed in most of the wetlands.

Table 36: Area estimates of wetlands in Etawah

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	14	609	5.56	174	233
2	1102	Ox-bow lakes/ Cut-off meanders	3	105	0.96	29	39
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	16	35	0.32	24	3
5	1105	Waterlogged	39	668	6.10	420	54
6	1106	River/Stream	33	6942	63.42	3762	4248
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	17	111	1.01	65	41
9	1203	Waterlogged	101	1799	16.44	1172	193
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**223**	**10269**	**93.82**	**5646**	**4811**
		Wetlands (<2.25 ha), mainly Tanks	677	677	6.18	-	-
		Total	**900**	**10946**	**100.00**	**5646**	**4811**

Area under Aquatic Vegetation	1422	413

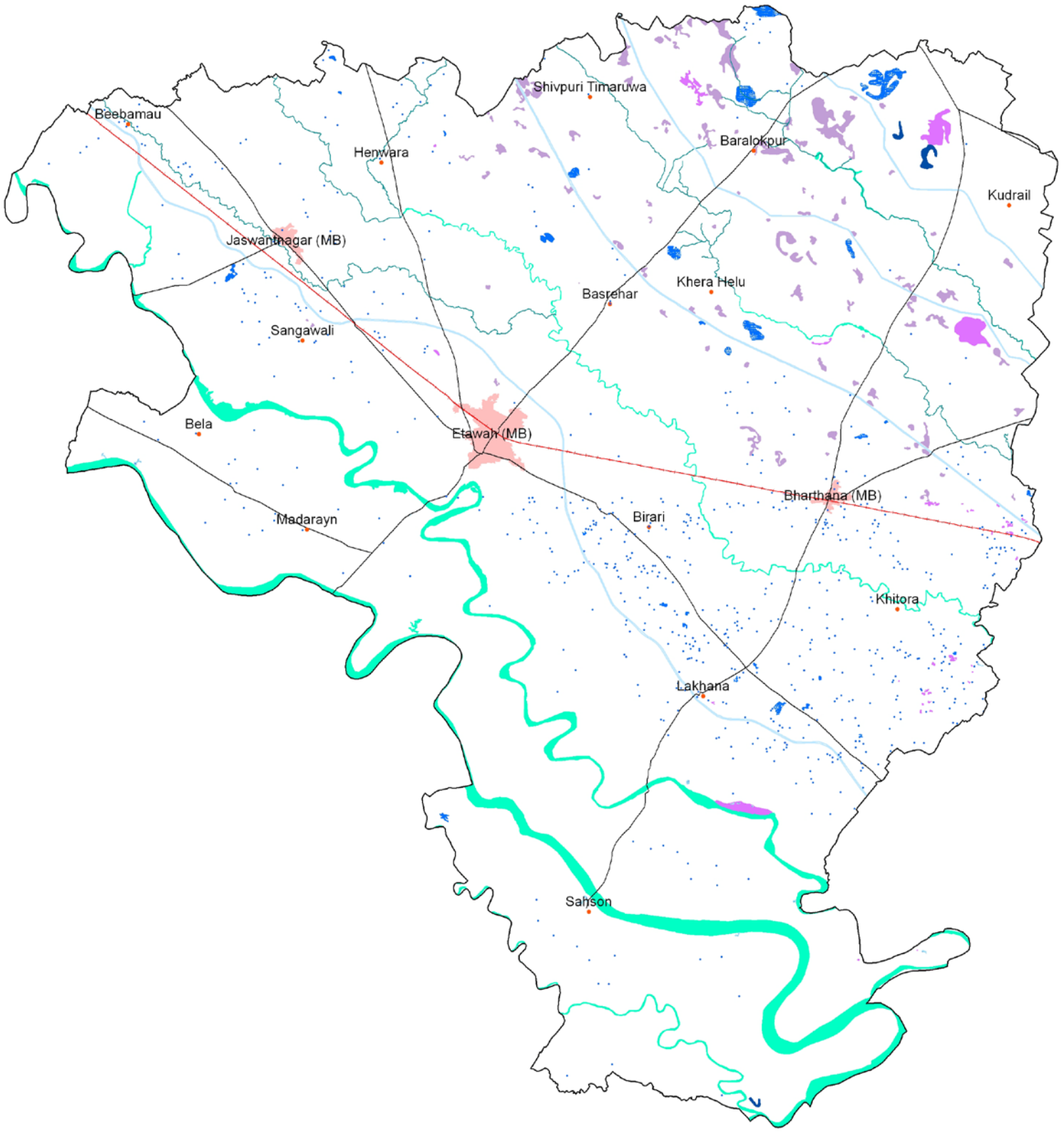
Area under turbidity levels		
Low	1841	2435
Moderate	3797	717
High	8	1659

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State : Uttar Pradesh

WETLAND MAP

District : Etawah

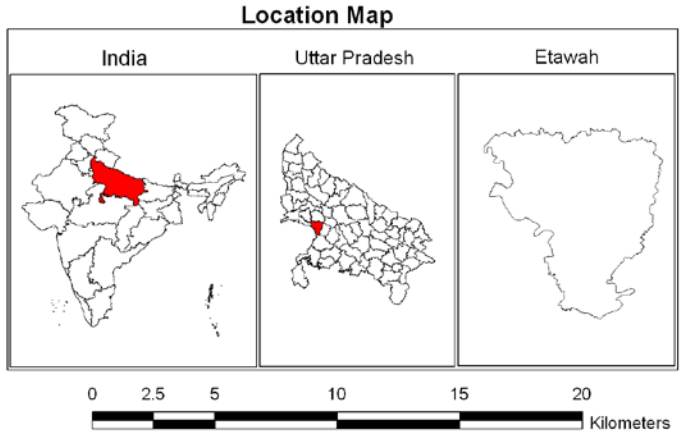


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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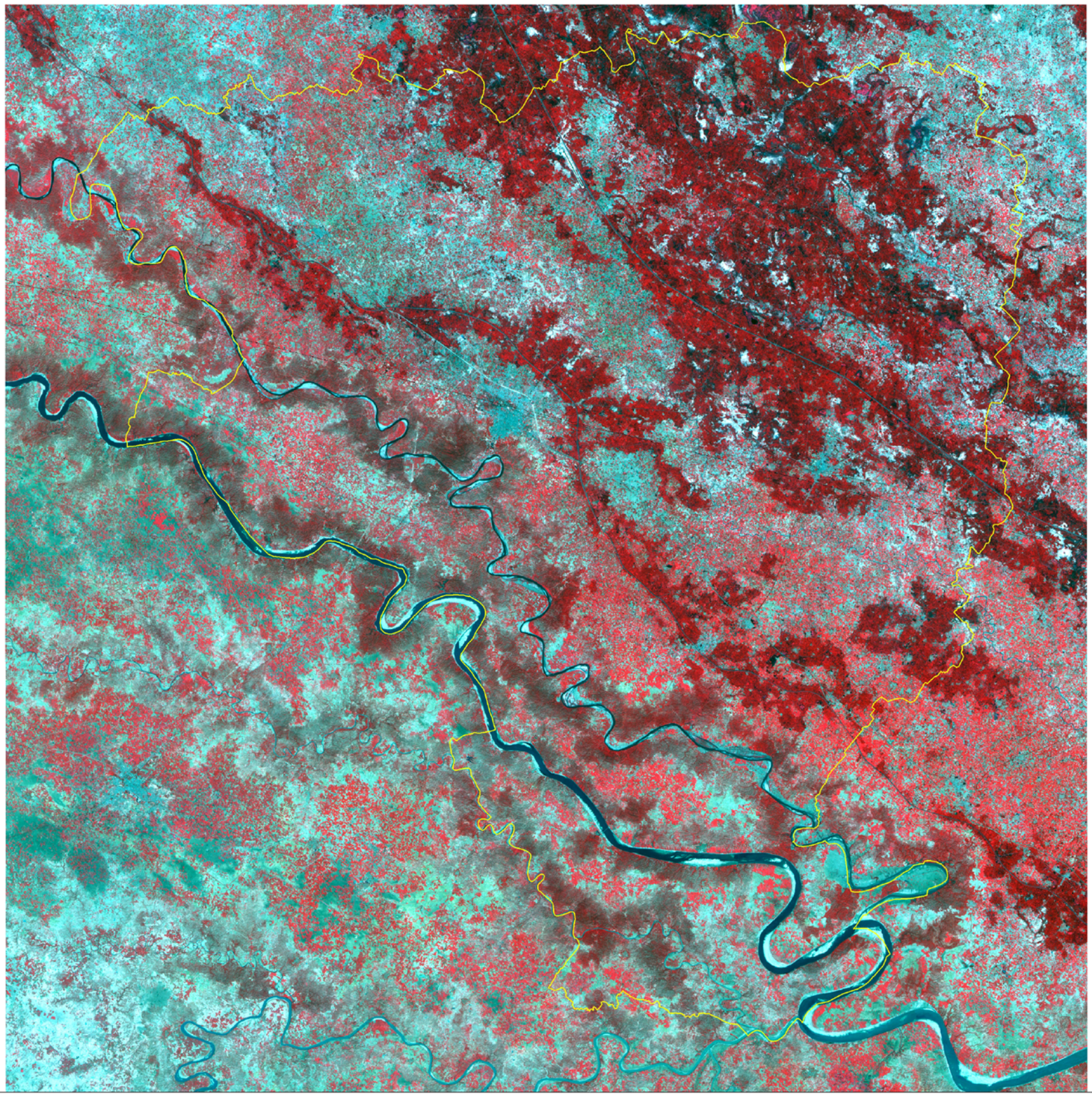
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Government of India

State : Uttar Pradesh

District : Etawah



IRS P6 LISS-III post monsoon data (2006)

7.1.32 Auraiya

The Auraiya district is situated in southwestern part of U.P., between 26° 21’ and 27° 01’ N latitude and 78° 45’ and 79° 45’ E longitude. It is bounded on the north by the districts of Kannauj, western border adjoins tehsil Bharthana of the Etawah district and the district of Gwalior. The eastern frontier marches with the district of Kanpur Dehat, and along the south lie Jalaun. Total Population is 1179993. May is generally the hottest month with the mean daily maximum temperature at about 42 °C and the mean daily minimum at about 26 °C. January is usually the coldest month with the mean daily maximum temperature about 23^0C and the mean daily minimum temperature at about 8^0C. The average annual rainfall in the district is 792 mm.

The total wetland area in the district is 7148 ha. Rivers/streams occupy 41.23 per cent share. Other major wetland types of the district are waterlogged areas. There are 252 sites of natural waterlogged with 1203 ha area accounting for 16.83 per cent of total wetlands and 48 man made waterlogged areas with 1050 ha area accounting 14.69 per cent. There are 1506 small wetlands (<2.25 ha) identified and delineated as point feature. Wetland area estimates of the district are summarized in table 37.

Area under aquatic vegetation in pre-monsoon season is 200 ha and covered an area of 3067 ha in post - monsoon season. Water spread area in post-monsoon season is 4059 ha and in pre-monsoon it is 3015 ha. Moderate turbidity and low turbidity of open water prevailed during post and pre monsoon season respectively.

Table 37: Area estimates of wetlands in Auraiya

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	8	155	2.17	102	32
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	10	79	1.11	53	0
5	1105	Waterlogged	252	1203	16.83	652	61
6	1106	River/Stream	35	2947	41.23	2423	2596
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	35	208	2.91	117	291
9	1203	Waterlogged	48	1050	14.69	712	35
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**388**	**5642**	**78.93**	**4059**	**3015**
		Wetlands (<2.25 ha), mainly Tanks	1506	1506	21.07	-	-
		Total	**1894**	**7148**	**100.00**	**4059**	**3015**

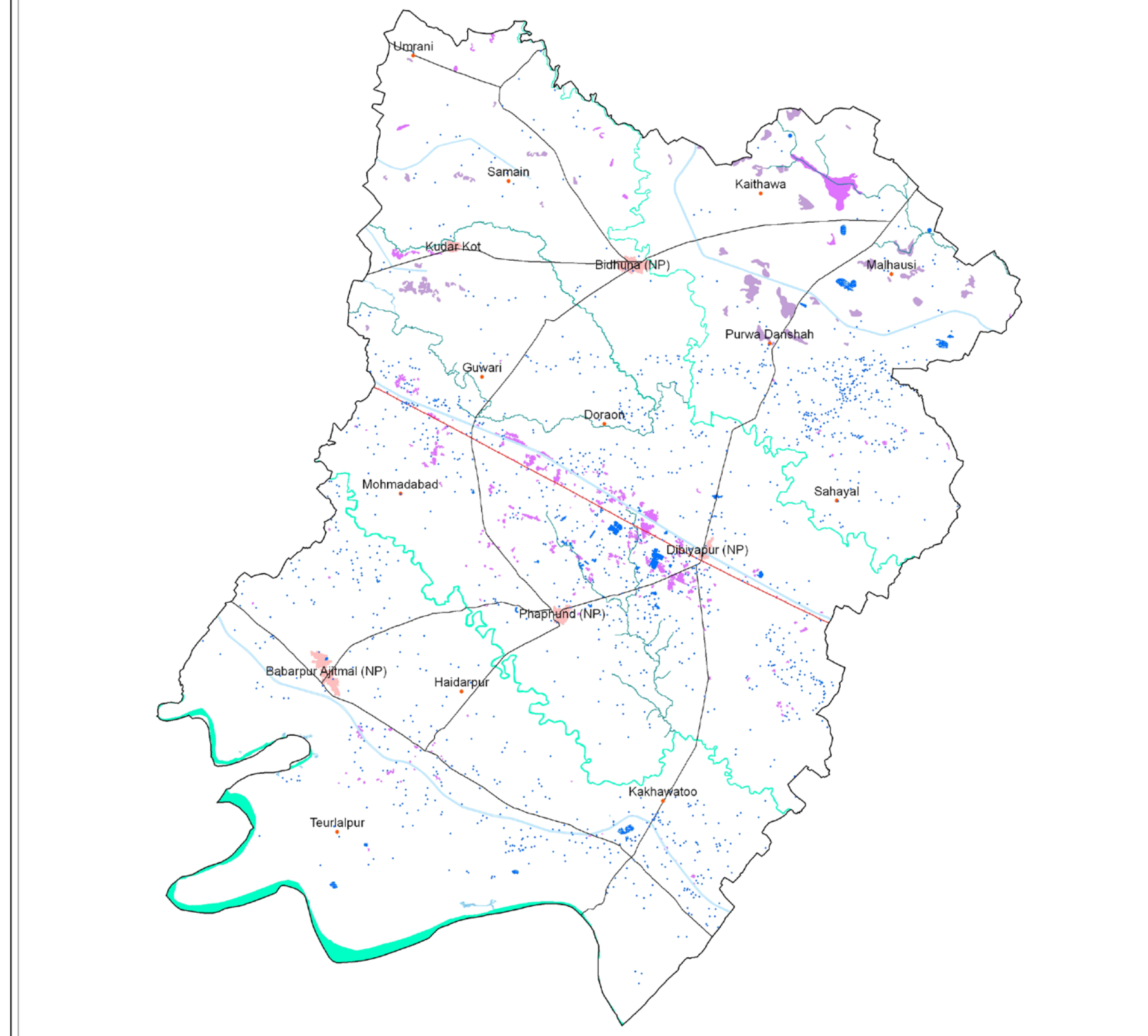
Area under Aquatic Vegetation	939	200

Area under turbidity levels		
Low	1091	1681
Moderate	2930	55
High	38	1279

State : Uttar Pradesh

WETLAND MAP

District : Auraiya

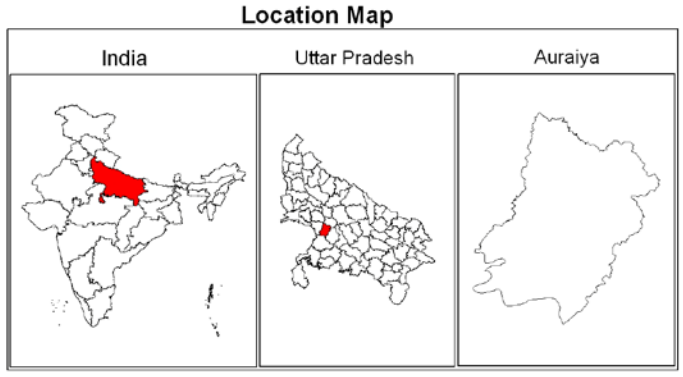


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 2.5 5 10 15 20 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

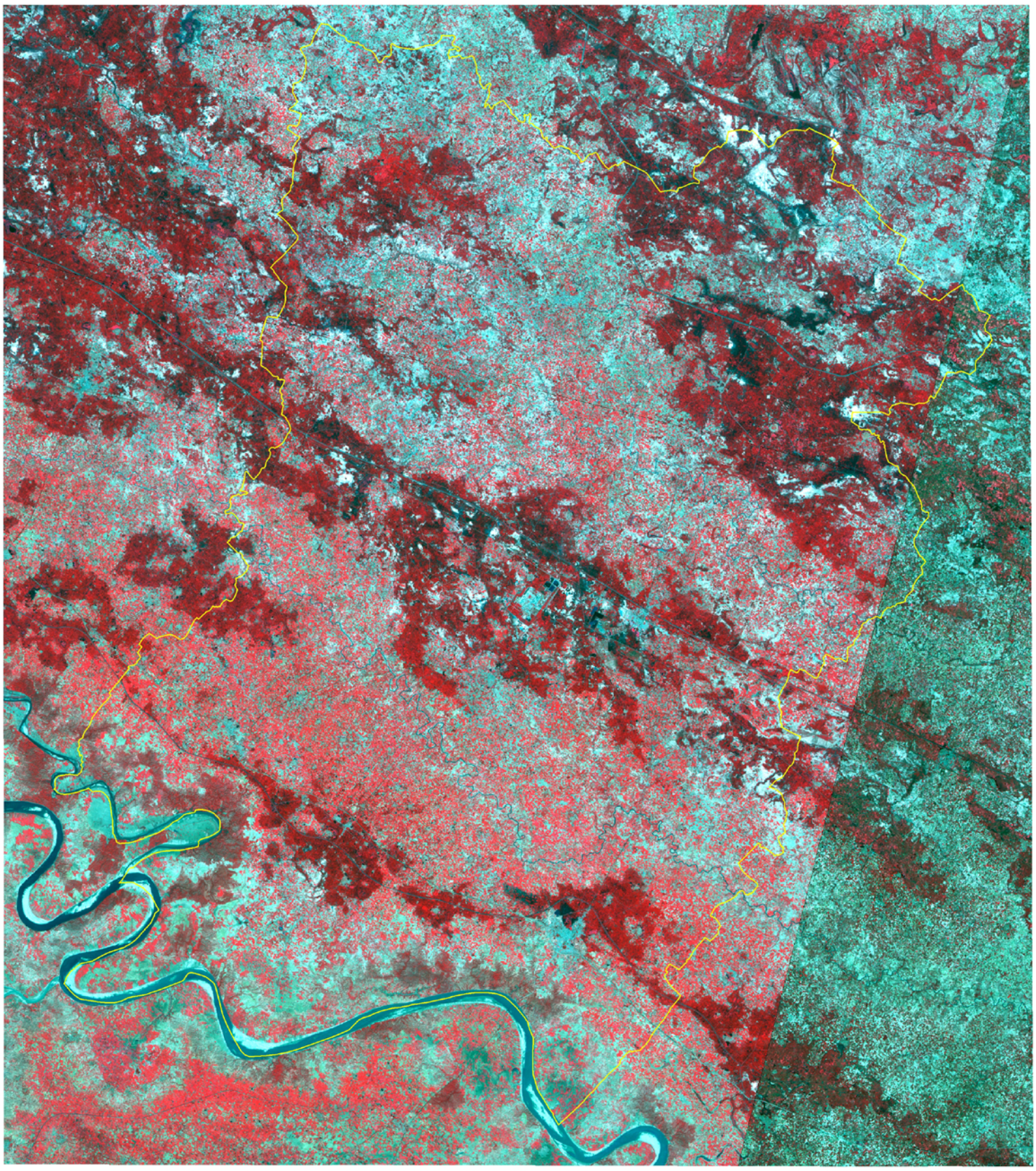
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Government of India

State : Uttar Pradesh

District : Auraiya



IRS P6 LISS-III post monsoon data (2006)

7.1.33 Kanpur Dehat

The district is surrounded by Kanpur-Nagar, Hamirpur, Jalaun, Etawah, Kannauj on different sides. River Yamuna divides Kanpur-Dehat from district Jalaun. The district headquarter is Akbarpur, located at 26°22′ to 26.38°N latitude and 79°57′ to 79.95°E longitude. It has an average elevation of 133 metres. As per 2001 census, the district has a population of 1563336. It has 5 tehsils, 10 blocks and 1032 villages. Average maximum and minimum temperatures are 47.8^{o} C and 4.0^{o}C respectively. Average rainfall is 940 mm.

The total wetland area in the district is 11603 ha. Major wetland types of the district are River/Stream, Lakes/ponds and waterlogged areas. There are 36 Lakes/ponds with 883 ha area (7.6%). There are 96 natural waterlogged areas and 93 man-made waterlogged areas accounting for 9.3 and 12.2 per cent area respectively. In addition, 1852 small wetlands (<2.25 ha) identified and demarcated as point feature. Area estimates of the district are summarized in table 38.

Area under aquatic vegetation in pre-monsoon season is 2554 ha during post-monsoon season while in pre-monsoon season 892 ha. Water spread area in post-monsoon season is 5336 ha and in pre-monsoon it is reduced to 4367 ha. Moderate to low turbidity of open water prevailed in both the seasons.

Table 38: Area estimates of wetlands in Kanpur Dehat

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	36	883	7.61	278	256
2	1102	Ox-bow lakes/ Cut-off meanders	7	180	1.55	11	2
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	9	19	0.16	6	6
5	1105	Waterlogged	96	1082	9.33	87	187
6	1106	River/Stream	58	5380	46.37	3712	3545
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	2	6	0.05	3	2
8	1202	Tanks/Ponds	160	781	6.73	225	221
9	1203	Waterlogged	93	1420	12.24	1014	148
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**461**	**9751**	**84.04**	**5336**	**4367**
		Wetlands (<2.25 ha), mainly Tanks	1852	1852	15.96	-	-
		Total	**2313**	**11603**	**100.00**	**5336**	**4367**

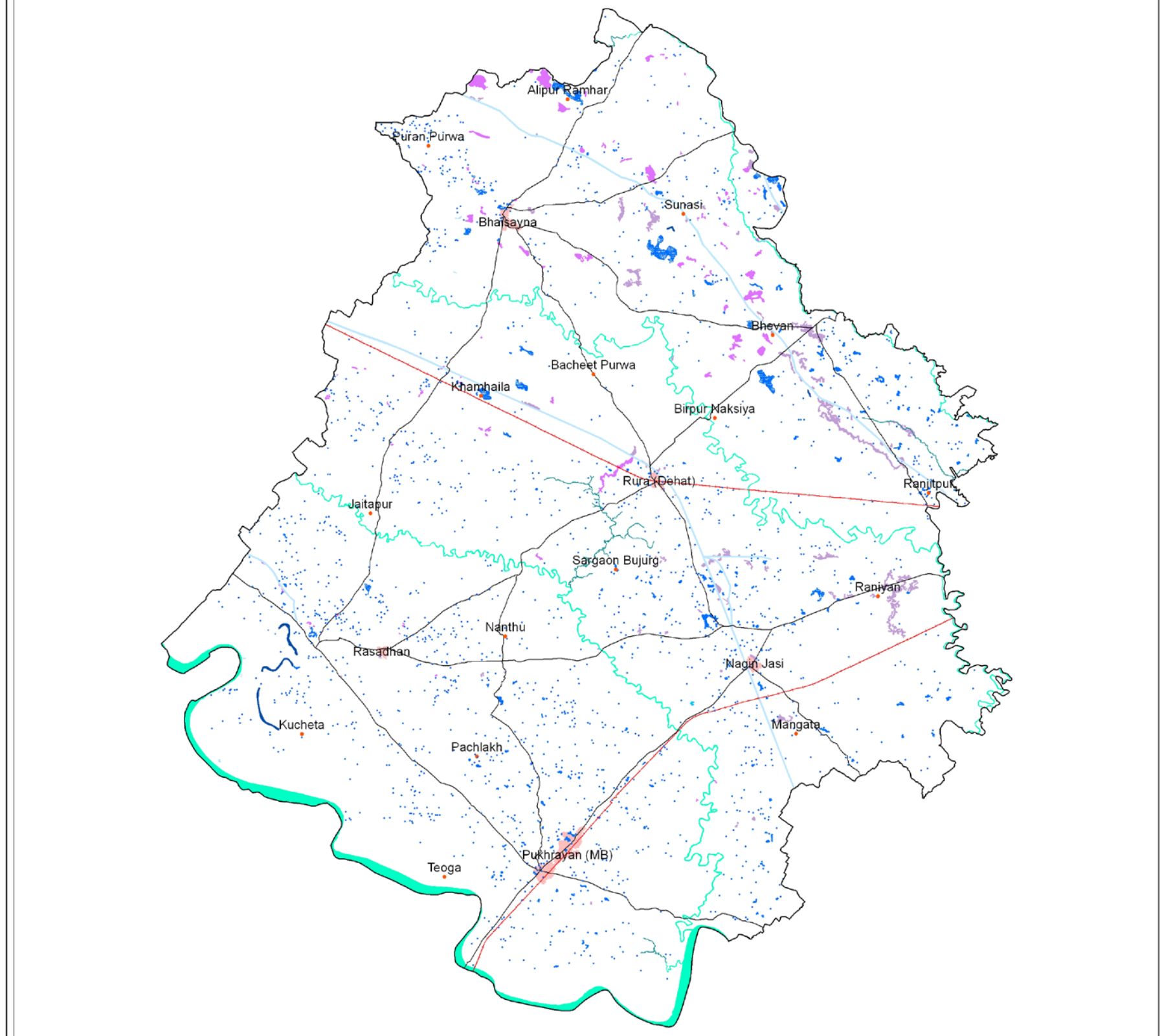
Area under Aquatic Vegetation	2554	892

Area under turbidity levels		
Low	1460	2052
Moderate	3821	750
High	55	1565

State : Uttar Pradesh

WETLAND MAP

District : Kanpur Dehat

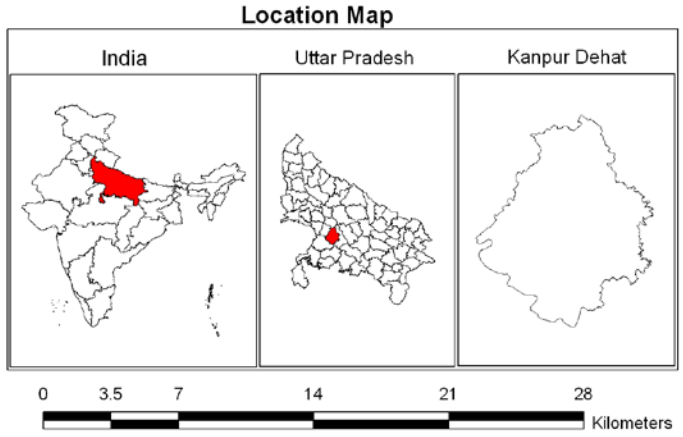


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

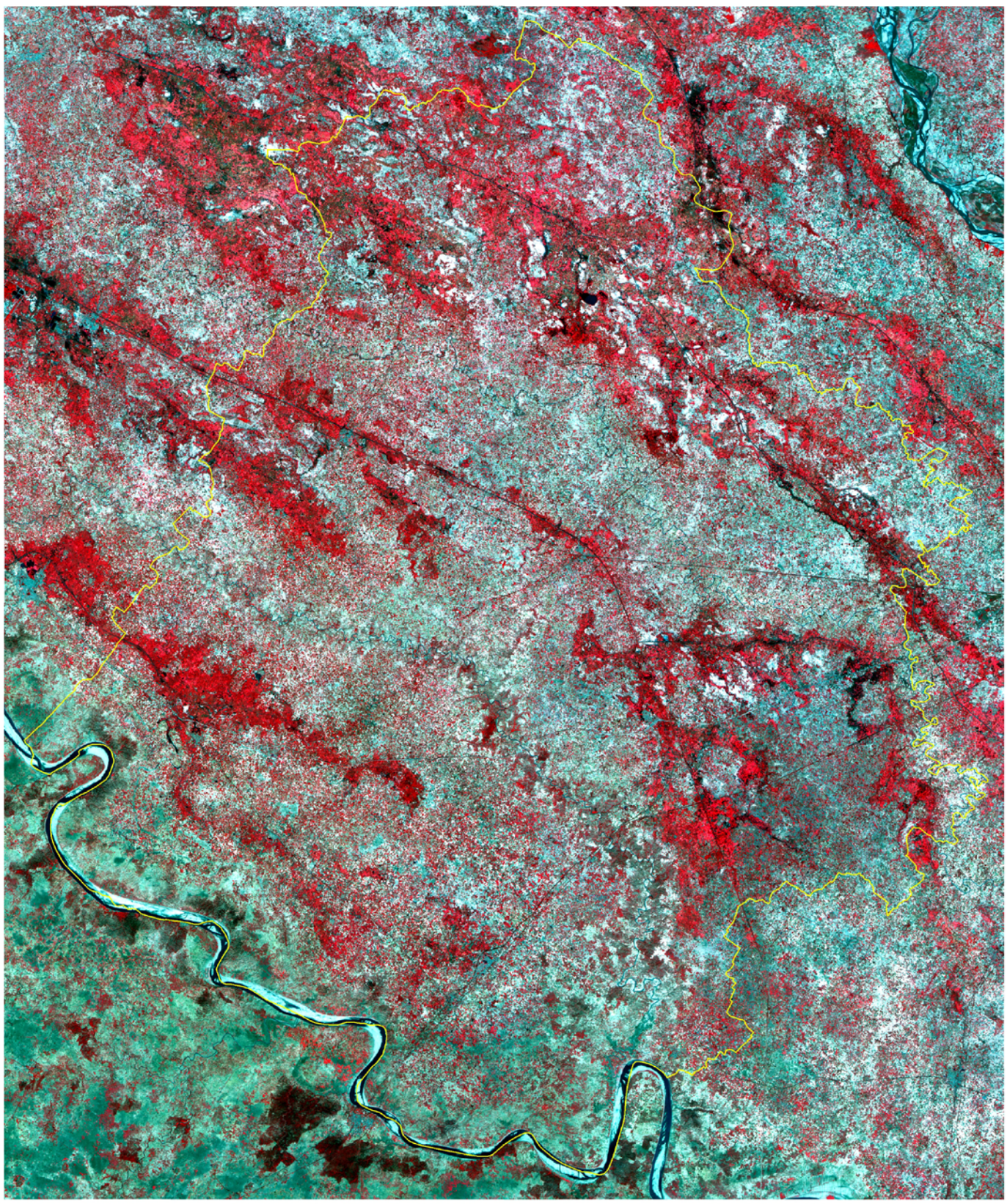
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Government of India

State : Uttar Pradesh

District : Kanpur Dehat



IRS P6 LISS-III post monsoon data (2006)

7.1.34 Kanpur Nagar

The city's coordinates are 26.47° N latitude and 80.35° E longitude. Kanpur is situated on the banks of the river Ganga. The districts surrounding Kanpur are Hamirpur in the south and Unnao in the north-east. As per 2001 census, the district has a population of 4167999. It has 3 tehsils, 10 blocks. Average maximum and minimum temperatures are 48.0^{o} C and 1.0^{o}C respectively.

The total wetland area in the district is 14770 ha. Major wetland types of the district are river/stream with 75.0 per cent share. The other major types are man made wetlands viz. Tanks/pond and waterlogged. There are 129 Tanks with 853 ha area (5.78%). There are 1189 small wetlands (<2.25 ha) identified. Wetland area estimates of the district are summarized in table 39.

Area under aquatic vegetation in pre-monsoon season is 1191 ha during post-monsoon season while in pre-monsoon season 472 ha. Water spread area in post-monsoon season is 7069 ha. Where as in pre-monsoon season the water spread area is 6061 ha. Moderate turbidity is observed in many wetlands during post-monsoon season (6162 ha). Most of the tanks have shown low turbidity, High turbidity is associated with riverine wetlands and accounted an area of 1176 ha during pre-monsoon season.

Table 39: Area estimates of wetlands in Kanpur Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	17	124	0.84	27	19
2	1102	Ox-bow lakes/ Cut-off meanders	5	94	0.64	65	58
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	11	120	0.81	40	52
5	1105	Waterlogged	19	264	1.79	180	35
6	1106	River/Stream	87	11152	75.50	5899	5371
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	129	853	5.78	281	366
9	1203	Waterlogged	70	974	6.59	577	160
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**338**	**13581**	**91.95**	**7069**	**6061**
		Wetlands (<2.25 ha), mainly Tanks	1189	1189	8.05	-	-
		Total	**1527**	**14770**	**100.00**	**7069**	**6061**

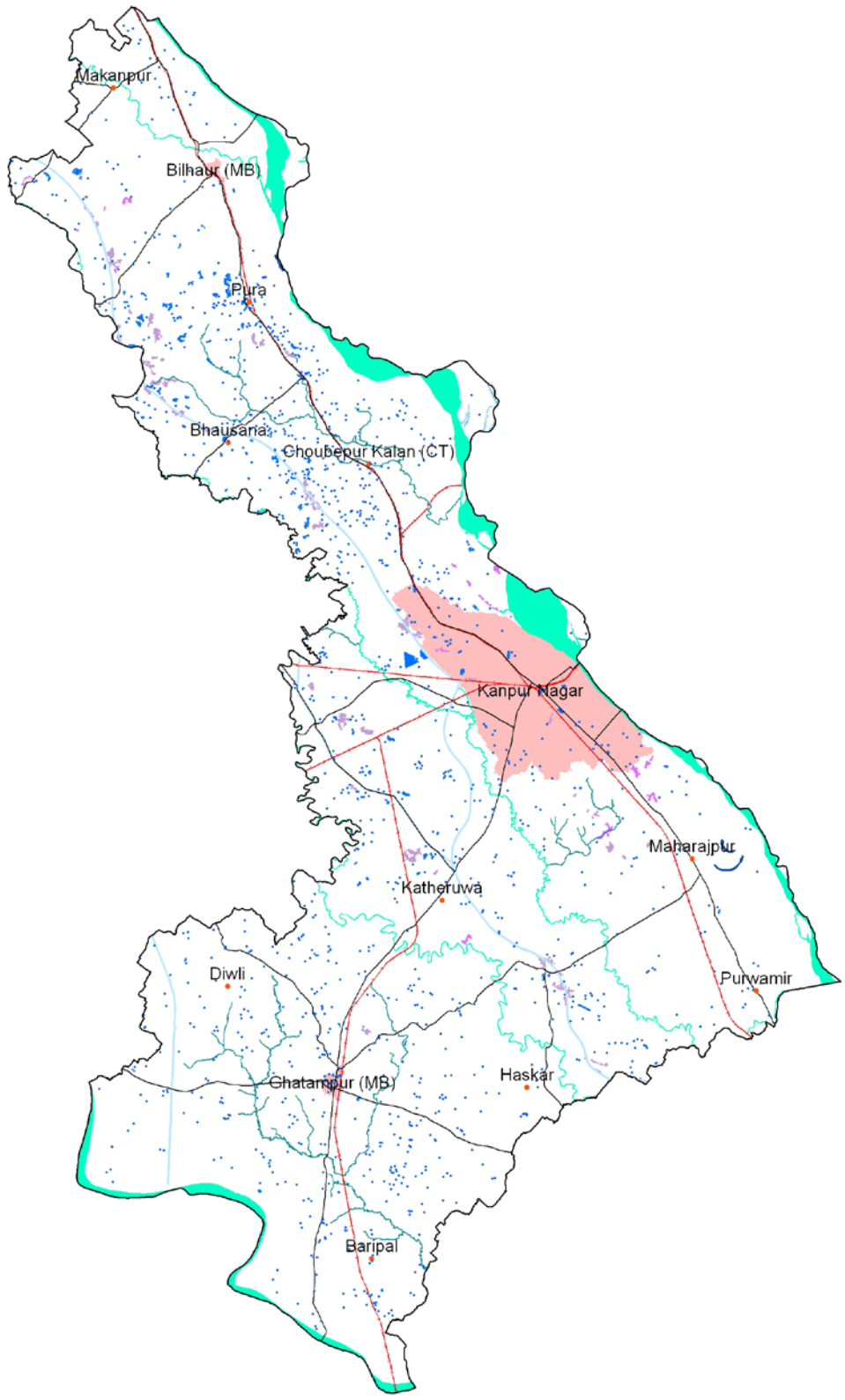
Area under Aquatic Vegetation	1191	472

Area under turbidity levels		
Low	808	739
Moderate	6162	4146
High	99	1176

State : Uttar Pradesh

WETLAND MAP

District : Kanpur Nagar

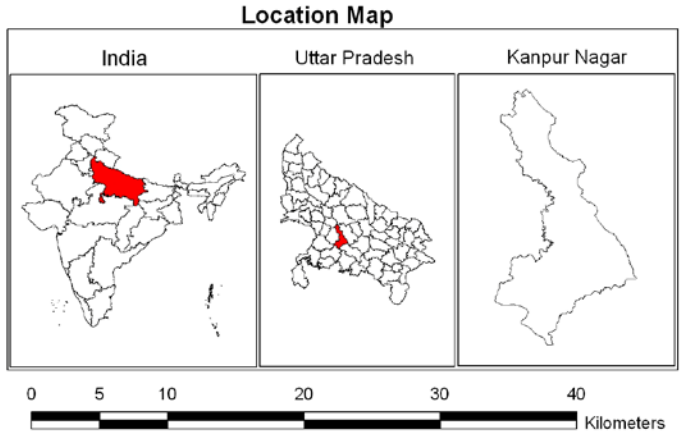


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

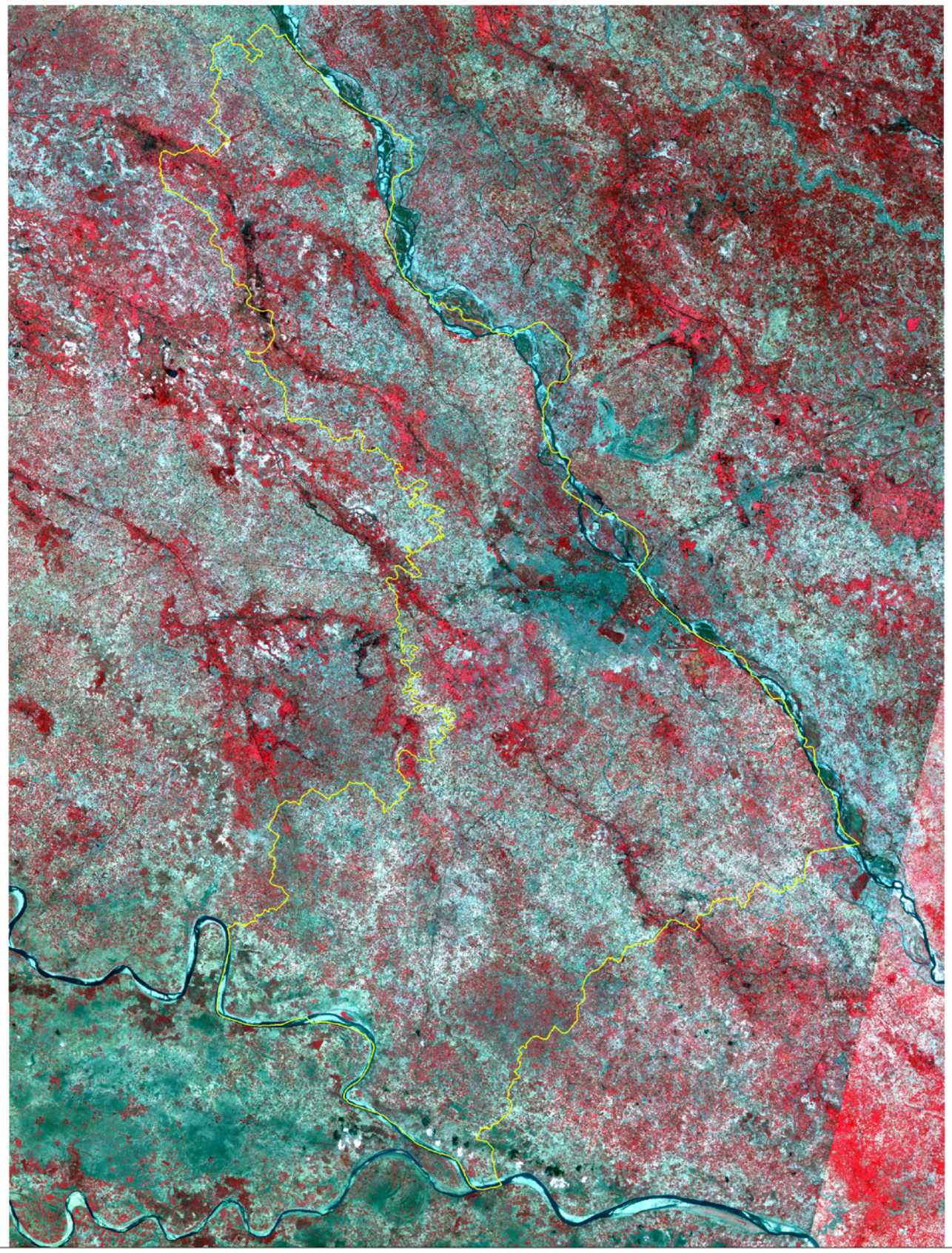
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Government of India

State : Uttar Pradesh

District : Kanpur Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.35 Jalaun

Jalaun district is adjoined by the districts of Etawah and Kanpur in the north across the river Yamuna, while Hamirpur District lies to the east and southeast, Jhansi District lies to the southeast, and Bhind District of Madhya Pradesh lies to the west. Jalaun district has its headquarters at Orai town, located at 25°59′ to 25.98°N latitude and 79°28′ to 79.47°E longitude. It has an average elevation of 131 metres As per 2001 census, the district has a population of 1454452.

The total wetland area in the district is 12719 ha. Major wetland types of the district are river/stream, tanks/ponds and waterlogged areas. There are 89 tanks/ponds, 214 natural waterlogged areas and accounts for 346 ha, 490 ha respectively There are 1411 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 40.

Area under aquatic vegetation in pre-monsoon season is 203 ha during post-monsoon season while in pre-monsoon season it reduced to 94 ha. Not much variation is observed in open water area, which varied from 7286 ha in post-monsoon season to 6375 ha in pre-monsoon season. Low and moderate turbidity is observed in many wetlands during post-monsoon season. Most of the tanks have shown low turbidity.

Table 40: Area estimates of wetlands in Jalaun

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	6	39	0.31	10	3
2	1102	Ox-bow lakes/ Cut-off meanders	1	208	1.64	208	0
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	15	59	0.46	30	3
5	1105	Waterlogged	214	490	3.85	292	25
6	1106	River/Stream	51	10161	79.89	6527	6299
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	89	346	2.72	216	45
9	1203	Waterlogged	2	5	0.04	3	0
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**378**	**11308**	**88.91**	**7286**	**6375**
		Wetlands (<2.25 ha), mainly Tanks	1411	1411	11.09	-	-
		Total	**1789**	**12719**	**100.00**	**7286**	**6375**

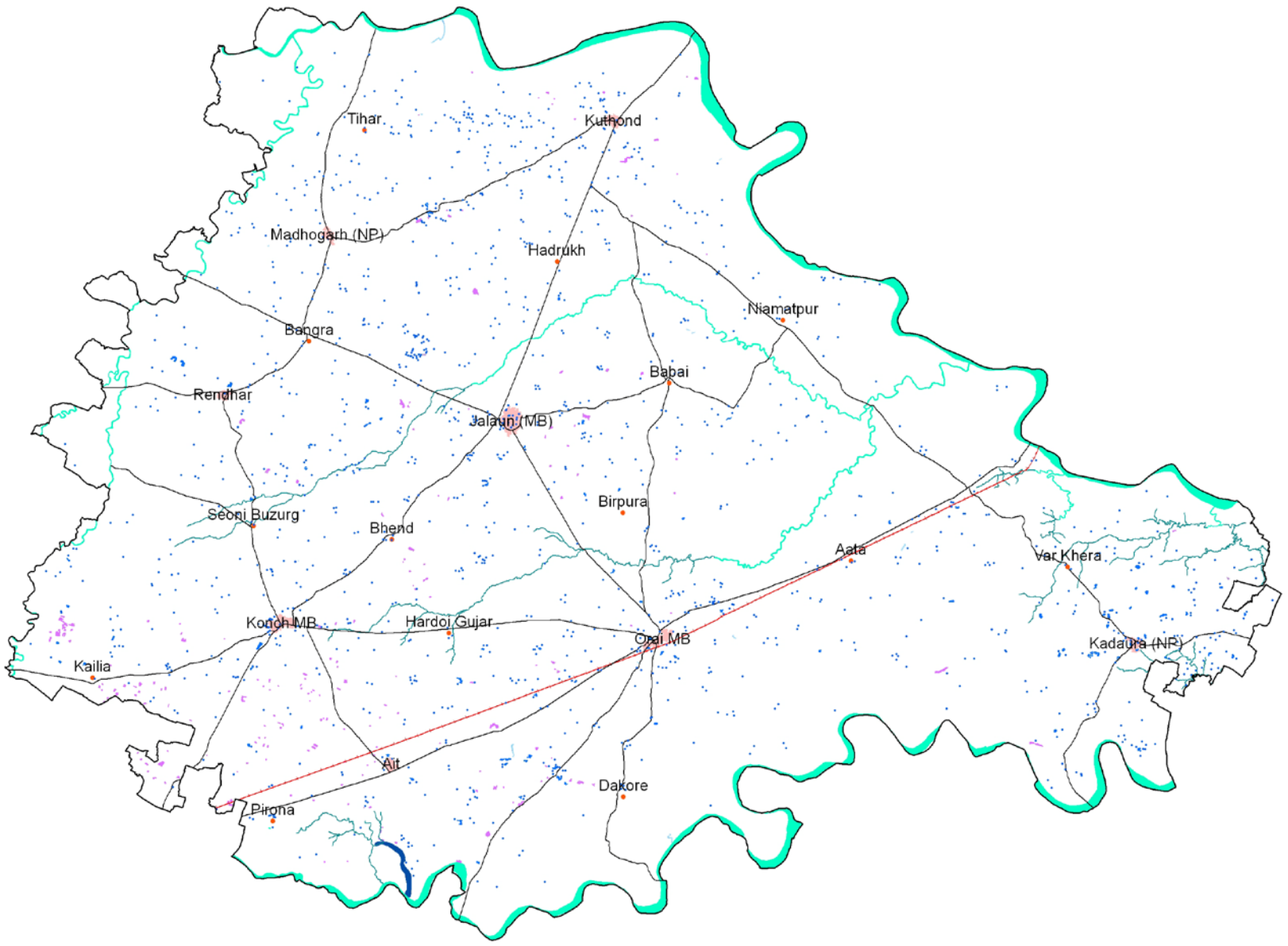
Area under Aquatic Vegetation	203	94

Area under turbidity levels		
Low	3974	3596
Moderate	3033	60
High	279	2719

State : Uttar Pradesh

WETLAND MAP

District : Jalaun

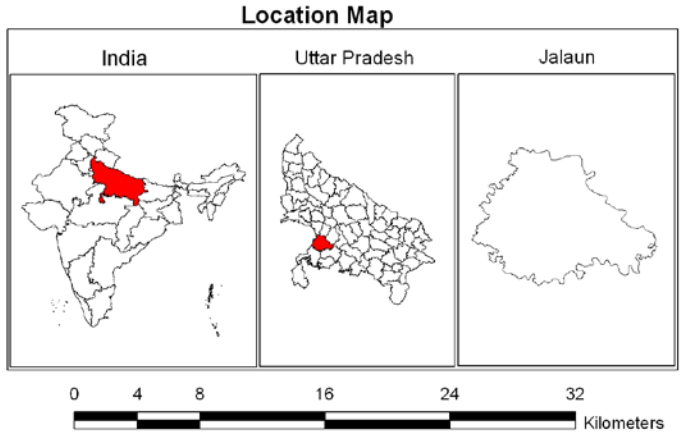


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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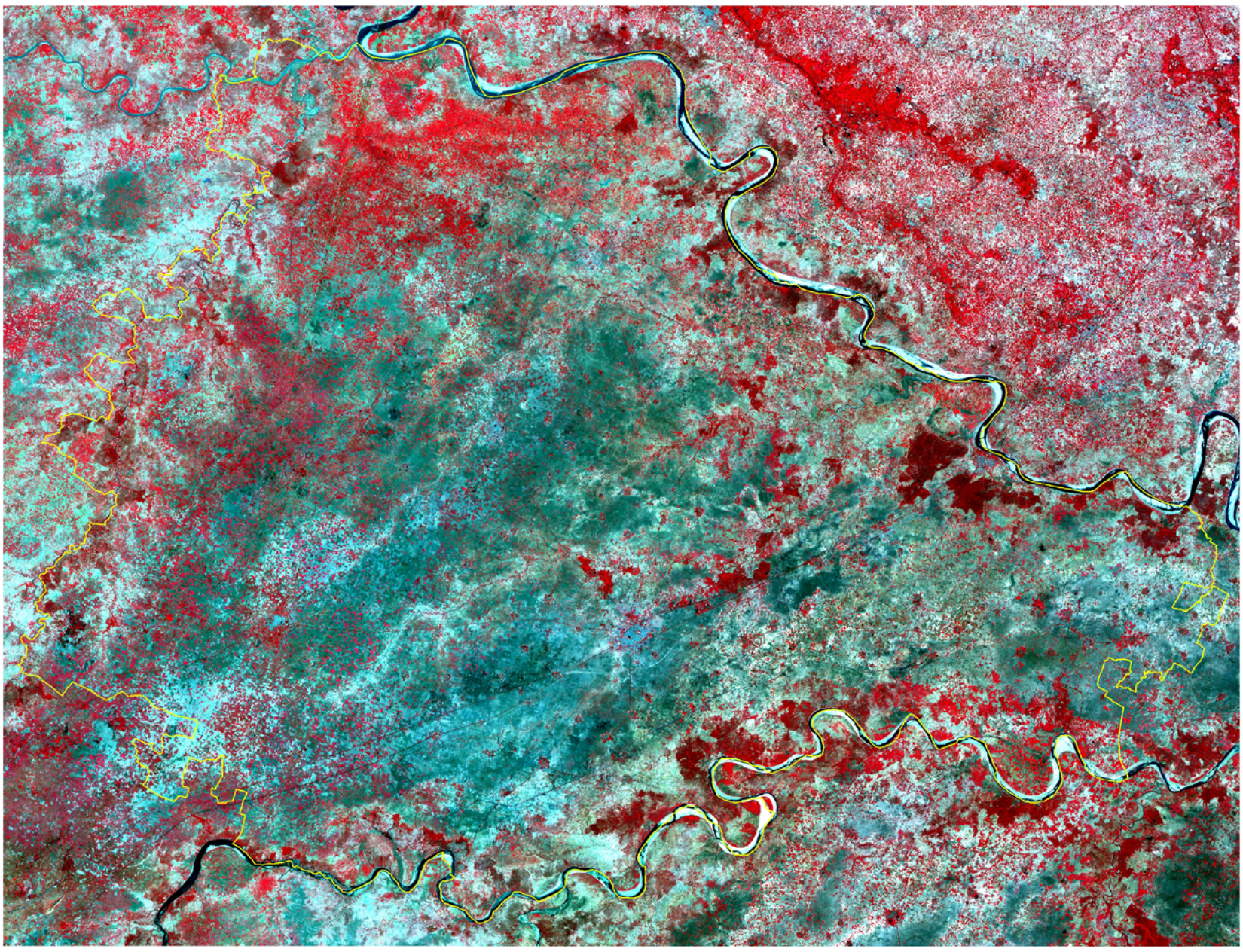
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Government of India

State : Uttar Pradesh

District : Jalaun



IRS P6 LISS-III post monsoon data (2006)

7.1.36 Jhansi

Jhansi is located at 25.43°N latitude and 78.58°E longitude. It has an average elevation of 284 metres. Jhansi city, the district headquarters, is situated between the rivers Pahunj and Betwa. The district is bordered on the north by Jalaun District, on the east by Hamirpur and Mahoba districts, on the south by Tikamgarh District of Madhya Pradesh state, on the southwest by Lalitpur District and on the east by the Datia and Bhind districts of Madhya Pradesh state. Being on a rocky plateau, Jhansi experiences extreme temperatures. Winter begins in October and peaks in mid-December with 4 degrees minimum and 21 degrees maximum temperature. Summer begins by April and temperatures can peak at 47 degrees in May. The rainy season starts by the third week of June. Average annual rainfall for this city is about 900 mm. As per 2001 census, the district has a population of 1744931. It has 5 tehsils, 8 blocks and 839 villages.

The total wetland area in the district is 15711 ha. Major wetland types of the district are river/stream, Reservoirs/barrages and tanks/ponds. There are 446 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 41.

Area under aquatic vegetation in pre-monsoon season is 2271 ha during post-monsoon season while in pre-monsoon season it reduced to 1144 ha. Water spread area in post-monsoon season is 9321 ha and in pre-monsoon season it is 7295 ha. Low turbidity is observed in most of the wetlands.

Table 41: Area estimates of wetlands in Jhansi

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	9	356	2.27	202	143
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	45	339	2.16	185	52
5	1105	Waterlogged	158	389	2.48	239	11
6	1106	River/Stream	77	10725	68.26	7197	6239
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	6	2059	13.11	864	450
8	1202	Tanks/Ponds	87	1397	8.89	634	400
9	1203	Waterlogged	-	-	-	-	-
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**382**	**15265**	**97.16**	**9321**	**7295**
		Wetlands (<2.25 ha), mainly Tanks	446	446	2.84	-	-
		Total	**828**	**15711**	**100.00**	**9321**	**7295**

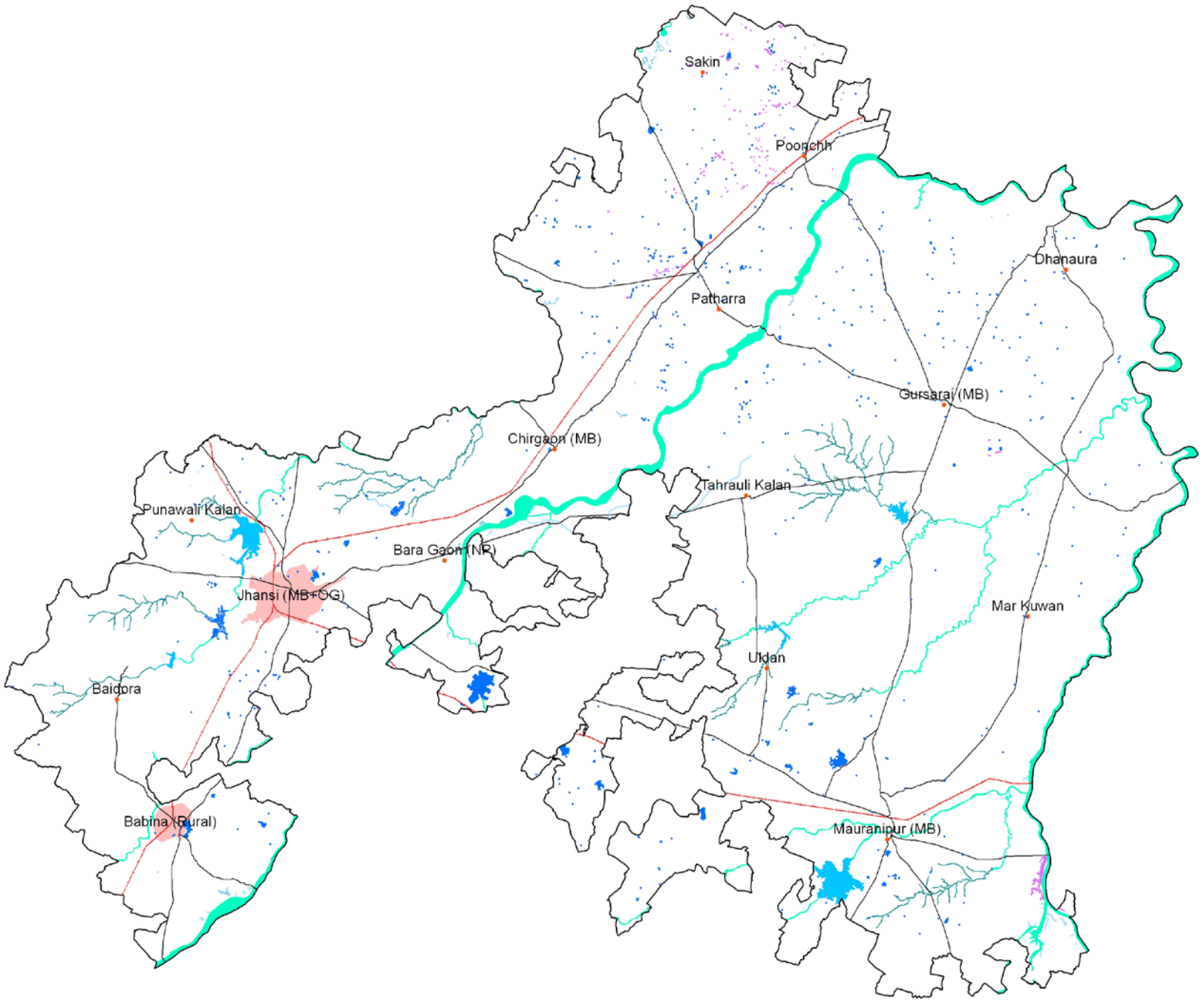
Area under Aquatic Vegetation	2271	1144

Area under turbidity levels		
Low	8147	6190
Moderate	937	953
High	237	152

State : Uttar Pradesh

WETLAND MAP

District : Jhansi

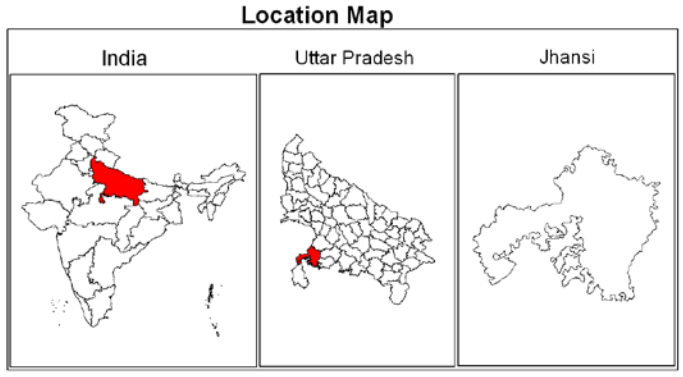


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4.5 9 18 27 36 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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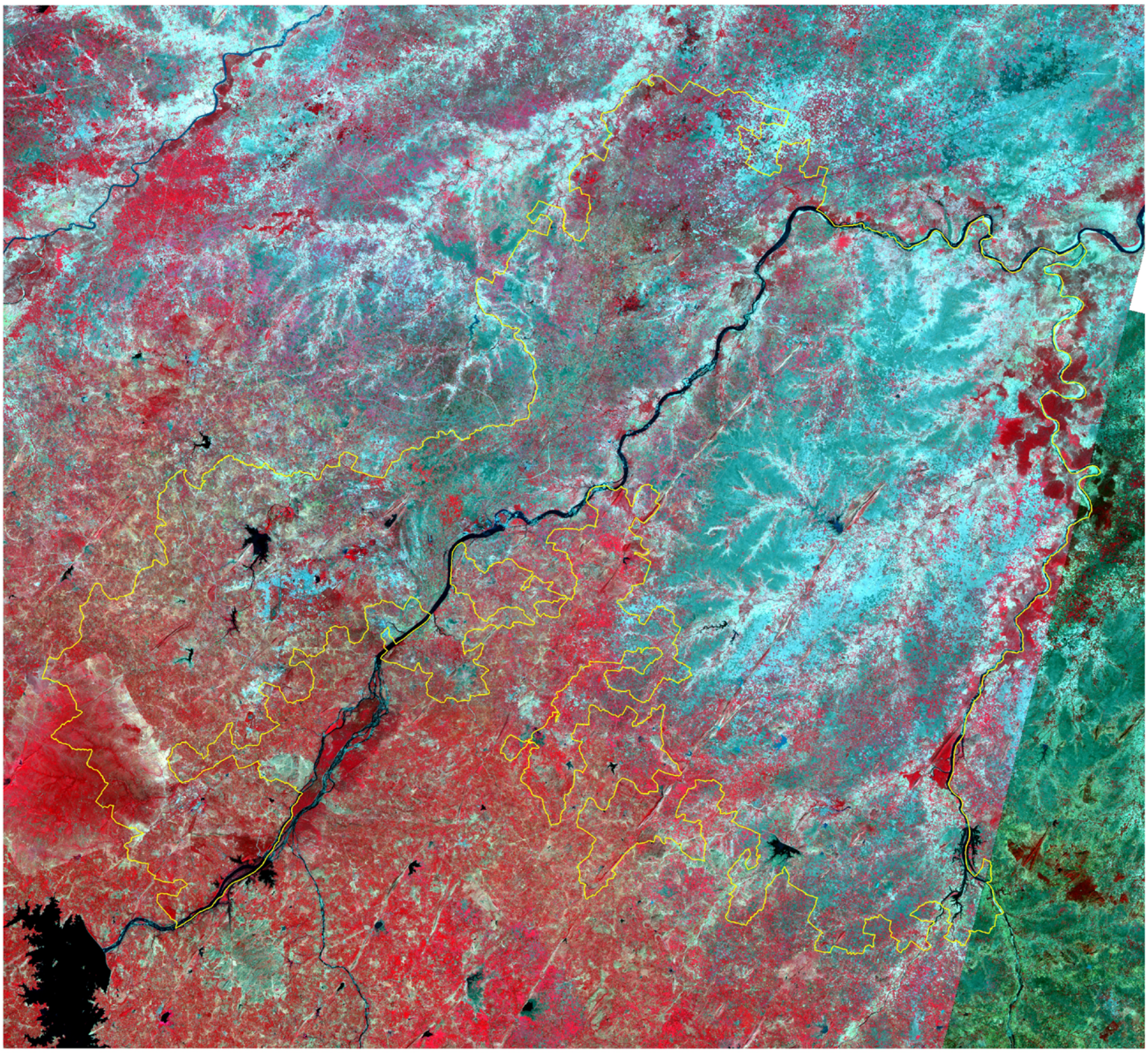
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Government of India

State : Uttar Pradesh

District : Jhansi



IRS P6 LISS-III post monsoon data (2006)

7.1.37 Lalitpur

Lalitpur is located at 24°41′ to 24.68°N latitude and 78°25′ to 78.42°E longitude. It has an average elevation of 428 metres. It is bounded By District Jhansi in the North, District Sagar in the South, Tikamgarh and Chhatarpur Districts in the East and Shivpuri and Guna Districts in the West. As per 2001 census, the district has a population of 977734. It has 3 tehsils, 6 blocks and 754 villages. Average maximum and minimum temperatures are 46.0^{o} C and 4.0^{o}C respectively. Average rainfall is 1044 mm.

The total wetland area in the district is 34119 ha. Major wetland types of the district are reservoir/barrages. There are 14 in number with 23221 ha area and accounting for 68.06 per cent of total wetland area of the district. Other major wetland types are: River/stream (15.3%), Tanks/pond (7.4%). There are 1127 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 42.

Area under aquatic vegetation in pre-monsoon season is 1261 ha during post-monsoon season while in pre-monsoon season it reduced to 671 ha. Water spread area in post-monsoon season is 28405 ha and in pre-monsoon season it is 12657 ha. Low turbidity of water is observed during both the seasons.

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Table 42: Area estimates of wetlands in Lalitpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	34	1338	3.92	740	305
2	1102	Ox-bow lakes/ Cut-off meanders	3	30	0.09	5	0
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	60	368	1.08	317	132
5	1105	Waterlogged	83	275	0.81	213	24
6	1106	River/Stream	38	5225	15.31	1908	1717
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	14	23221	68.06	23149	10137
8	1202	Tanks/Ponds	371	2535	7.43	2073	342
9	1203	Waterlogged	-	-	-	-	-
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**603**	**32992**	**96.70**	**28405**	**12657**
		Wetlands (<2.25 ha), mainly Tanks	1127	1127	3.30	-	-
		Total	**1730**	**34119**	**100.00**	**28405**	**12657**

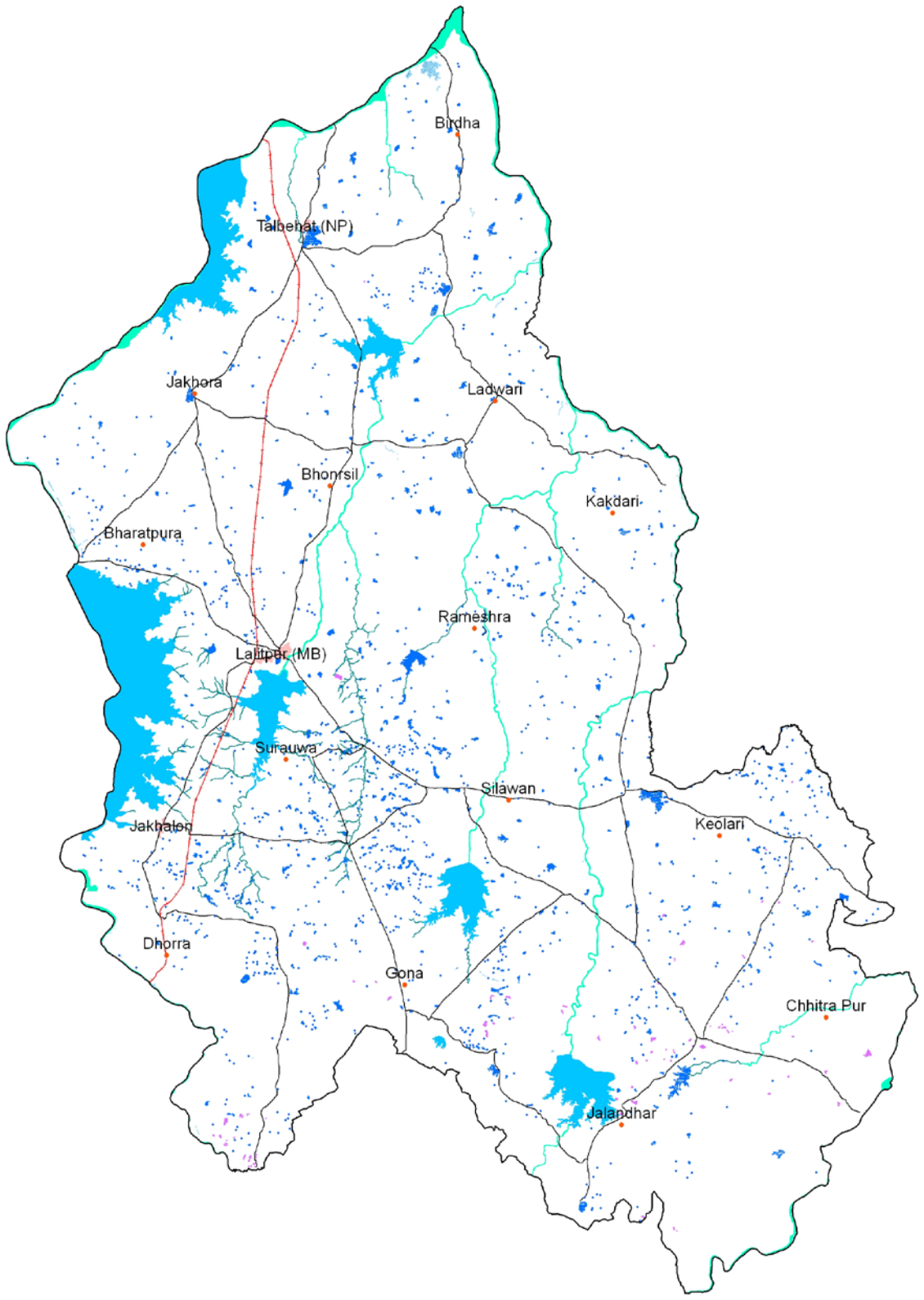
Area under Aquatic Vegetation	1261	671

Area under turbidity levels		
Low	27352	12449
Moderate	620	145
High	433	63

State : Uttar Pradesh

WETLAND MAP

District : Lalitpur

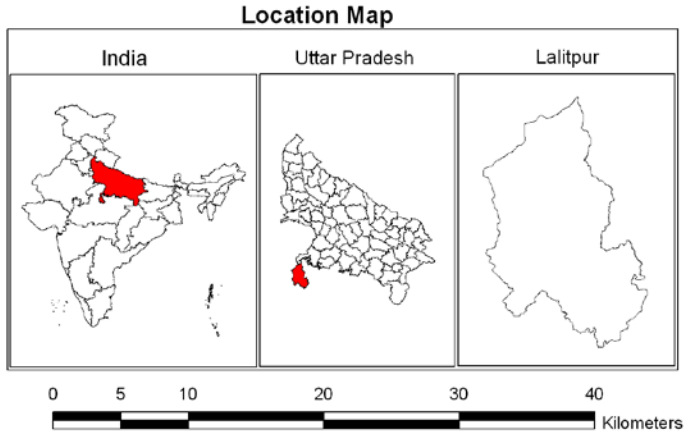


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

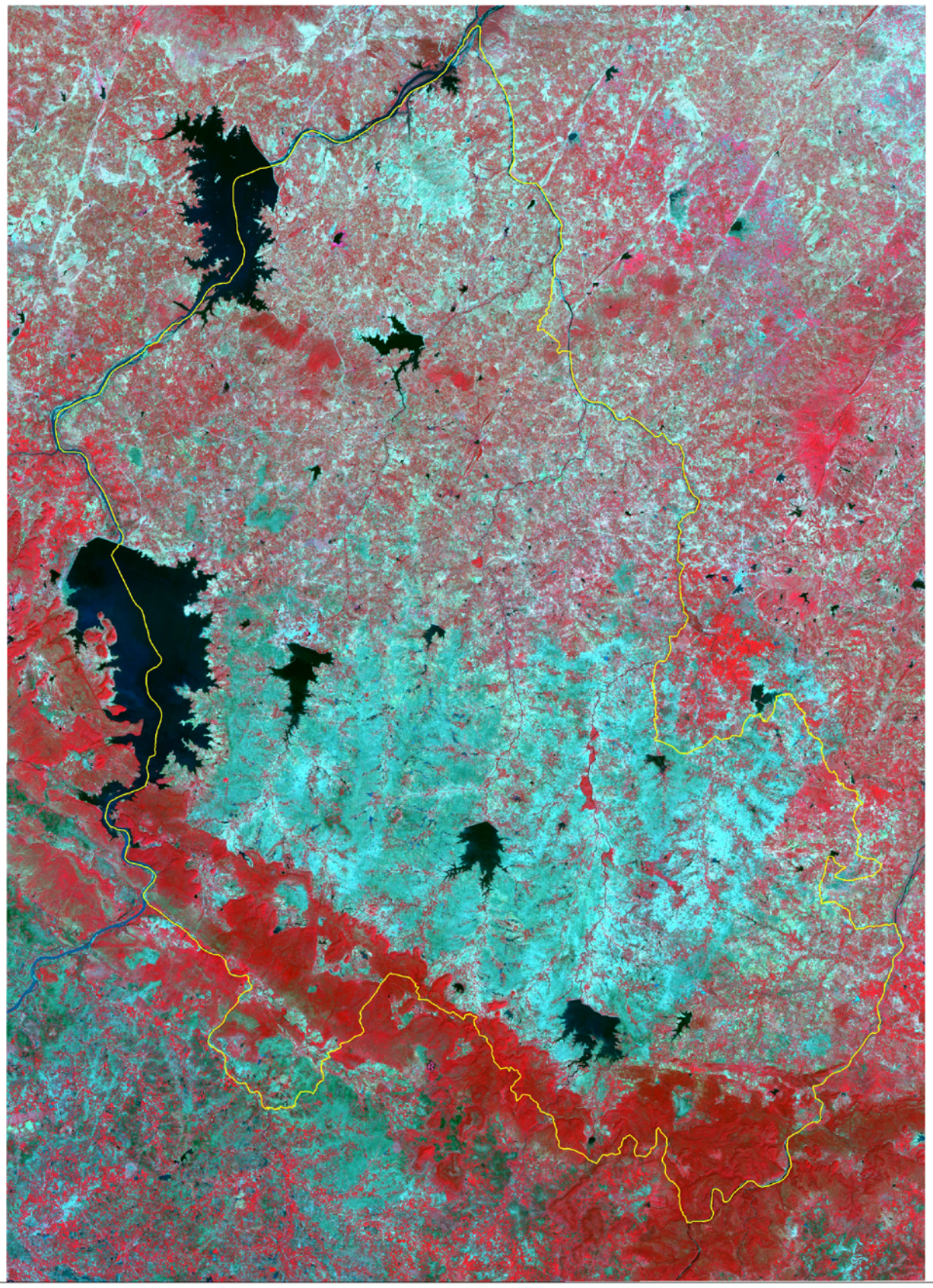
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Lalitpur



IRS P6 LISS-III post monsoon data (2006)

7.1.38 Hamirpur

Hamirpur is located at 25.95°N latitude and 80.15°E longitude. It has an average elevation of 80 metres. The district is bounded by districts Jalaun (Orai), Kanpur and Fatehpur in the North, Banda in the East, Mahoba in South and Districts of Jhansi and Jalaun on the West. As per 2001 census, the district has a population of 1043724. It has 4 tehsils, 7 blocks and 647 villages. Average maximum and minimum temperatures are 43.0^{o} C and 3.0^{o}C respectively.

The total wetland area in the district is 15283 ha. Major wetland types of the district are river/stream and reservoir/barrages and contribute 82 per cent area of the district. There are 3 reservoirs/barrages found in the district with 1336 ha area. There are 229 Tanks/ponds with 851 area (5.57%). In addition, 1373 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 43.

Area under aquatic vegetation in pre-monsoon season is 533 ha during post-monsoon season while in pre-monsoon season it reduced to 259 ha. Water spread area in post-monsoon season is 8726 ha. Where as in pre-monsoon season the water spread area is 7158 ha. Low turbidity is observed in many wetlands during both the seasons. Area estimates are high in low turbidity class (6363 ha during post-monsoon season and 5652 ha during pre-monsoon season).

Table 43: Area estimates of wetlands in Hamirpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	52	403	2.64	233	118
2	1102	Ox-bow lakes/ Cut-off meanders	3	49	0.32	7	2
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	3	4	0.03	0	0
5	1105	Waterlogged	31	118	0.77	84	43
6	1106	River/Stream	63	11083	72.52	6612	6092
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	3	1336	8.74	1335	811
8	1202	Tanks/Ponds	229	851	5.57	417	92
9	1203	Waterlogged	13	66	0.43	38	0
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**397**	**13910**	**91.02**	**8726**	**7158**
		Wetlands (<2.25 ha), mainly Tanks	1373	1373	8.98	-	-
		Total	**1770**	**15283**	**100.00**	**8726**	**7158**

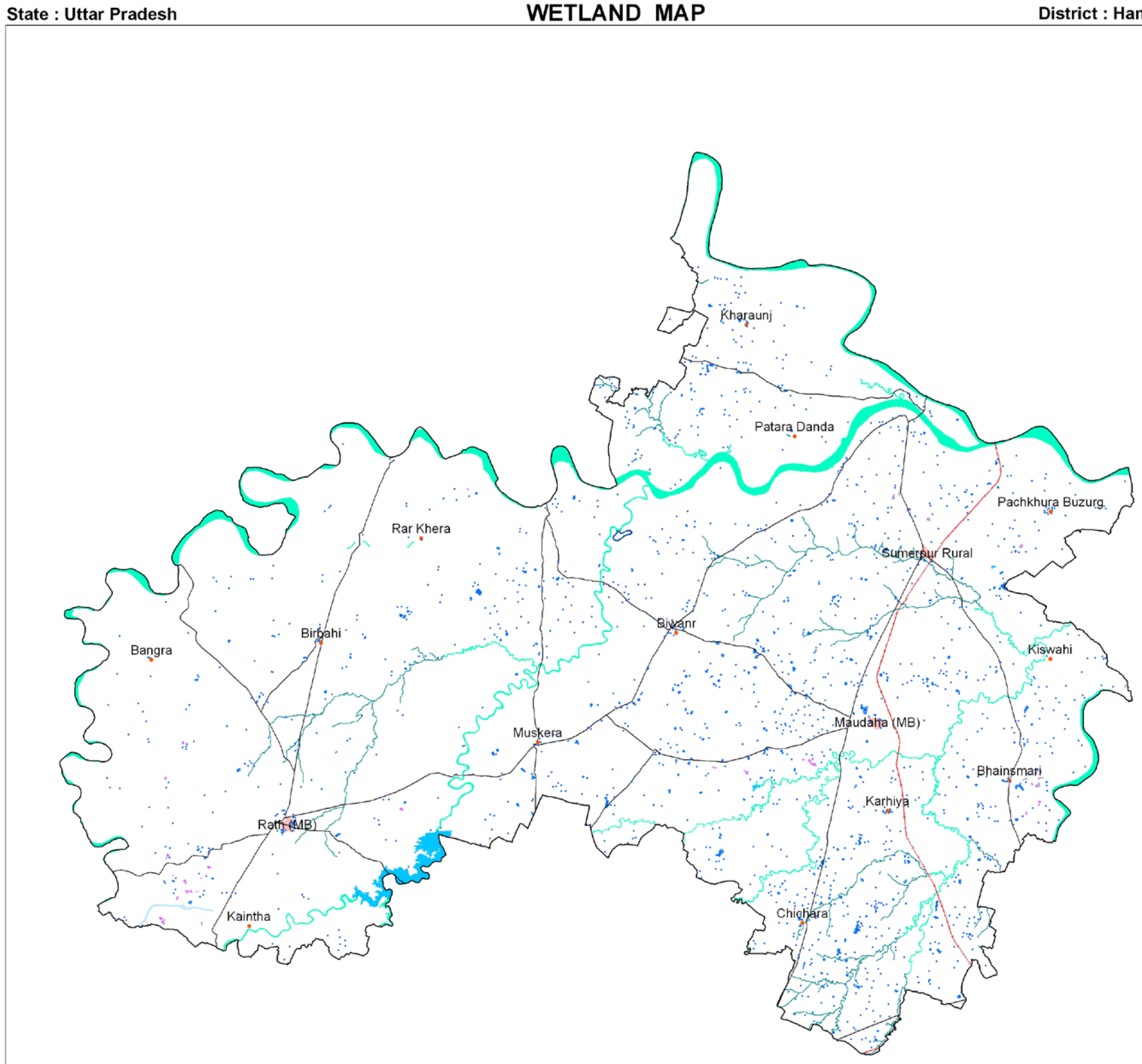
Area under Aquatic Vegetation	533	259

Area under turbidity levels		
Low	6363	5652
Moderate	2342	71
High	21	1435

State : Uttar Pradesh

WETLAND MAP

District : Hamirpur

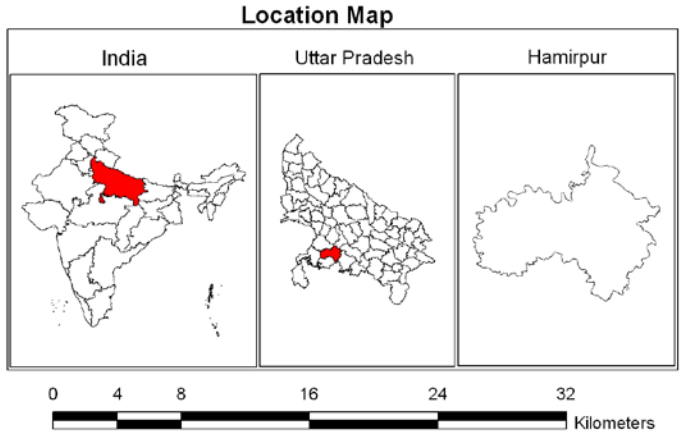


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4 8 16 24 32 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

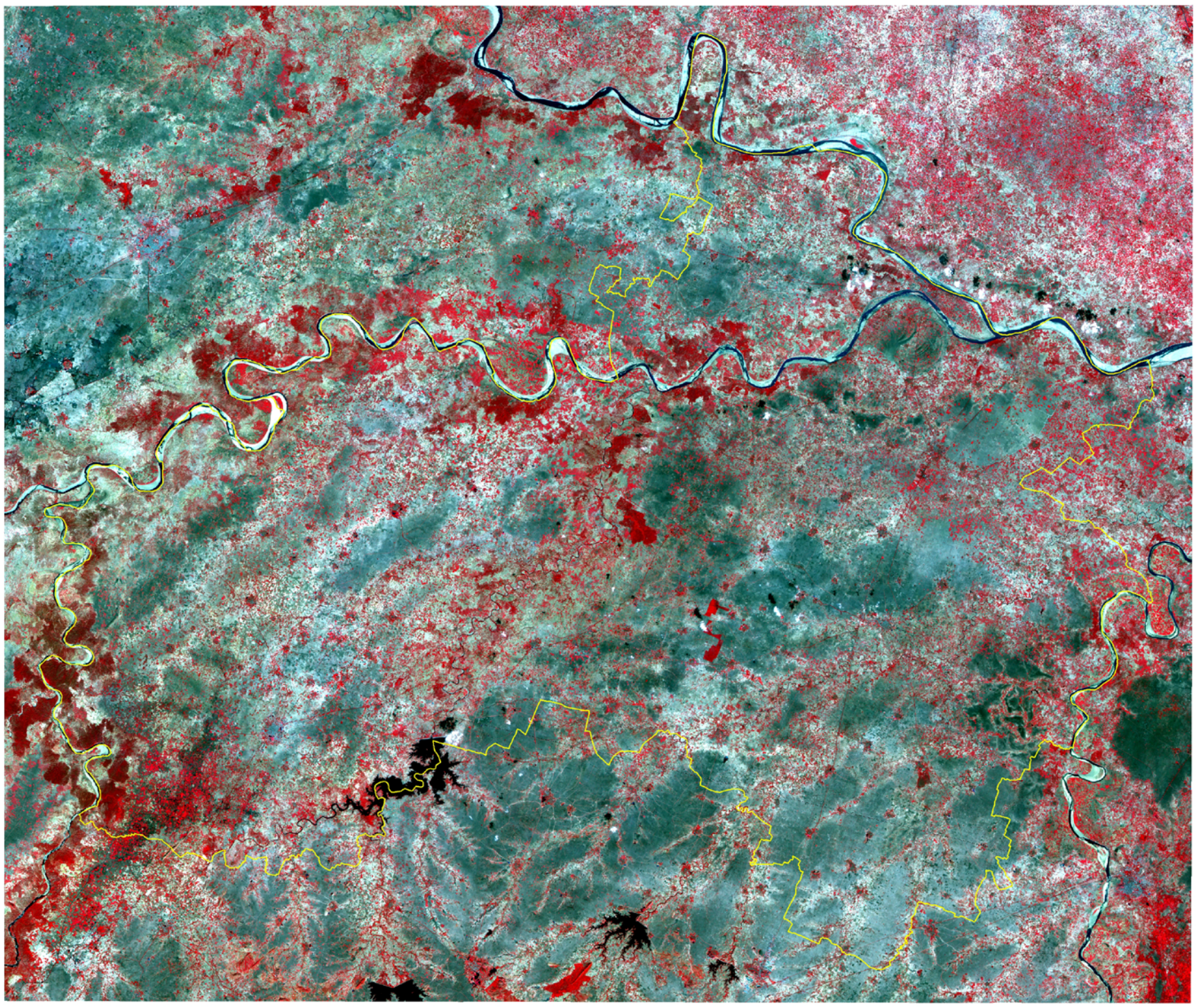
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Hamirpur



IRS P6 LISS-III post monsoon data (2006)

7.1.39 Mahoba

Mahoba is located at 25°17′ to 25.28°N latitude and 79°52′ to 79.87°E longitude. It has an average elevation of 214 metres. Mahoba district is surrounded by Hamiprpur district in the North, Madhya Pradesh state in the South, Banda district in the East and Jhansi district in the West. As per 2001 census, the district has a population of 708447. It has 3 tehsils, 4 blocks and 521 villages.

The total wetland area in the district is 9647 ha. Major wetland types of the district are reservoir/barrages. There are 76 in number with 5257 ha area (54.5%). The other major types are: Lakes/ponds (12.67%), and Rivers/streams (11.5%). There are 846 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 44.

Area under aquatic vegetation in pre-monsoon season is 862 ha during post-monsoon season while in pre-monsoon season it reduced to 785 ha. Water spread area in post-monsoon season is 7781 ha. Where as in pre-monsoon season the water spread area is 5681 ha. Low turbidity is most prevalent class in both the seasons.

Table 44 Area estimates of wetlands in Mahoba

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	33	1222	12.67	933	596
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	16	54	0.56	41	25
5	1105	Waterlogged	26	87	0.90	53	19
6	1106	River/Stream	55	1111	11.52	1012	981
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	76	5257	54.49	4799	3378
8	1202	Tanks/Ponds	114	1065	11.04	939	679
9	1203	Waterlogged	1	5	0.05	4	3
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**321**	**8801**	**91.23**	**7781**	**5681**
		Wetlands (<2.25 ha), mainly Tanks	846	846	8.77	-	-
		Total	**1167**	**9647**	**100.00**	**7781**	**5681**

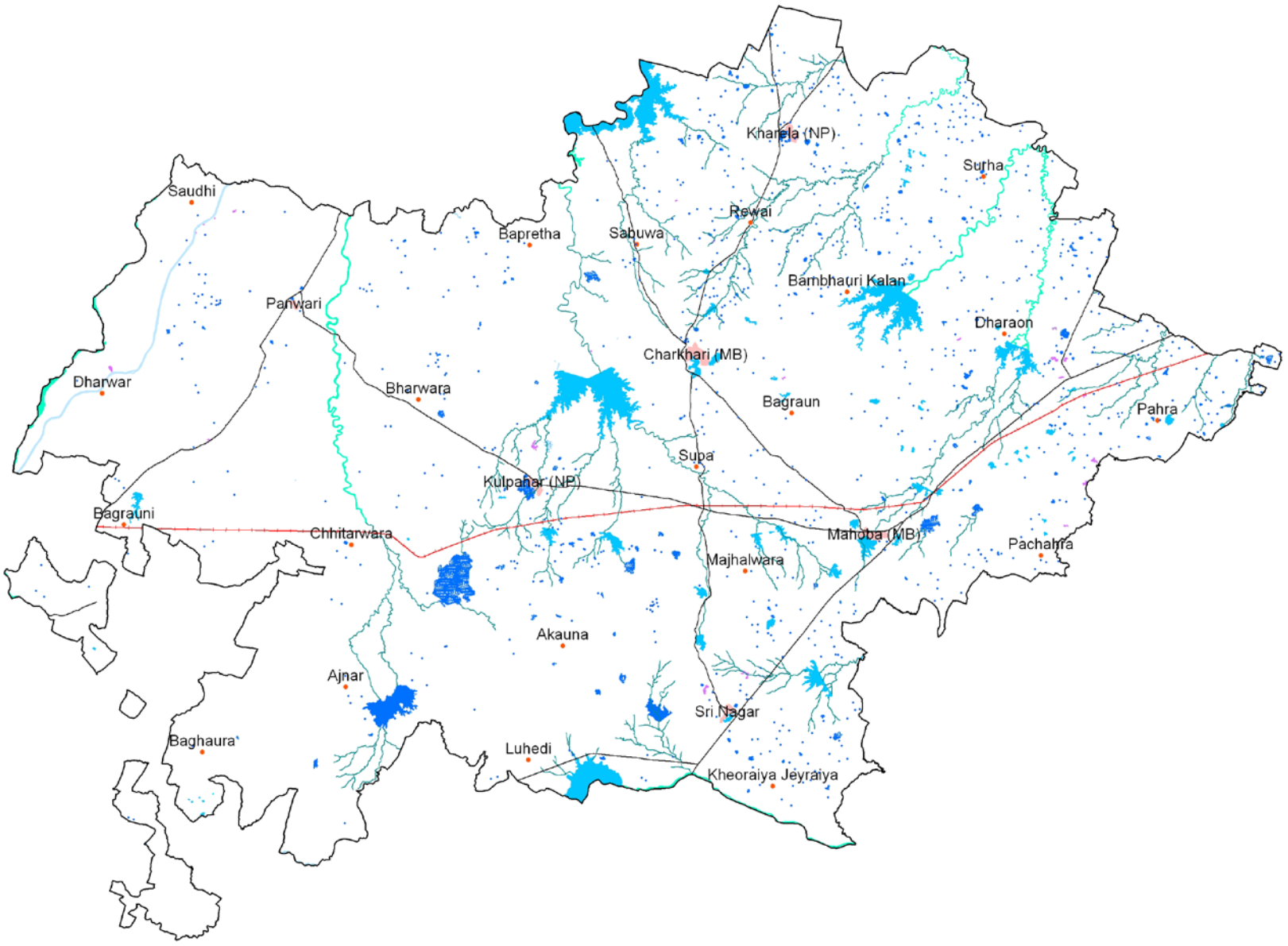
Area under Aquatic Vegetation	862	785

Area under turbidity levels		
Low	7192	5523
Moderate	568	137
High	21	21

State : Uttar Pradesh

WETLAND MAP

District : Mahoba

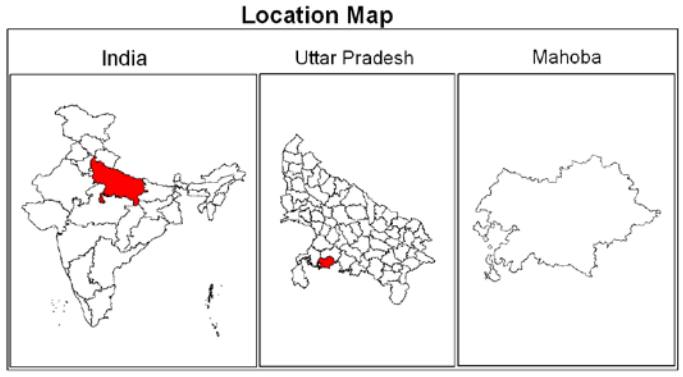


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.75 7.5 15 22.5 30 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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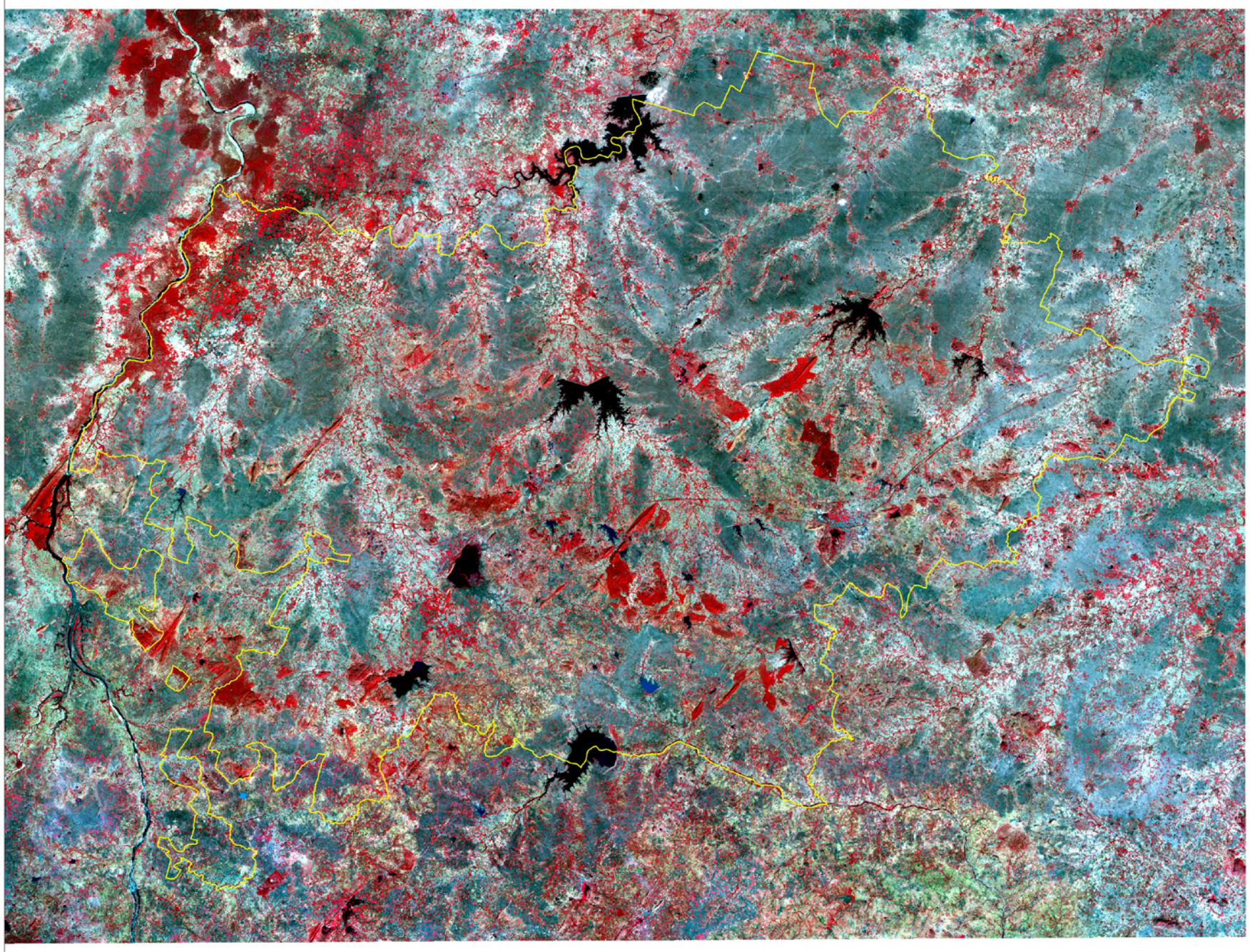
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Mahoba



IRS P6 LISS-III post monsoon data (2006)

7.1.40 Banda

Banda, district is located at 25.48°N latitude and 80.33°E longitude. The district is bounded on the north by district of Fatehpur, on the east by the district of Chitrakut, on the west by the district of Hamirpur and Mahoba and on the south by Satna, Panna districts of Madhya Pradesh. It has an average elevation of 123 metres. As per 2001 census, the district has a population of 1537334. It has 4 tehsils, 8 blocks and 694 villages. Average maximum and minimum temperatures are 44.4^{o} C and 5.2^{o} C respectively. Average rainfall is 902mm.

The total wetland area in the district is 20432 ha. Major wetland types of the district are river/stream and tanks/ponds. There are 366 tanks/ponds found in the district and accounts for 1375 ha area. There are 127 Lakes/pond with 675 ha area. In addition, 2586 small wetlands (<2.25 ha) are identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 45.

Area under aquatic vegetation in pre-monsoon season is 1252 ha during post-monsoon season while in pre-monsoon season it reduced to 376 ha. Water spread area in post-monsoon season is 11210 ha. Where as in pre-monsoon season the water spread area is 7209 ha. Low turbidity is most prevalent class in both the seasons.

Table 45: Area estimates of wetlands in Banda

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	127	675	3.30	326	148
2	1102	Ox-bow lakes/ Cut-off meanders	5	654	3.20	653	411
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	2	0.01	2	0
5	1105	Waterlogged	192	975	4.77	553	98
6	1106	River/Stream	53	13164	64.43	8278	6226
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	85	562	2.75	434	179
8	1202	Tanks/Ponds	366	1375	6.73	767	115
9	1203	Waterlogged	86	439	2.15	197	32
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**915**	**17846**	**87.34**	**11210**	**7209**
		Wetlands (<2.25 ha), mainly Tanks	2586	2586	12.66	-	-
		Total	**3501**	**20432**	**100.00**	**11210**	**7209**

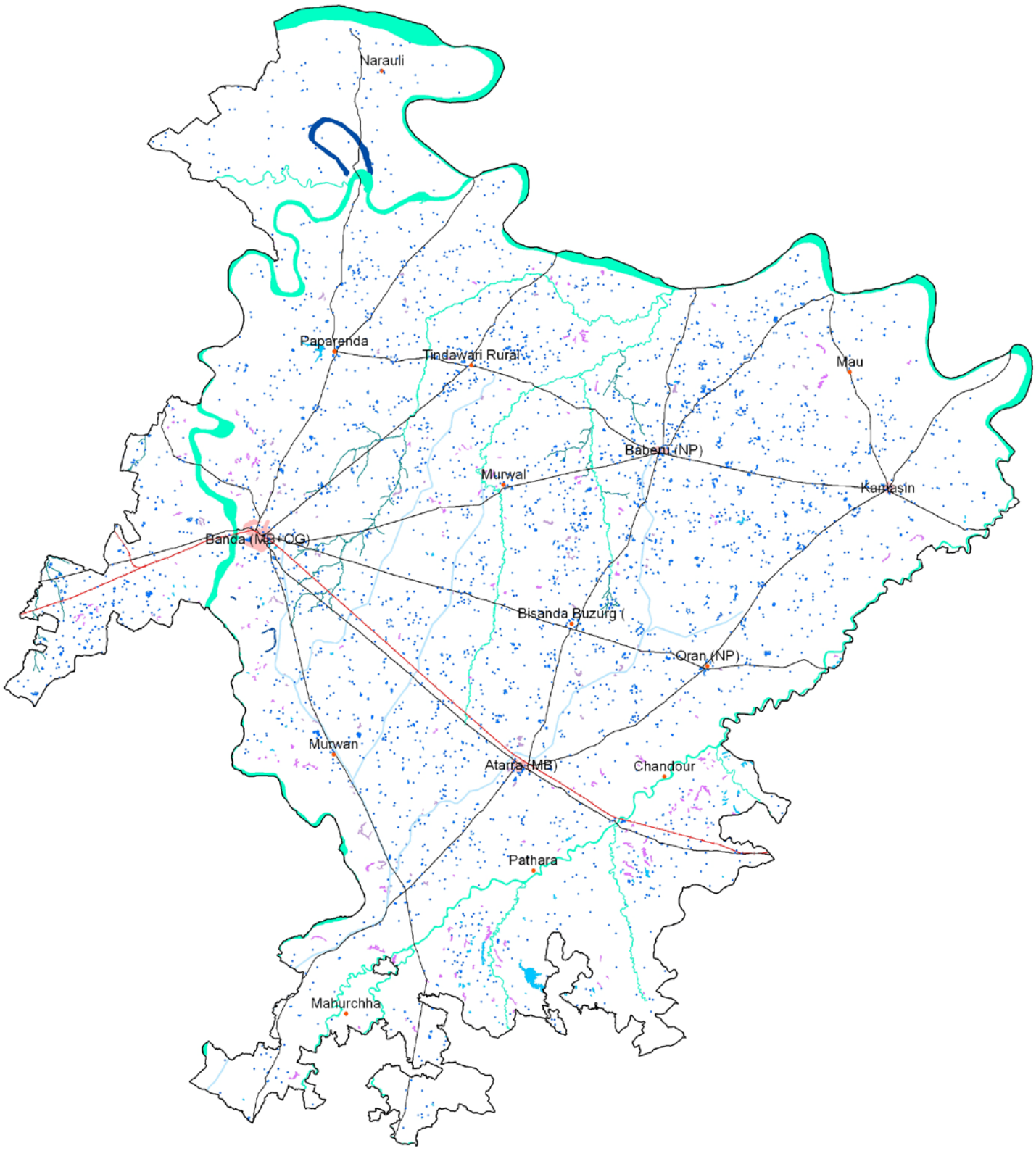
Area under Aquatic Vegetation	1252	376

Area under turbidity levels		
Low	6128	3271
Moderate	5082	1294
High	0	2644

State : Uttar Pradesh

WETLAND MAP

District : Banda

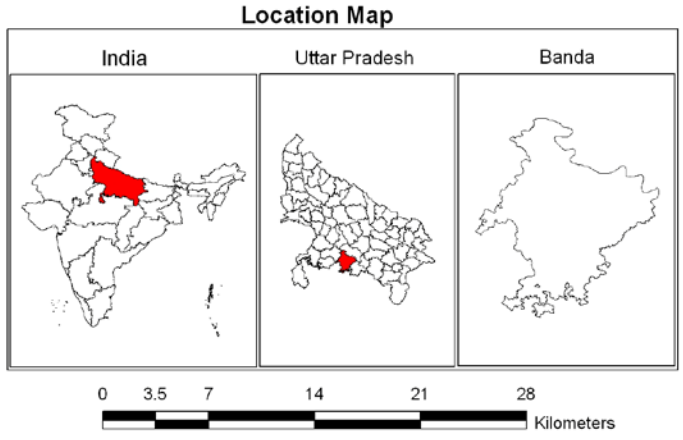


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

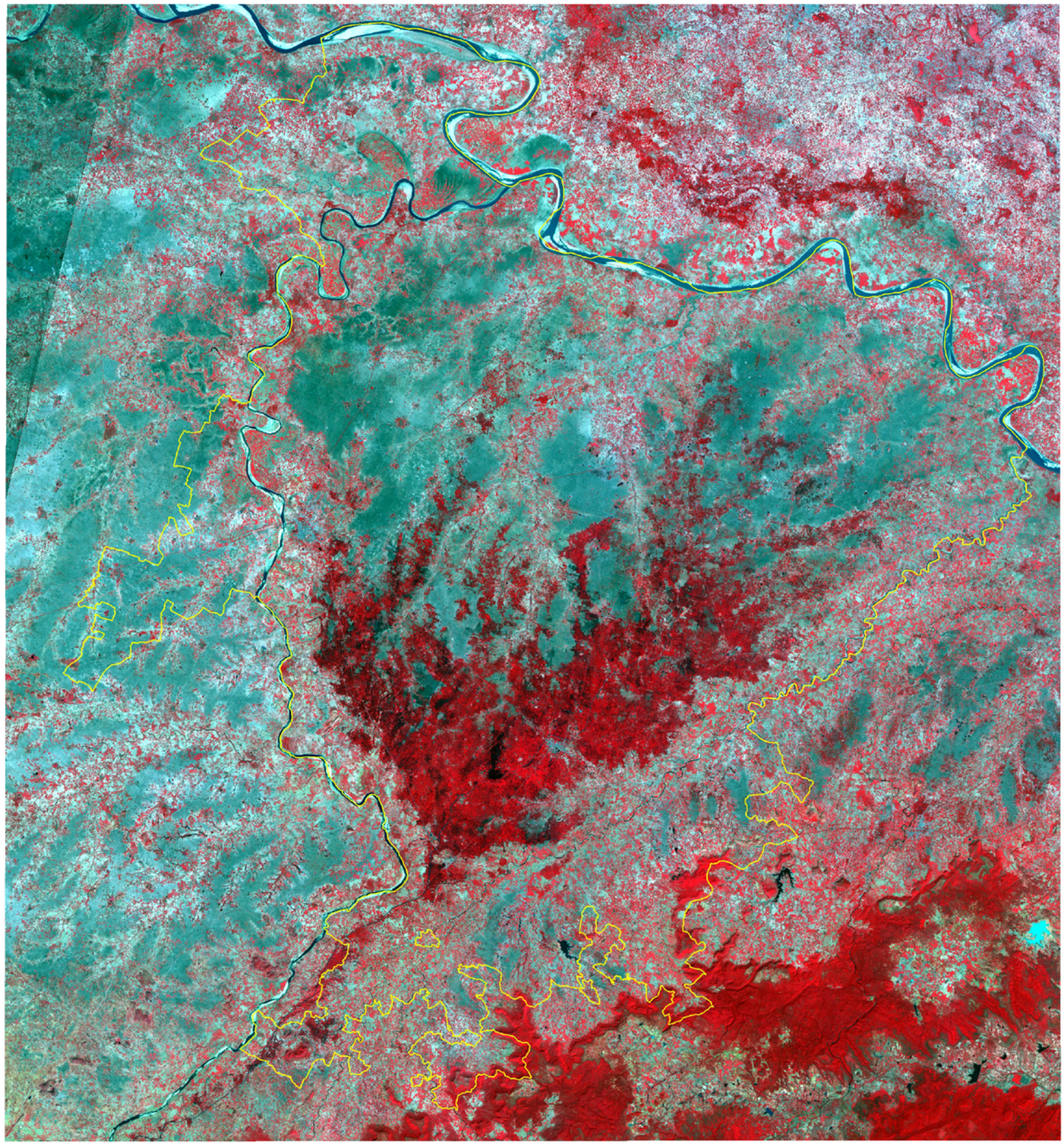
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Government of India

State : Uttar Pradesh

District : Banda



IRS P6 LISS-III post monsoon data (2006)

7.1.41 Chitrakoot

The Chitrakoot is located at 24° 48' to 25° 12' N latitude and 80° 58' to 81° 34' E longitude. The district is bounded in the North by Kaushambi, in the South by Satna (M.P.) & Rewa (M.P.), in the East by Allahabad (Prayag Raj) and in the West by Banda. It is a town of religious, cultural, historical and archaeological importance. As per 2001 census, the district has a population of 766225. It has 2 tehsils, 5 blocks and 650villages. Average maximum and minimum temperatures are 47.8^{o} C and 5.6^{o} C respectively. Average rainfall is 100mm.

The total wetland area in the district is 12153 ha. Major wetland types of the district are river/stream, accounting for 51.0 per cent of total wetland area. The other major types are: reservoirs/barrages. There are 313 in number with 3209 ha area (26.4%). There are 1225 small wetlands (<2.25 ha) identified and demarcated as point feature. Wetland area estimates of the district are summarized in table 46.

Area under aquatic vegetation in pre-monsoon season is 770 ha during post-monsoon season while in pre-monsoon season it reduced to 155 ha. Water spread area in post-monsoon season is 8701 ha. Where as in pre-monsoon season the water spread area is 5245 ha. Moderate and low turbidity of open water is observed during post monsoon and high to moderate in pre monsoon.

Table 46: Area estimates of wetlands in Chitrakoot

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	36	190	1.56	89	46
2	1102	Ox-bow lakes/ Cut-off meanders	1	45	0.37	45	0
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	50	271	2.23	157	35
6	1106	River/Stream	62	6222	51.20	5053	4059
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	313	3209	26.41	2771	1015
8	1202	Tanks/Ponds	187	735	6.05	461	67
9	1203	Waterlogged	36	256	2.11	125	23
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**685**	**10928**	**89.92**	**8701**	**5245**
		Wetlands (<2.25 ha), mainly Tanks	1225	1225	10.08	-	-
		Total	**1910**	**12153**	**100.00**	**8701**	**5245**

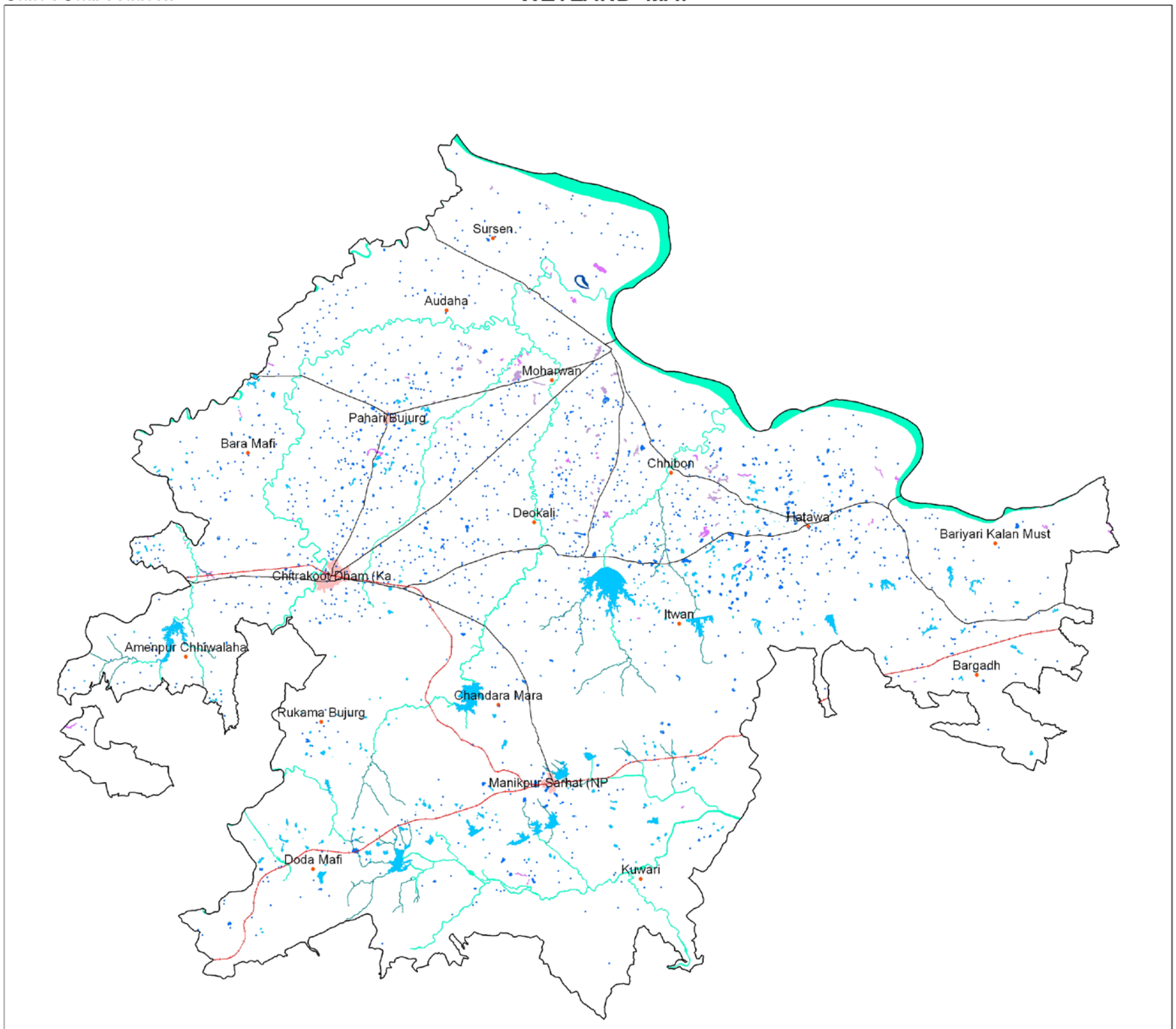
Area under Aquatic Vegetation	770	155

Area under turbidity levels		
Low	3081	1201
Moderate	5296	2073
High	324	1971

State : Uttar Pradesh

WETLAND MAP

District : Chitrakoot

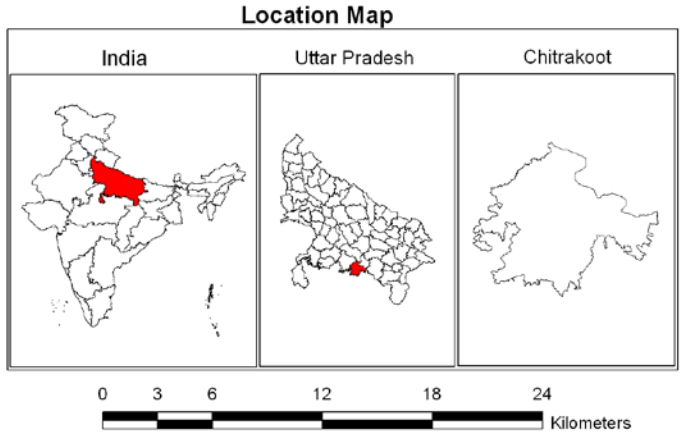


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

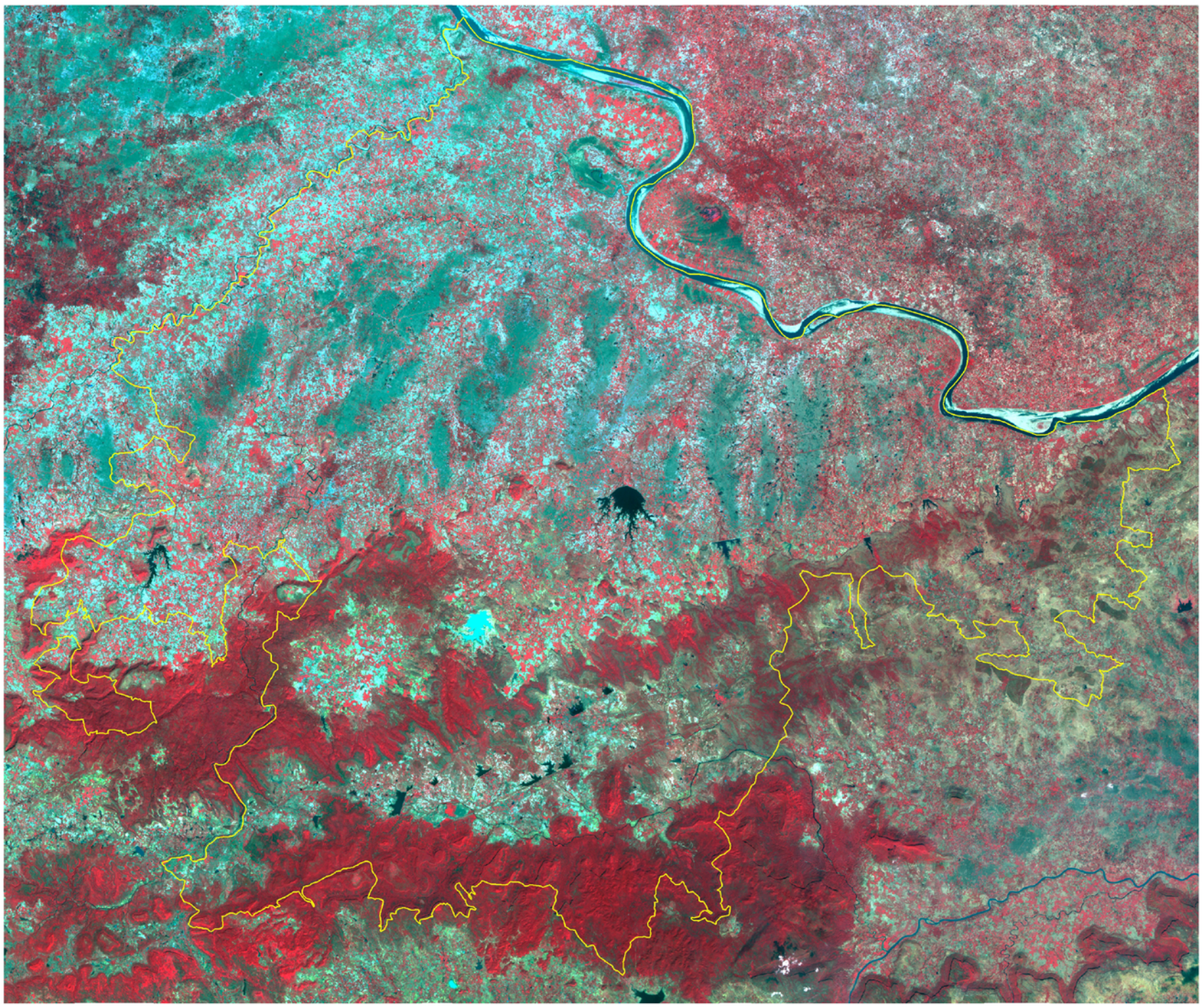
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Government of India

State : Uttar Pradesh

District : Chitrakoot



IRS P6 LISS-III post monsoon data (2006)

7.1.42 Fatehpur

Fatehpur is located at 25.93°N latitude and 80.8°E longitude. It has an average elevation of 110 metres. This district is situated between two important cities Allahabad and Kanpur of Uttar Pradesh on the banks of the sacred rivers Ganga and Yamuna. As per 2001 census, the district has a population of 2308384. It has 3 tehsils, 13 blocks and 1516 villages. Average rainfall is 904 mm.

The total wetland area in the district is 18449 ha. Major wetland types of the district are River/Stream. Waterlogged (man made) and Lakes/ponds are other major wetland types. There are 76 tanks/ponds in the district and accounts for 390 ha. Man made waterlogged covers an area of 3679 ha and their number is 268. In addition there are 1986 small wetlands (<2.25 ha) identified. Detailed estimates of wetlands in Fatehpur are given in table no.47

Area under aquatic vegetation in pre-monsoon season is 2772 ha during post-monsoon season while in pre-monsoon season 251 ha. Water spread area in post-monsoon season is 10788 ha and in pre-monsoon it is 6689 ha. Moderate turbidity prevailed in open water of wetlands, in both the seasons.

Table 47: Area estimates of wetlands in Fatehpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	59	1125	5.51	527	193
2	1102	Ox-bow lakes/ Cut-off meanders	5	192	0.94	96	95
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	2	266	1.30	36	17
5	1105	Waterlogged	6	106	0.52	64	54
6	1106	River/Stream	39	12691	62.10	8005	5539
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	76	390	1.91	150	45
9	1203	Waterlogged	268	3679	18.00	1910	747
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**455**	**18449**	**90.28**	**10788**	**6690**
		Wetlands (<2.25 ha), mainly Tanks	1986	1986	9.72	-	-
		Total	**2441**	**20435**	**100.00**	**10788**	**6690**

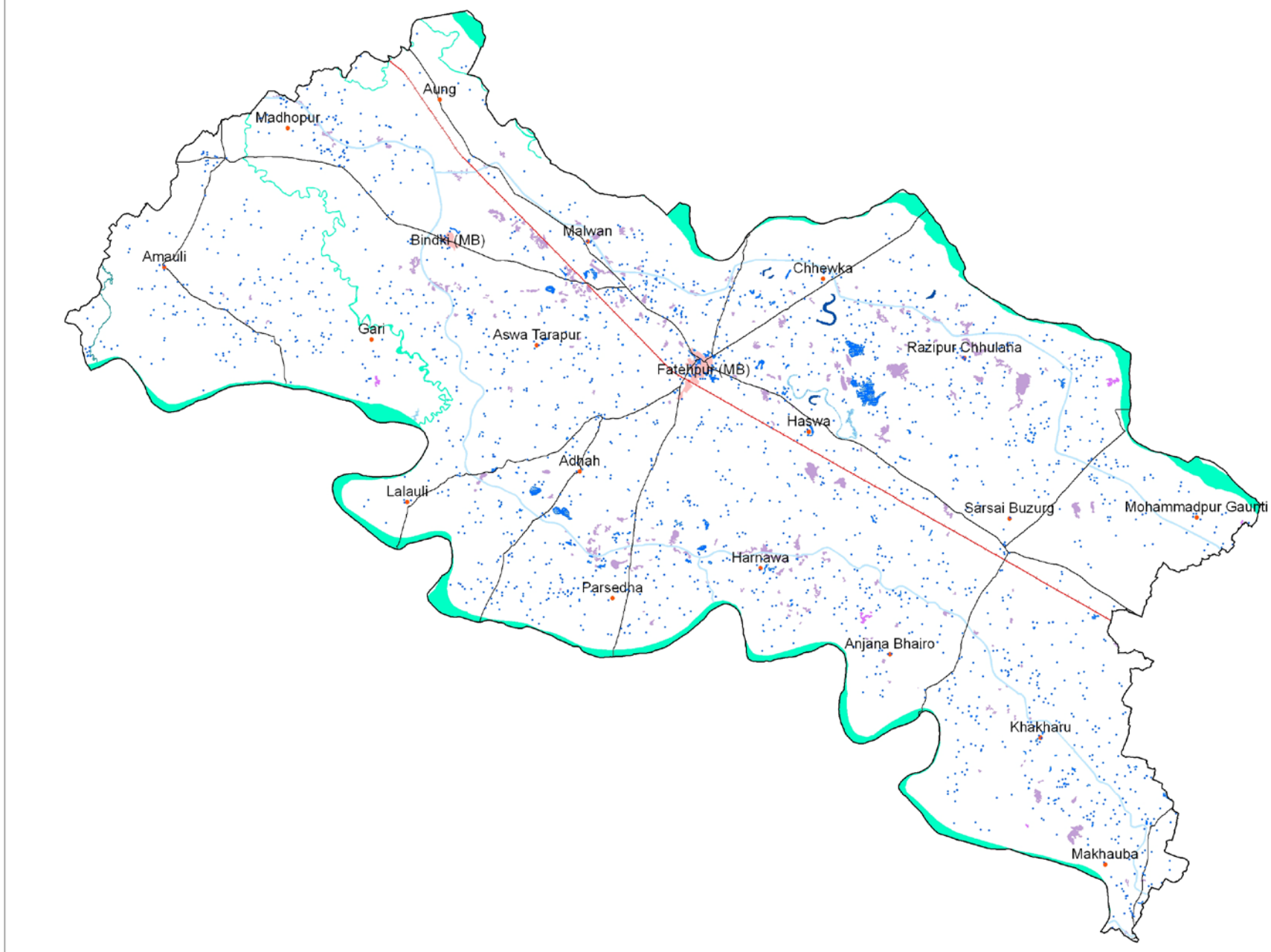
Area under Aquatic Vegetation	2772	251

Area under turbidity levels		
Low	1516	921
Moderate	9220	2741
High	52	3028

State : Uttar Pradesh

WETLAND MAP

District : Fatehpur

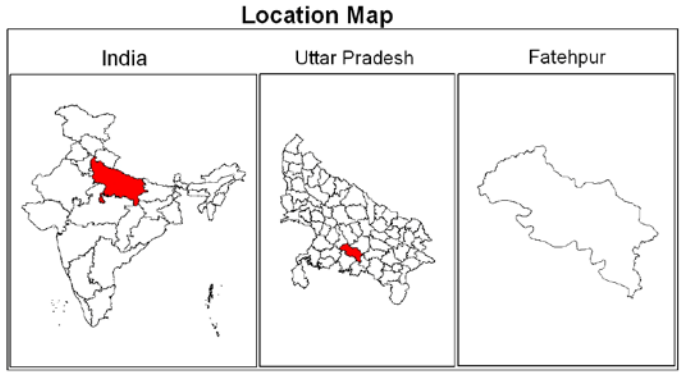


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4.5 9 18 27 36 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

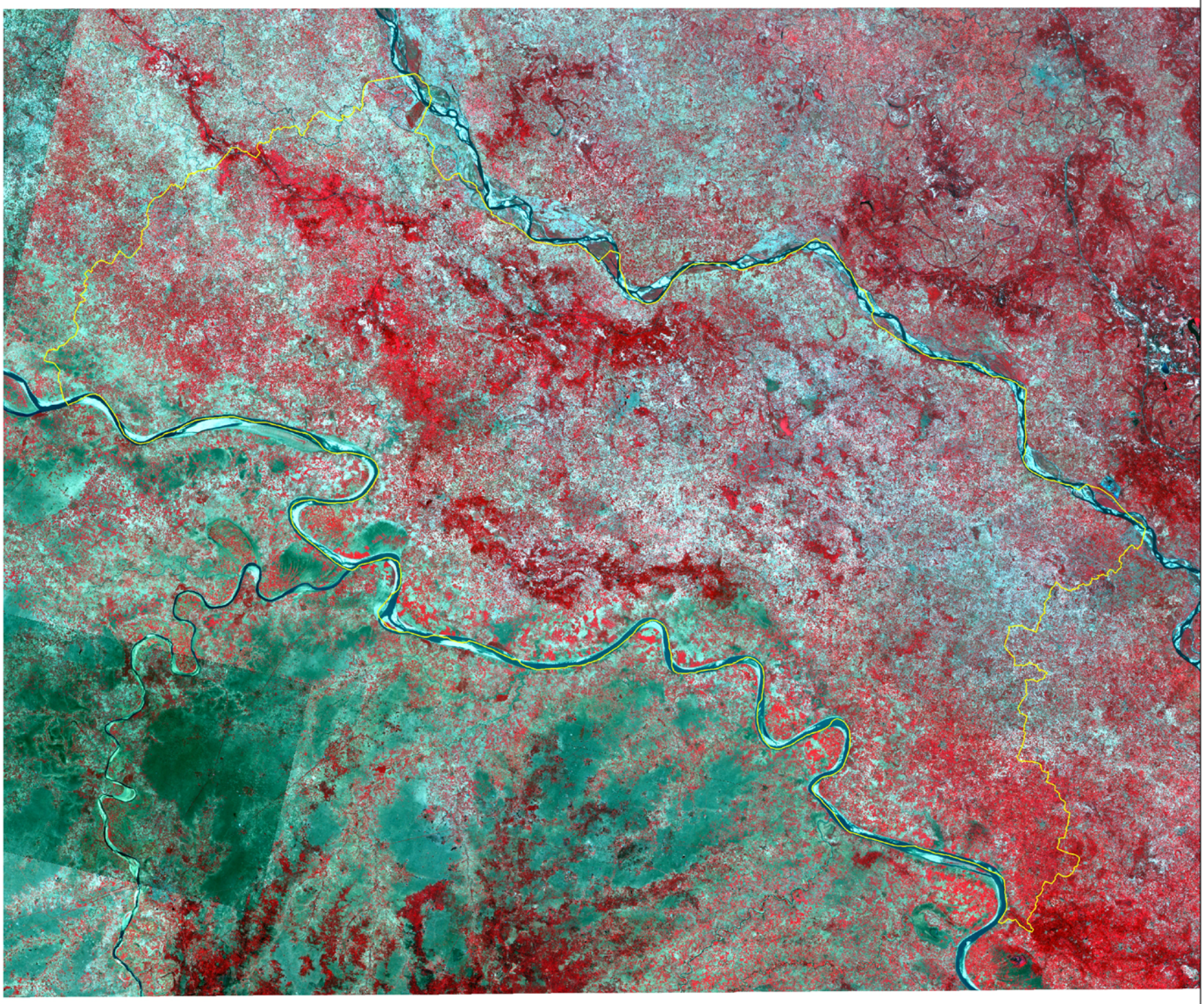
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State : Uttar Pradesh

District : Fatehpur



IRS P6 LISS-III post monsoon data (2006)

7.1.43 Pratapgarh

Pratapgarh is located at 25° 34' and 26° 11' N latitude and 81° 19' and 82° 27' E longitude. The district is bounded on the north by district Sultanpur, on the south by district Allahabad, on the east by district Jaunpur and on the west by Fatehpur and north-east by district Rae Bareli. In the south-west the Ganga forms the boundary of the district for about 50 km. separating it from Fatehpur and Allhabad and in the extreme north-east the Gomti forms the boundary for about 6 km. As per 2001 census, the district has a population of 2731174.

The total wetland area in the district is 16441 ha. Major wetland types of the district are Lakes/ponds and Waterlogged area. Natural waterlogged areas and ox-bow lakes are observed along the rivers and occupied an area of 554 ha and 1624 ha respectively. The number and distribution of ox-bow lakes indicate that these are formed due to shifting of river course. In addition there are 1850 small wetlands (<2.25 ha). Detailed estimates of wetlands in Pratapgarh are given in table no.48.

Area under aquatic vegetation in pre-monsoon season is 3038 ha during post-monsoon season while in pre-monsoon season 778 ha. Water spread area in post-monsoon season is 8442 ha and in pre-monsoon season it is 7990 ha. Low and moderate turbidity is observed during both the season.

Table 48: Area estimates of wetlands in Pratapgarh

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	48	2228	13.55	1066	1145
2	1102	Ox-bow lakes/ Cut-off meanders	45	1624	9.88	492	689
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	3	6	0.04	4	3
5	1105	Waterlogged	53	554	3.37	330	188
6	1106	River/Stream	37	6874	41.81	3841	5115
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	36	234	1.42	122	66
9	1203	Waterlogged	294	3071	18.68	2587	786
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**516**	**14591**	**88.75**	**8442**	**7992**
		Wetlands (<2.25 ha), mainly Tanks	1850	1850	11.25	-	-
		Total	**2366**	**16441**	**100.00**	**8442**	**7992**

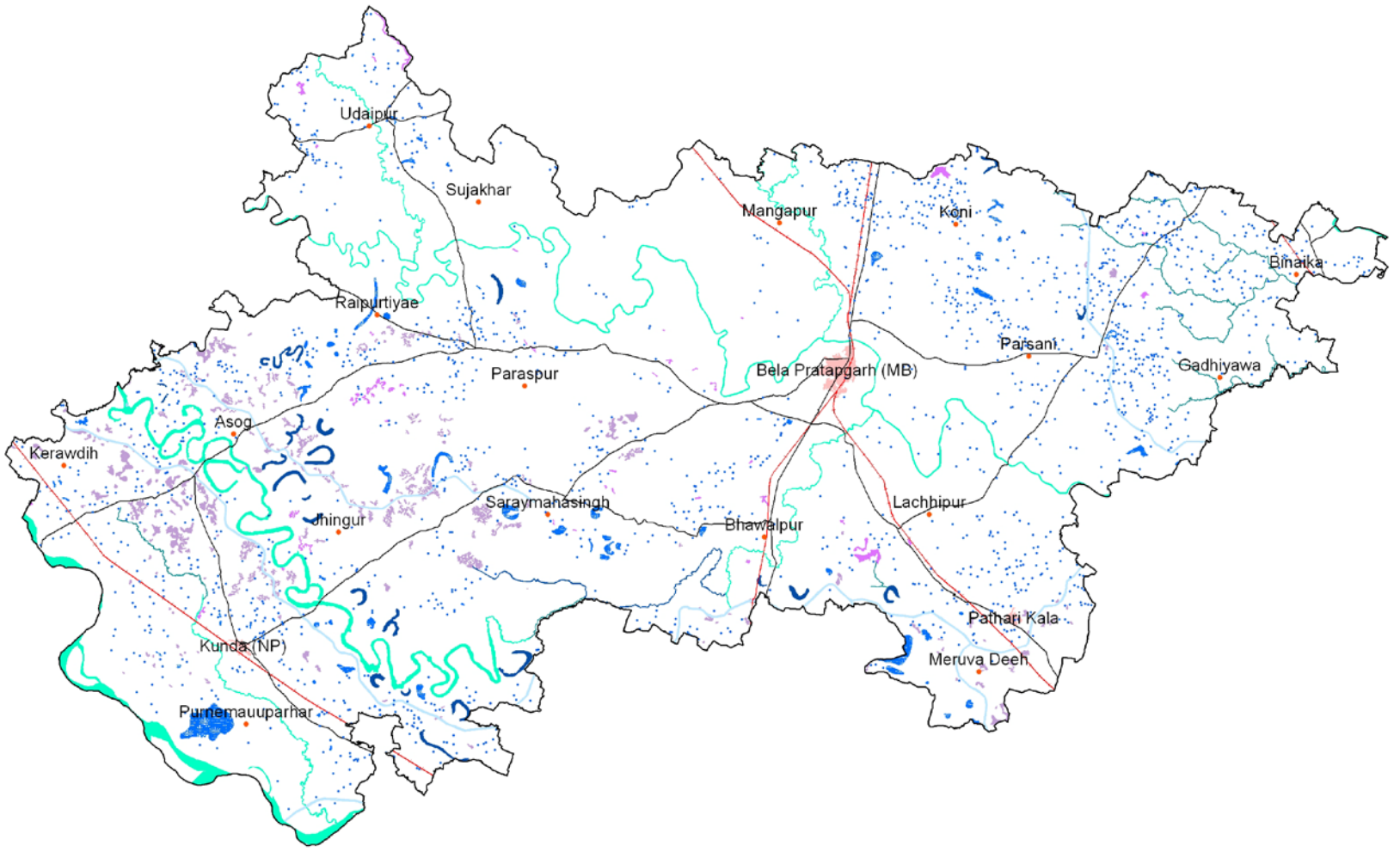
Area under Aquatic Vegetation	3038	778

Area under turbidity levels		
Low	2638	1387
Moderate	5602	6303
High	202	302

State : Uttar Pradesh

WETLAND MAP

District : Pratapgarh

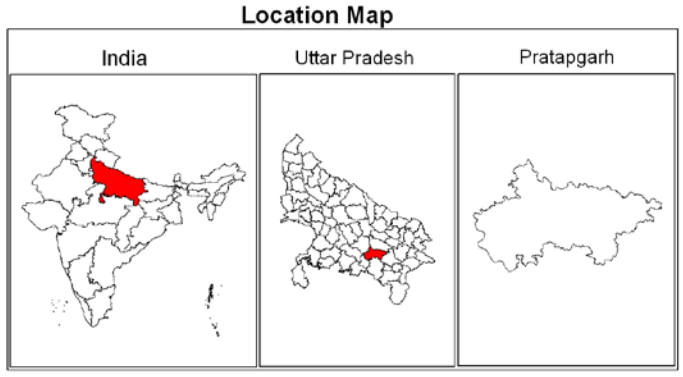


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4.5 9 18 27 36 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

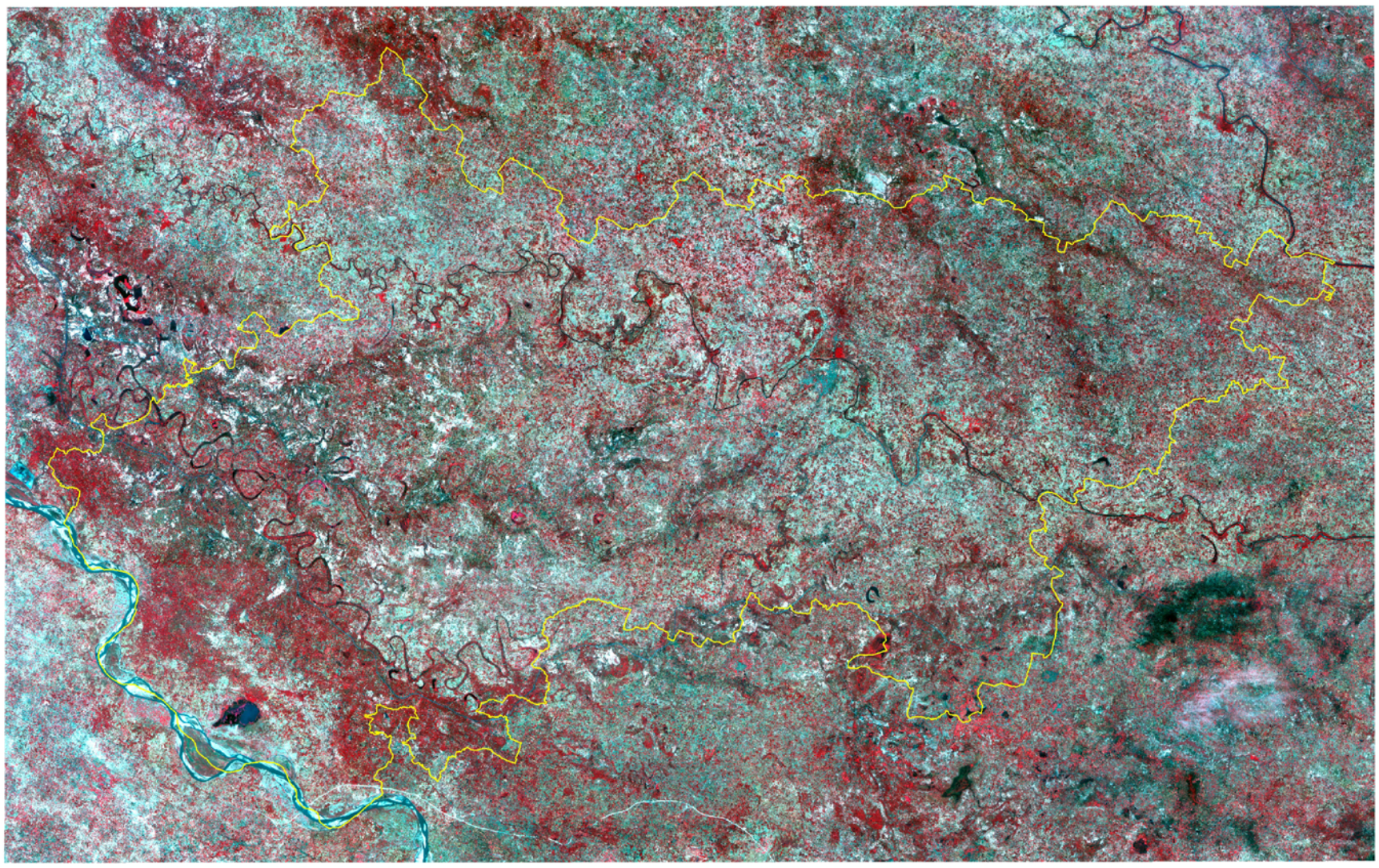
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Government of India

State : Uttar Pradesh

District : Pratapgarh



IRS P6 LISS-III post monsoon data (2006)

7.1.44 Kaushambi

Manjhanpur town is the district headquarters of Kaushambi. Manjhanpur is located at 25°32′ to 25.53°N latitude and 81°23′ to 81.38°E longitude. It has an average elevation of 90 metres. As per 2001 census, the district has a population of 1293154. It has 3 tehsils, 8 blocks and 885 villages. Average maximum and minimum temperatures are 46.7^{o} C and 5.0^{o}C respectively.

The total wetland area in the district is 9485 ha. Major wetland types of the district are River/streams with 74 per cent area. The other major types are Lakes/ponds (4.88%), and waterlogged-man made (6.0%). In addition there are 1068 small wetlands (<2.25 ha). Detailed estimates of wetlands in Kaushambi are given in table no.49.

Area under aquatic vegetation in pre-monsoon season is 826 ha during post-monsoon season while in pre-monsoon season 316 ha. Water spread area in post-monsoon season is 4233ha. Where as in pre-monsoon season the water spread area is 3138 ha. Moderate turbidity is observed during post monsoon while high and moderate turbidity is observed during pre monsoon.

Table 49: Area estimates of wetlands in Kaushambi

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	28	463	4.88	139	137
2	1102	Ox-bow lakes/ Cut-off meanders	2	3	0.03	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	35	0.37	35	7
5	1105	Waterlogged	4	15	0.16	13	11
6	1106	River/Stream	9	7009	73.90	3761	2898
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	2	2	0.02	-	-
8	1202	Tanks/Ponds	72	315	3.32	97	15
9	1203	Waterlogged	69	575	6.06	188	71
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**187**	**8417**	**88.74**	**4233**	**3139**
		Wetlands (<2.25 ha), mainly Tanks	1068	1068	11.26	-	-
		Total	**1255**	**9485**	**100.00**	**4233**	**3139**

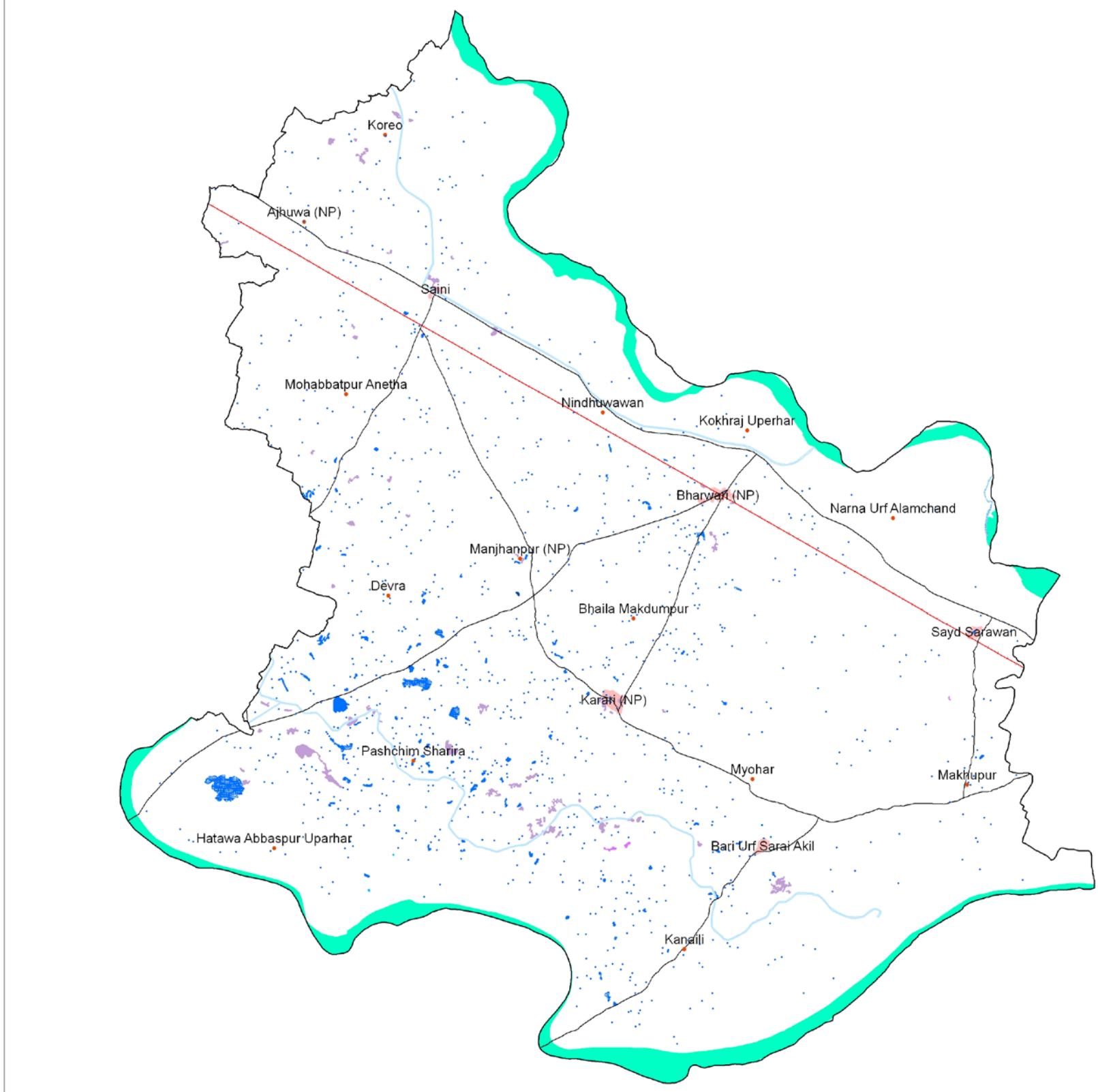
Area under Aquatic Vegetation	826	316

Area under turbidity levels		
Low	210	175
Moderate	4020	1325
High	3	1639

State : Uttar Pradesh

WETLAND MAP

District : Kaushambi

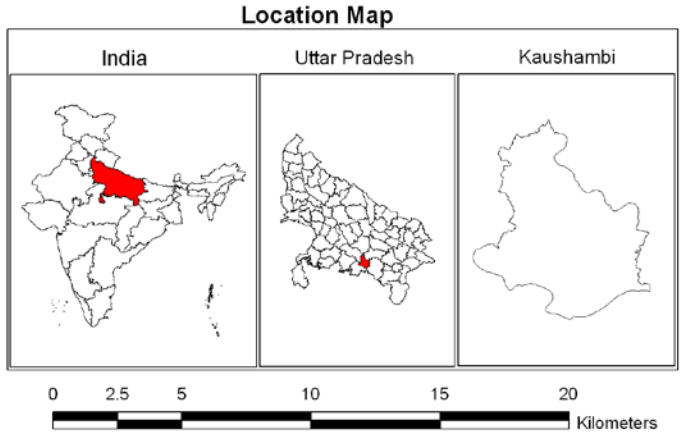


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

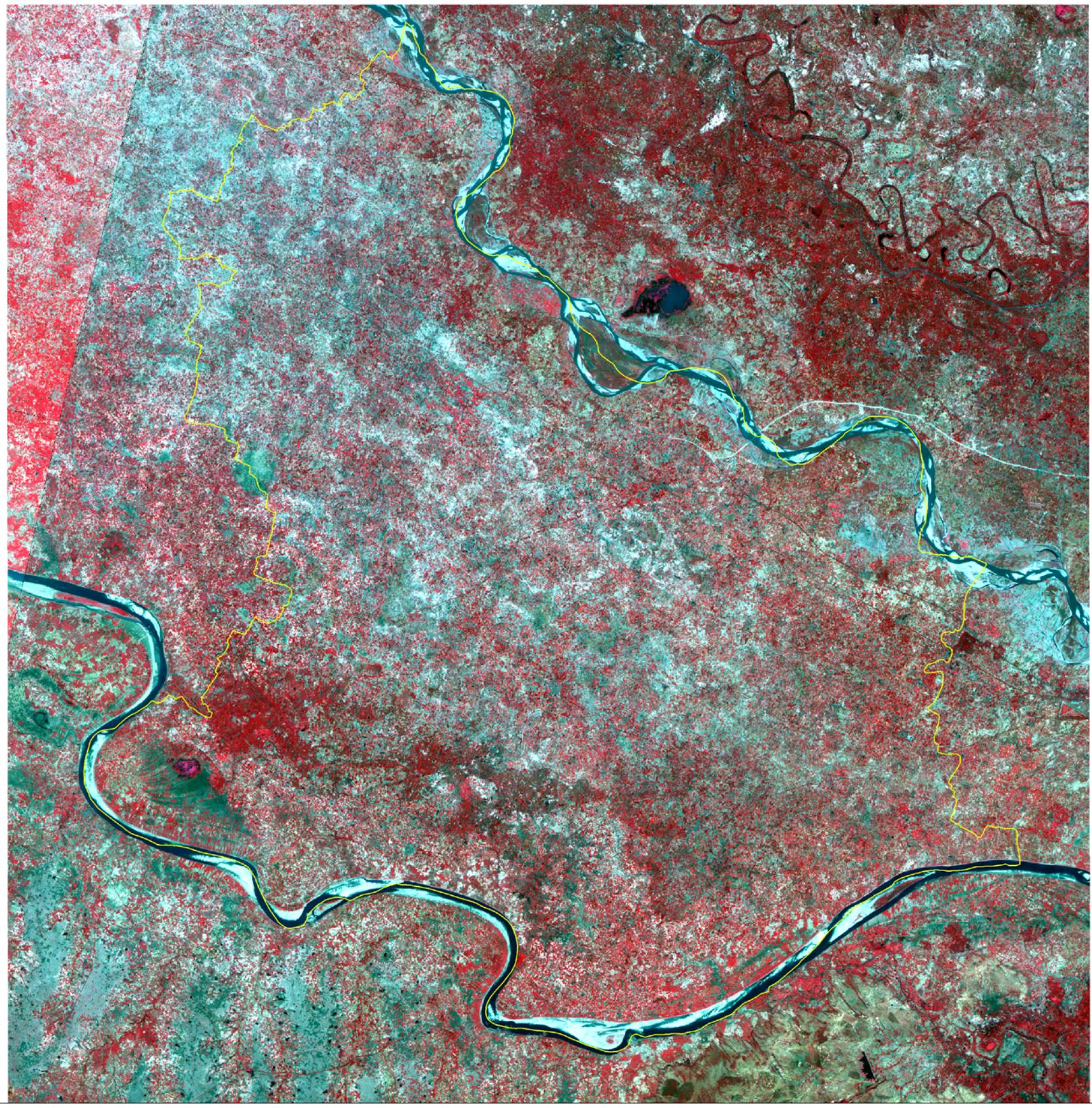
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Government of India

State : Uttar Pradesh

District : Kaushambi



IRS P6 LISS-III post monsoon data (2006)

7.1.45 Allahabad

Allahabad is located at 25.45°N 81.84°E in the southern part of the Uttar Pradesh at an elevation of 98 metres. Allahabad is a holy city in Hindu religion, also known as Prayag. It is a place where the three rivers -Ganga, Yamuna and the mythical river of Sarasvati meet at a point known as Sangam. Allahabad City has a population of 4936105 as per the 2001 census. The summer season lasts from April to June with the maximum temperatures ranging from 40 °C to 45 °C. Monsoon begins in early July and lasts till September. The winter season lasts from December to February. Maximum temperatures are around 22 °C and minimum around 10 °C. Lowest temperature recorded, −2 °C; highest 48 °C.

The total wetland area in the district is 27487 ha. Apart from River/Stream, the major wetlands are: Lanks/ponds and waterlogged (man made). There are 22 Lakes/ponds with 1879 ha area and 19 Reservoirs/barrages with 1270 ha area. In addition there are 1892 small wetlands (<2.25 ha). Detailed estimates of wetlands in Allahabad are given in table no.50.

Area under aquatic vegetation in pre-monsoon season is 3701 ha during post-monsoon season while in pre-monsoon season 1457 ha. Water spread area in post-monsoon season is 16088 ha and in pre-monsoon season it is 17746 ha. Moderate turbidity is observed during both the season.

Table 50: Area estimates of wetlands in Allahabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands – Natural**					
1	1101	Lakes/Ponds	22	1879	6.84	618	612
2	1102	Ox-bow lakes/ Cut-off meanders	21	382	1.39	160	163
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	6	313	1.14	313	66
5	1105	Waterlogged	36	590	2.15	144	230
6	1106	River/Stream	39	18143	66.01	12463	14431
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	19	1270	4.62	855	822
8	1202	Tanks/Ponds	192	794	2.89	571	402
9	1203	Waterlogged	150	2224	8.09	964	1022
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**485**	**25595**	**93.12**	**16088**	**17748**
		Wetlands (<2.25 ha), mainly Tanks	1892	1892	6.88	-	-
		Total	**2377**	**27487**	**100.00**	**16088**	**17748**

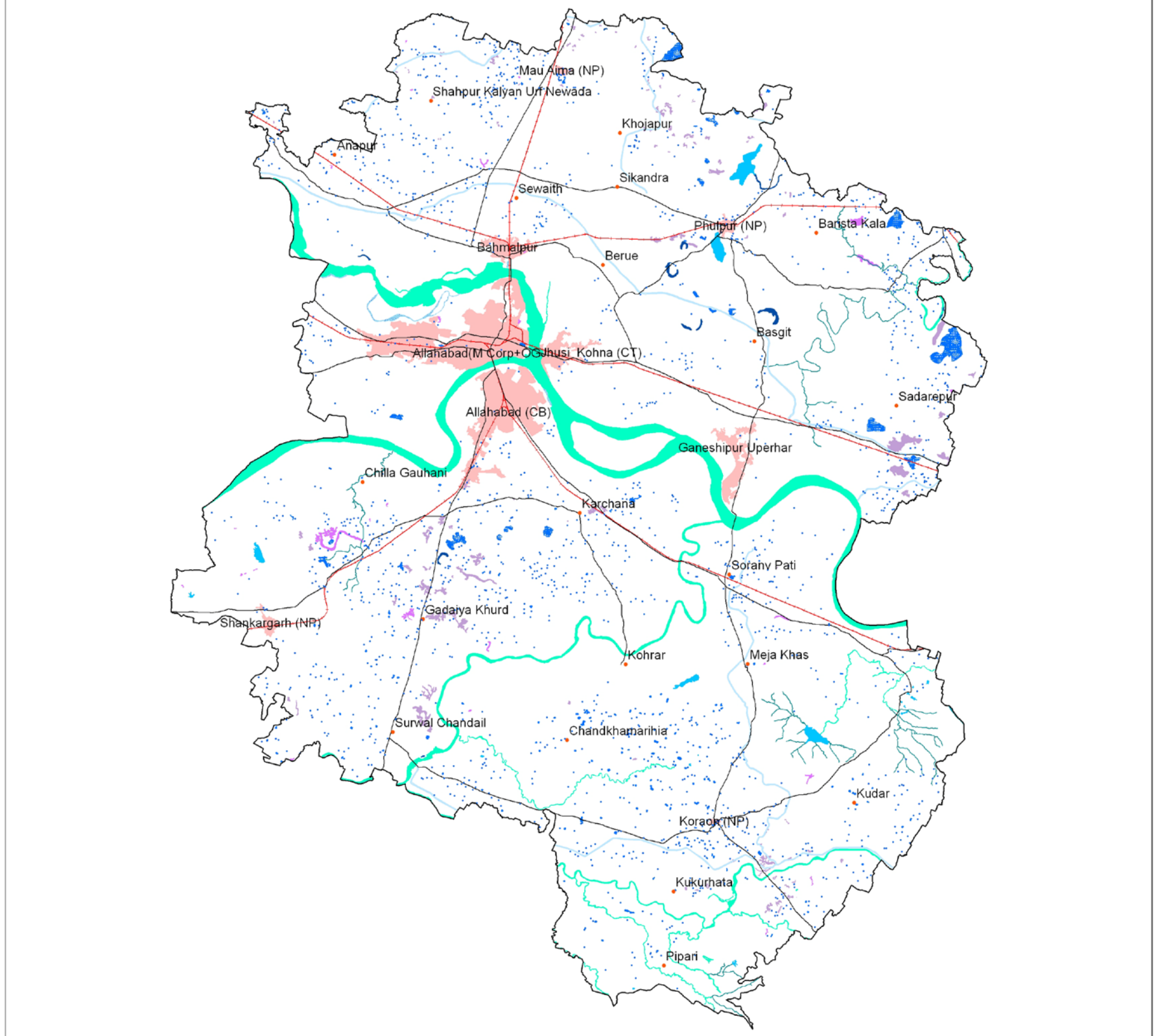
Area under Aquatic Vegetation	3701	1457

Area under turbidity levels		
Low	2395	1417
Moderate	13596	14197
High	97	2134

State : Uttar Pradesh

WETLAND MAP

District : Allahabad

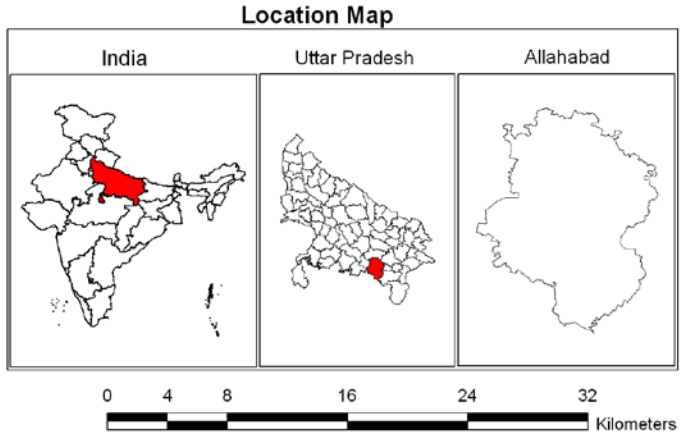


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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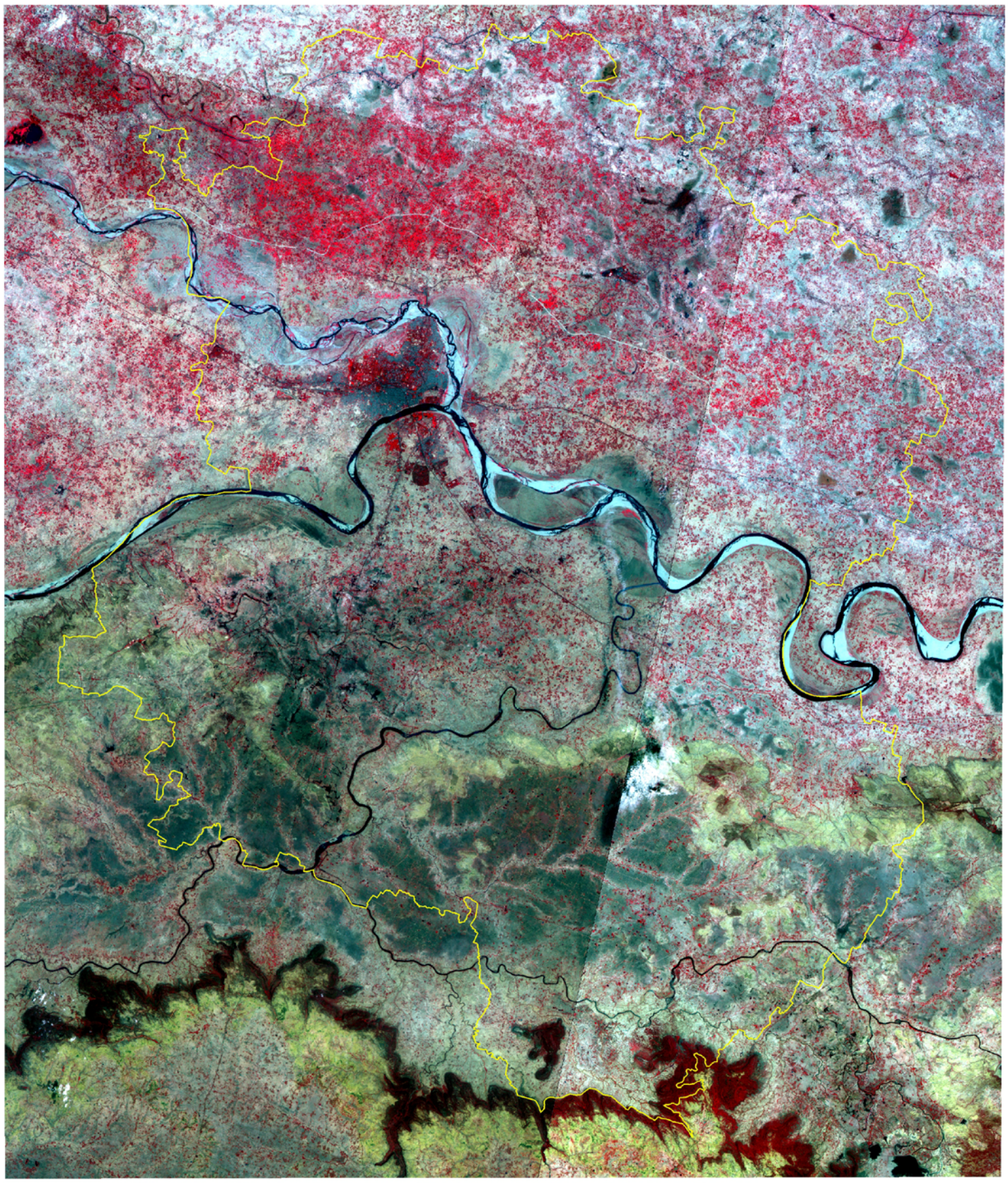
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Government of India

State : Uttar Pradesh

District : Allahabad



IRS P6 LISS-III post monsoon data (2006)

7.1.46 Barabanki

Barabanki is located between Latitudes 26° 30' North and 27° 19' North and Longitudes 80° 58' East and 81° 55' East. It is surrounded by district Faizabad in the East, districts Gonda and Bahraich in the North East, district Sitapur in the North West, district Lucknow in the West, district Rae Bareli in the South and district Sultanpur in the South East. The river Ghaghra forms the North Eastern Boundary separating Barabanki from Bahraich and Gonda. The district is well fed by rivers Ghaghra, Gomti and Kalyani with their tributaries for major part of the year. As of 2001 India census Barabanki had a population of 2673581. Most of the rain occurs from June to September and often in November to January. The winter sets in November and continues till February end. The maximum temperature recorded in 1997-98 was 47.5 °C and minimum was 2.5 °C. The average rainfall recorded for 1997-98 was 1056 mm.

The total wetland area in the district is 27290 ha. Major wetland types of the district are River/Stream and Tanks/ponds. There are 174 tanks/ponds under Man-made and 119 Lakes/Ponds – Natural in the district and accounts for 4069 and 1745 ha respectively. Man made waterlogged covers an area of 2067 ha and their number is 116. In addition there are 1982 small wetlands (<2.25 ha). Detailed estimates of wetlands in Barabanki are given in table no.51.

Area under aquatic vegetation in pre-monsoon season is 6364 ha during post-monsoon season while in pre-monsoon season 2417 ha. Water spread area in post-monsoon season is 14238 ha. Where as in pre-monsoon season the water spread area is 6158 ha. Low to moderate turbidity of water is observed during both the season. High turbidity is associated with riverine wetlands and accounted an area of 230 ha during pre-monsoon season.

Table 51: Area estimates of wetlands in Barabanki

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	119	4069	14.91	768	213
2	1102	Ox-bow lakes/ Cut-off meanders	29	740	2.71	233	219
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	15	1282	4.70	659	18
5	1105	Waterlogged	44	2024	7.42	1619	89
6	1106	River/Stream	54	13381	49.03	8755	5273
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	174	1745	6.39	611	242
9	1203	Waterlogged	116	2067	7.57	1593	106
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**551**	**25308**	**92.74**	**14238**	**6160**
		Wetlands (<2.25 ha), mainly Tanks	1982	1982	7.26	-	-
		Total	**2533**	**27290**	**100.00**	**14238**	**6160**

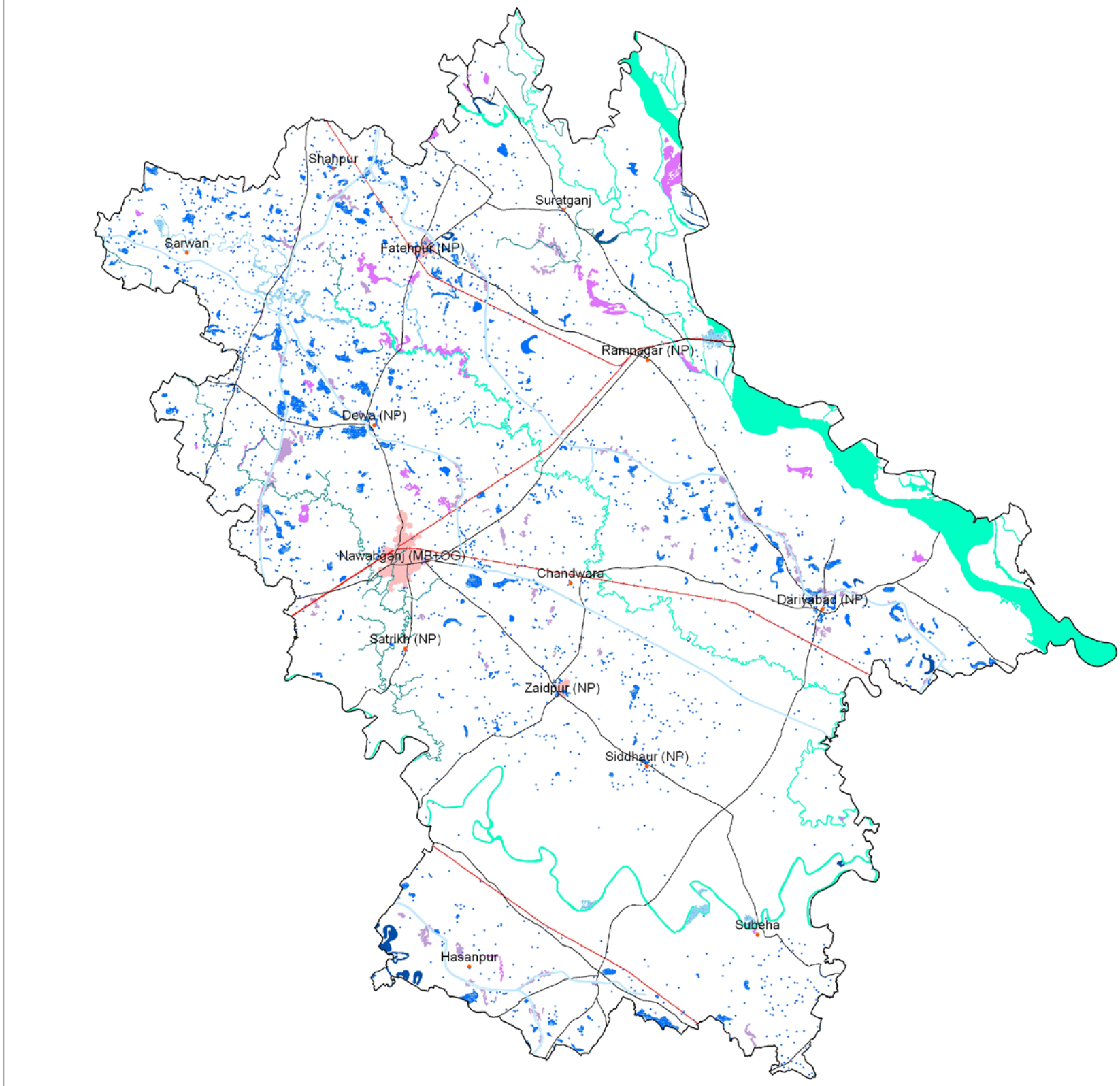
Area under Aquatic Vegetation	6364	2417

Area under turbidity levels		
Low	5366	4768
Moderate	8642	1333
High	230	59

State : Uttar Pradesh

WETLAND MAP

District : Barabanki

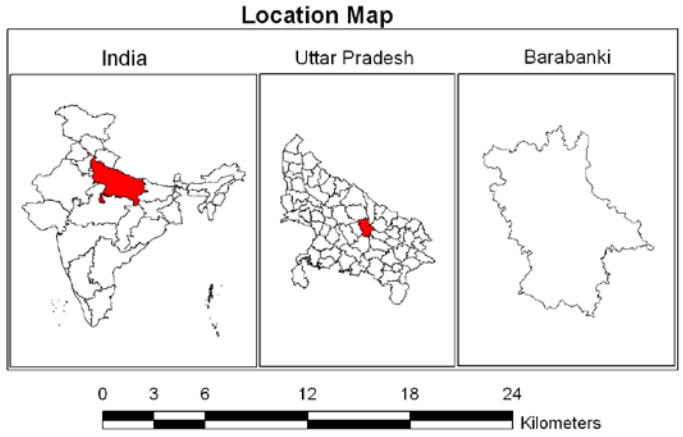


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

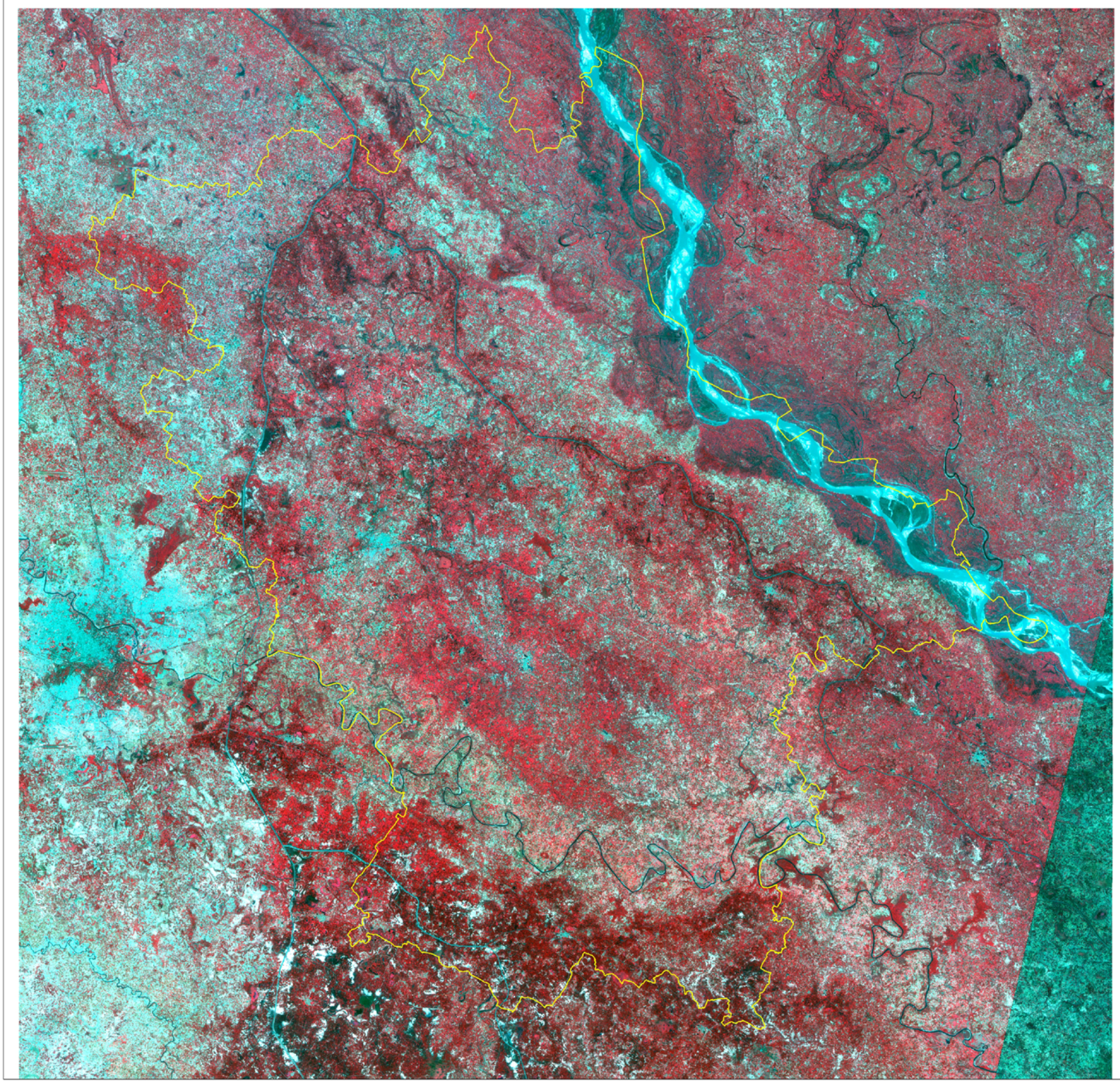
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Barabanki



IRS P6 LISS-III post monsoon data (2006)

7.1.47 Faizabad

Situated on the banks of river Ghaghra (locally known as Saryu), Faizabad has a twin city of Ayodhya, considered to be the birthplace of Lord Ram. Faizabad is located at 26.78°N latitude and 82.13°E longitude. It has an average elevation of 97 metres. As per 2001 census, the district has a population of 2088928. Average maximum and minimum temperatures are 43.7^{o} C and 2.2^{o} C respectively. Average rainfall is 1035 mm.

The total wetland area in the district is 23050 ha. Major wetland types of the district are River/Stream and Lakes/ponds. There are 57 tanks/ponds under Man-made and 111 Lakes/Ponds – Natural in the district and accounts for 589 and 3839 ha respectively. Man made waterlogged covers an area of 1053 ha and their number is 51. In addition there are 1241 small wetlands (<2.25 ha). Detailed estimates of wetlands in Faizabad are given in table 52.

Area under aquatic vegetation in pre-monsoon season is 2278 ha, which increased to 6796 ha during post monsoon. Water spread area in post-monsoon season is 8711 ha. Where as in pre-monsoon season the water spread area is 7436 ha. Low and moderate turbidity of open water is observed during post-monsoon season. High turbidity is associated with riverine wetlands and accounted an area of 1148 ha during pre-monsoon season.

Table 52: Area estimates of wetlands in Faizabad

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	111	3839	16.66	428	1260
2	1102	Ox-bow lakes/ Cut-off meanders	33	936	4.06	262	296
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	34	1256	5.45	233	191
5	1105	Waterlogged	48	849	3.68	564	117
6	1106	River/Stream	66	13287	57.64	6447	4915
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	57	589	2.56	175	191
9	1203	Waterlogged	51	1053	4.57	602	466
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**400**	**21809**	**94.62**	**8711**	**7472**
		Wetlands (<2.25 ha), mainly Tanks	1241	1241	5.38	-	-
		Total	**1641**	**23050**	**100.00**	**8711**	**7472**

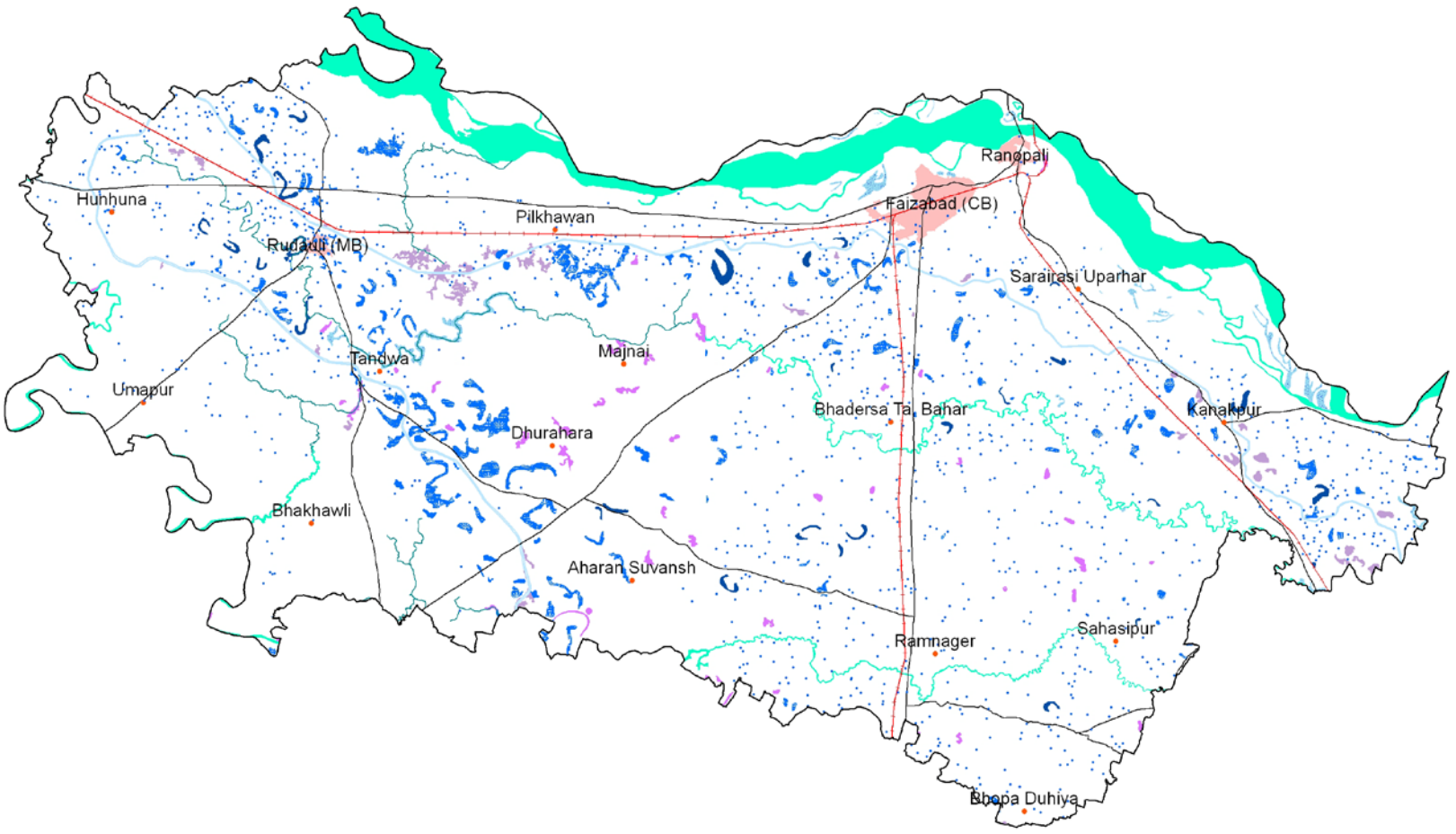
Area under Aquatic Vegetation	6796	2278

Area under turbidity levels		
Low	1034	4782
Moderate	6950	1542
High	727	1148

State : Uttar Pradesh

WETLAND MAP

District : Faizabad

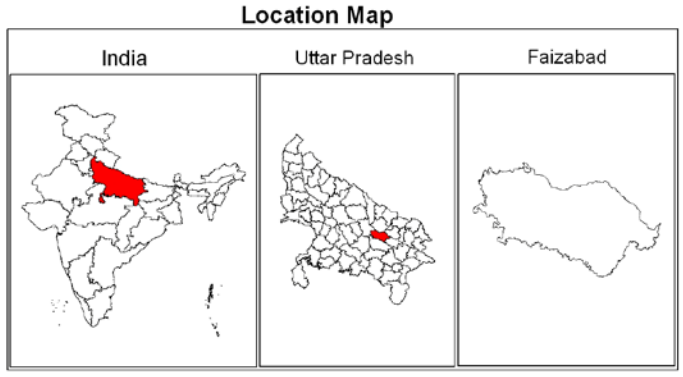


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

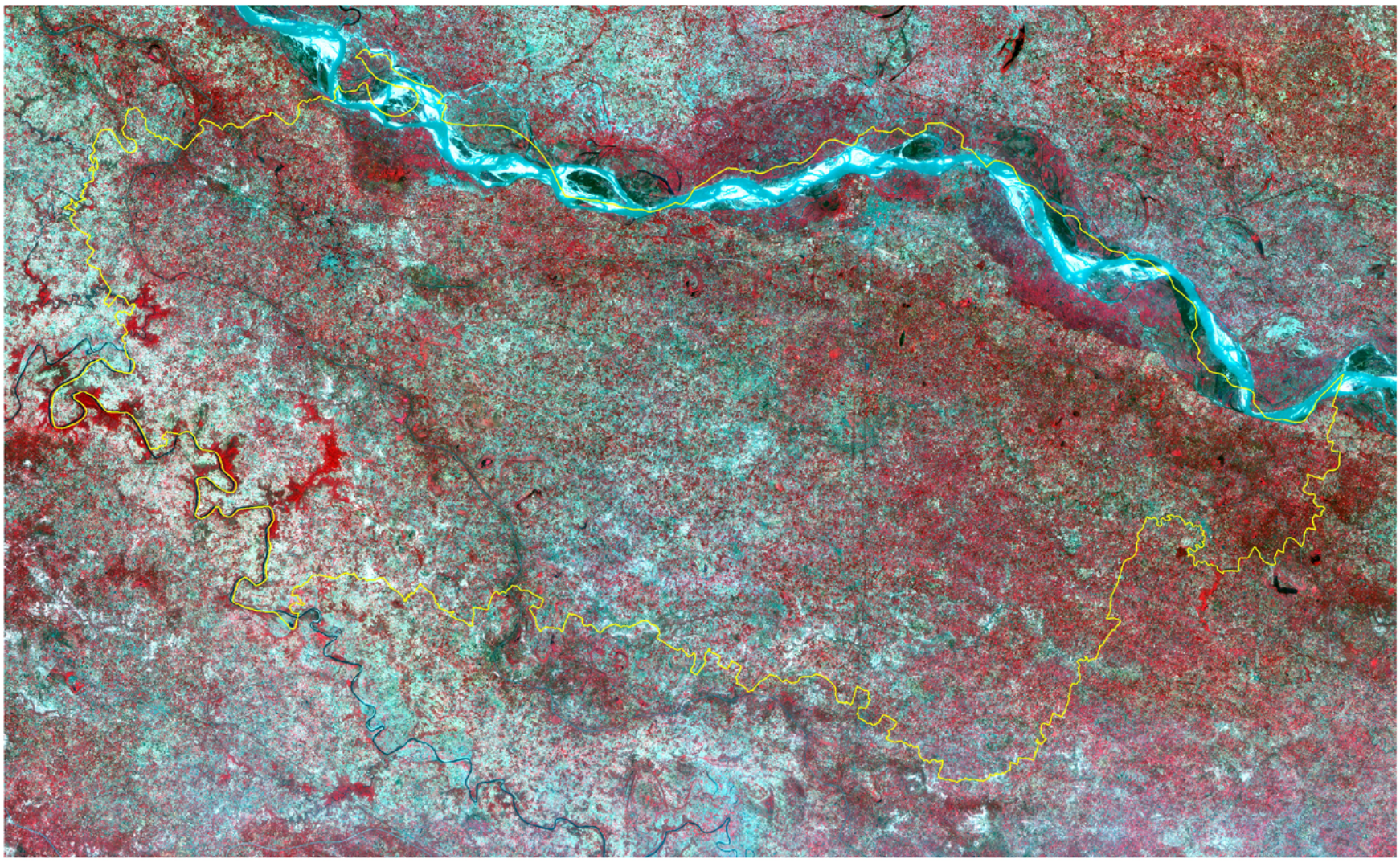
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Government of India

State : Uttar Pradesh

District : Faizabad



IRS P6 LISS-III post monsoon data (2006)

7.1.48 Ambedkar Nagar

The Ambedkar Nagar is located at 26.26^{o} N latitude and 52.33^{o} E longitude. The city of Akbarpur situated on the bank of the River Tons is H.Q. of Ambedkar Nagar. As per 2001 census, the district has a population of 2026876. It has 4 tehsils, 19 blocks.

The total wetland area in the district is 14947 ha. Major wetland types of the district are River/Stream and Lakes/ponds and waterlogged areas (man made). There are 118 Lakes/Ponds in the district and accounts for 1979 ha. Man made waterlogged area spread over 24 sites occupy an area of 748 ha. In addition there are 1094 small wetlands (<2.25 ha). Detailed estimates of wetlands in Ambedkar Nagar are given in table no.53

Area under aquatic vegetation is 4345 ha and during post-monsoon season while in pre-monsoon season, it is reduced to 2867 ha. Water spread area in post-monsoon season is 5914 ha and in pre-monsoon season it is 5558 ha. Moderate turbidity of water prevailed in post monsoon, while it is low in pre monsoon.

Table 53 Area estimates of wetlands in Ambedkar Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	118	1979	13.24	240	345
2	1102	Ox-bow lakes/ Cut-off meanders	65	1619	10.83	319	348
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	20	572	3.83	294	229
5	1105	Waterlogged	21	325	2.17	66	142
6	1106	River/Stream	52	8427	56.38	4650	4211
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	4	183	1.22	174	174
9	1203	Waterlogged	24	748	5.00	171	110
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**304**	**13853**	**92.68**	**5914**	**5559**
		Wetlands (<2.25 ha), mainly Tanks	1094	1094	7.32	-	-
		Total	**1398**	**14947**	**100.00**	**5914**	**5559**

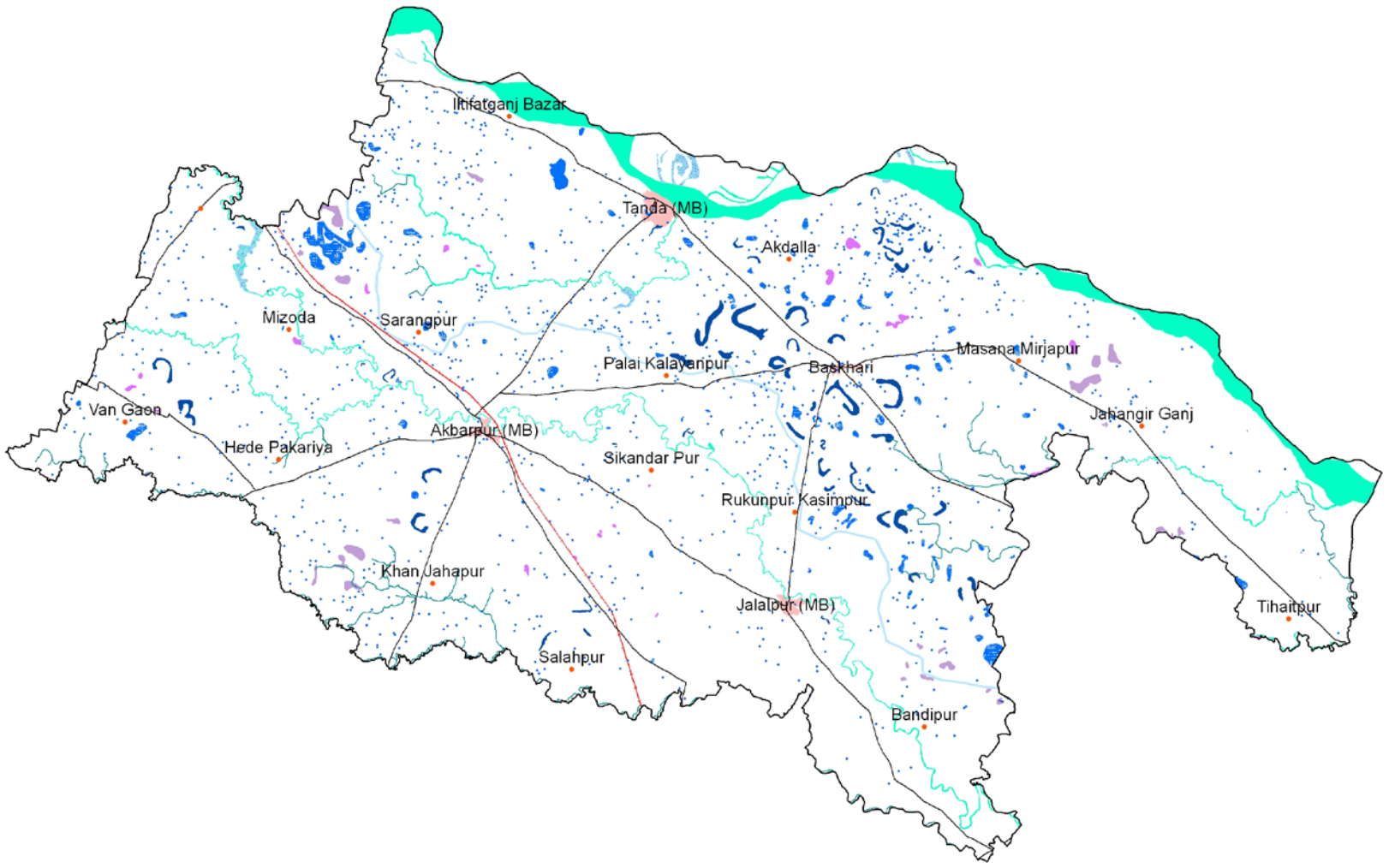
Area under Aquatic Vegetation	4345	2867

Area under turbidity levels		
Low	1056	4122
Moderate	4851	1430
High	7	7

State : Uttar Pradesh

WETLAND MAP

District : Ambedkar Nagar

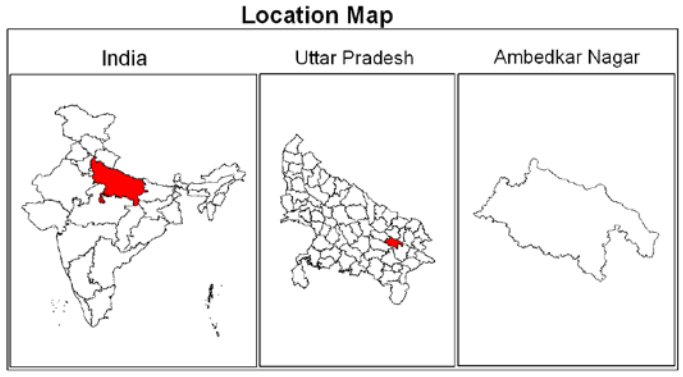


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

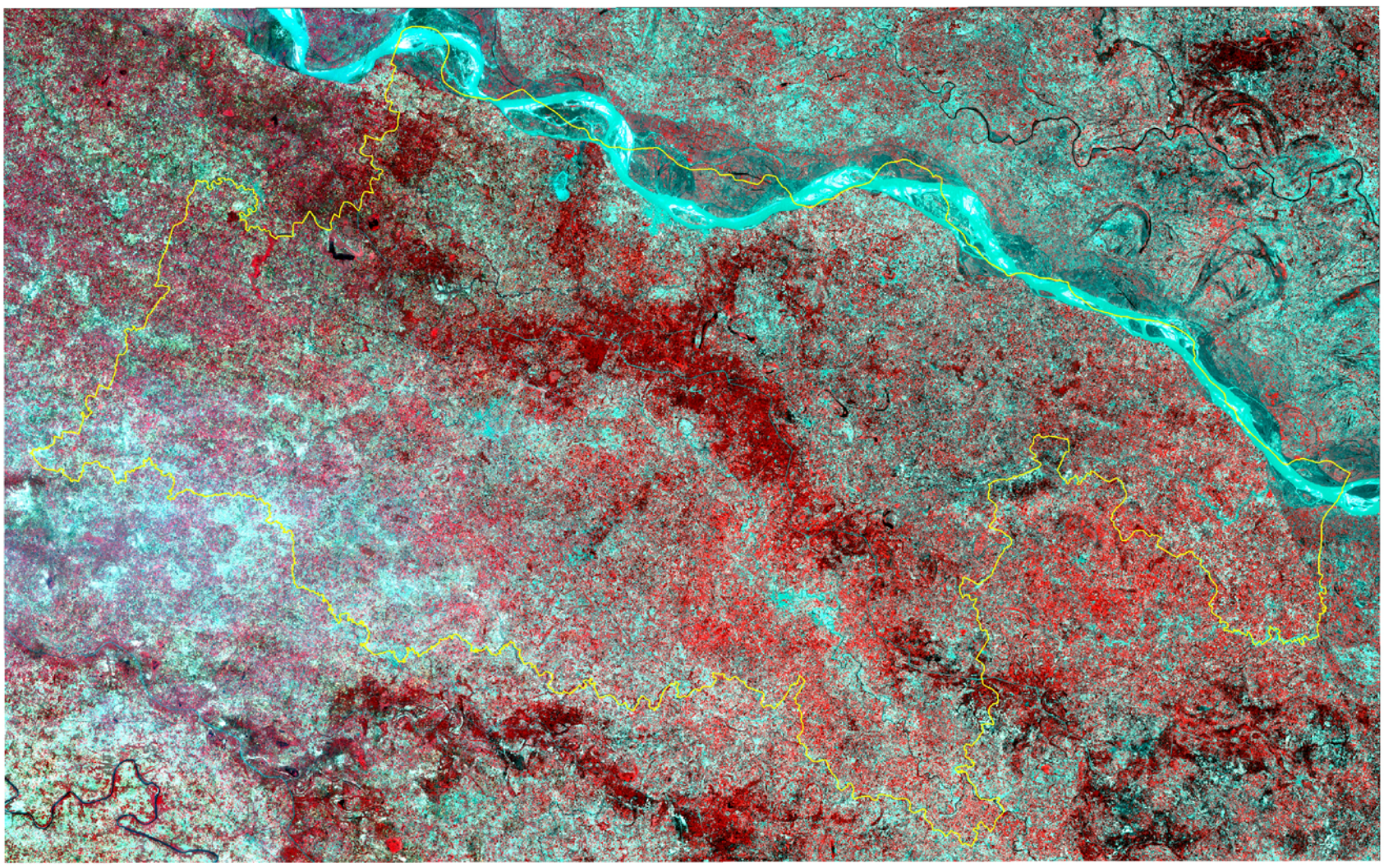
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Government of India

State : Uttar Pradesh

District : Ambedkar Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.49 Sultanpur

Sultanpur district lies between 26°16′ to 26.27°N latitude and 82°04′ to 82.07°E longitude. The District is situated on the banks of Gomti River. The important rivers of the district are River Gomti and Sai. As per 2001 census, the district has a population of 3214832. It has 6 tehsils, 23 blocks and 2533 villages. The climate of Sultanpur is semi-arid with very hot summer and equally cold winter season. During the summer months i.e.May-June, the maximum temperature goes beyond 44 degrees Celcius and in winter months of Dec.-Jan. it is around 3-4 degrees. Average rainfall is 1005 mm.

The total wetland area in the district is 20503 ha. Waterlogged is the dominant wetland type of the district. There are 228 manmade waterlogged sites spread over 6266 ha area, accounting for 30.0 per cent of total wetlands. There are 104 natural waterlogged sites, accounting for around 9.0 per cent of total wetland. The major natural wetlands are: Lakes/ponds. In addition there are 2982 small wetlands (<2.25 ha). There are 118 such sites occupying 21% area. Major wetland types of the district are River/Stream and Tanks/ponds. Detailed estimates of wetlands in Sultanpur are given in table no.54.

Area under aquatic vegetation in pre-monsoon season is 6916 ha during post-monsoon season while in pre-monsoon season 2531 ha. Water spread area in post-monsoon season is 10406 ha. and in pre-monsoon season it is 7311 ha. The qualitative turbidity of water of wetlands is in general low and moderate during both the seasons.

Table 54: Area estimates of wetlands in Sultanpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	118	4327	21.10	854	1497
2	1102	Ox-bow lakes/ Cut-off meanders	21	587	2.86	212	165
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	24	678	3.31	674	284
5	1105	Waterlogged	104	1844	8.99	1227	423
6	1106	River/Stream	39	3331	16.25	3331	2869
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	63	488	2.38	219	146
9	1203	Waterlogged	228	6266	30.56	3889	1927
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**597**	**17521**	**85.46**	**10406**	**7311**
		Wetlands (<2.25 ha), mainly Tanks	2982	2982	14.54	-	-
		Total	**3579**	**20503**	**100.00**	**10406**	**7311**

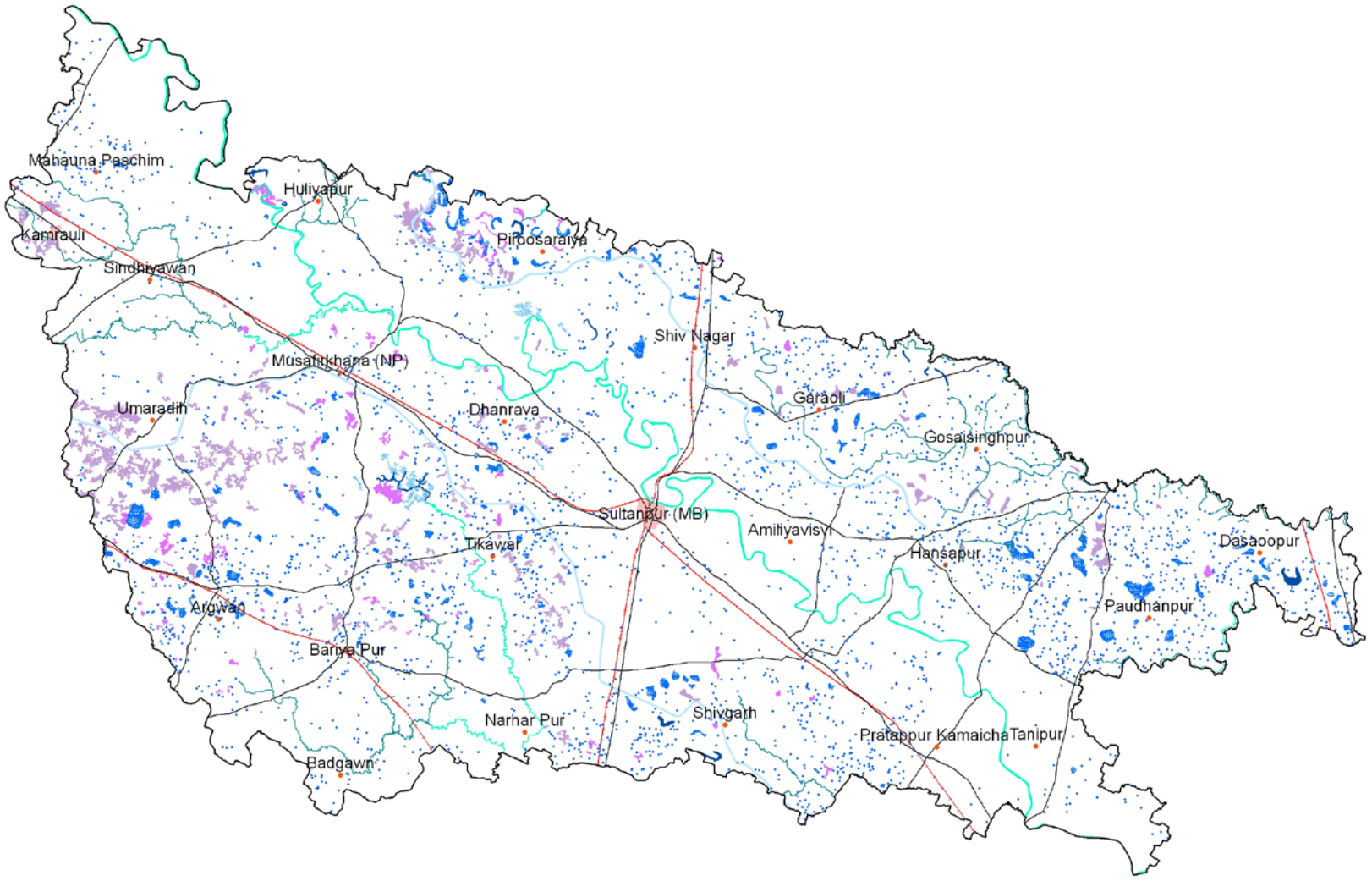
Area under Aquatic Vegetation	6916	2531

Area under turbidity levels		
Low	4374	3567
Moderate	3022	2689
High	3010	1055

State : Uttar Pradesh

WETLAND MAP

District : Sultanpur

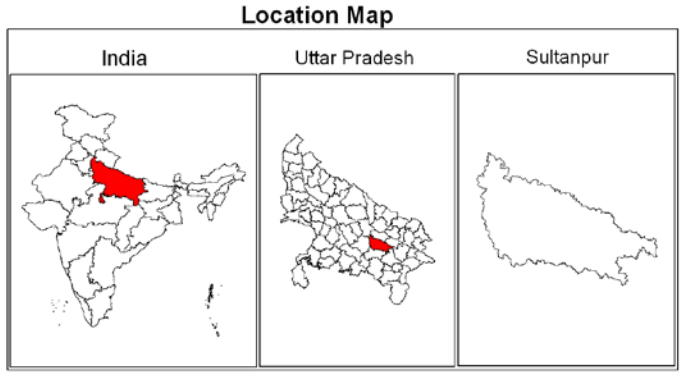


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4.5 9 18 27 36 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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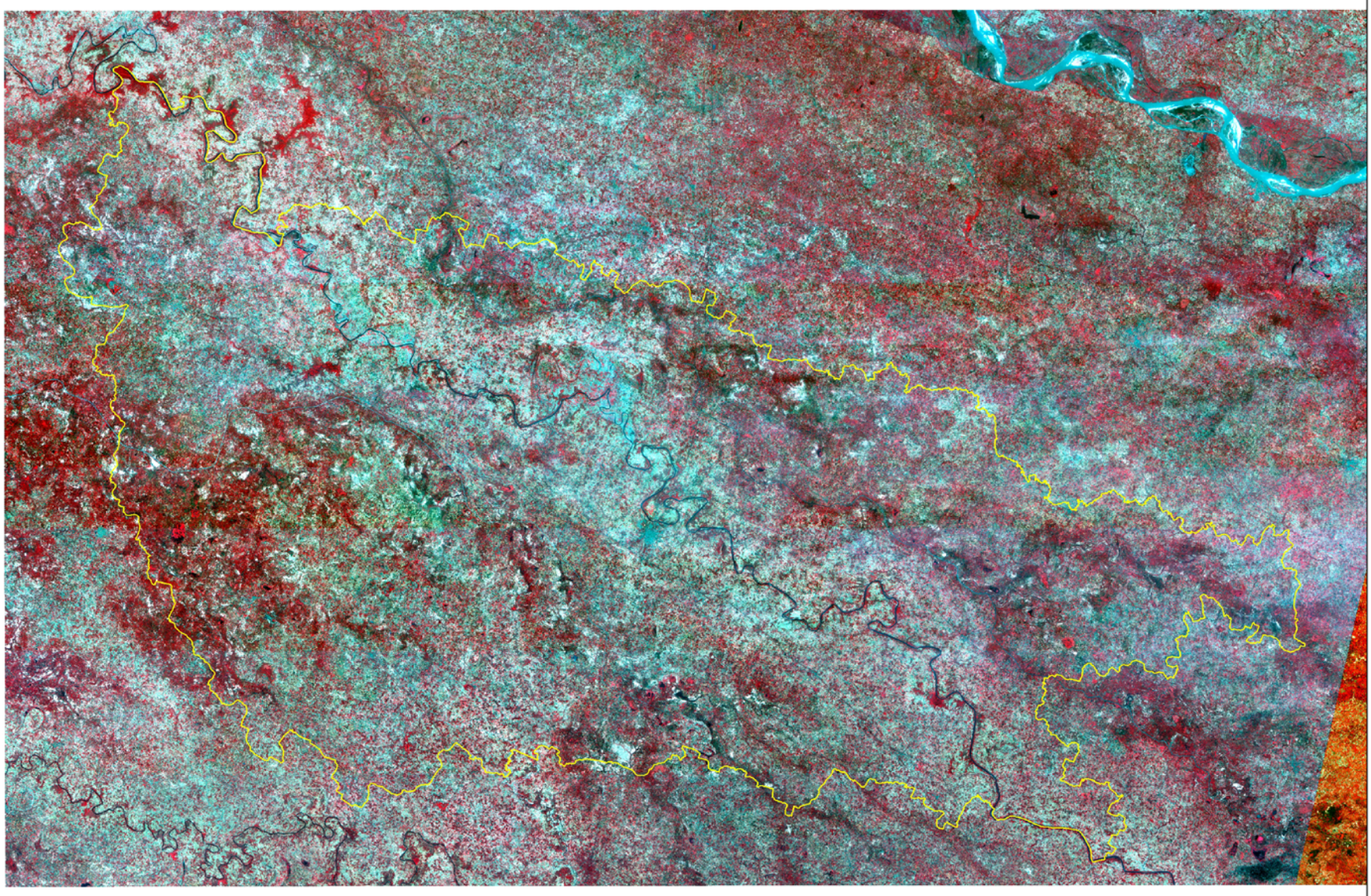
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Government of India

State : Uttar Pradesh

District : Sultanpur



IRS P6 LISS-III post monsoon data (2006)

7.1.50 Bahraich

Bahraich is located on the Saryu River at 27.58°N latitude and 81.6°E longitude. It has an average elevation of 126 metres. District Bahraich has an international border with Nepal on the Northern part, Barabanki & Sitapur districts are in the South, Khiri in the West and Gonda & Srawasti are in Eastern side. Northern part of the district is Tarai region, which is covered by dense natural forests. As per 2001 India census, Bahraich had a population of 2381072. It has 4 tehsils, 12 blocks and 1227 villages. Average maximum and minimum temperatures are 44^{o} C and 5^{o} C respectively.

The total wetland area in the district is 51618 ha, accounting for 60.0 per cent of total wetland area. The other major wetland type is waterlogged (natural). There are 340 such sites under this category accounting for 22.0 per cent of total wetland area. In addition there are 886 small wetlands (<2.25 ha). Detailed estimates of wetlands in Bahraich are given in table no.55.

Area under aquatic vegetation is 6041 ha during post-monsoon season while in pre-monsoon season 3735 ha. Water spread area in post-monsoon season is 33446 ha. It is reduced to 25855 ha in pre-monsoon season. The qualitative turbidity of water in wetlands is in general low and moderate during post monsoon, and low in pre monsoon.

Table 55: Area estimates of wetlands in Bahraich

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	23	715	1.39	413	272
2	1102	Ox-bow lakes/ Cut-off meanders	42	1876	3.63	1396	846
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	50	2617	5.07	1178	698
5	1105	Waterlogged	340	11438	22.16	7228	4344
6	1106	River/Stream	79	30965	59.99	20367	17074
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	2	1866	3.62	1866	1842
8	1202	Tanks/Ponds	31	240	0.46	209	108
9	1203	Waterlogged	42	1015	1.97	789	672
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**609**	**50732**	**98.28**	**33446**	**25856**
		Wetlands (<2.25 ha), mainly Tanks	886	886	1.72	-	-
		Total	**1495**	**51618**	**100.00**	**33446**	**25856**

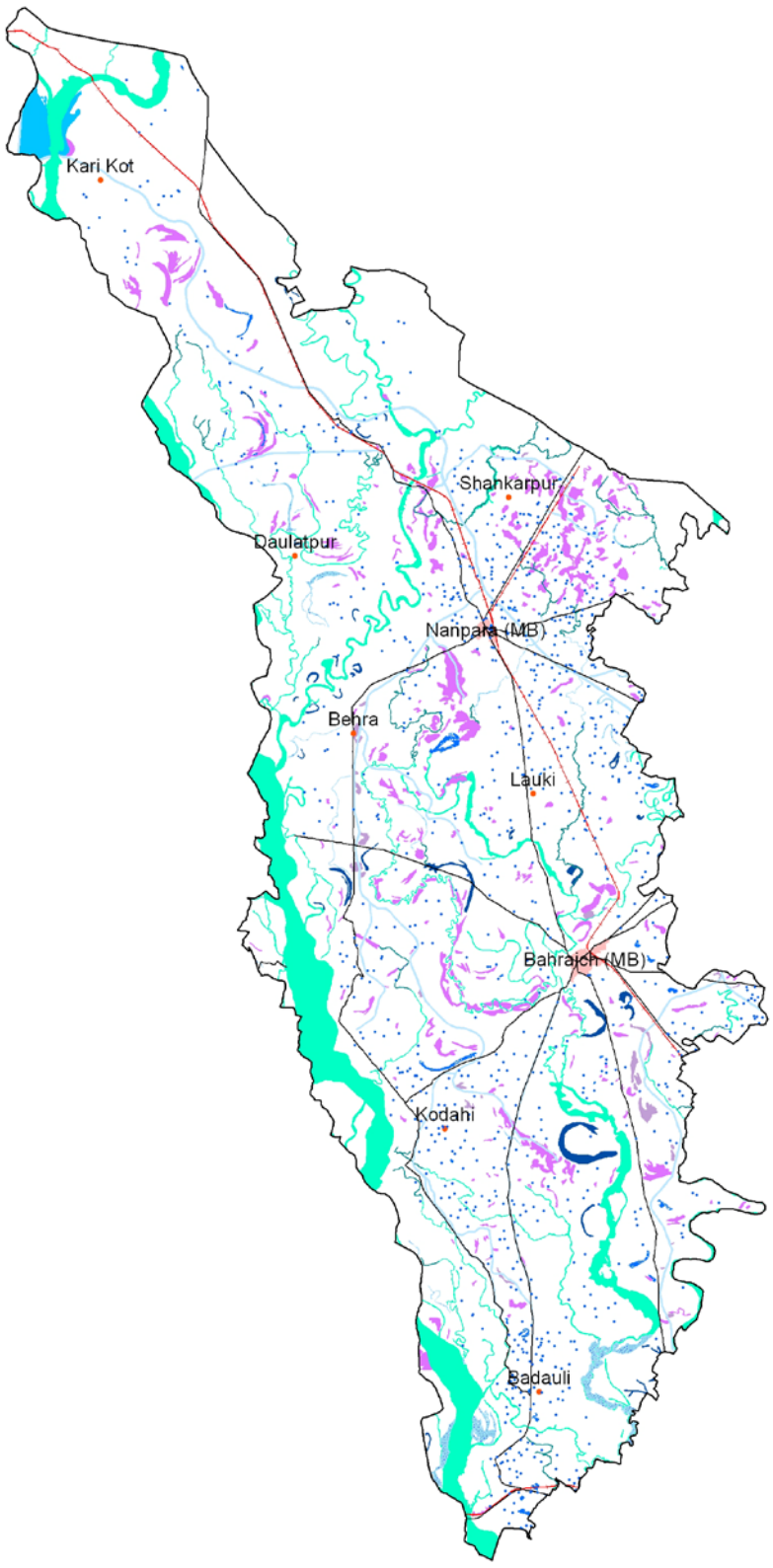
Area under Aquatic Vegetation	6041	3735

Area under turbidity levels		
Low	16881	20503
Moderate	12329	1632
High	4236	3721

State : Uttar Pradesh

WETLAND MAP

District : Bahraich

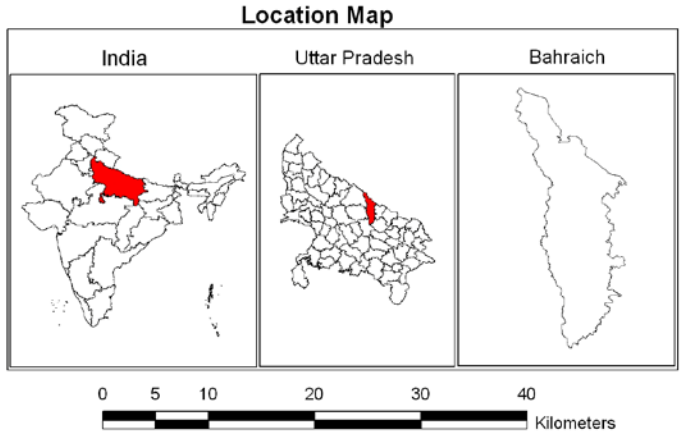


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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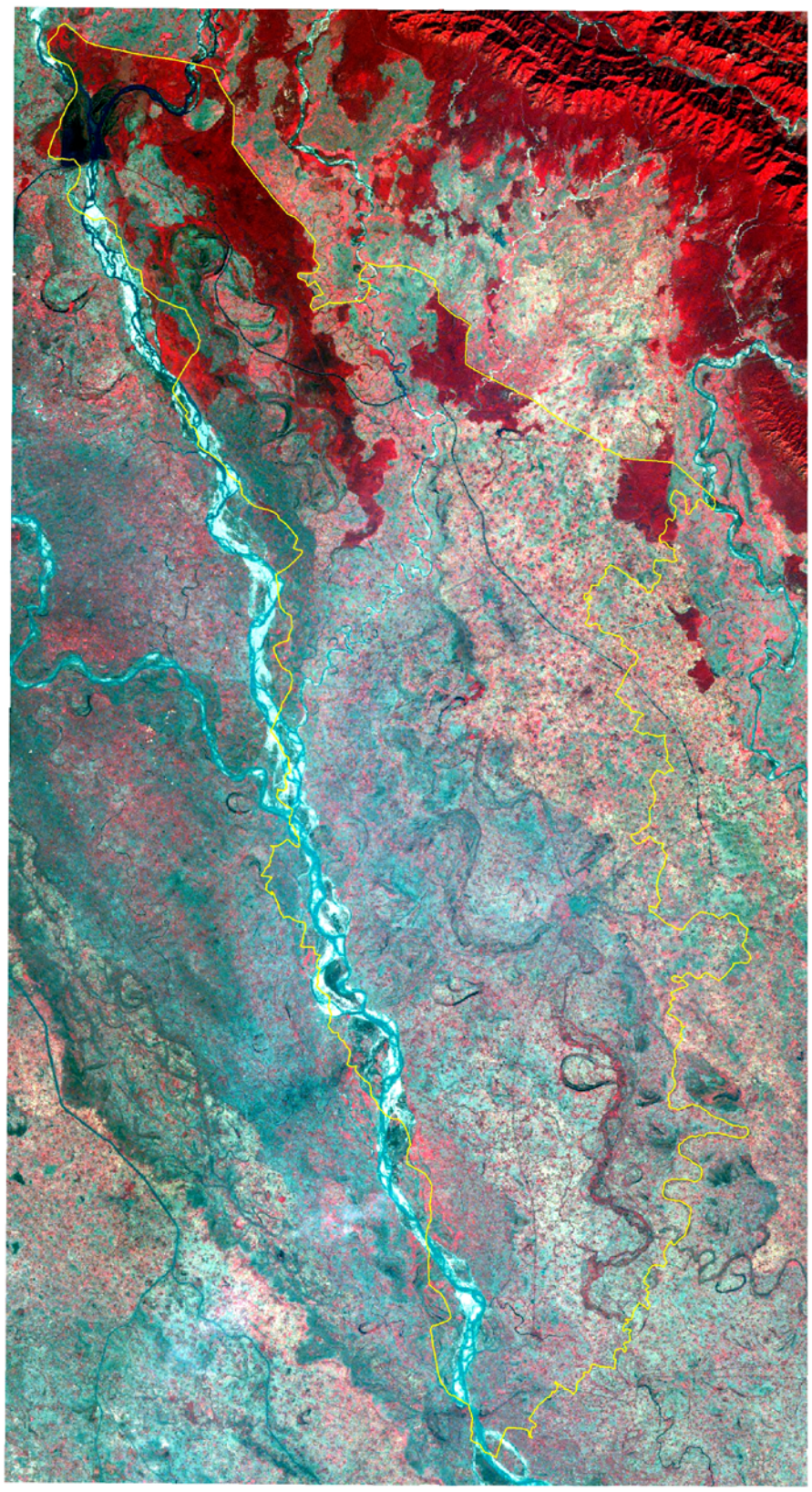
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Government of India

State : Uttar Pradesh

District : Bahraich



IRS-P6 AWiFS post monsoon data (2005)

7.1.51 Shrawasti

Shrawasti, the northeastern area of Uttar Pradesh, is located near river Rapti. The district shares its border with district Balrampur. Bhinga is the District headquarters of Shrawasti. As per 2001 census, the district has a population of 1176391. It has 3 tehsils, 7 blocks and 702 villages.

The total wetland area in the district is 16930 ha. Natural wetlands dominated the area. The major wetland types of the district are River/Stream, waterlogged (natural), Lakes/pond and Ox-bow lakes. There are 163 waterlogged areas with 3788 ha, 23 Lakes/pond with 2200 ha. The Ox-bow lakes and Riverine wetlands together occupy around 10.5 per cent area. In addition there are 768 small wetlands (<2.25 ha). Detailed estimates of wetlands in Shrawasti are given in table no.56.

Area under aquatic vegetation in post-monsoon is 4772 ha while in pre-monsoon season is 3223 ha. Water spread area in post-monsoon season is 9619 ha where as in pre-monsoon season it is 6790 ha. Qualitative turbidity of water is mainly low to moderate during both the seasons.

Table 56: Area estimates of wetlands in Shrawasti

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	23	2200	12.99	236	90
2	1102	Ox-bow lakes/ Cut-off meanders	38	1088	6.43	777	236
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	22	709	4.19	66	530
5	1105	Waterlogged	163	3788	22.37	2518	1343
6	1106	River/Stream	89	7191	42.47	5496	4304
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	3	309	1.83	231	48
8	1202	Tanks/Ponds	27	131	0.77	117	82
9	1203	Waterlogged	30	746	4.41	178	160
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**395**	**16162**	**95.46**	**9619**	**6793**
		Wetlands (<2.25 ha), mainly Tanks	768	768	4.54	-	-
		Total	**1163**	**16930**	**100.00**	**9619**	**6793**

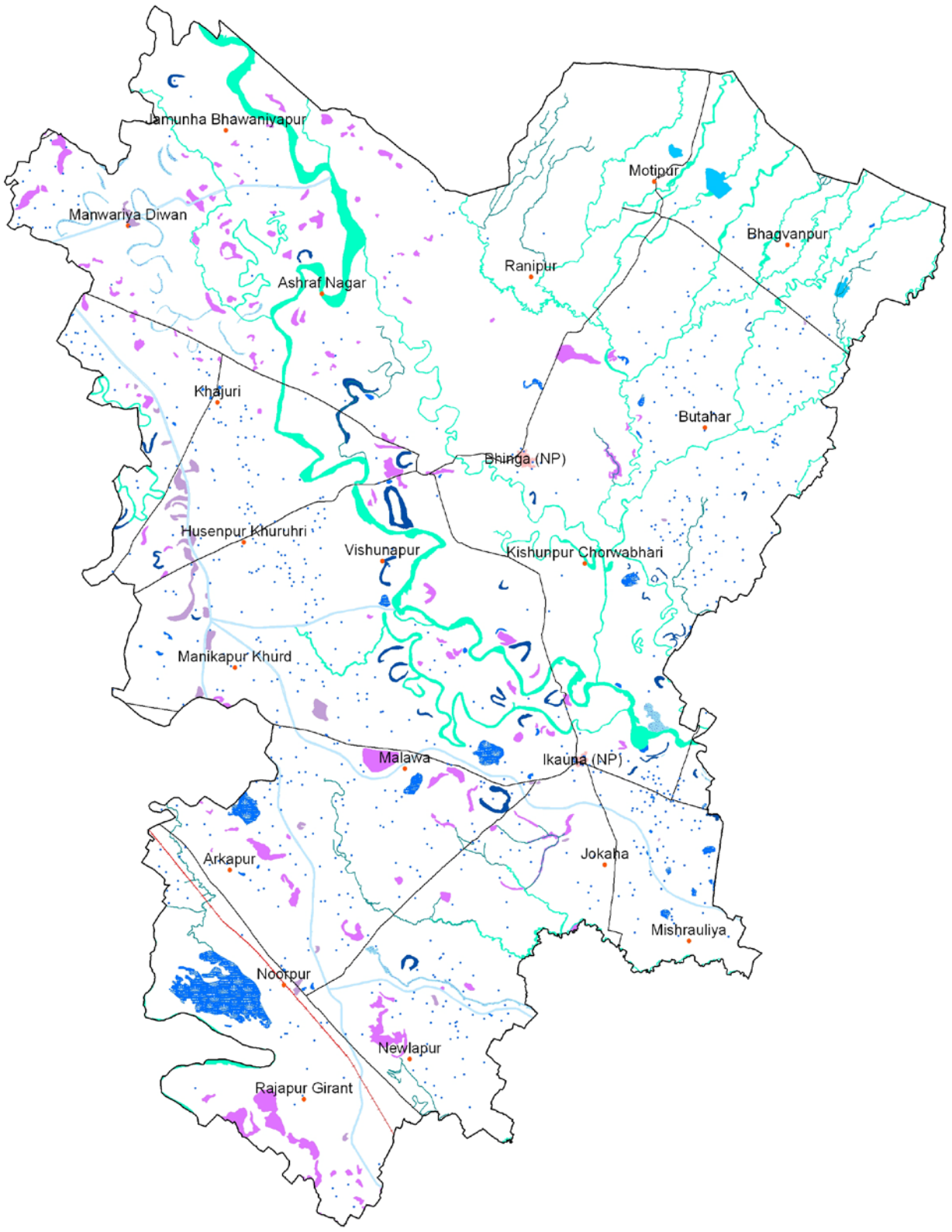
Area under Aquatic Vegetation	4772	3223

Area under turbidity levels		
Low	5506	3346
Moderate	4045	3442
High	68	5

State : Uttar Pradesh

WETLAND MAP

District : Shrawasti

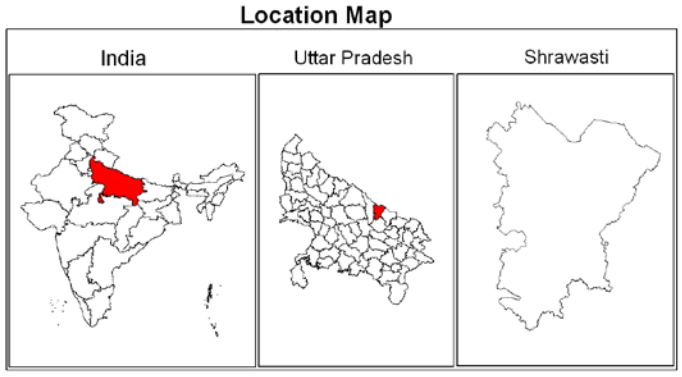


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

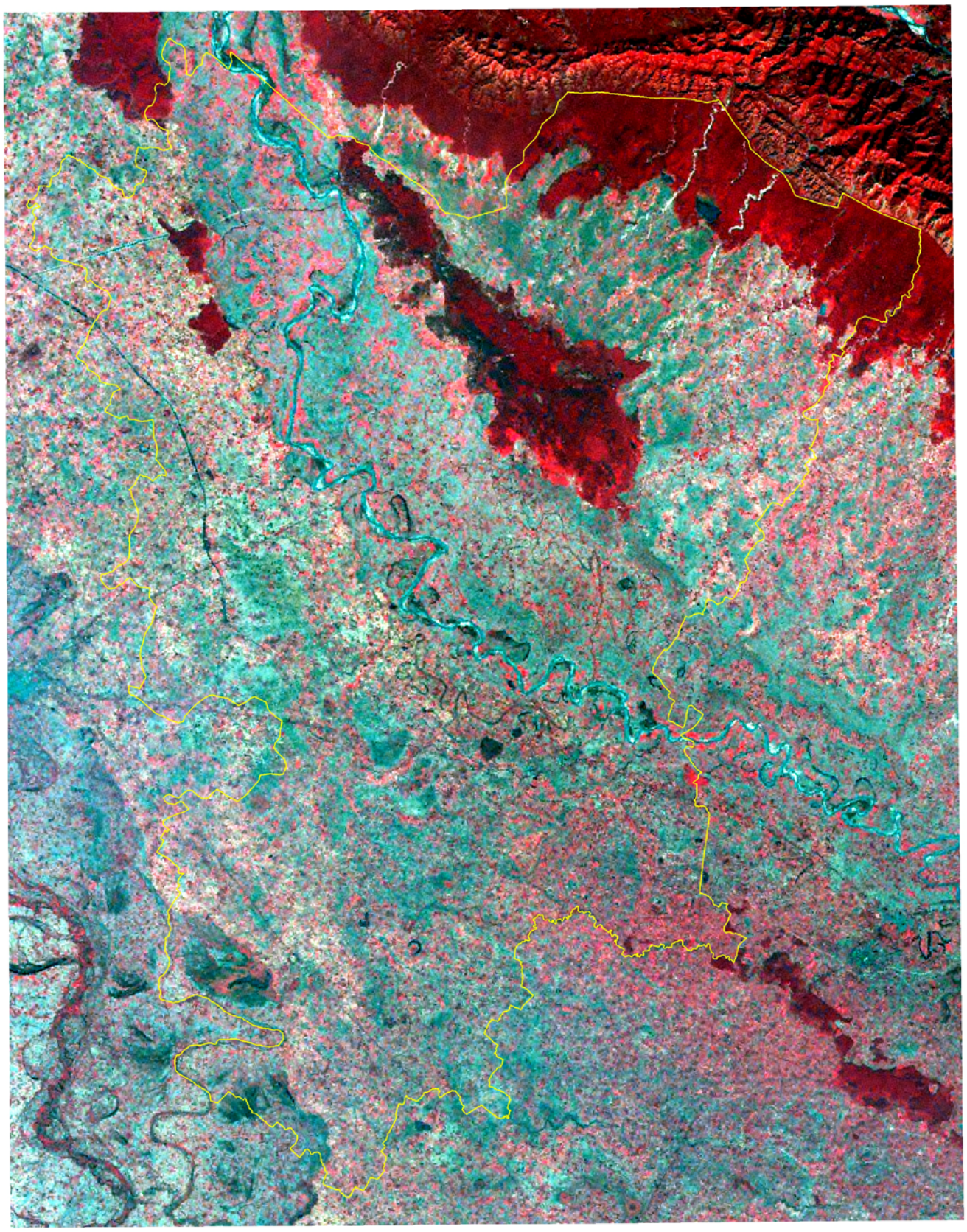
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Shrawasti



IRS-P6 AWiFS post monsoon data (2005)

7.1.52 Balrampur

Balrampur is located at 27.43°N latitude and 82.18°E longitude. It has an average elevation of 106 metres. The town is situated on the bank of the river Rapti. The district is bordered on the north and the northeast by Nepal, on the east by Siddharth Nagar district, on the southeast by Basti district, on the south and the southwest by Gonda district and on the west by Shrawasti district. As of 2001 India census, Balrampur had a population of 1682350.

The total wetland area in the district is 21348 ha. Natural wetlands dominated the district. The major wetland types of the district are River/Stream, Lakes/ Ponds, Waterlogged (natural), and Ox-bow lakes/ Cut-off meanders. Most of the natural wetlands are densely distributed in the southern part of the district. Reservoirs/barrage is the major man made wetlands. There are 13 such sites, situated mostly in the northern part of the district. In addition there are 1811 small wetlands (<2.25 ha) scattered through out the district. A detailed estimate of wetlands in Balrampur is given in table no.57.

Area under aquatic vegetation does not vary significantly in two seasons. Area under aquatic vegetation in post and pre-monsoon season is 4537 and 4576 ha respectively. This can be linked to water spread in two seasons, which, does not show significant seasonal fluctuation. Water spread area in post-monsoon season is 7086 ha where as in pre-monsoon season it is 6261 ha. The qualitative turbidity of water in general is low to moderate in both the seasons.

Table 57: Area estimates of wetlands in Balrampur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	141	3463	16.22	1391	189
2	1102	Ox-bow lakes/ Cut-off meanders	88	1559	7.30	884	342
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	67	1206	5.65	615	193
5	1105	Waterlogged	97	1800	8.43	1312	134
6	1106	River/Stream	217	9474	44.38	7086	6261
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	13	1283	6.01	649	532
8	1202	Tanks/Ponds	71	383	1.79	275	91
9	1203	Waterlogged	32	369	1.73	261	15
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**726**	**19537**	**91.52**	**12473**	**7757**
		Wetlands (<2.25 ha), mainly Tanks	1811	1811	8.48	-	-
		Total	**2537**	**21348**	**100.00**	**12473**	**7757**

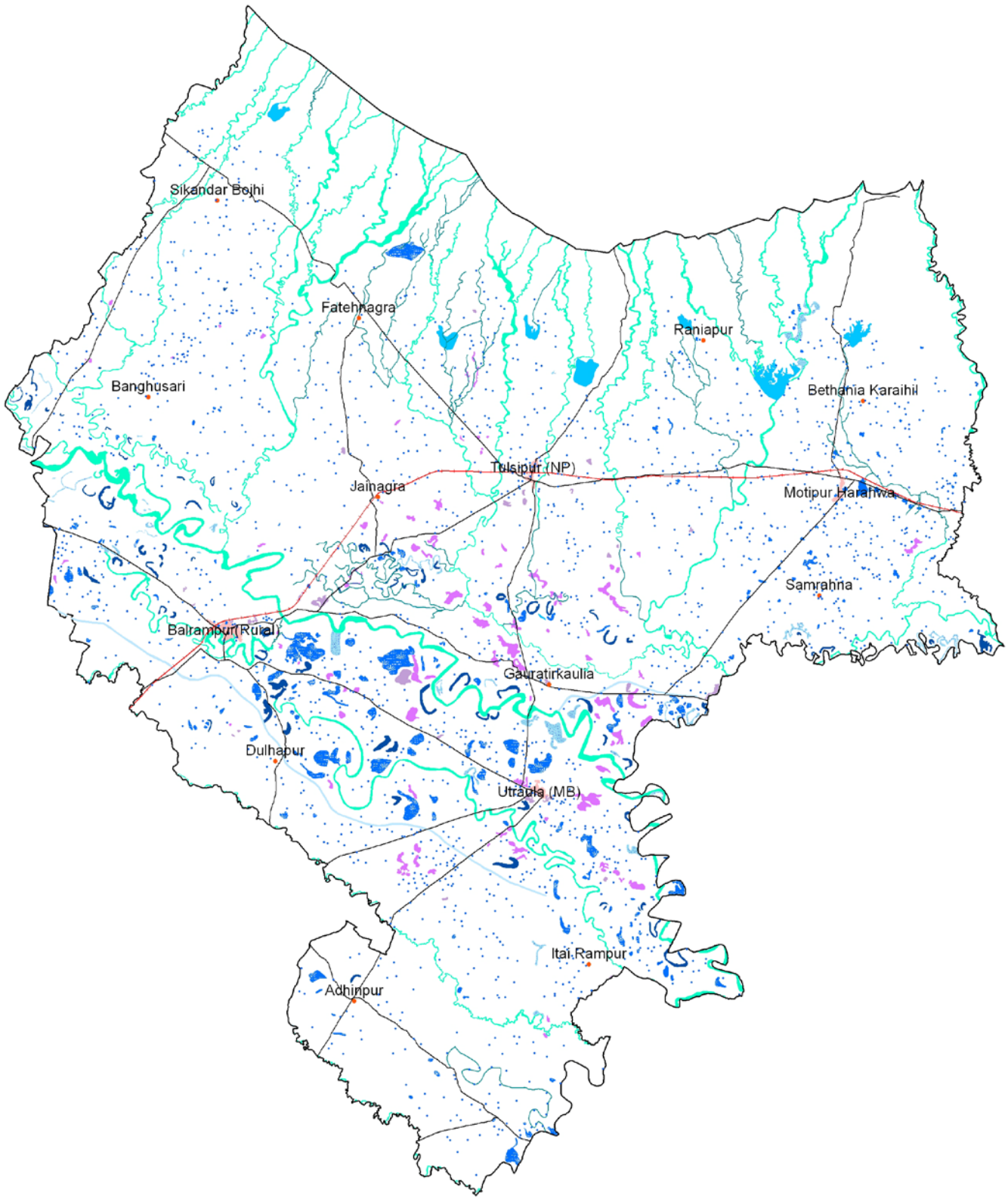
Area under Aquatic Vegetation	4537	4576

Area under turbidity levels		
Low	4868	3545
Moderate	7462	4094
High	143	118

State : Uttar Pradesh

WETLAND MAP

District : Balrampur

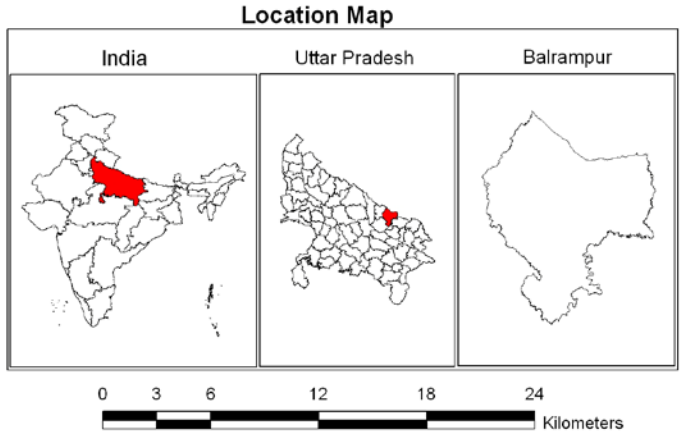


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

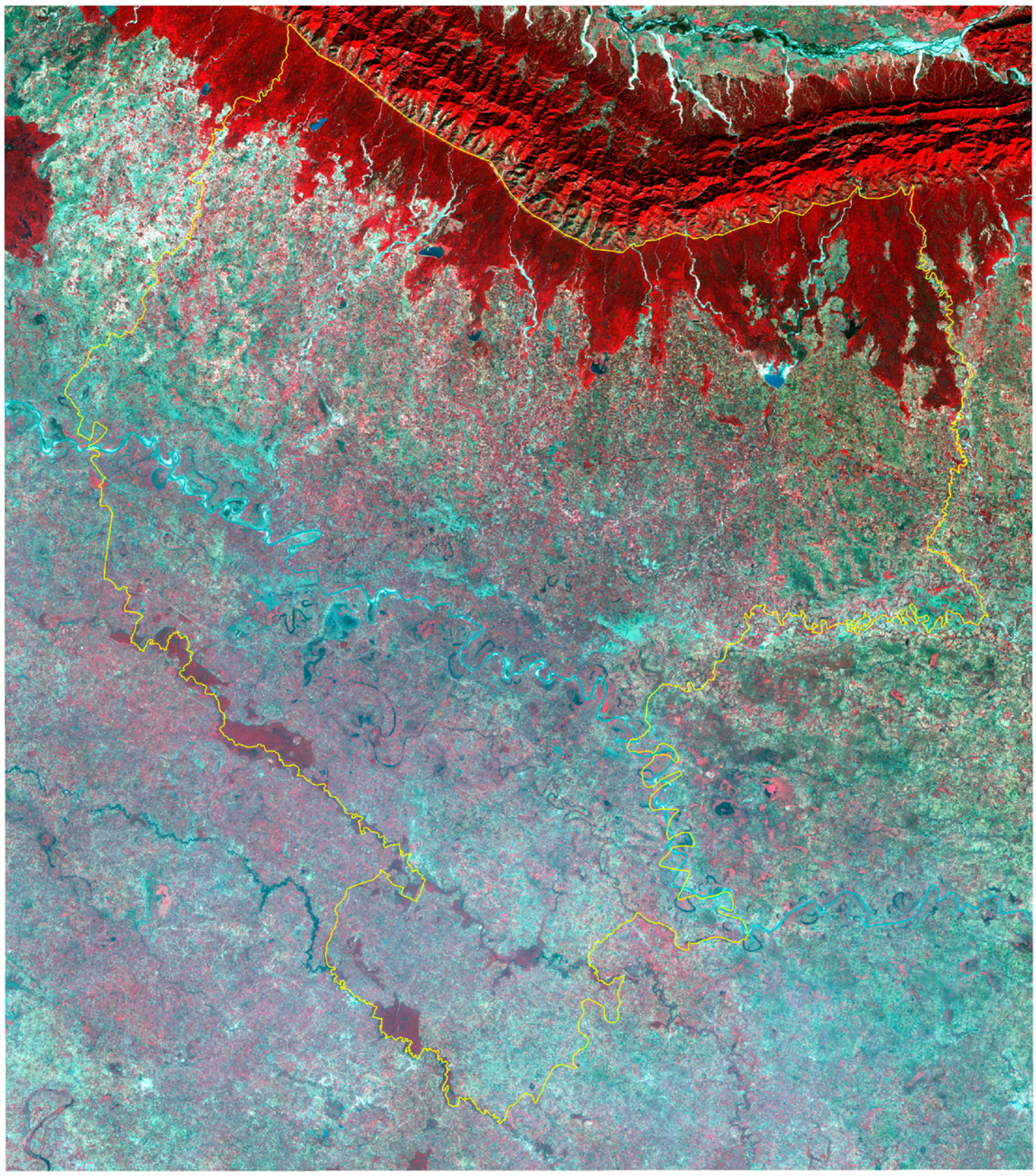
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Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Balrampur



IRS P6 LISS-III post monsoon data (2006)

7.1.53 Gonda

Gonda is located at 27.13°N latitude and 81.93°E longitude. It has an average elevation of 120 metres. The rivers Sarayu and Ghaghara pass through the district. The District Balrampur makes its northern boundaries. In the west it is bounded by district Bahraich and on the east by the district Basti. In the south it is separated from district's Bara Banki and Faizabad by the river Ghaghara. The territory covered by the present district of Gonda formed part of the ancient kingdom of Kosala. As per 2001 census, the district has a population of 2765586. Average rainfall is 1152 mm.

The total wetland area in the district is 22427 ha. Natural wetlands dominate the area. Apart from the River/streams, the major wetland types of the district are Riverine wetlands, Ox-bow lakes/ Cut-off meanders, and Lakes/pond. There are 212 Riverine wetlands and 81 Ox-bow lakes accounting for 15.6 and 14.0 per cent area respectively. Most of the natural wetlands are densely distributed in the central part of the district and mainly along the river. In addition there are 1663 small wetlands (<2.25 ha) scattered through out the district. Details of wetland area estimates are given in table- 58.

Area under aquatic vegetation in post and pre-monsoon season is 6778 and 5251 ha respectively. Water spread area in post-monsoon season is 9951 ha where as in pre-monsoon season it is 5670 ha. The qualitative turbidity of water is in general low to moderate during post monsoon, while it is low in pre monsoon.

Table 58: Area estimates of wetlands in Gonda

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	92	2043	9.11	320	112
2	1102	Ox-bow lakes/ Cut-off meanders	81	3122	13.92	1473	534
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	212	3517	15.68	1538	610
5	1105	Waterlogged	79	2010	8.96	990	695
6	1106	River/Stream	206	9274	41.35	5173	3534
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	56	537	2.39	310	81
9	1203	Waterlogged	23	261	1.16	147	103
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**749**	**20764**	**92.58**	**9951**	**5669**
		Wetlands (<2.25 ha), mainly Tanks	1663	1663	7.42	-	-
		Total	**2412**	**22427**	**100.00**	**9951**	**5669**

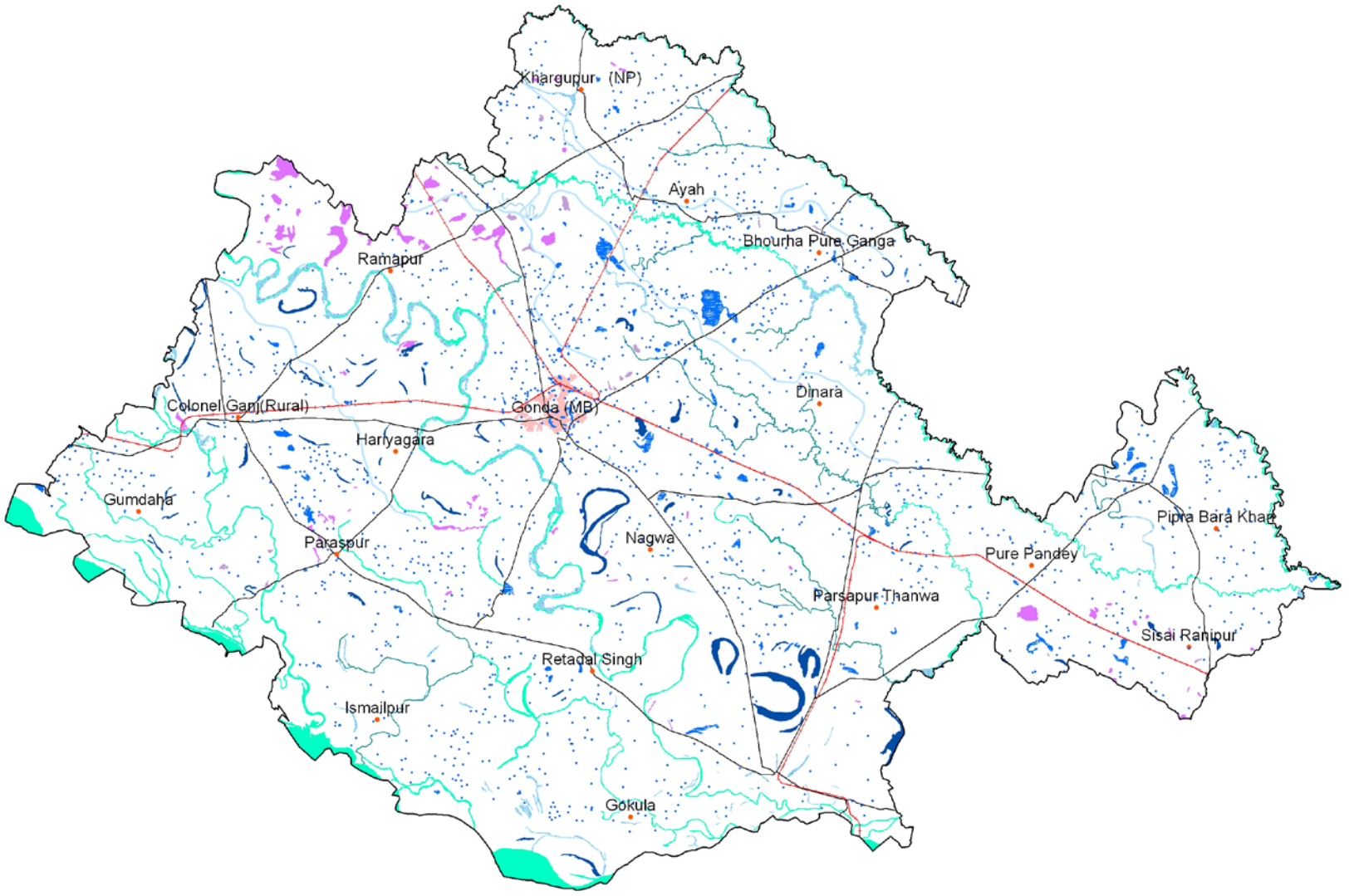
Area under Aquatic Vegetation	6778	5251

Area under turbidity levels		
Low	4883	3332
Moderate	3977	1799
High	1091	538

State : Uttar Pradesh

WETLAND MAP

District : Gonda

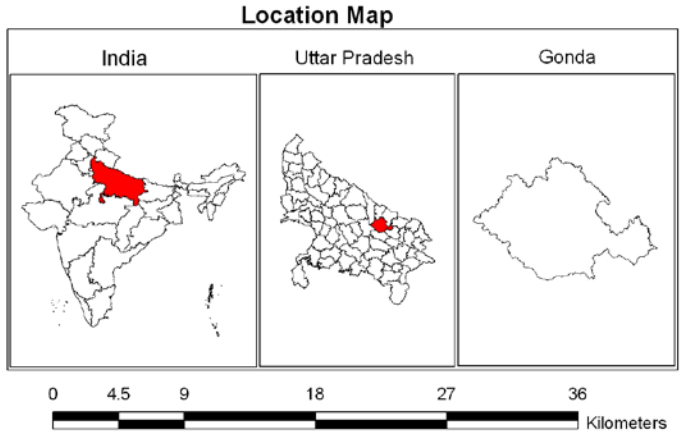


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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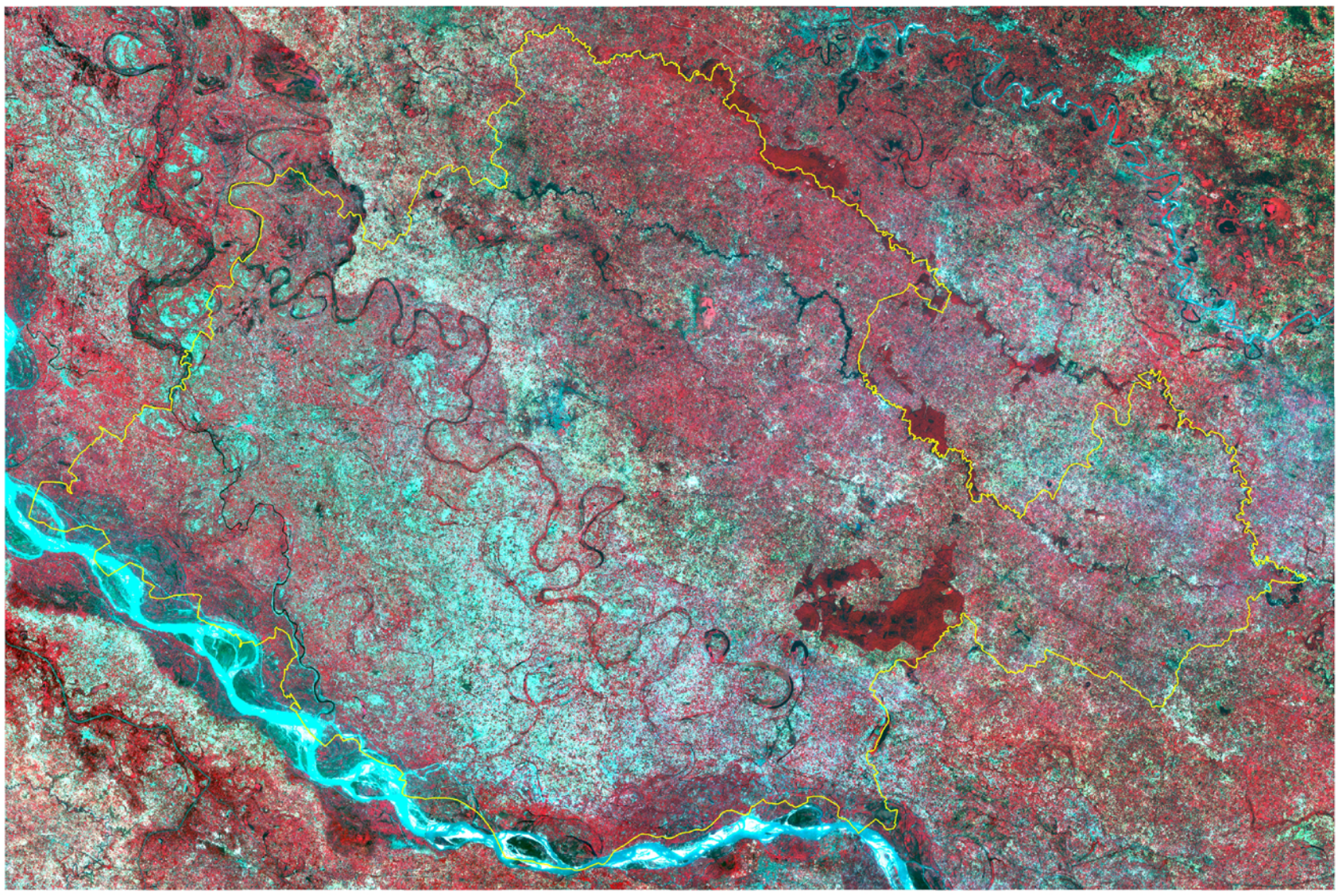
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Government of India

State : Uttar Pradesh

District : Gonda



IRS P6 LISS-III post monsoon data (2006)

7.1.54 Siddarthnagar

The district lies between 27° to 27° 28' N latitudes and 82° 45' to 83° 10' E longitudes. Navgarh is the district headquarters of the district. It is adjacent to Nepal. It is surrounded by many other districts of Uttar Pradesh, on the East by Maharajganj district, South by Basti and Sant Kabir Nagar districts and in West by Balrampur district. As per 2001 census, the district has a population of 2040085.

The total wetland area in the district is 24029 ha. The major wetland types of the district are Lakes/ponds and River/Stream which occupies 6620 ha and 6052 ha respectively, together accounting for 52.5 per cent of wetland area. There are 249 tanks/ponds in the district which covers 1800 ha. Man made waterlogged covers an area of 687 ha and their number is 28. Wetlands are found maximum in number in the south western side of the district. In addition there are 3657 small wetlands (<2.25 ha). Detailed estimates of wetlands in Siddarthnagar are given in table no.59.

Area under aquatic vegetation in post-monsoon is 10905 ha while in pre-monsoon season is 6033 ha. Water spread area in post-monsoon season is 8902 ha and in pre-monsoon season it is 8426 ha. Thus, not much seasonal variation is observed. Low turbidity is observed in most of the wetlands. High turbidity is observed in rivers/streams under inland wetlands – natural and tanks/ponds under inland wetlands-manmade during post-monsoon season

Table 59: Area estimates of wetlands in Siddarthnagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	152	6620	27.55	1078	1715
2	1102	Ox-bow lakes/ Cut-off meanders	99	1312	5.46	518	355
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	66	2204	9.17	444	419
5	1105	Waterlogged	77	1697	7.06	456	166
6	1106	River/Stream	116	6052	25.19	5416	5205
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	249	1800	7.49	777	417
9	1203	Waterlogged	28	687	2.86	213	150
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**787**	**20372**	**84.78**	**8902**	**8427**
		Wetlands (<2.25 ha), mainly Tanks	3657	3657	15.22	-	-
		Total	**4444**	**24029**	**100.00**	**8902**	**8427**

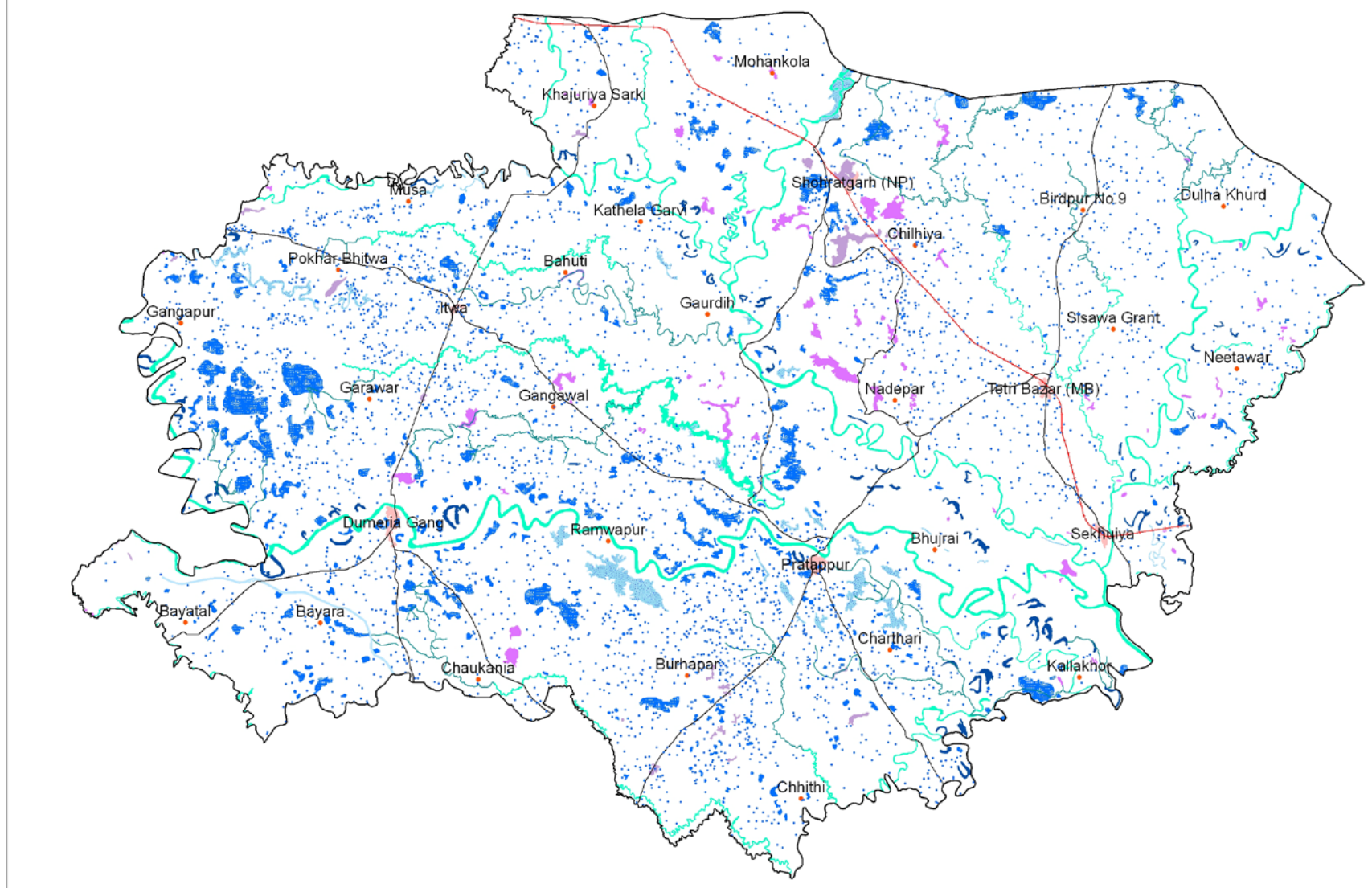
Area under Aquatic Vegetation	10905	6033

Area under turbidity levels		
Low	5092	4212
Moderate	3484	2812
High	326	1403

State : Uttar Pradesh

WETLAND MAP

District : Siddharthnagar

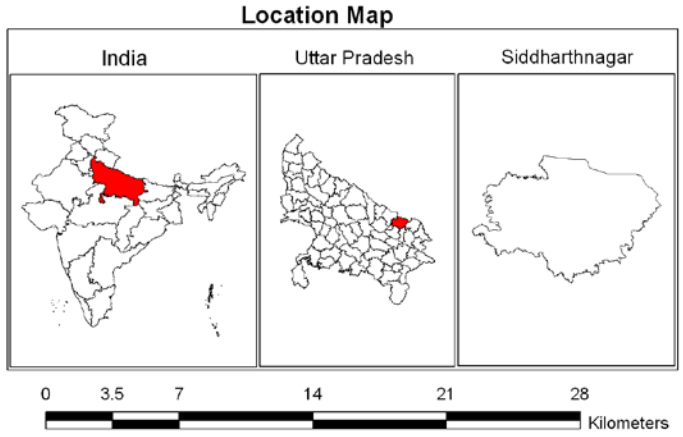


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

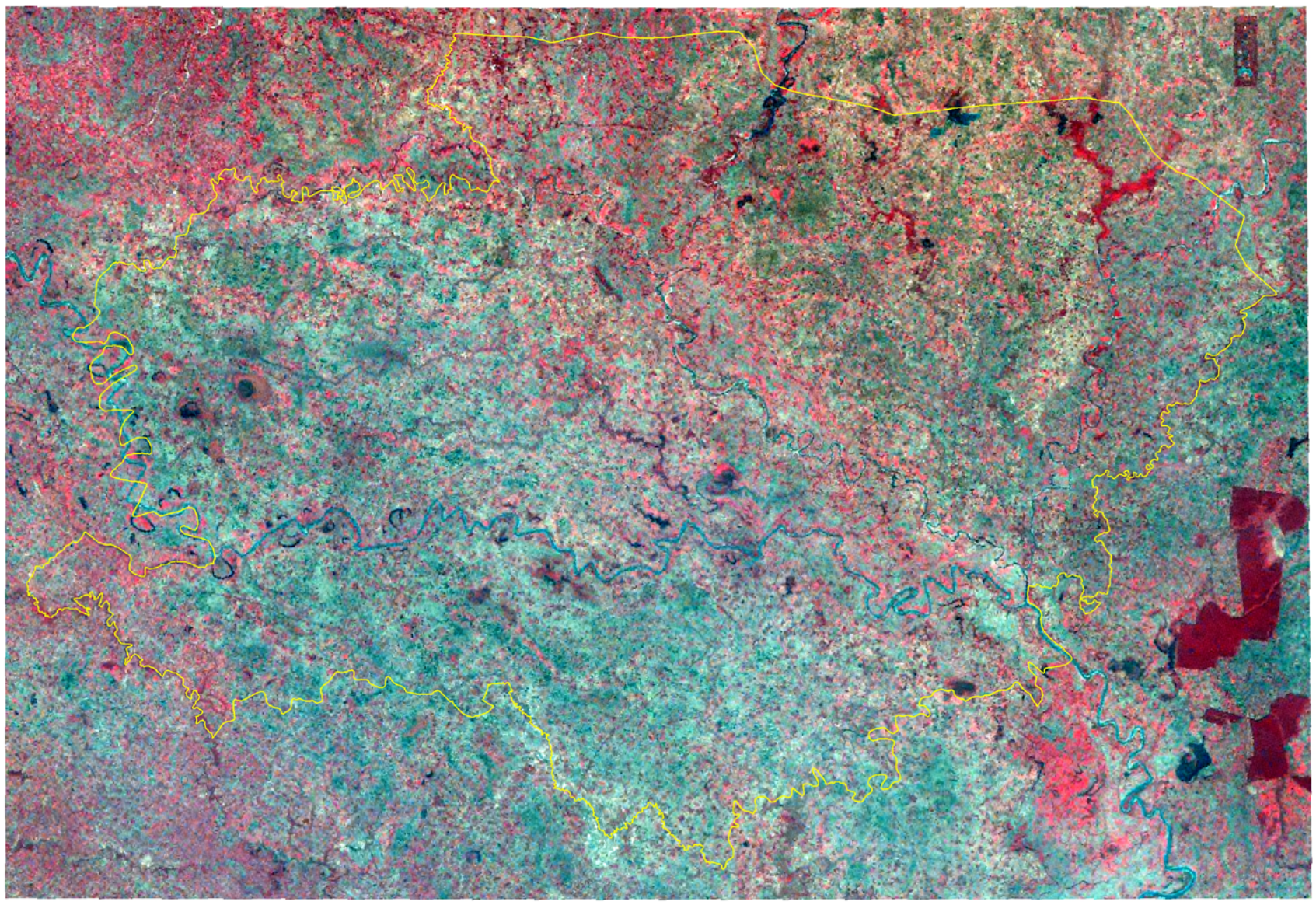
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Siddharthnagar



IRS-P6 AWiFS post monsoon data (2005)

7.1.55 Basti

Basti is located at 26.80°N latitude and 82.74°E longitude. Basti lies between the newly created district Sant Kabir Nagar district on the east and Gonda district on the west. On the south, the Ghaghara River separates it from Faizabad district and newly created Ambedkar Nagar district, while on the north, the district is bounded by Siddharthnagar district. It has 3 tehsils, 13 blocks and 3354 villages. As of 2001 India census, Basti had a population of 2084814. The average annual rainfall of the district is 1166 mm. During the winter season the mean minimum temperature is about 9°C and the mean maximum temperature 23°C. During the summer, the mean minimum is about 25°C and the mean maximum about 44°C.

The total wetland area in the district is 18335 ha. Natural wetlands dominated in the district. The major wetland types are River/Stream and Lakes/ponds which occupies 3736 ha (50.1%), 9203 ha (20.3%) respectively. Natural waterlogged and Riverine wetlands together contributed around 13.0%. Wetlands are found maximum in number in the North eastern (upper side) side of the district. In addition there are 1622 small (<2.25 ha) wetlands. Detailed estimates of wetlands in Basti are given in table no.60.

Area under aquatic vegetation in post-monsoon is 5752 ha while in pre-monsoon season is 4620 ha. Water spread area in post-monsoon season is 6861 ha and in pre-monsoon season it is 5323 ha. Qualitative turbidity of water is in general moderate in post monsoon and low in pre monsoon.

Table 60: Area estimates of wetlands in Basti

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	146	3736	20.38	651	650
2	1102	Ox-bow lakes/ Cut-off meanders	38	1233	6.72	390	171
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	60	1069	5.83	524	164
5	1105	Waterlogged	66	1192	6.50	231	180
6	1106	River/Stream	112	9203	50.19	4955	4105
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	26	228	1.24	87	40
9	1203	Waterlogged	7	52	0.28	23	13
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**455**	**16713**	**91.15**	**6861**	**5323**
		Wetlands (<2.25 ha), mainly Tanks	1622	1622	8.85	-	-
		Total	**2077**	**18335**	**100.00**	**6861**	**5323**

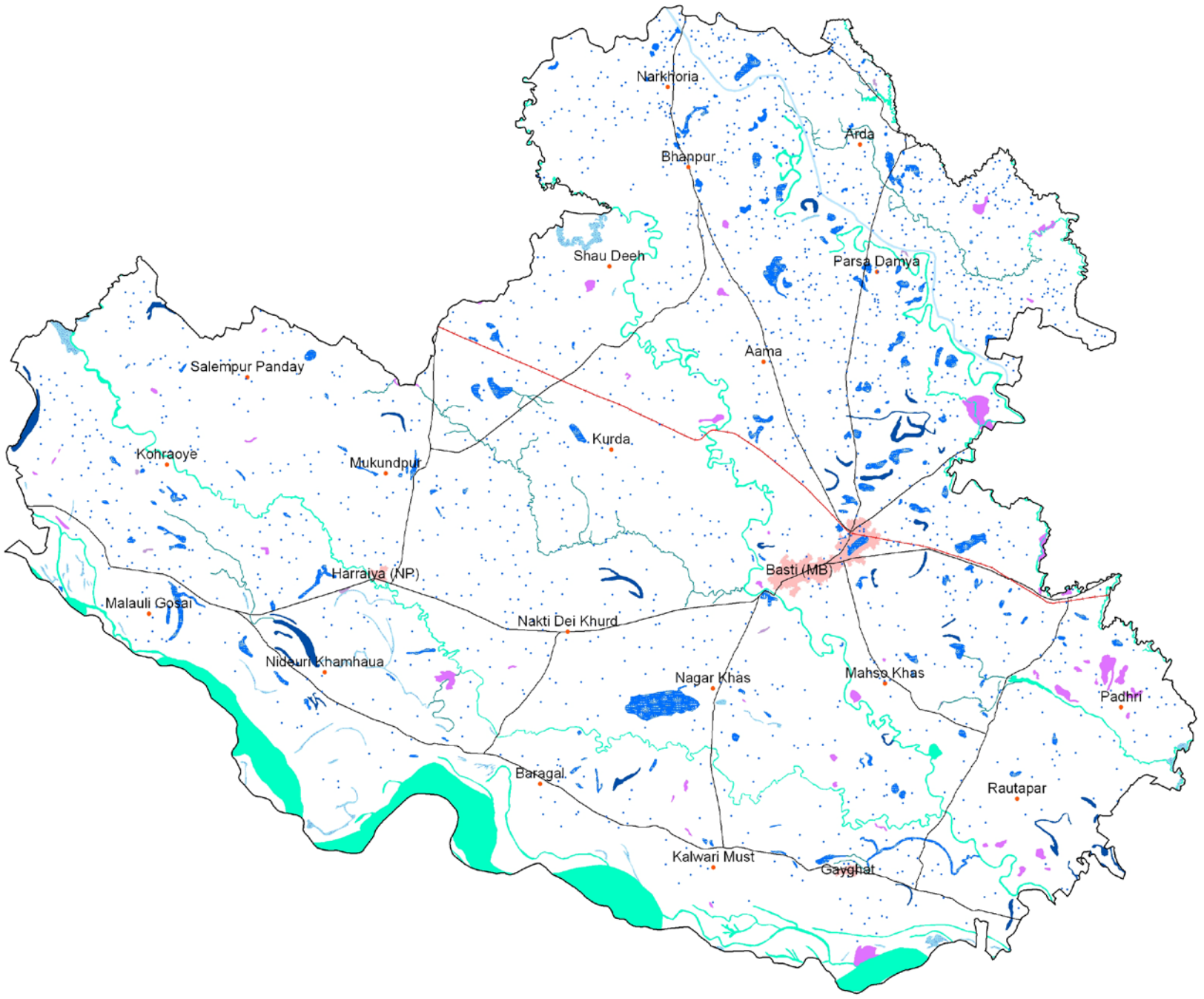
Area under Aquatic Vegetation	5752	4620

Area under turbidity levels		
Low	2706	4009
Moderate	4002	1087
High	153	227

State : Uttar Pradesh

WETLAND MAP

District : Basti

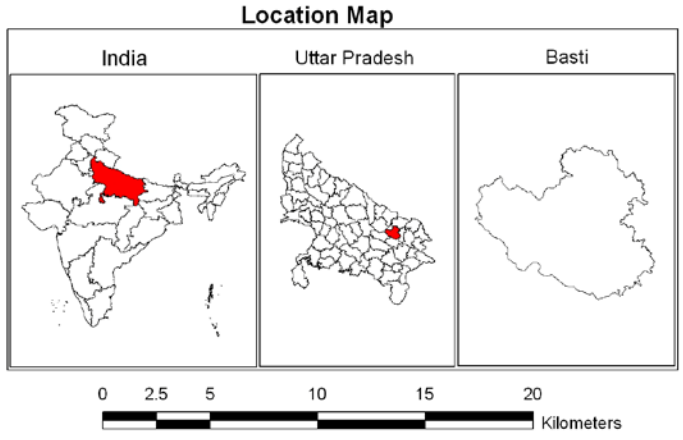


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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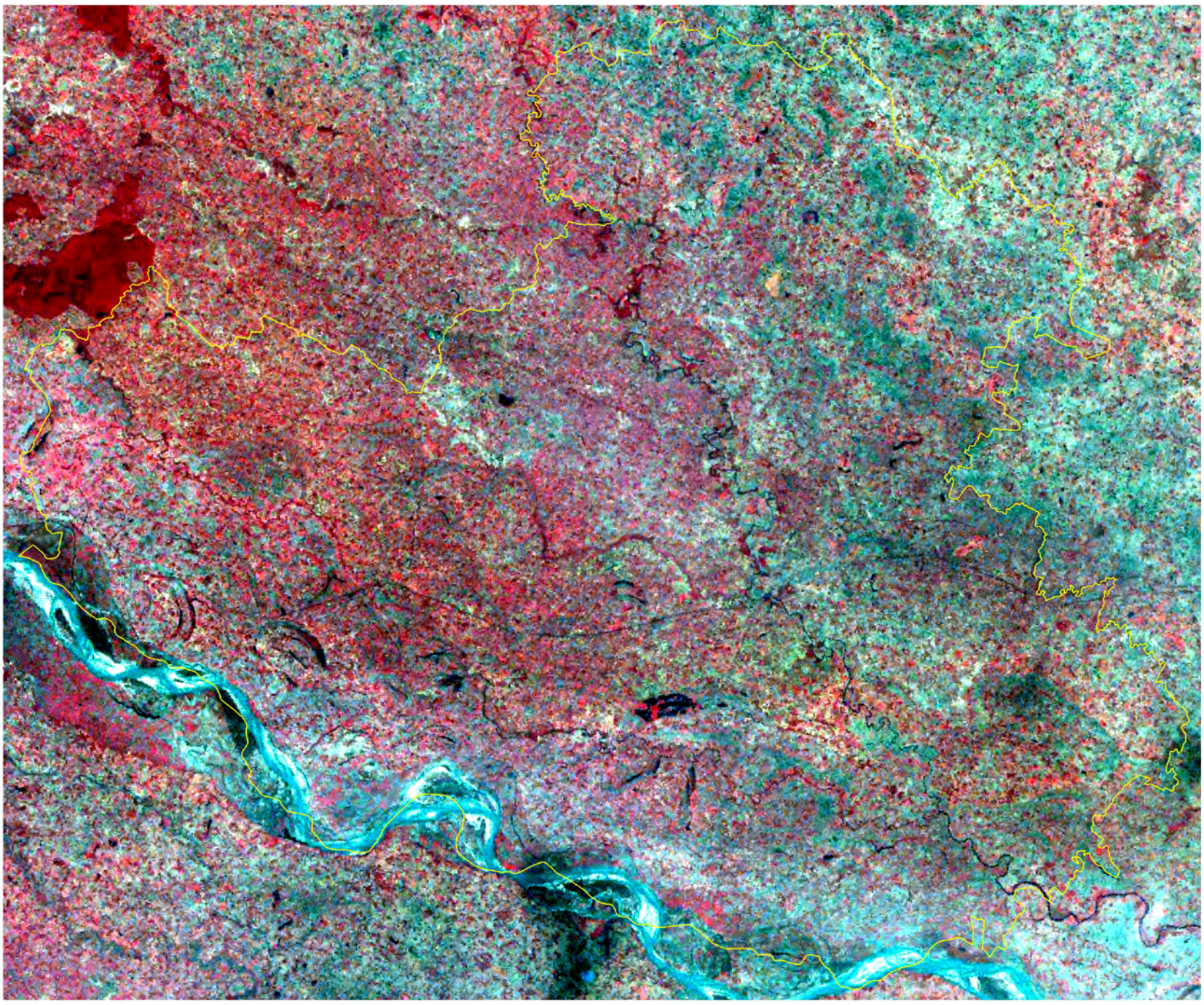
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Government of India

State : Uttar Pradesh

District : Basti



IRS-P6 AWiFS post monsoon data (2005)

7.1.56 Sant Kabir Nagar

The district is bounded by Gorakhpur in the east, Basti in the west, Siddharth Nagar in the north and Ambedkar Nagar in the south. Khalilabad city is the district headquarters of Sant Kabir Nagar district and located at 26°47′ to 26.78°N latitude and 83°04′ to 83.07°E longitude. As per 2001 census, the district has a population of 1420226. It has 3 tehsils, 7 blocks and 1727 villages. Average maximum and minimum temperatures are 44.0^{o}C and 9.0^{o}C respectively. Average rainfall is 1166 mm.

The total wetland area in the district is 15443 ha. This is also a district of natural wetlands. The major wetland types of the district are Lakes/ponds and River/Stream. There are 118 Lakes/ponds accounting for around 40% of total wetland area. The Ox-bow lakes and Riverine wetlands together occupy 13% area. There are only 5 Ponds/tanks with 28.0 ha area. In addition there are 1089 small (<2.25 ha) wetlands identified, which are mainly manmade ponds. Detailed estimates of wetlands in Sant Kabir Nagar are given in table no.61.

Area under aquatic vegetation in pre-monsoon season is 9421 ha and post monsoon is 6467 ha. Water spread area in post-monsoon season is 5837 ha and pre-monsoon season it is 4382 ha. Qualitative turbidity of water in general is low in both the seasons.

Table 61: Area estimates of wetlands in Sant Kabir Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	118	6167	39.93	2429	1503
2	1102	Ox-bow lakes/ Cut-off meanders	46	1371	8.88	156	115
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	40	703	4.55	278	93
5	1105	Waterlogged	53	1347	8.72	276	41
6	1106	River/Stream	89	4652	30.12	2673	2617
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	5	28	0.18	25	14
9	1203	Waterlogged	2	86	0.56	-	-
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**353**	**14354**	**92.95**	**5837**	**4383**
		Wetlands (<2.25 ha), mainly Tanks	1089	1089	7.05	-	-
		Total	**1442**	**15443**	**100.00**	**5837**	**4383**

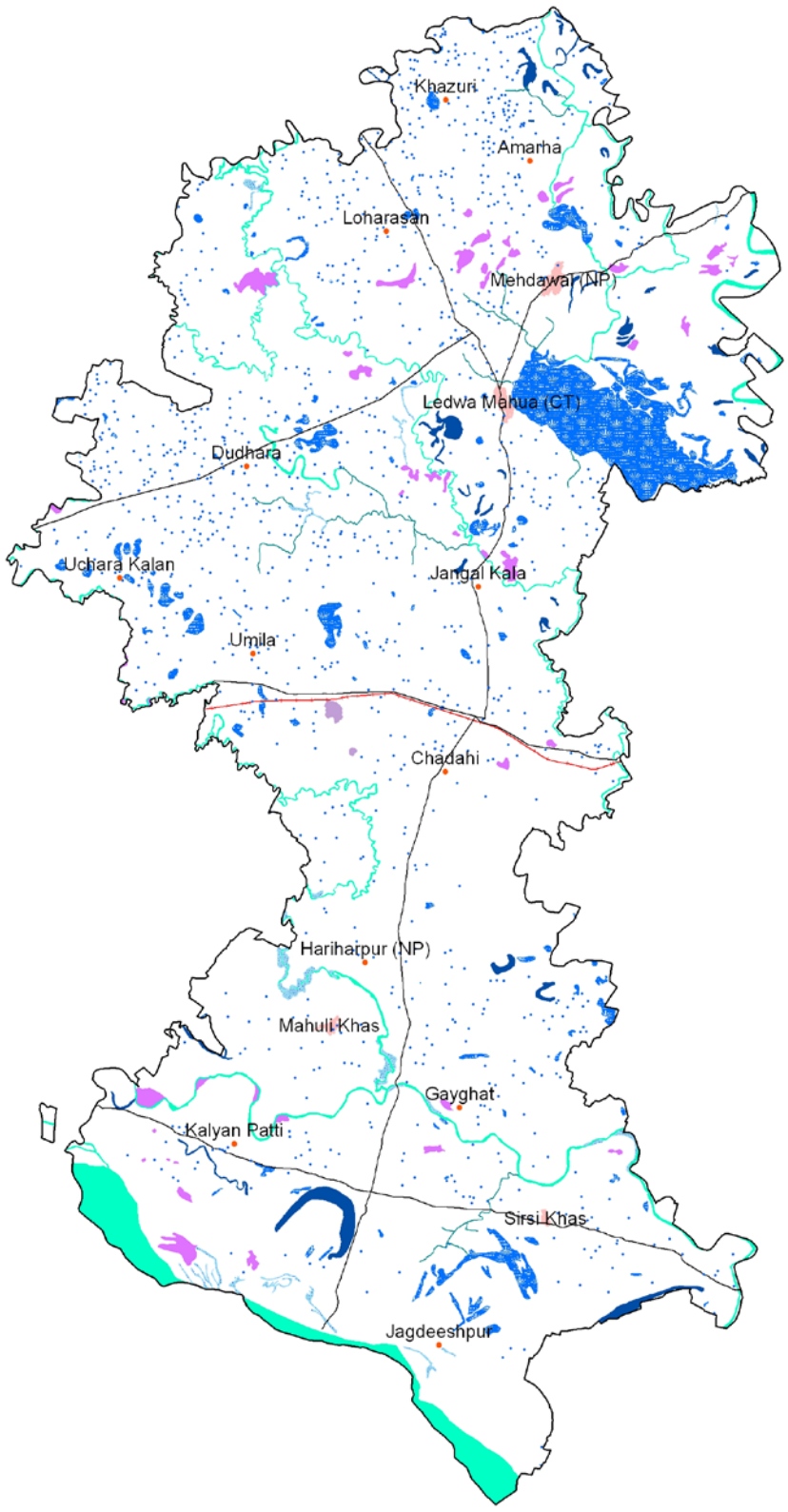
Area under Aquatic Vegetation	6467	9421

Area under turbidity levels		
Low	3658	2345
Moderate	1767	1623
High	412	415

State : Uttar Pradesh

WETLAND MAP

District : Sant Kabir Nagar

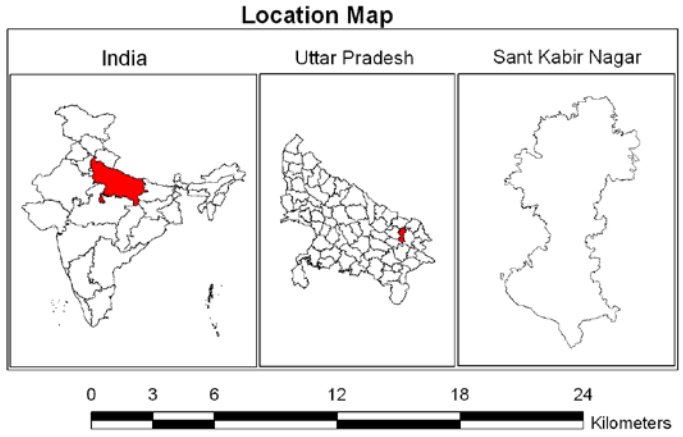


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

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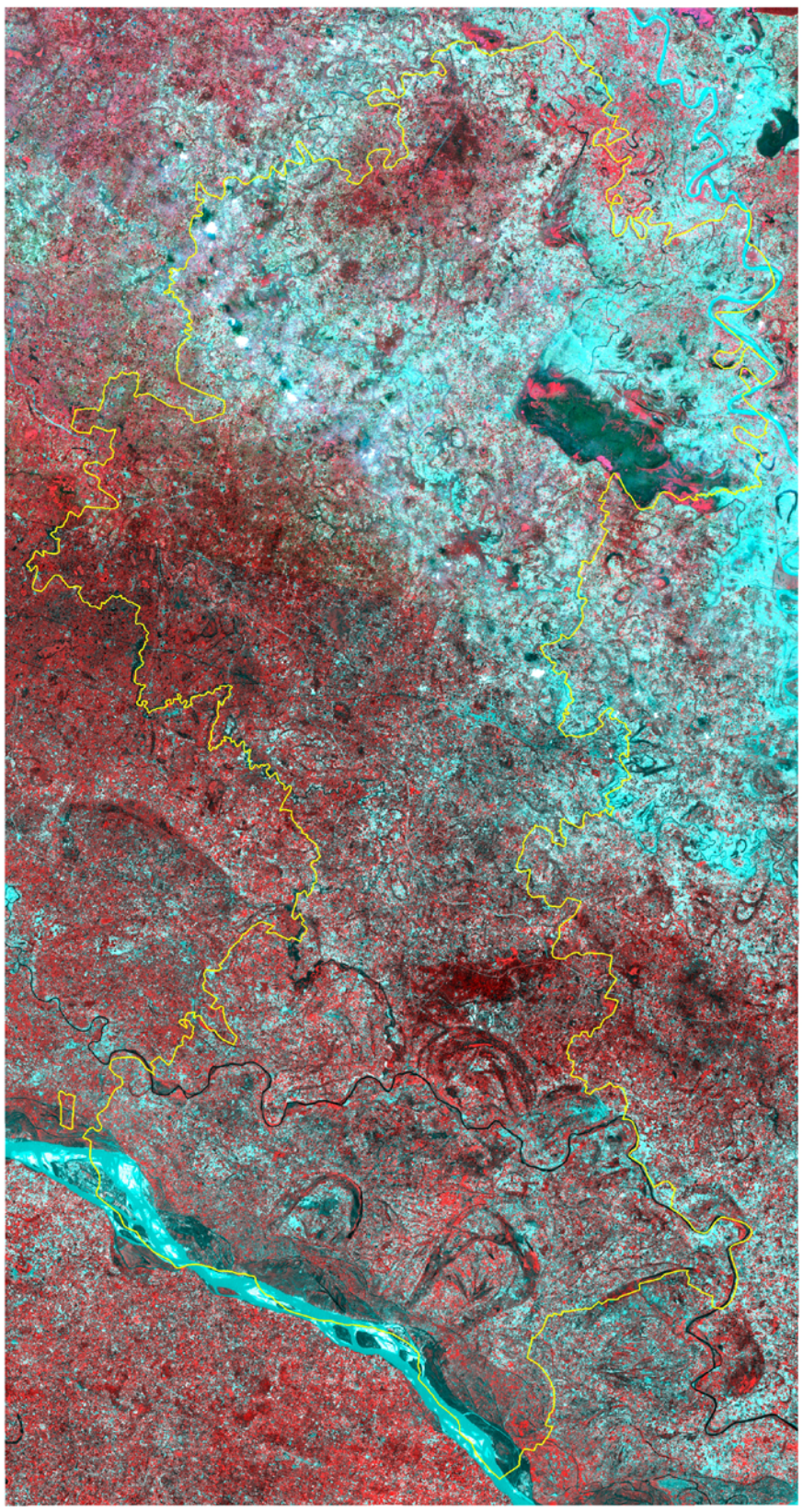
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Government of India

State : Uttar Pradesh

District : Sant Kabir Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.57 Mahrajganj

Maharajganj is located at 26°06′ to 26.11°N latitude and 84°30′ to 84.50°E longitude. It has an average elevation of 66 metres. The district is close to Indo -Nepal Border. Its borders are defined by Nepal Estate in north, Gorakhpur district in south, Padrauna district in east and Siddharth Nagar & Sant Kabir Nagar districts in west. As per 2001 census, the district has a population of 2167041.

The total wetland area in the district is 10532 ha. Major wetland types of the district are Lakes/ponds and River/Stream. There are 111 Lakes/ponds with 3370 ha area and accounts for 32.0% of total wetland area. There area 35 Riverine wetlands contributing 6.0% of are. In addition there are 2645 small (<2.25 ha) wetlands identified. Wetlands are found maximum in number in the South eastern side of the district
Detailed estimates of wetlands in Mahrajganj are given in table no.62.

Area under aquatic vegetation in post-monsoon is 3294 ha while in pre-monsoon season is 2462 ha. Water spread area in post-monsoon season is 3512 ha and in pre-monsoon it is 2433 ha. Qualitative turbidity of water is in general moderate in both the seasons.

Table 62: Area estimates of wetlands in Mahrajganj

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	111	3370	32.00	944	446
2	1102	Ox-bow lakes/ Cut-off meanders	18	288	2.73	99	26
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	35	635	6.03	218	97
5	1105	Waterlogged	11	316	3.00	179	-
6	1106	River/Stream	90	3017	28.65	1931	1830
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	1	3	0.03	3	6
9	1203	Waterlogged	12	258	2.45	138	28
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**278**	**7887**	**74.89**	**3512**	**2433**
		Wetlands (<2.25 ha), mainly Tanks	2645	2645	25.11	-	-
		Total	**2923**	**10532**	**100.00**	**3512**	**2433**

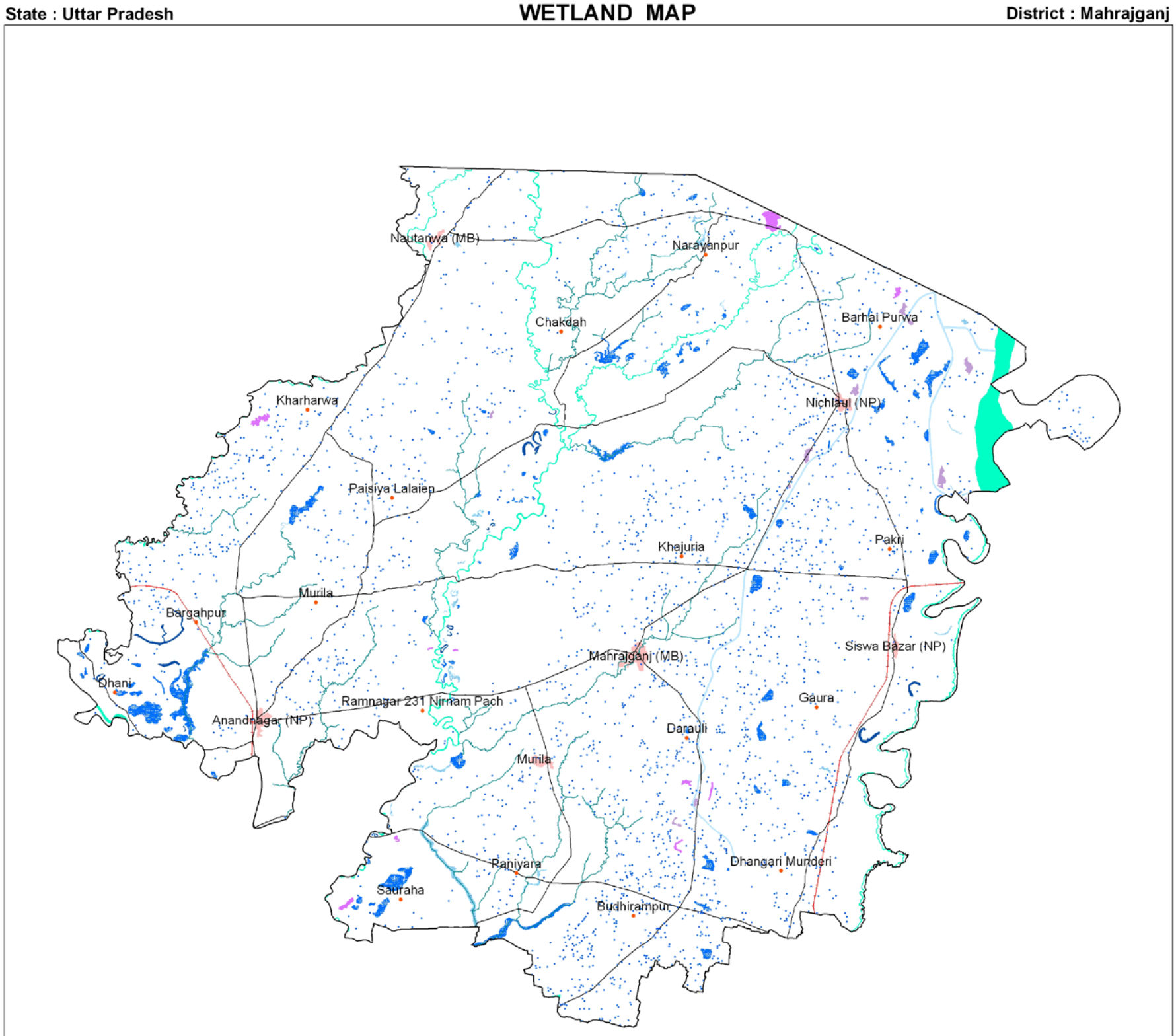
Area under Aquatic Vegetation	3294	2462

Area under turbidity levels		
Low	381	290
Moderate	2230	1428
High	901	715

State : Uttar Pradesh

WETLAND MAP

District : Mahrajganj

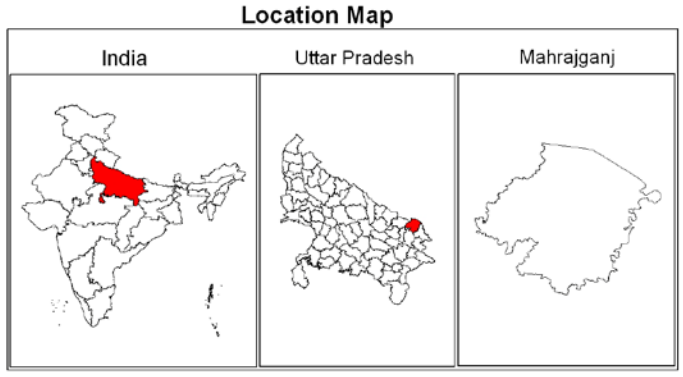


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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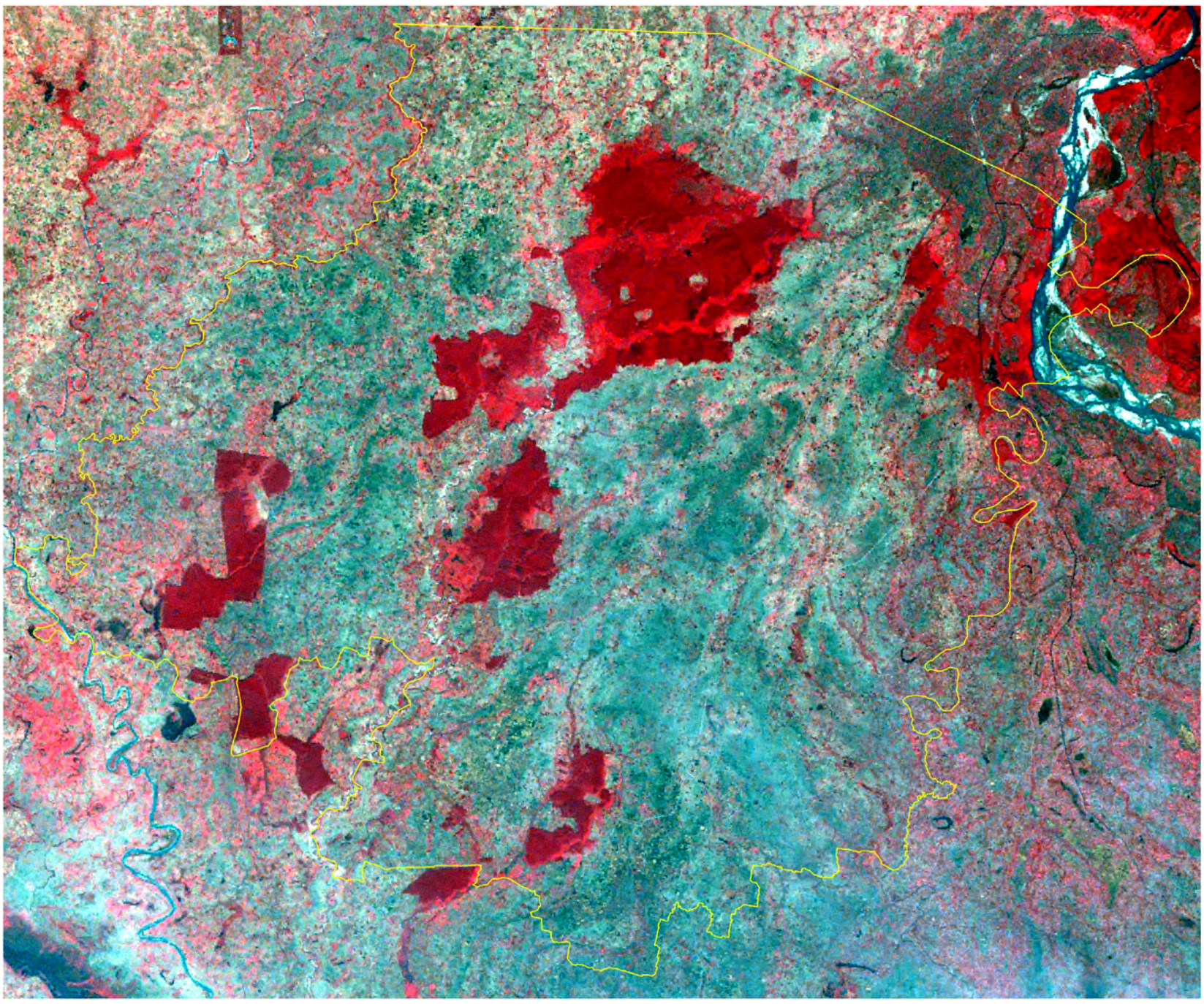
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District : Mahrajganj



IRS-P6 AWiFS post monsoon data (2005)

7.1.58 Gorkhpur

Gorakhpur city lies at 26° 46´ N latitude and 83° 22´ E longitude. The district is bounded by districts Mahrajganj in the north, Ambedkar Nagar, Azamgarh and Mau in the south, Kushinagar and Deoria in the east and Sant Kabirnagar in the west. As per 2001 census, the district has a population of 3769456. It has 7 tehsils, 19 blocks and 3319 villages.

The total wetland area in the district is 27916 ha. Apart from, Rivers/stream, the major wetland types of the district are Lakes/Ponds and Ox-bow lakes/cut off meanders. There are 189 Lakes/pond with 6959 ha. In addition there are 1714 small (<2.25 ha) wetlands identified. Detailed estimates of wetlands in Gorkhpur are given in table no.63.

Area under aquatic vegetation in pre-monsoon season is 5403 ha and in post-monsoon is 9027. Water spread area in post-monsoon season is 13321 ha and in pre-monsoon season it is 7606 ha. Qualitative turbidity of water in general is moderate in both the seasons.

Table 63: Area estimates of wetlands in Gorkhpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	189	6959	24.93	3427	1050
2	1102	Ox-bow lakes/ Cut-off meanders	104	2773	9.93	748	453
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	125	2382	8.53	712	318
5	1105	Waterlogged	29	1082	3.88	587	157
6	1106	River/Stream	97	11477	41.11	7609	5534
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	4	32	0.11	16	21
9	1203	Waterlogged	46	1497	5.36	222	73
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**594**	**26202**	**93.86**	**13321**	**7606**
		Wetlands (<2.25 ha), mainly Tanks	1714	1714	6.14	-	-
		Total	**2308**	**27916**	**100.00**	**13321**	**7606**

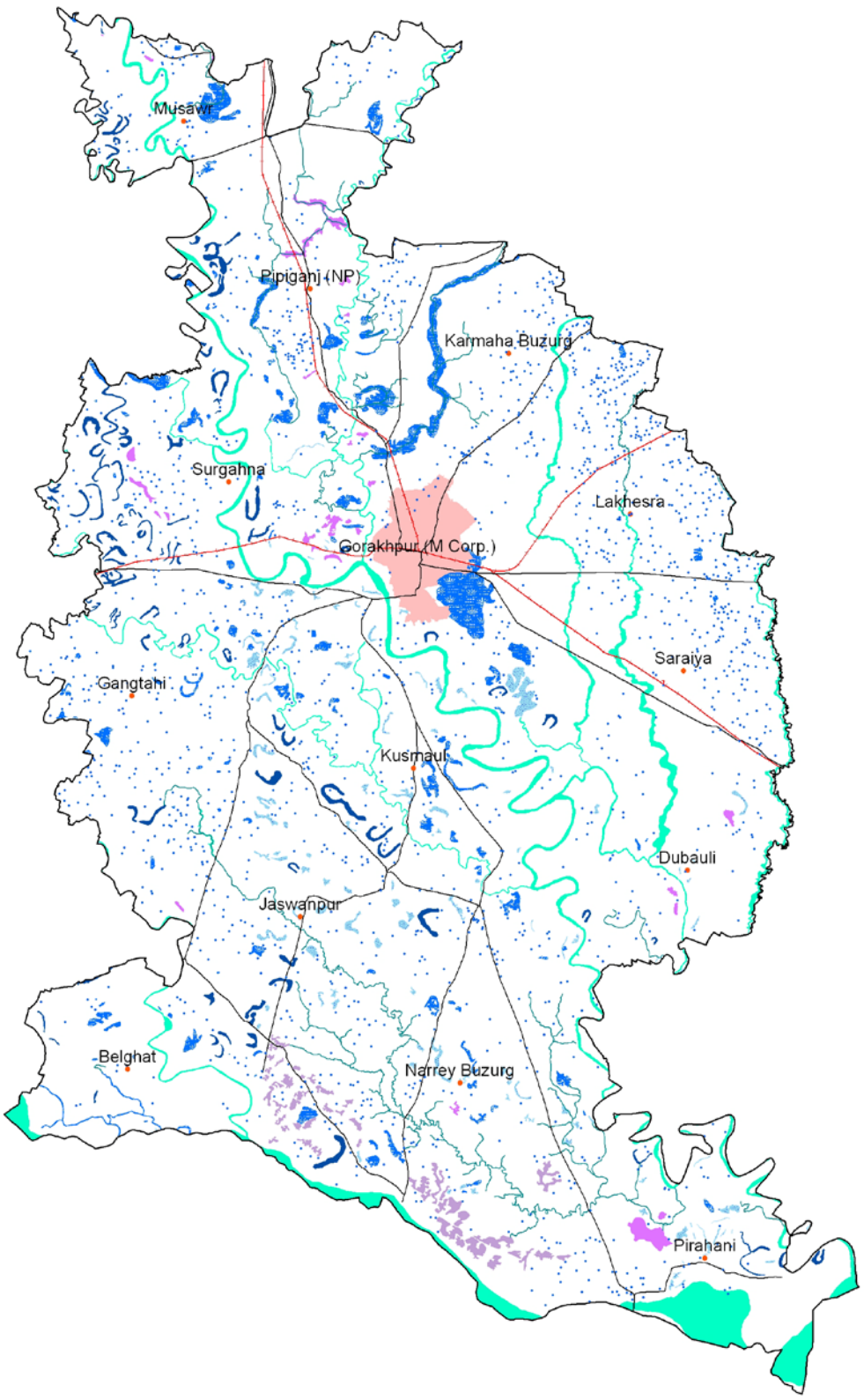
Area under Aquatic Vegetation	9027	5403

Area under turbidity levels		
Low	1038	2610
Moderate	11002	3801
High	1281	1195

State : Uttar Pradesh

WETLAND MAP

District : Gorakhpur

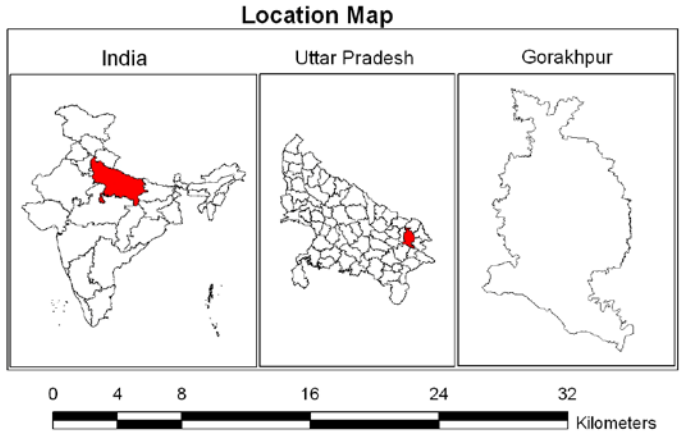


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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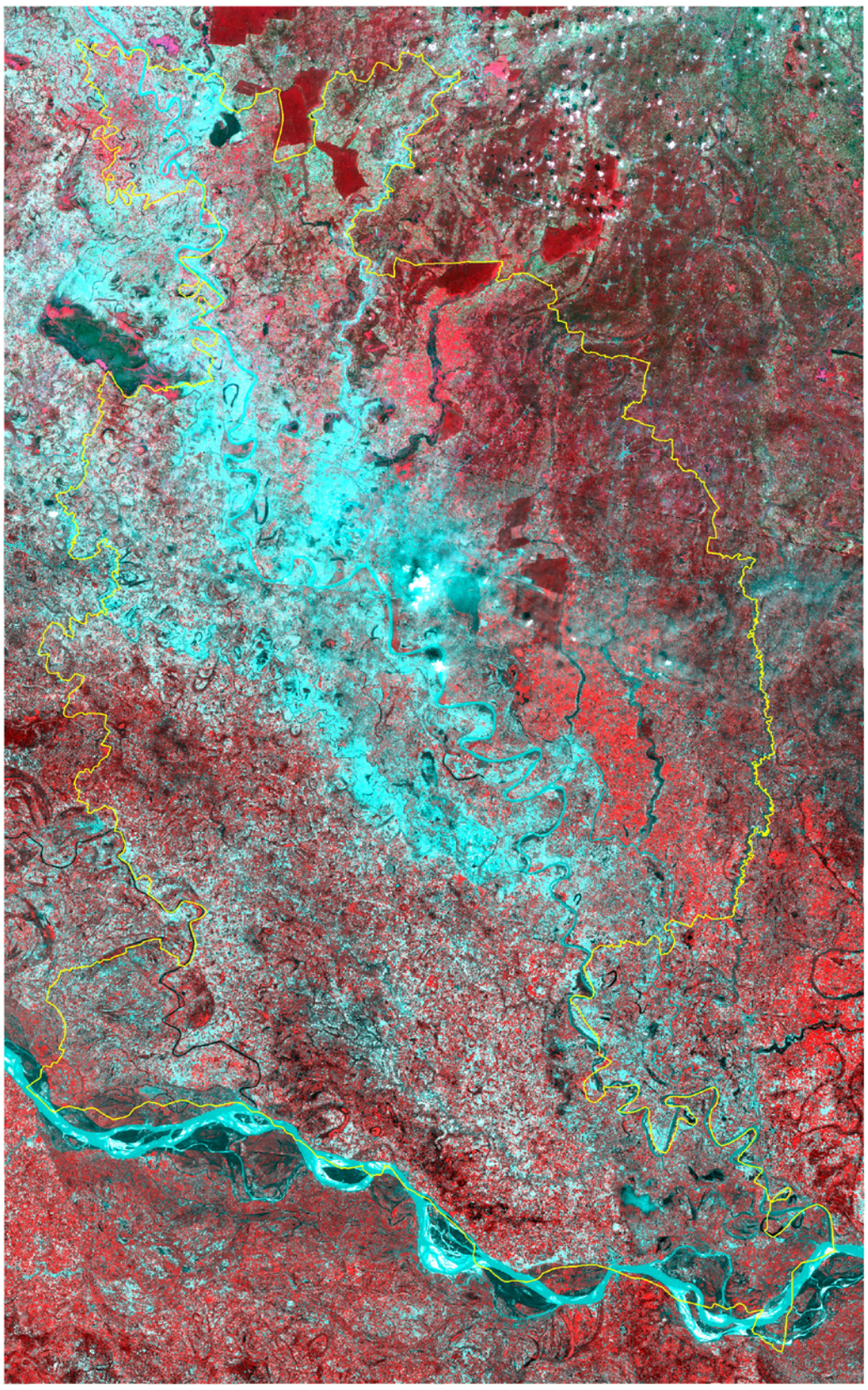
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State : Uttar Pradesh

District : Gorakhpur



IRS P6 LISS-III post monsoon data (2006)

7.1.59 Kushinagar

Kushinagar District is bounded on the east by Bihar state, on the southwest by Deoria District, on the west by Gorakhpur District, and on the northwest by Maharajganj District. Padrauna is the district headquarter of Kushinagar district . Padrauna is located at 26°54′ to 26.9°N latitude and 83°59′ to 83.98°E llongitude. It has an average elevation of 79 metres. As per 2001 census, the district has a population of 2893196. It has 4 tehsils, 14 blocks and 1620 villages.

The total wetland area in the district is 18506 ha. River/Stream is the dominant wetland type with 48.6% area. The other major wetlands are Lakes/pond, Waterlogged and Riverine wetlands. Total waterlogged area is around 22.0 per cent. There are 30 sites with 2023 ha area under natural type and 48 sites with 2089 ha area under manmade. Only 3 Tanks/pond are mapped with 11 ha area. In addition there are 1610 small (<2.25 ha) wetlands, mainly manmade ponds. Detailed estimates of wetlands in Kushinagar are given in table no.64.

Area under aquatic vegetation in pre- monsoon season is 1831 ha and post-monsoon is 4212 ha. Water spread area in post-monsoon season is 8020 ha and in pre-monsoon season it is 6291 ha. Moderate turbidity is observed in most of the wetlands. Qualitative turbidity of water is in general moderate in both the seasons.

Table 64: Area estimates of wetlands in Kushinagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	58	2051	11.08	841	844
2	1102	Ox-bow lakes/ Cut-off meanders	9	442	2.39	219	180
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	60	1282	6.93	469	424
5	1105	Waterlogged	30	2023	10.93	935	673
6	1106	River/Stream	66	8998	48.62	4382	3553
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	3	11	0.06	11	6
9	1203	Waterlogged	48	2089	11.29	1163	611
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**274**	**16896**	**91.30**	**8020**	**6291**
		Wetlands (<2.25 ha), mainly Tanks	1610	1610	8.70	-	-
		Total	**1884**	**18506**	**100.00**	**8020**	**6291**

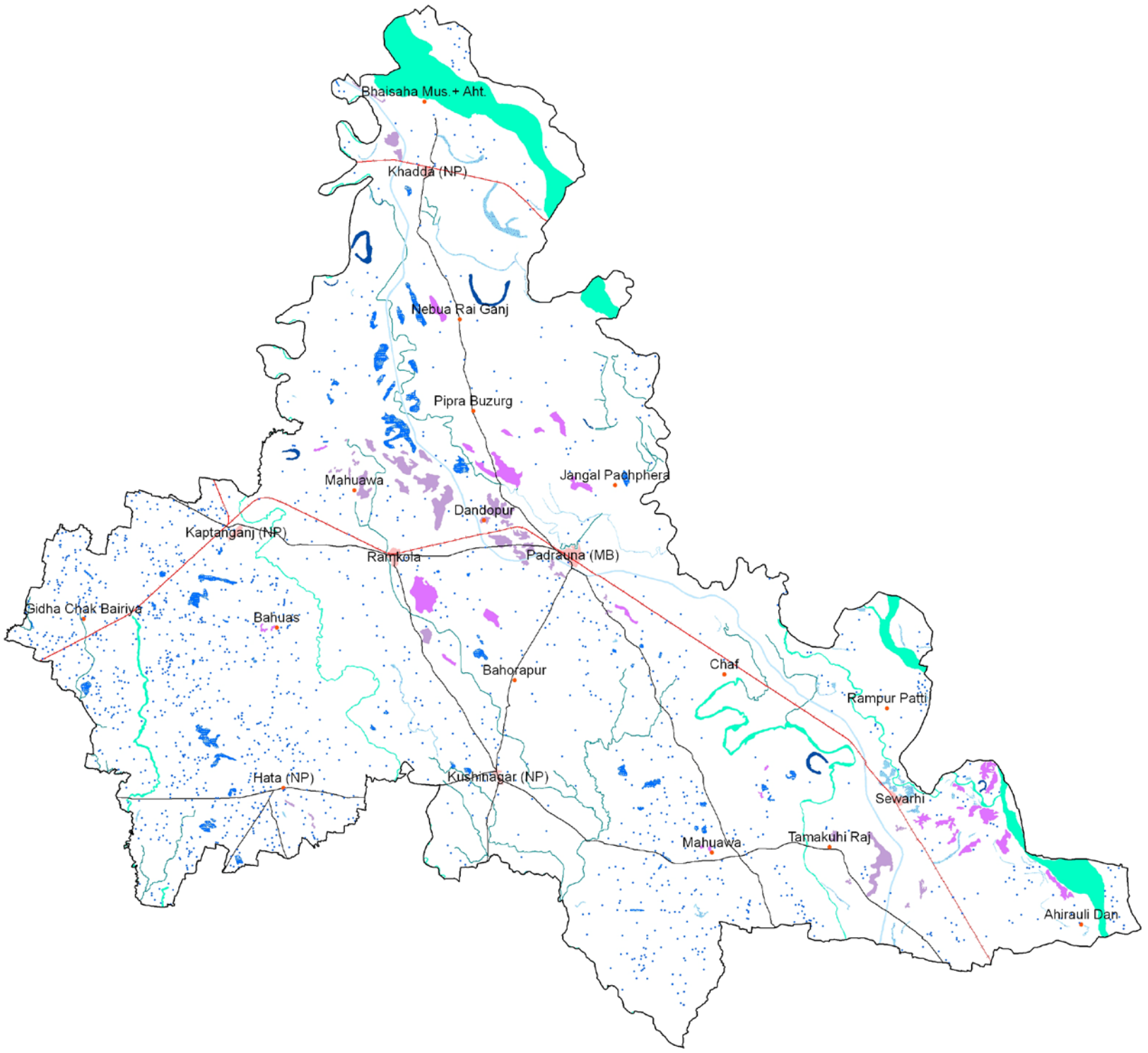
Area under Aquatic Vegetation	4212	1831

Area under turbidity levels		
Low	1716	1040
Moderate	6294	4738
High	10	513

State : Uttar Pradesh

WETLAND MAP

District : Kushinagar

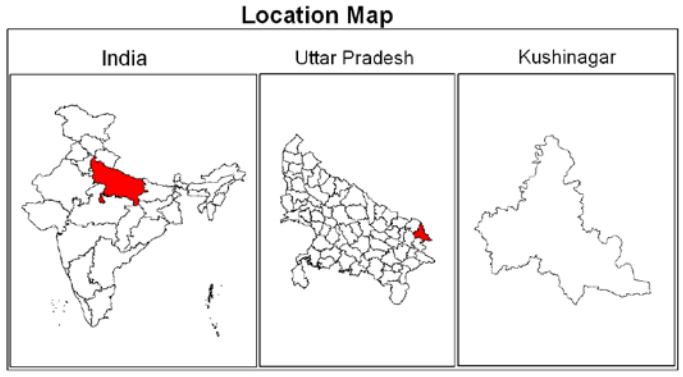


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3.5 7 14 21 28 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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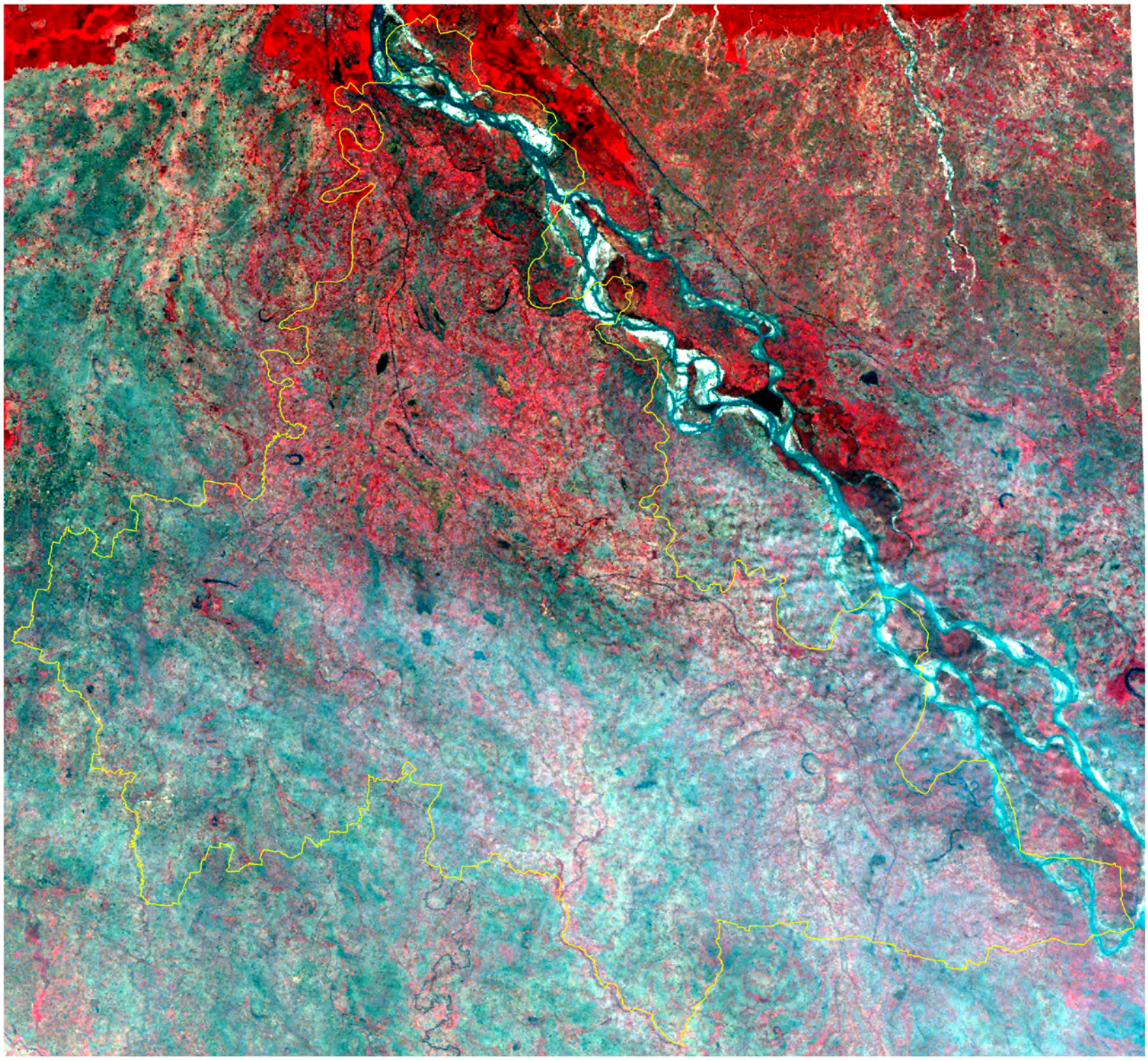
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State : Uttar Pradesh

District : Kushinagar



IRS-P6 AWiFS post monsoon data (2005)

7.1.60 Deoria

Deoria is located at 26.5°N latitude and 83.79°E longitude. The district is surrounded by Kushinagar district in the North, district Gopalganj & Siwan (Bihar state) in the East, district Mau & district Ballia in the South and district Gorakhpur in the West. It has an average elevation of 68 metres. As per 2001 census, the district has a population of 2712650. It has 5 tehsils, 16 blocks and 1990 villages. Average rainfall is 864mm.

The total wetland area in the district is 17408 ha. All wetlands mapped belong to the natural category. River/stream is the dominant one with 71% shrae. The other major wetland types of the district are Lakes/ponds and Riverine wetland. There are 59 Lakes/pond with 1850 ha area accounting 10.6% area.and 49 Riverine wetlands with around 1000 ha area. In addition there are 1568 small (<2.25 ha) wetlands. Identified which is mainly tanks/pond. Detailed estimates of wetlands in Deoria is given in table no.65

Area under aquatic vegetation in pre-monsoon season is 1426 ha and post monsoon is 2385. Water spread area in post-monsoon season is 7472 ha. and in pre-monsoon it is 4312 ha. Qualitative turbidity of water is in general moderate during post monsoon and low to moderate during pre monsoon.

Table 65: Area estimates of wetlands in Deoria

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	59	1850	10.63	602	162
2	1102	Ox-bow lakes/ Cut-off meanders	12	202	1.16	104	103
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	41	999	5.74	232	38
5	1105	Waterlogged	14	333	1.91	47	93
6	1106	River/Stream	70	12456	71.55	6487	3917
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	-	-	-	-	-
9	1203	Waterlogged	-	-	-	-	-
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**196**	**15840**	**90.99**	**7472**	**4313**
		Wetlands (<2.25 ha), mainly Tanks	1568	1568	9.01	-	-
		Total	**1764**	**17408**	**100.00**	**7472**	**4313**

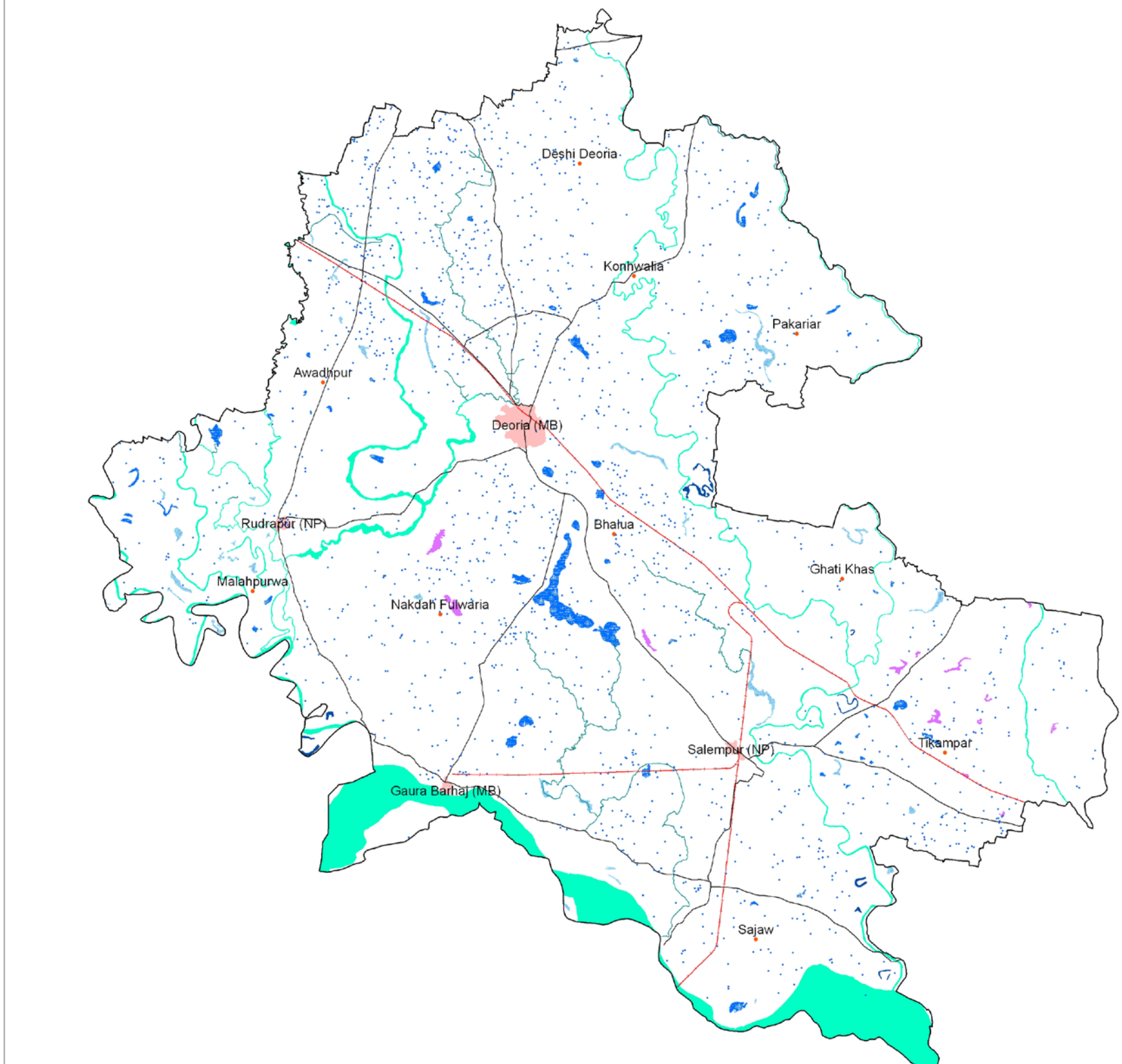
Area under Aquatic Vegetation	2385	1426

Area under turbidity levels		
Low	338	2142
Moderate	6889	2061
High	245	110

State : Uttar Pradesh

WETLAND MAP

District : Deoria

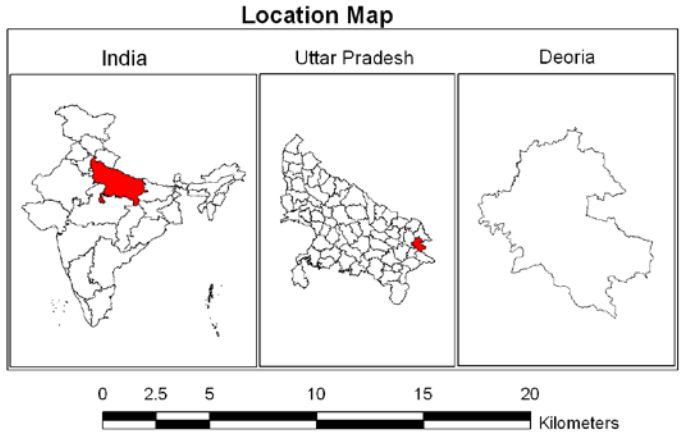


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

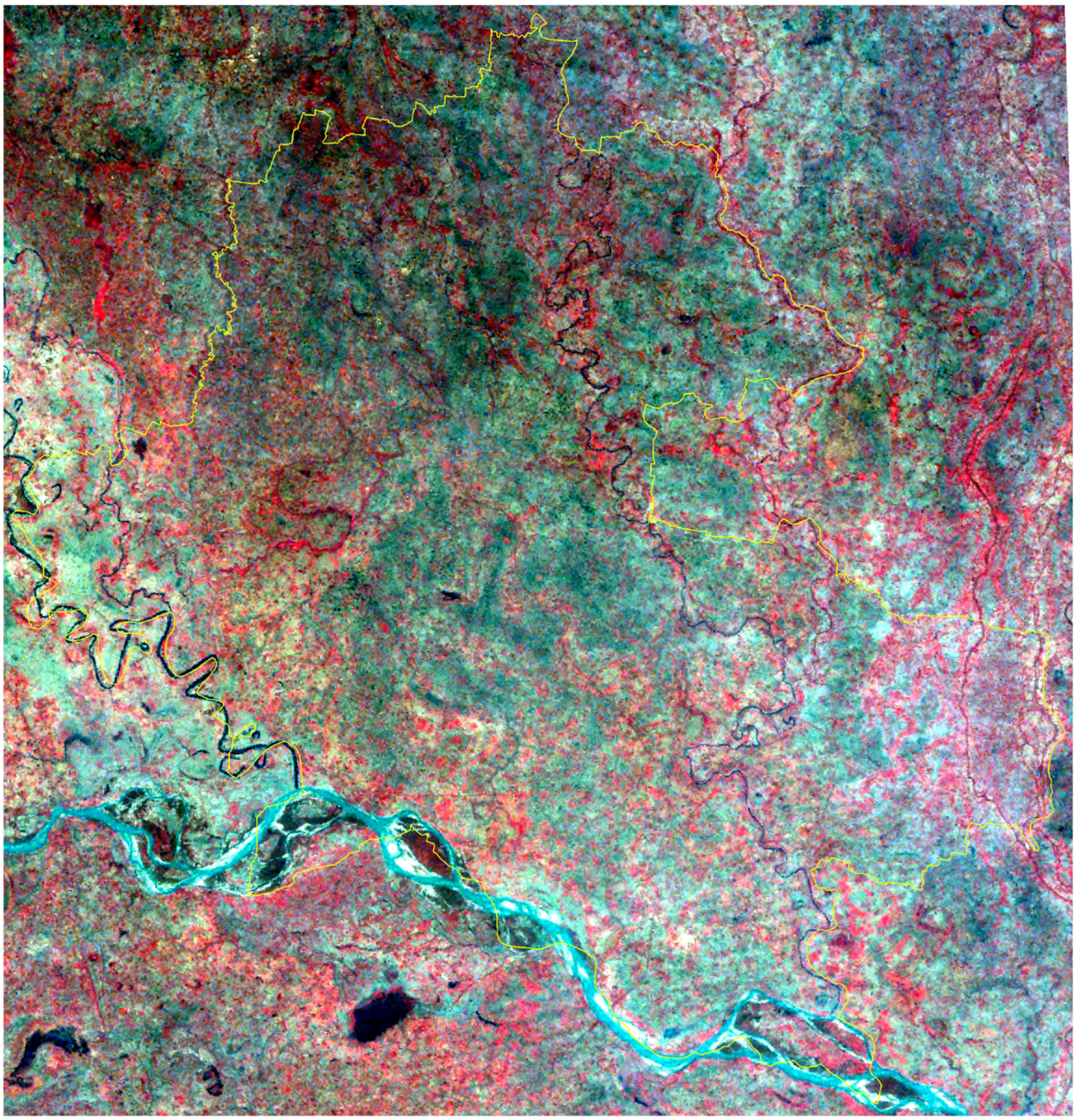
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Government of India

State : Uttar Pradesh

District : Deoria



IRS-P6 AWiFS post monsoon data (2005)

7.1.61 Azamgarh

Azamgarh is located at 26.06°N latitude 83.19°E longitude. It has an average elevation of 64 metres. It is bounded by Gorkhpur in the north, Mau in the east, Sultanpur in the west and Ghazipur in the south. The river Ghaghra separates the district from the Gorakhpur. The Azamgarh district is divided into 7 Tehsils and 22 Blocks. Number of villages stands at 4122. As of 2001 India census, Azamgarh had a population of 3939916. The average annual rainfall in the district is 1021.3 mm.

The total wetland area in the district is 21348 ha. Major wetland types of the district are River/Stream and Lakes/ Ponds. There are 145 Lakes/pond occupying 22.8% of total wetland area. The other major types are Ox-bow lakes/ Cut-off meanders (34 in number) and Waterlogged. There are 23 sites of Waterlogged under natural type with 6.7% area and 43 sites under man made with 7.9% area. Most of the inland wetlands-natural are densely distributed in the southern part of the district. In addition there are 1811 small wetlands (<2.25 ha) identified, which are scattered through out the district. Detailed estimates of wetlands in Azamgarh district are given in table 66.

Area under aquatic vegetation in post and pre-monsoon season is 4537 and 4576 ha respectively. Water spread area in post-monsoon season is 7086 ha where as in pre-monsoon season it is 6261 ha. Qualitative turbidity of water in general is moderate in both the seasons.

Table 66: Area estimates of wetlands in Azamgarh

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	145	5800	22.77	1610	1790
2	1102	Ox-bow lakes/ Cut-off meanders	34	1750	6.87	304	321
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	29	797	3.13	730	142
5	1105	Waterlogged	23	1710	6.71	1350	364
6	1106	River/Stream	69	9972	39.15	4961	4073
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	5	31	0.12	16	10
9	1203	Waterlogged	43	2006	7.88	683	147
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**348**	**22066**	**86.63**	**9654**	**6847**
		Wetlands (<2.25 ha), mainly Tanks	3406	3406	13.37	-	-
		Total	**3754**	**25472**	**100.00**	**9654**	**6847**

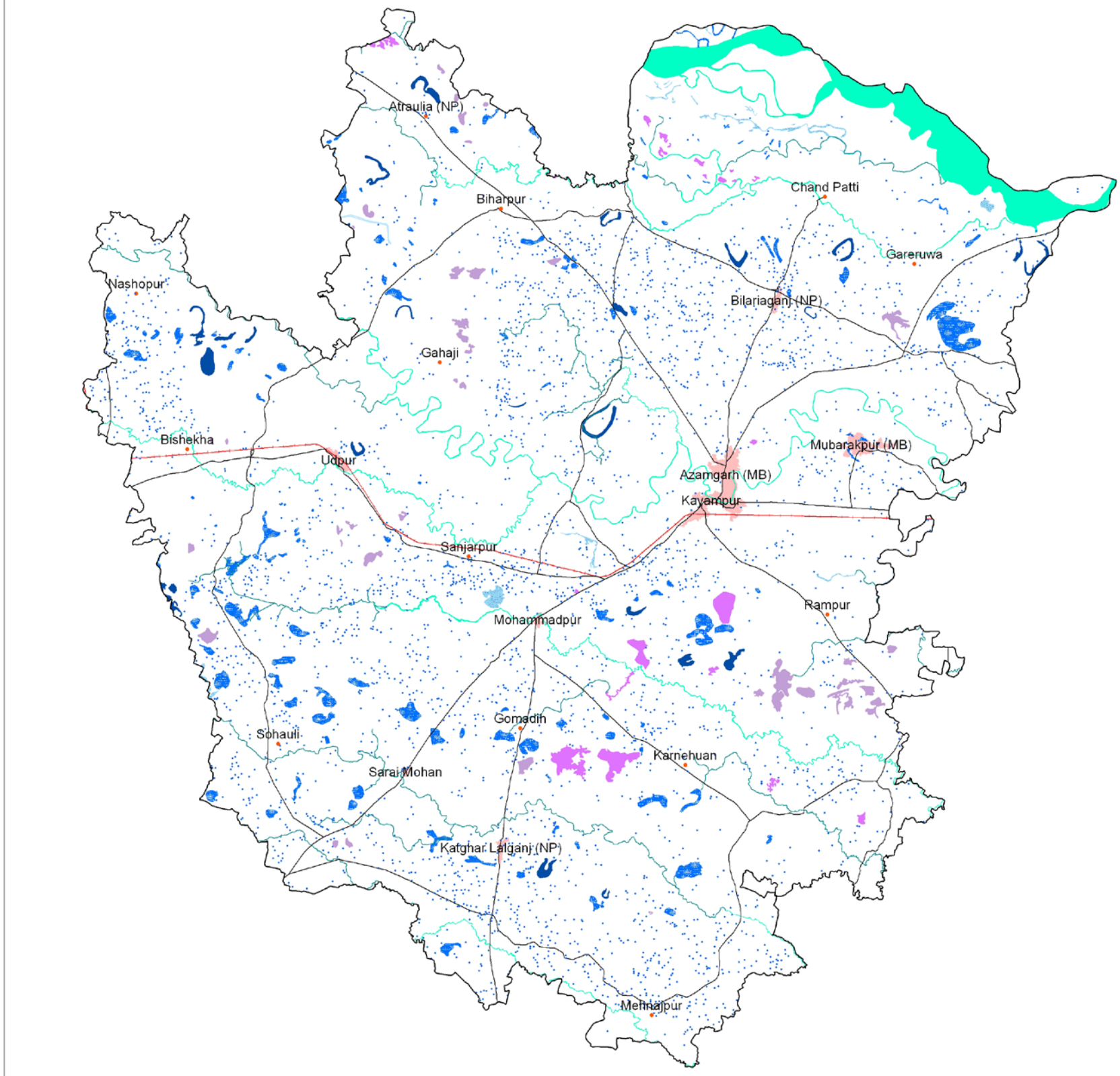
Area under Aquatic Vegetation	7360	6426

Area under turbidity levels		
Low	1221	2686
Moderate	8409	4106
High	24	55

State : Uttar Pradesh

WETLAND MAP

District : Azamgarh

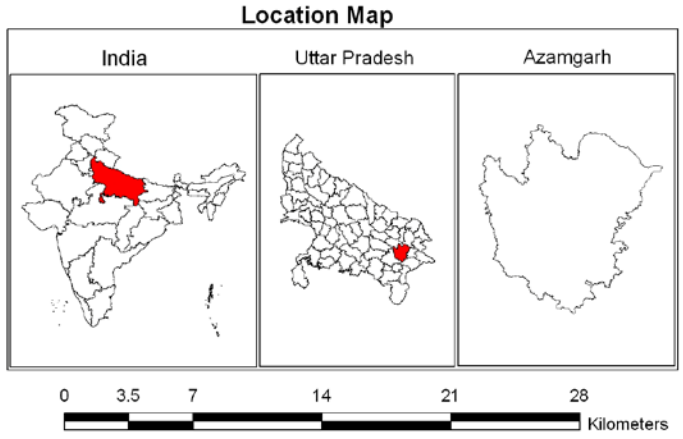


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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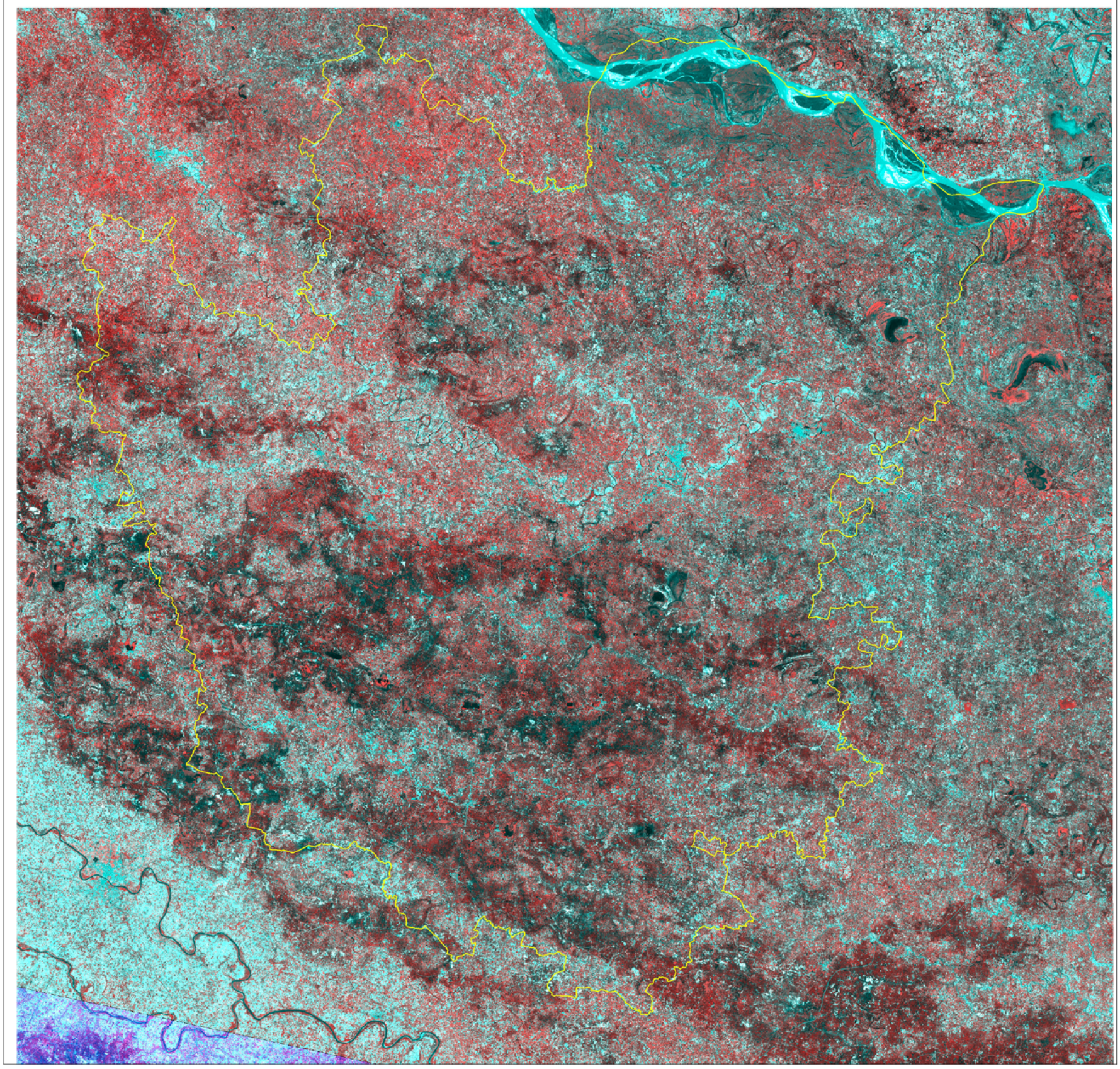
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State : Uttar Pradesh

District : Azamgarh



IRS P6 LISS-III post monsoon data (2006)

7.1.62 Mau

Mau is situated on the fertile plains of the Ganga - Ghaghara doab. It lies between 83° 17’ to 84° 52' East & 24° 47' to 26°17' North. The district is surrounded by Ghazipur district on the south, Ballia district in the east and Azamgarh district in the west. The river Ghagra forms its northern boundary. As per 2001 census, the district has a population of 1853997. It has 4 tehsils, 9 blocks and 1644 villages. Average maximum and minimum temperatures are 44.0^{o} C and 6.0^{o}C respectively. Average rainfall is 1021 mm.

The total wetland area in the district is 10841 ha. Major wetland types of the district are River/Stream and Lakes/ Ponds. There are 50 Lakes/pond mapped with 4767 ha area accounting 44.0 % of total wetland area. There area 25 waterlogged sites (natural) with 6.0% area. Only 4 man made wetlands belonging man made category is mapped. These are waterlogged areas and associated with canal system. Most of the inland wetlands is densely distributed in the northeastern and southeastern part of the district. In addition there are 1096 small wetlands (<2.25 ha) scattered through out the district. Area estimates of wetland of district are given in table no.67.

Area under aquatic vegetation in post and pre-monsoon season is 3343 ha and 3174 ha respectively. Water spread area in post-monsoon season is 4439 ha where as in pre-monsoon season the water spread it is 2844 ha. Moderate turbidity is observed in most of the wetlands.

Table 67: Area estimates of wetlands in Mau

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	50	4767	43.97	2614	1660
2	1102	Ox-bow lakes/ Cut-off meanders	10	296	2.73	35	95
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	15	201	1.85	78	71
5	1105	Waterlogged	25	659	6.08	36	7
6	1106	River/Stream	26	3615	33.35	1655	981
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	-	-	-	-	-
9	1203	Waterlogged	4	207	1.91	21	30
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**130**	**9745**	**89.89**	**4439**	**2844**
		Wetlands (<2.25 ha), mainly Tanks	1096	1096	10.11	-	-
		Total	**1226**	**10841**	**100.00**	**4439**	**2844**

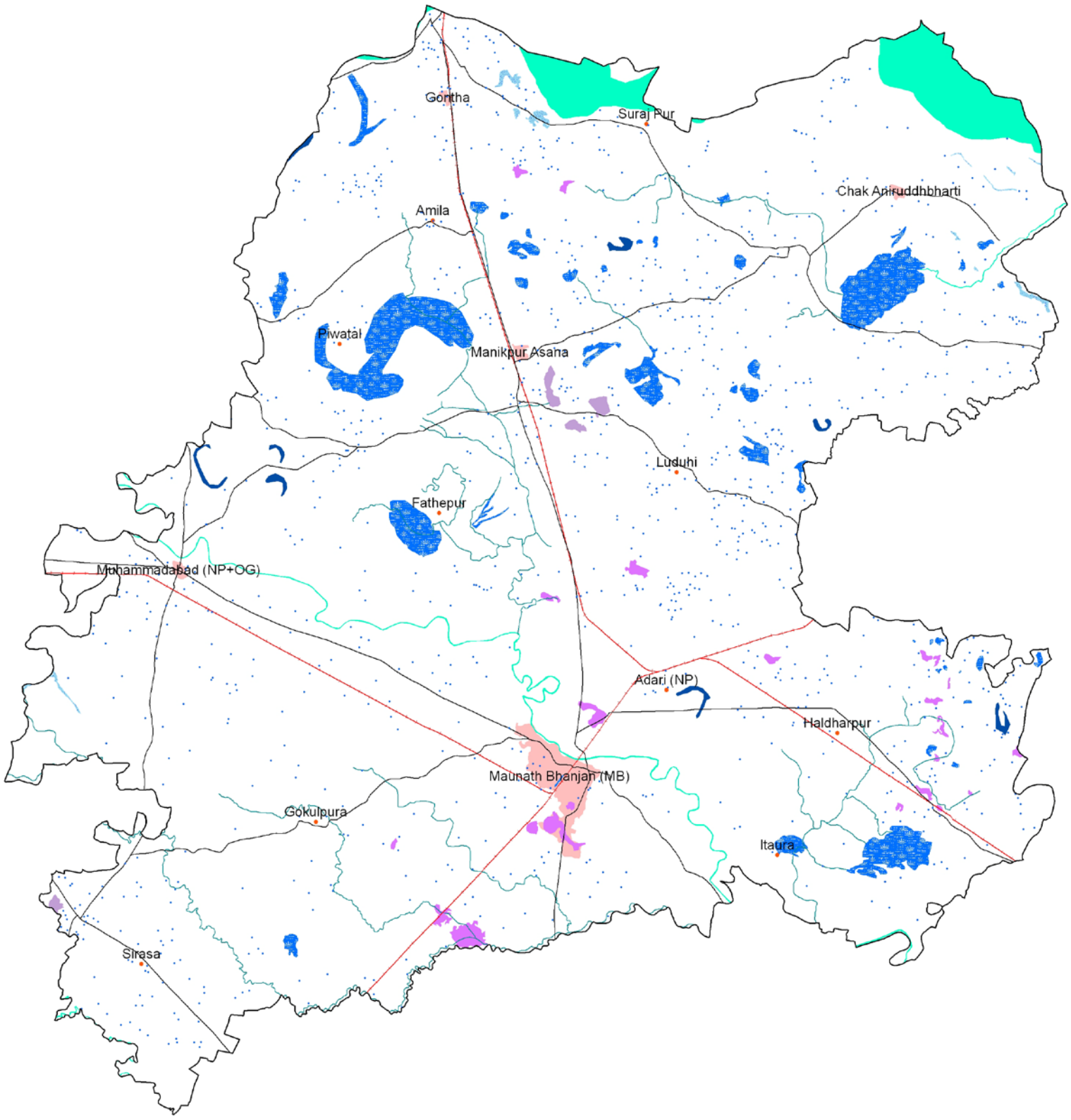
Area under Aquatic Vegetation	3343	3173

Area under turbidity levels		
Low	314	715
Moderate	4119	1749
High	6	380

State : Uttar Pradesh

WETLAND MAP

District : Mau

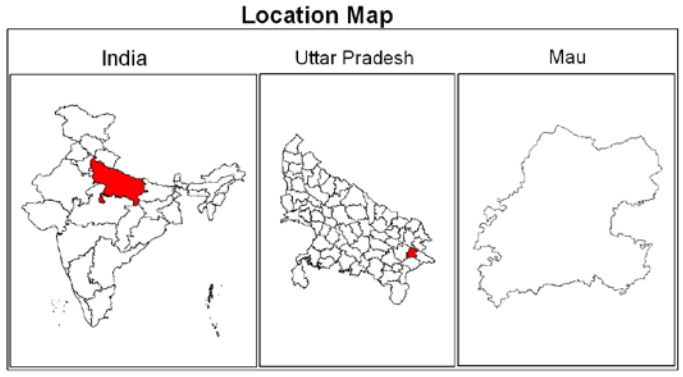


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 2 4 8 12 16 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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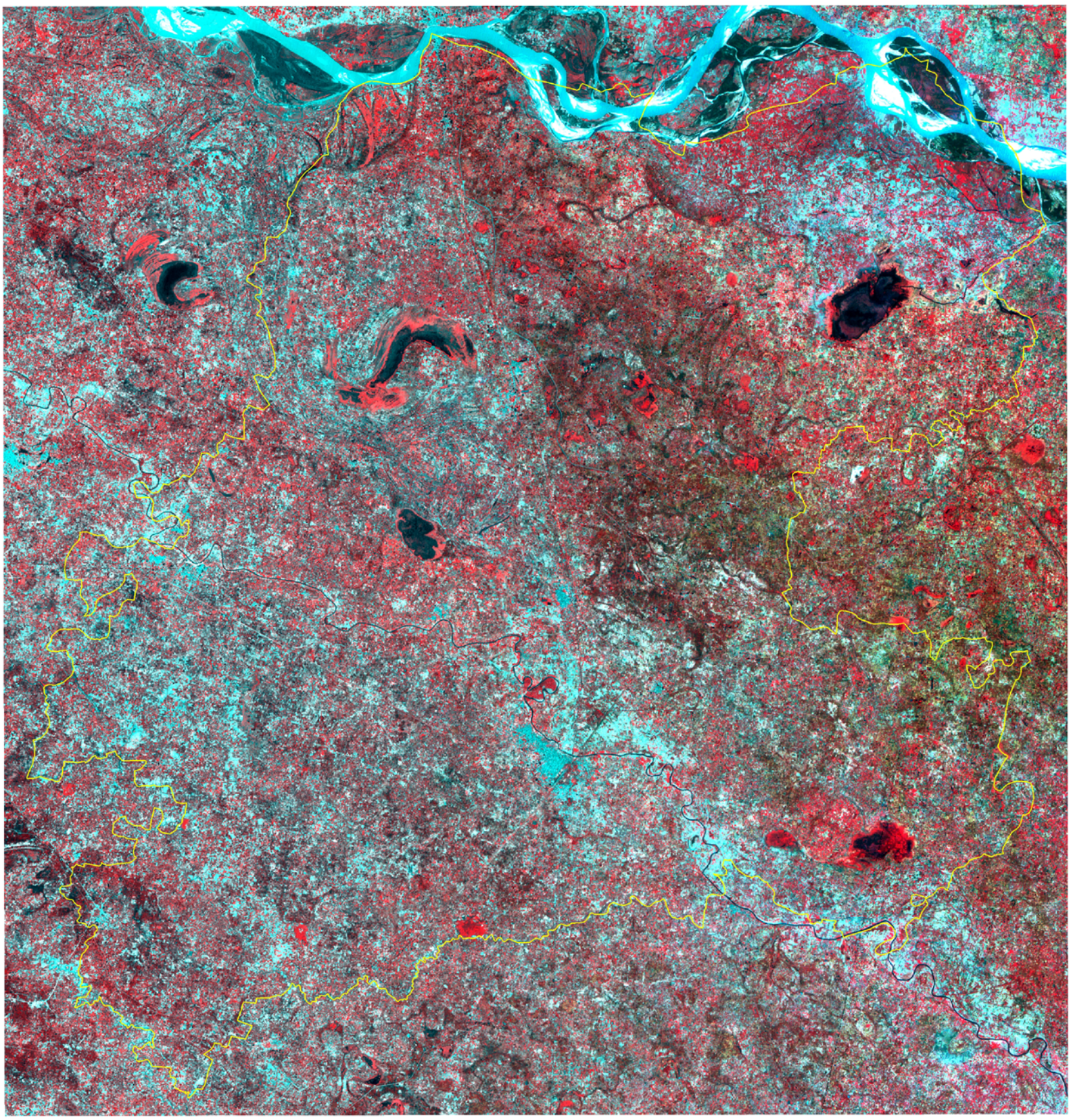
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Government of India

State : Uttar Pradesh

District : Mau



IRS P6 LISS-III post monsoon data (2006)

7.1.63 Ballia

Ballia is located at 25.45°N latitude and 84.10°E longitude. The district is bounded on the north by Ghaghara River and in south by Chhoti Sargu and Ganga River. As of 2001 India census, Ballia had a population of 2761620. It has 6 tehsils, 17 blocks and 2339 villages. Average maximum and minimum temperatures are 44.7^{o} C and 3.9^{o} C respectively. Average rainfall is 983mm.

The total wetland area in the district is 32047 ha. Major wetland types of the district are River/Stream and Lakes/ Ponds. These wetlands contribute around 82 per cent area of the district. There are 111 Lakes/ponds accounting for 15.0 per cent area of total wetlands. Ox-bow lakes, Riverine wetlands are other natural wetlands found. In addition there are 1442 small wetlands (<2.25 ha) scattered through out the district. Detailed wetland estimates are given in table no 68.

Area under aquatic vegetation in post and pre-monsoon season is 7544 ha and 3875 ha respectively. Water spread area in post-monsoon season is 14996 ha where as in pre-monsoon season it is 11648 ha. Moderate turbidity is observed in most of the wetlands during post monsoon.

Table 68: Area estimates of wetlands in Ballia

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	111	4747	14.81	1245	1131
2	1102	Ox-bow lakes/ Cut-off meanders	27	1328	4.14	615	424
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	31	1636	5.11	210	250
5	1105	Waterlogged	34	1194	3.73	555	565
6	1106	River/Stream	34	21405	66.79	12366	9253
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	3	8	0.02	5	5
9	1203	Waterlogged	12	287	0.90	-	20
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**252**	**30605**	**95.50**	**14996**	**11648**
		Wetlands (<2.25 ha), mainly Tanks	1442	1442	4.50	-	-
		Total	**1694**	**32047**	**100.00**	**14996**	**11648**

Area under Aquatic Vegetation	7544	3875

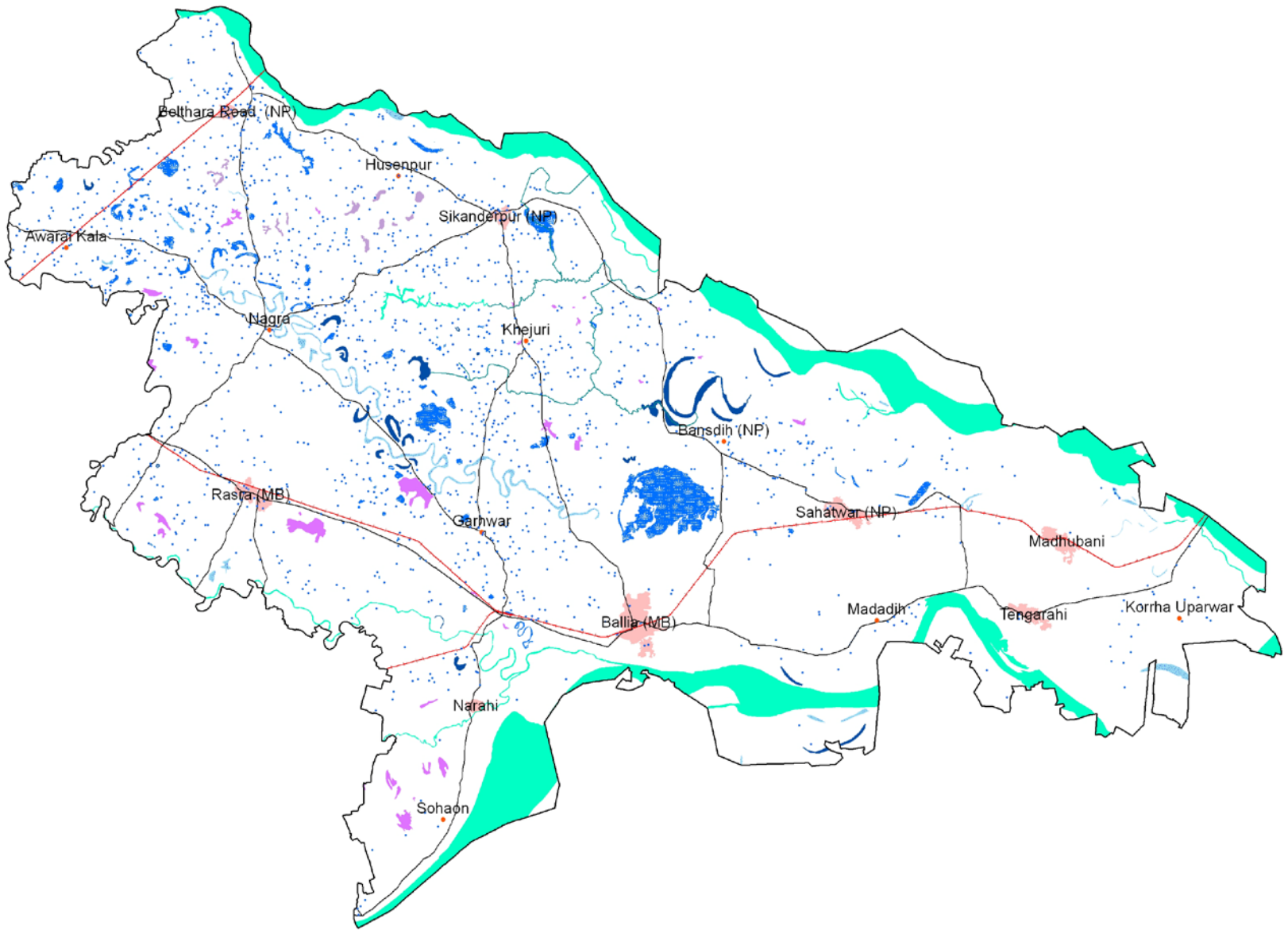
Area under turbidity levels		
Low	1602	5585
Moderate	9129	2287
High	4265	3776

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State : Uttar Pradesh

WETLAND MAP

District : Ballia

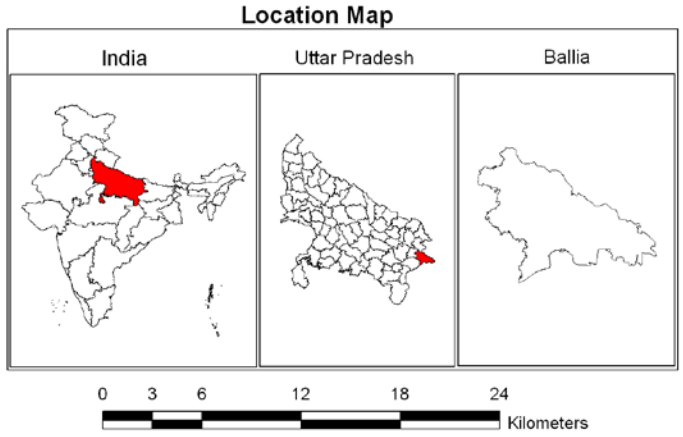


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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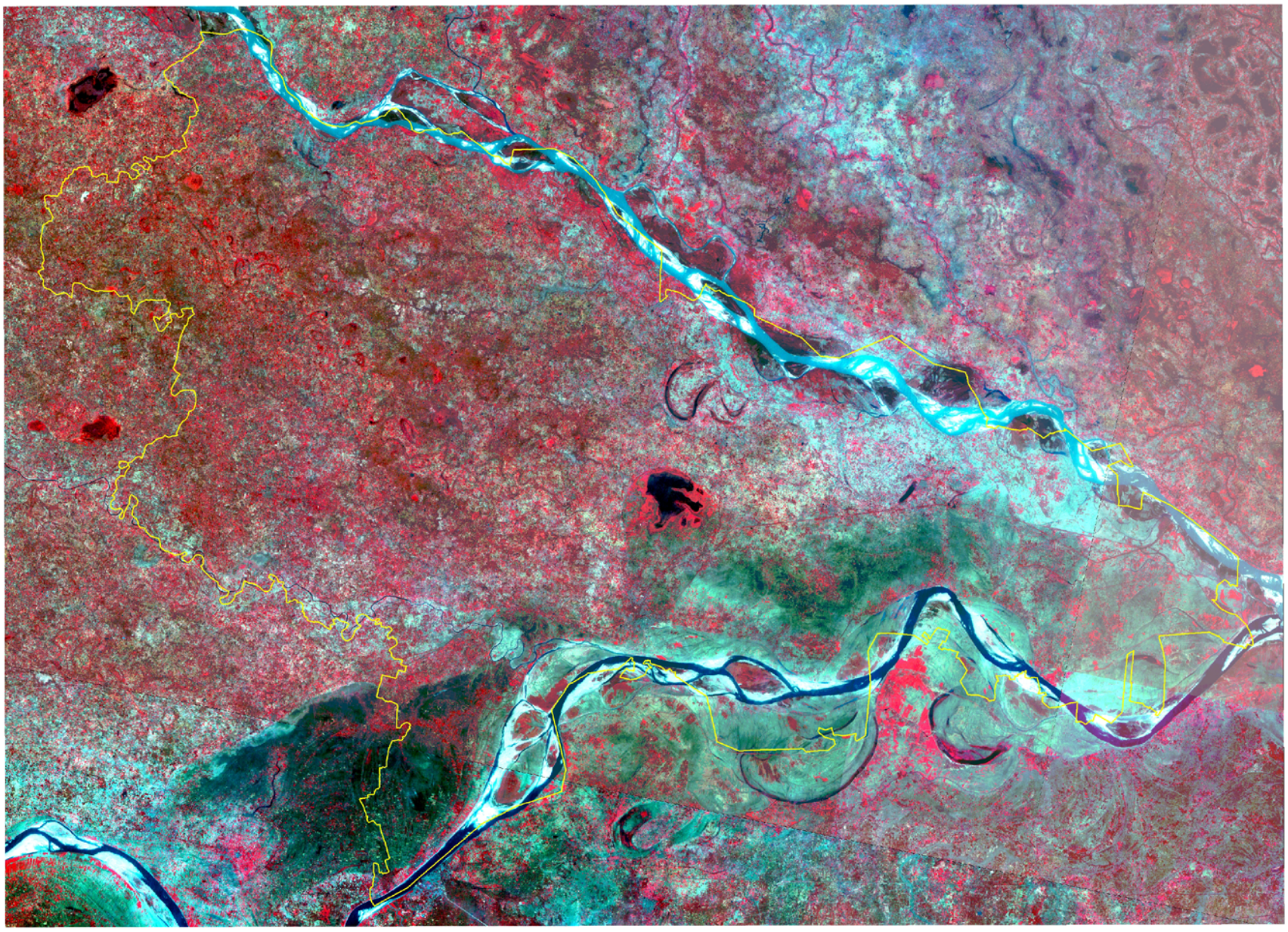
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State : Uttar Pradesh

District : Ballia



IRS P6 LISS-III post monsoon data (2006)

7.1.64 Jaunpur

The district is situated in the north-western part of Varanasi division. Hardoi, the HQ, is located at 25.46°N latitude and 82.44°E longitude. As per 2001 census, the district has a population of 3911679. It has 6 tehsils, 21 blocks and 3386 villages.

The total wetland area in the district is 13709 ha. Major wetland types of the district are River/Stream, waterlogged and Lakes/ Ponds. There are 35 Lakes/ponds accounting 16.0% of wetland area. Ox-bow lakes/ Cut-off meanders number is 15 and covers an area of 722 ha. Waterlogged (natural) and waterlogged (man made) occupied around 16.0% and 15.0% area respectively. Most of the natural wetlands are densely distributed in the northern and western part of the district. In addition there are 3301 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 69.

Area under aquatic vegetation in post and pre-monsoon season varied significantly, from 4009 ha to 1934 ha respectively. Water spread area in post-monsoon and pre moon soon did not show much variation: 6384 ha and 5986 ha respectively. The qualitative turbidity of water in general is moderate in both the seasons.

Table 69 Area estimates of wetlands in Jaunpur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	35	2262	16.50	1052	630
2	1102	Ox-bow lakes/ Cut-off meanders	15	722	5.27	191	216
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	4	66	0.48	20	7
5	1105	Waterlogged	28	2179	15.89	1345	1059
6	1106	River/Stream	93	3145	22.94	3145	3105
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	7	39	0.28	39	12
9	1203	Waterlogged	53	1995	14.55	592	957
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**235**	**10408**	**75.92**	**6384**	**5986**
		Wetlands (<2.25 ha), mainly Tanks	3301	3301	24.08	-	-
		Total	**3536**	**13709**	**100.00**	**6384**	**5986**

Area under Aquatic Vegetation	4009	1934

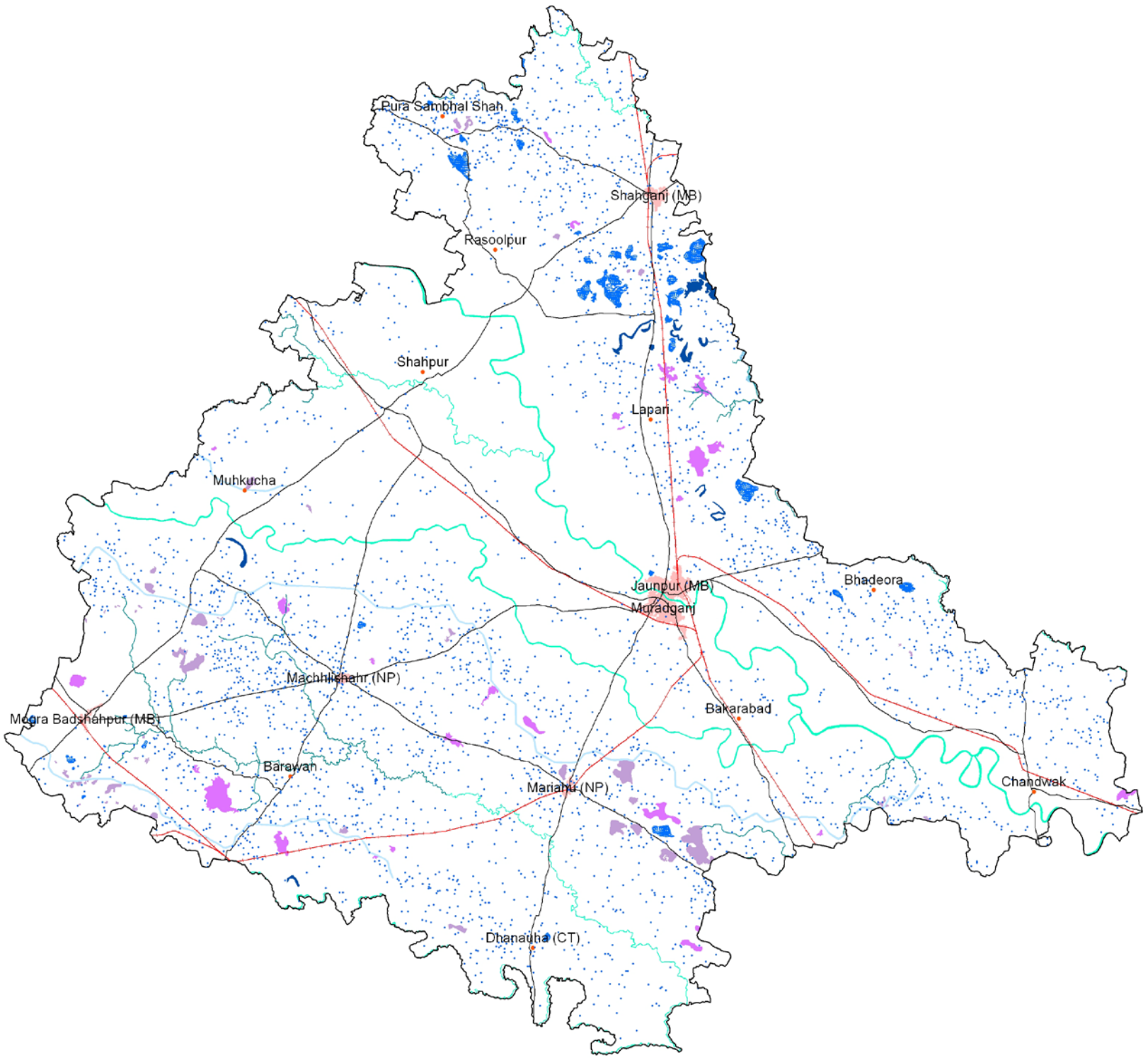
Area under turbidity levels		
Low	2121	1783
Moderate	4147	4072
High	116	131

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State : Uttar Pradesh

WETLAND MAP

District : Jaunpur

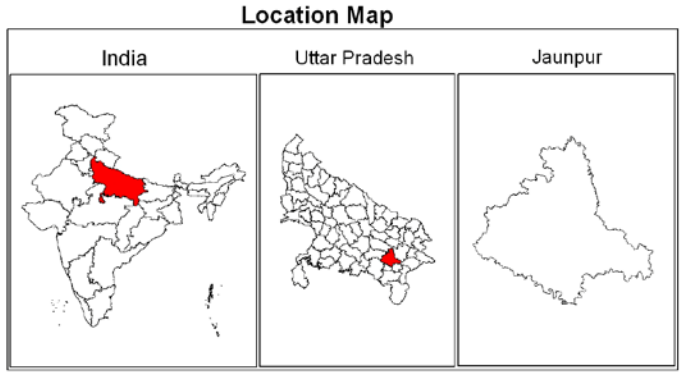


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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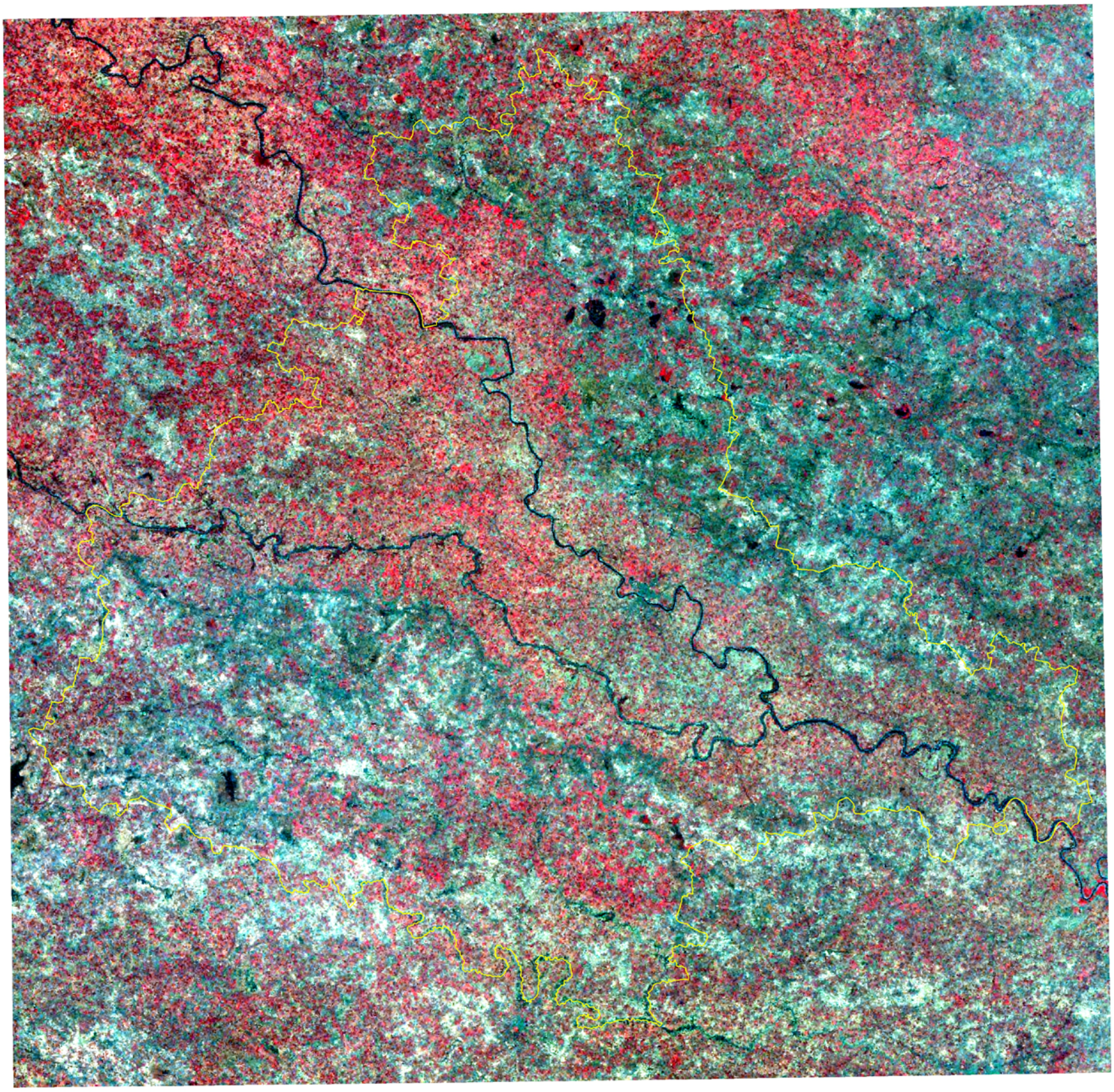
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Government of India

State : Uttar Pradesh

District : Jaunpur



IRS-P6 AWiFS post monsoon data (2005)

7.1.65 Ghazipur

Ghazipur is located at 25.58°N N latitude and 83.57°E longitude. It has an average elevation of 62 metres. The River Ganges from one side and Karmnasa from other side divided it from Bihar State. It is bounded on Ballia and Bihar State in east, Jaunpur, Varansi and Azamgarh in west, Mau and Ballia in north and the Chandauli in south. As per 2001 census, the district has a population of 3037582. It has 5 tehsils, 16 blocks and 1050 villages. Average maximum and minimum temperatures are 42.1^{o} C and 4.0^{o}C respectively. Average rainfall is 1034mm.

The total wetland area in the district is 23581 ha. Major wetland types of the district are River/Stream, and waterlogged. Lakes/ponds and Ox-bow lakes contribute together around 13.0 % area. There are 75 Lakes/ponds and 27 Ox-bow lakes. Most of the inland wetlands- natural is densely distributed in the northern part of the district. In addition there are 2344 small wetlands (<2.25 ha) scattered through out the district.Wetland area estimates are given in table 70.

Area under aquatic vegetation in post and pre-monsoon season is 5678 ha and 2961 ha respectively. Water spread area in post-monsoon season is 12016 ha and in pre-monsoon it is 9307 ha. The qualitative turbidity of water in general is moderate in both the seasons.

Table 70: Area estimates of wetlands in Ghazipur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	75	1597	6.77	295	342
2	1102	Ox-bow lakes/ Cut-off meanders	27	1588	6.73	447	314
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	13	478	2.03	474	411
5	1105	Waterlogged	76	3017	12.79	394	779
6	1106	River/Stream	62	13567	57.53	10052	7198
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	1	5	0.02	5	7
8	1202	Tanks/Ponds	3	15	0.06	6	3
9	1203	Waterlogged	44	970	4.11	343	253
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**301**	**21237**	**90.06**	**12016**	**9307**
		Wetlands (<2.25 ha), mainly Tanks	2344	2344	9.94	-	-
		Total	**2645**	**23581**	**100.00**	**12016**	**9307**

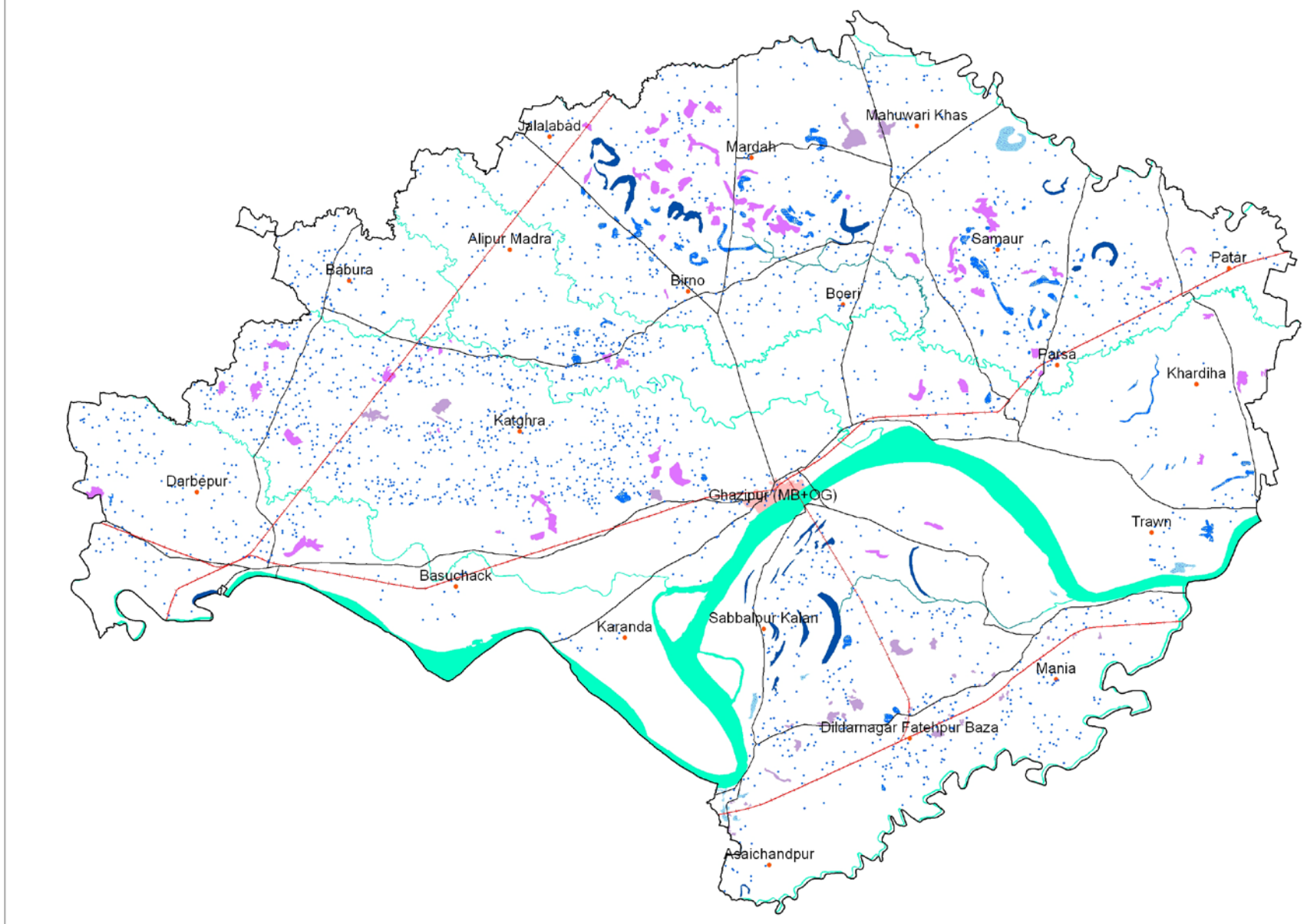
Area under Aquatic Vegetation	5678	2961

Area under turbidity levels		
Low	392	312
Moderate	11160	8279
High	464	716

State : Uttar Pradesh

WETLAND MAP

District : Ghazipur

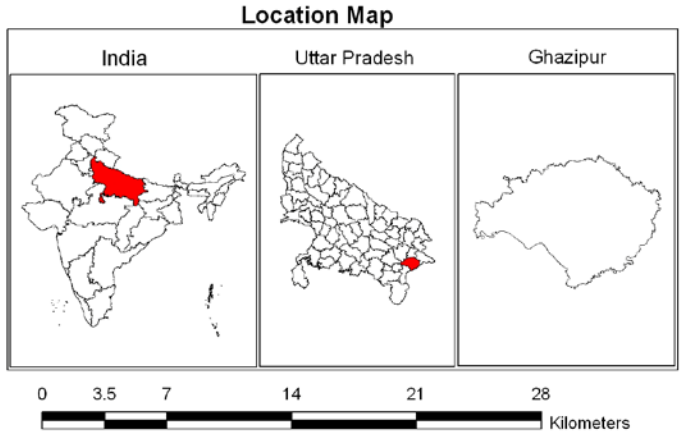


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

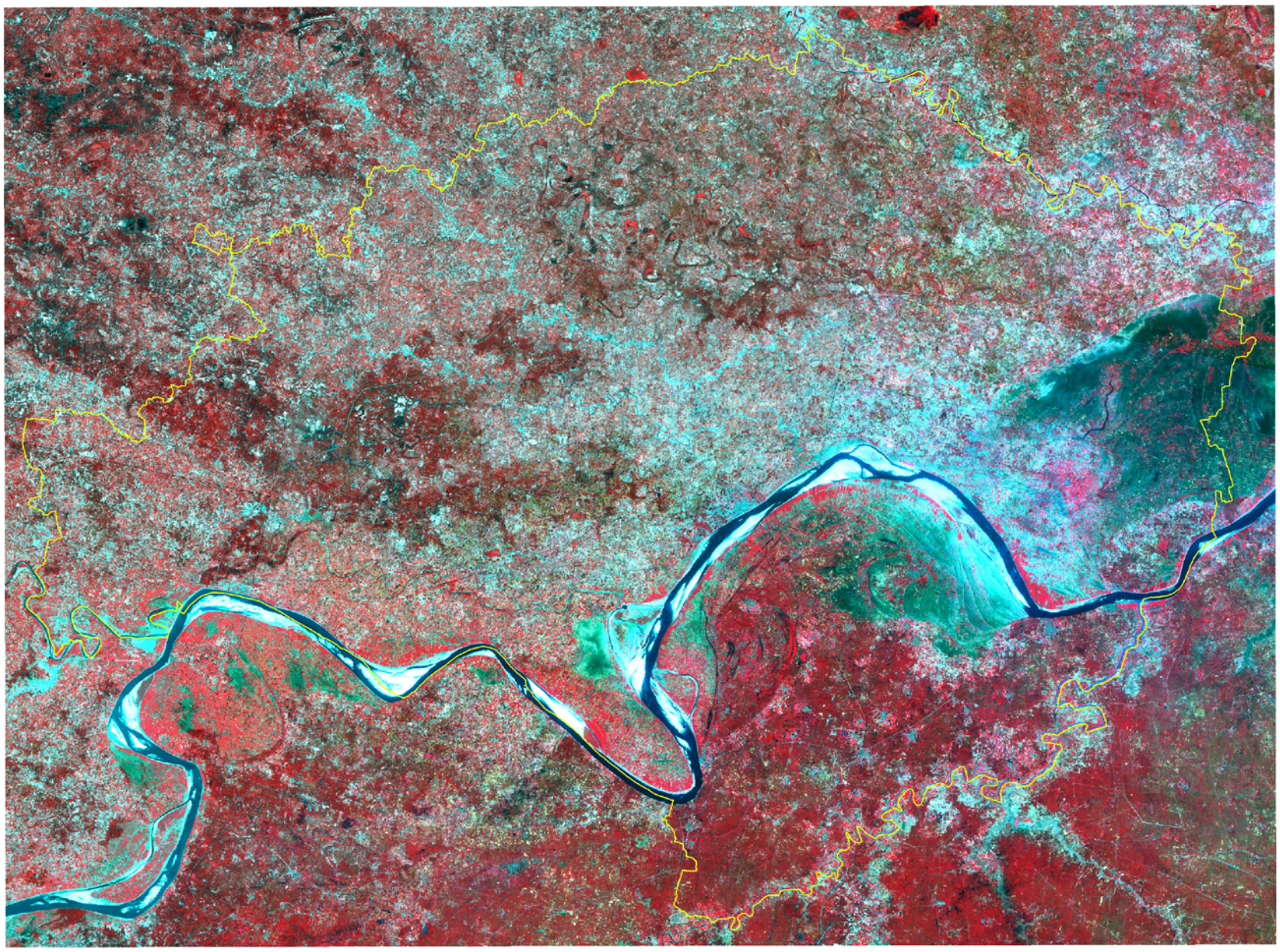
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Government of India

State : Uttar Pradesh

District : Ghazipur



IRS P6 LISS-III post monsoon data (2006)

7.1.66 Chandauli

Chandauli is located at 25.27°N latitude and 83.27°E longitude. Chandauli district is bounded on the east by Bihar State, on the north-east by Ghazipur District, South by Sonebhadra District, South-east by Bihar and on the South-West Mirzapur. Karmanasa River separates the district from Bihar State. It has an average elevation of 70 metres. As per 2001 census, the district has a population of 1643251. It has 3 tehsils, 9 blocks and 1633 villages.

The total wetland area in the district is 16961 ha. Man made wetlands dominated the district with Reservoirs/barrages and waterlogged areas accounting 32.5% and 20.0 % respectively. Most of the reservoirs/barrages are densely distributed in the southern part of the district. River/Stream is the major natural wetland with 33.8% area. There are 13 Lakes/pond with 575 ha area (3.4%). Ox-bow lakes/ Cut-off meanders are absent in this district. In addition there are 870 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 71.

Area under aquatic vegetation in post and pre-monsoon season is 1783 ha and 1083 ha respectively. Water spread area in post-monsoon season is 12606 ha and in pre-monsoon season it is 7658 ha. Qualitative turbidity of water in general is moderate in both the seasons.

Table 71: Area estimates of wetlands in Chandauli

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	13	572	3.37	463	376
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	5	305	1.80	258	344
5	1105	Waterlogged	37	551	3.25	217	19
6	1106	River/Stream	45	5719	33.72	4085	3344
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	109	5511	32.49	5401	2292
8	1202	Tanks/Ponds	10	39	0.23	32	0
9	1203	Waterlogged	124	3394	20.01	2150	1283
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**343**	**16091**	**94.87**	**12606**	**7658**
		Wetlands (<2.25 ha), mainly Tanks	870	870	5.13	-	-
		Total	**1213**	**16961**	**100.00**	**12606**	**7658**

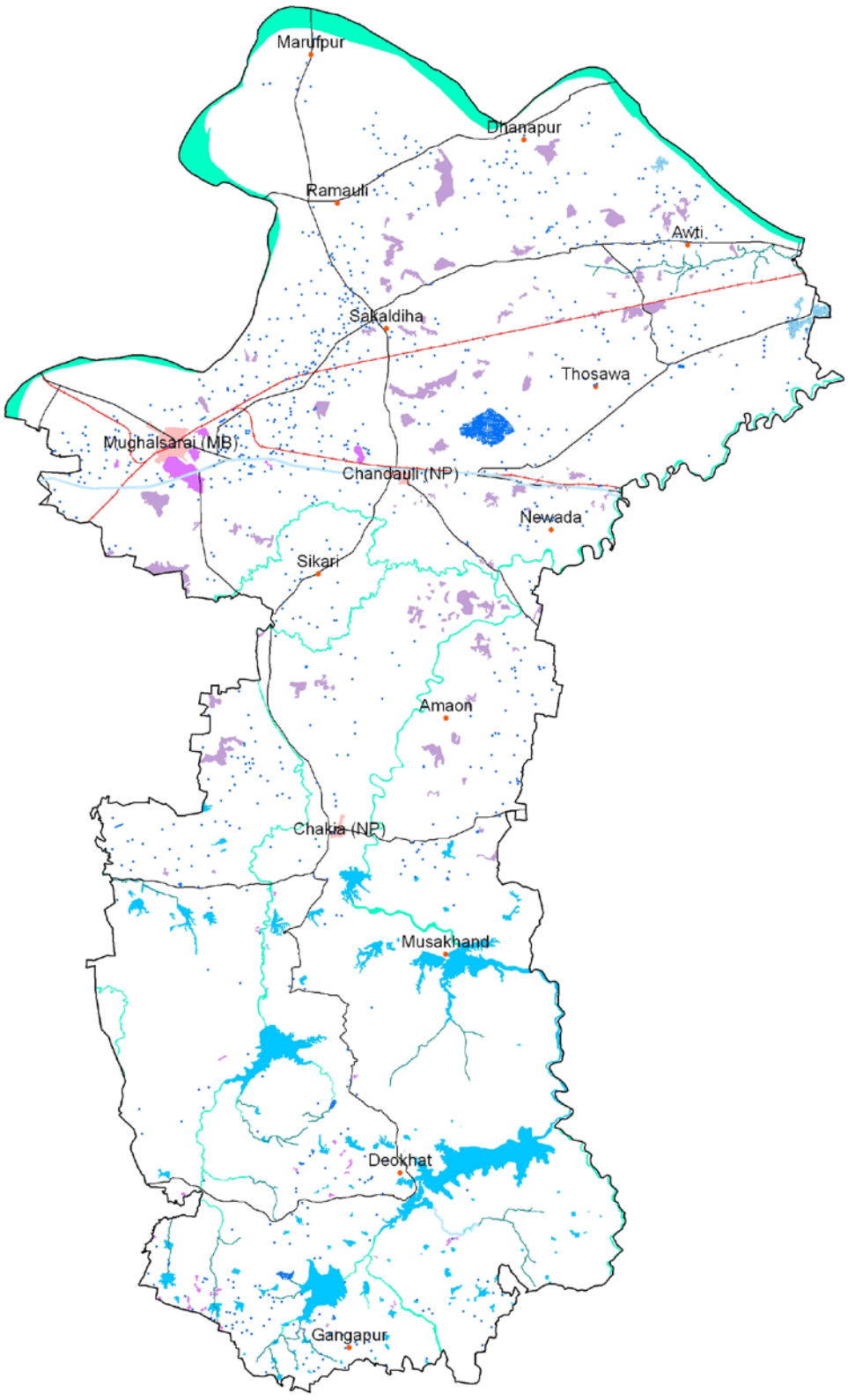
Area under Aquatic Vegetation	1783	1083

Area under turbidity levels		
Low	1356	567
Moderate	10764	7039
High	486	52

State : Uttar Pradesh

WETLAND MAP

District : Chandauli

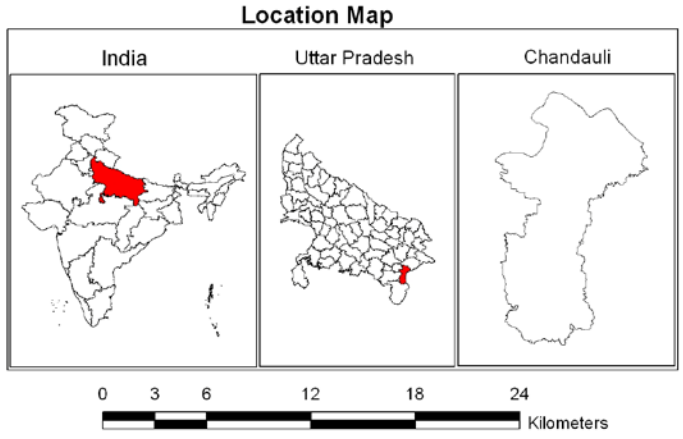


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 3 6 12 18 24 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

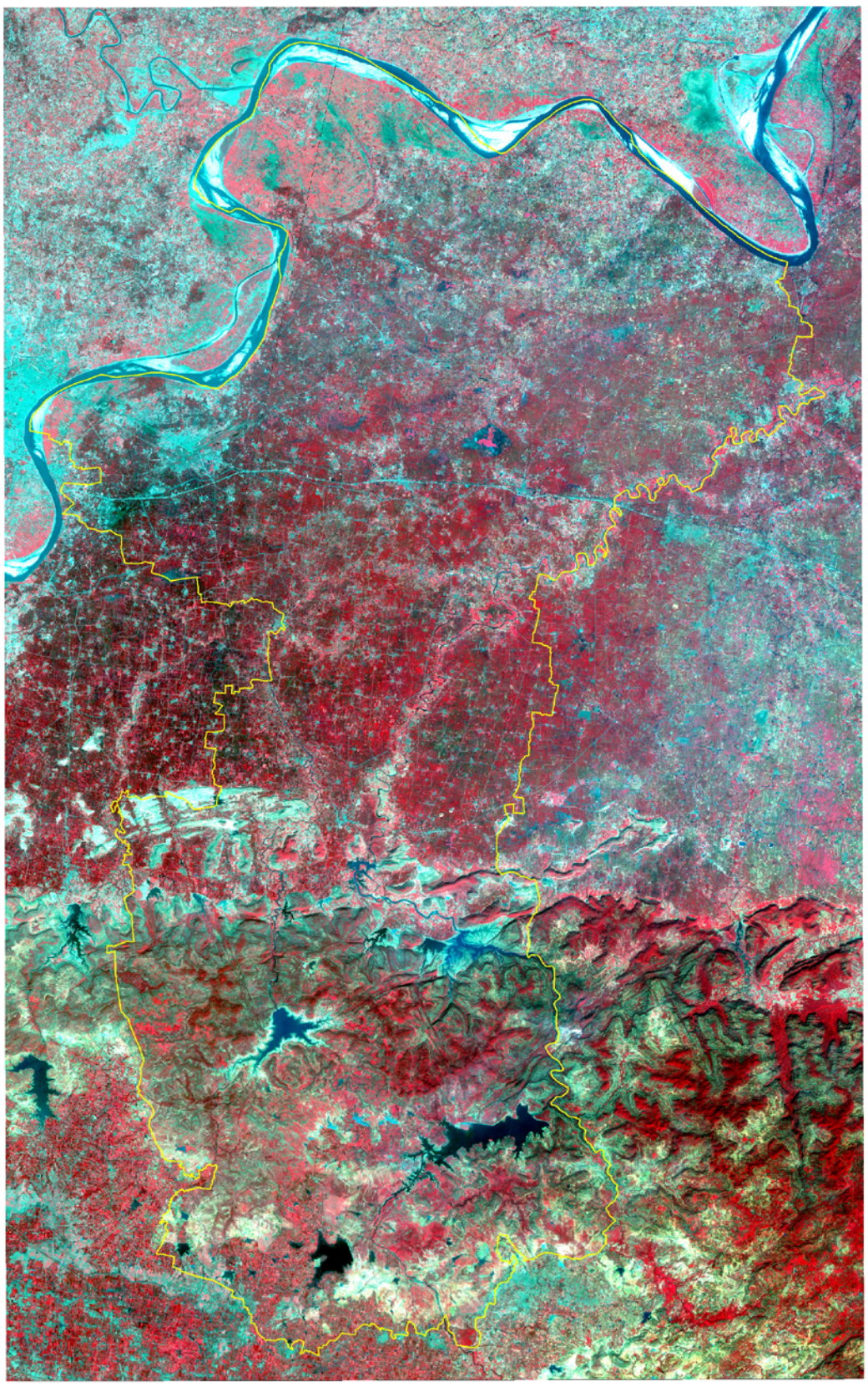
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Government of India

State : Uttar Pradesh

District : Chandauli



IRS P6 LISS-III post monsoon data (2006)

7.1.67 Varanasi

Varanasi is a famous Hindu holy city situated on the banks of the River Ganga. The urban agglomeration is stretched between 25° 14’ to 25° 23.5’N latitude and 82° 56’ to 83° 03’E longitude. Varuna, Ganga and Assi rivers flow through the district. As per 2001 census, the district has a population of 3138671. It has 2 tehsils, 8 blocks and 1336 villages. Varanasi has a humid subtropical climate with high variation between summer and winter temperatures. Summers are long, from early April till October, with the monsoon season in between. The average temperature in summers is 32°C–46°C. Winters are from December to February. The average temperature in winters is 5°C–15°C. The average annual rainfall is 1110 mm. Fog is common in winter while hot dry winds called loo blow in summer.

Wetland area of the district is 7470 ha. Major wetland type is River/Stream with 71.0 % area. The other major types are waterlogged (7.2%) and Lakes/pond (3.0%). There are 8 Lakes with 224 ha area. In addition there are 1081 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 72.

Area under aquatic vegetation in post and pre-monsoon season is 799 ha and 414 ha respectively. Water spread area in post-monsoon season is 4323 ha where as in pre-monsoon season it is 3358 ha. Qualitative turbidity of water is in general moderate in both the seasons.

Table 72: Area estimates of wetlands in Varanasi

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	8	224	3.00	41	88
2	1102	Ox-bow lakes/ Cut-off meanders	1	135	1.81	135	2
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	3	18	0.24	18	7
5	1105	Waterlogged	11	544	7.28	47	98
6	1106	River/Stream	17	5323	71.26	4062	3143
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	-	-	-	-	-
9	1203	Waterlogged	9	145	1.94	20	20
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**49**	**6389**	**85.53**	**4323**	**3358**
		Wetlands (<2.25 ha), mainly Tanks	1081	1081	14.47	-	-
		Total	**1130**	**7470**	**100.00**	**4323**	**3358**

Area under Aquatic Vegetation	799	414

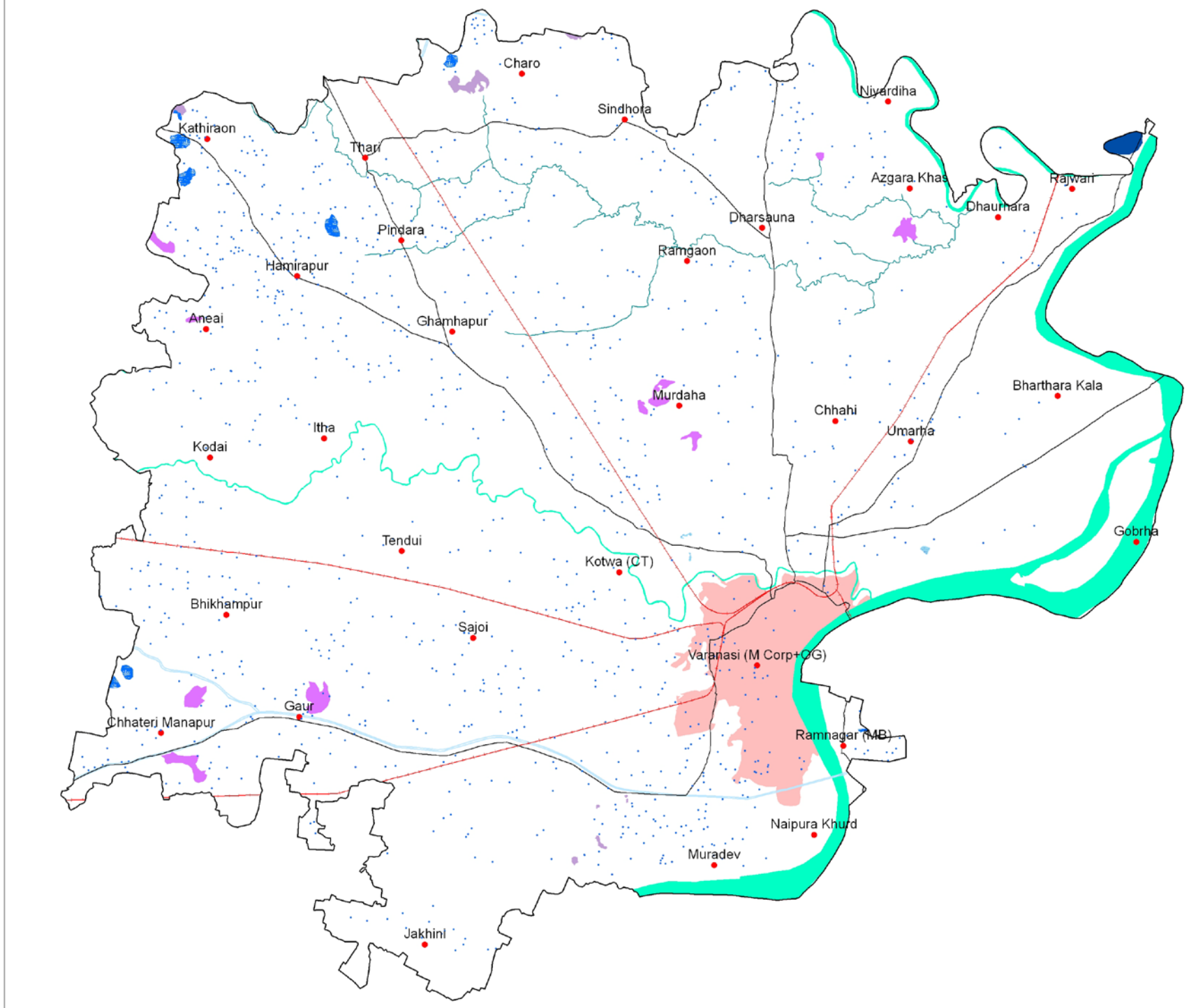
Area under turbidity levels		
Low	342	288
Moderate	3977	3067
High	4	3

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State : Uttar Pradesh

WETLAND MAP

District : Varanasi

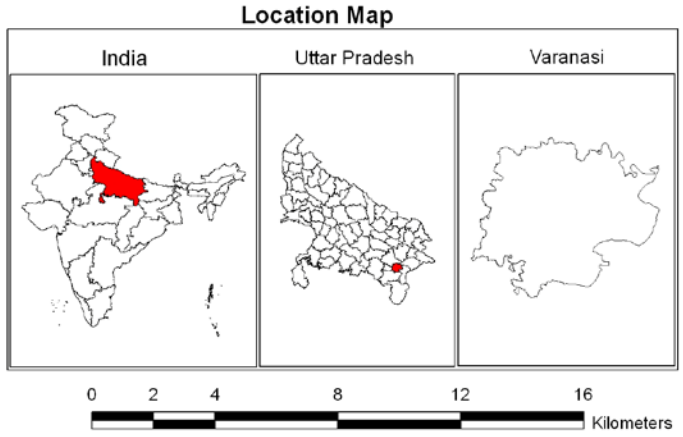


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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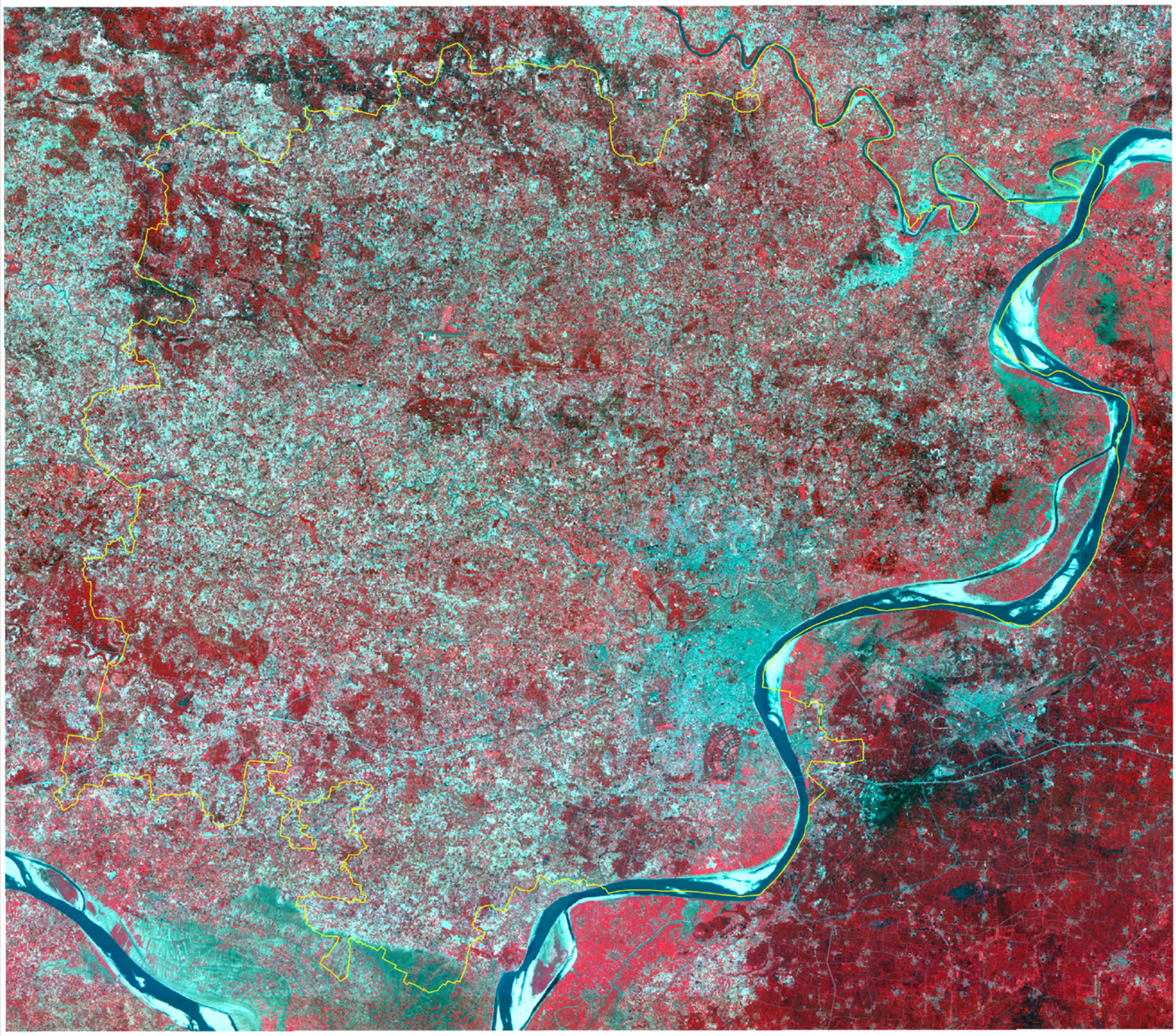
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Government of India

State : Uttar Pradesh

District : Varanasi



IRS P6 LISS-III post monsoon data (2006)

7.1.68 Sant Ravidas Nagar

Gyanpur is located at 25°21′ to 25.35°N latitude and 82°28′ to 82.47°E longitude. It has an average elevation of 81 metres. This district is situated in the planes of the river Ganges, with its borders touching districts like Allahabad, Varanasi, Mirjapur and Jaunpur, simultaneously. The Ganges, Varuna and Morva are the main rivers. The city of Gyanpur is the district headquarters. As per 2001 census, the district has a population of 1353705. It has 3 tehsils, 6 blocks and 1224 villages.

Wetland area of the district is 5767 ha. Apart from River/Stream which occupy 59/0% area, the major natural wetlands are: Lakes/ponds and waterlogged. There are 8 Lakes with 6.0% area and 22 waterlogged sites with 10.2% area. Waterlogged (man made) occupy 6.0 per cent area. In addition there are 1013 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 73.

Area under aquatic vegetation in post and pre-monsoon season is 844 ha and 370 ha respectively. Aquatic vegetation is mainly observed in waterlogged area. Water spread area in post-monsoon season is 2914 ha where as in pre-monsoon season it is 2472 ha. Turbidity of water is moderate in both the seasons.

Table 73: Area estimates of wetlands in Sant Ravidas Nagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	8	347	6.02	86	301
2	1102	Ox-bow lakes/ Cut-off meanders	1	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	10	0.17	10	13
5	1105	Waterlogged	22	589	10.21	221	221
6	1106	River/Stream	75	3400	58.96	2404	1704
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	2	59	1.02	59	-
9	1203	Waterlogged	8	349	6.05	134	233
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**117**	**4754**	**82.43**	**2914**	**2472**
		Wetlands (<2.25 ha), mainly Tanks	1013	1013	17.57	-	-
		Total	**1130**	**5767**	**100.00**	**2914**	**2472**

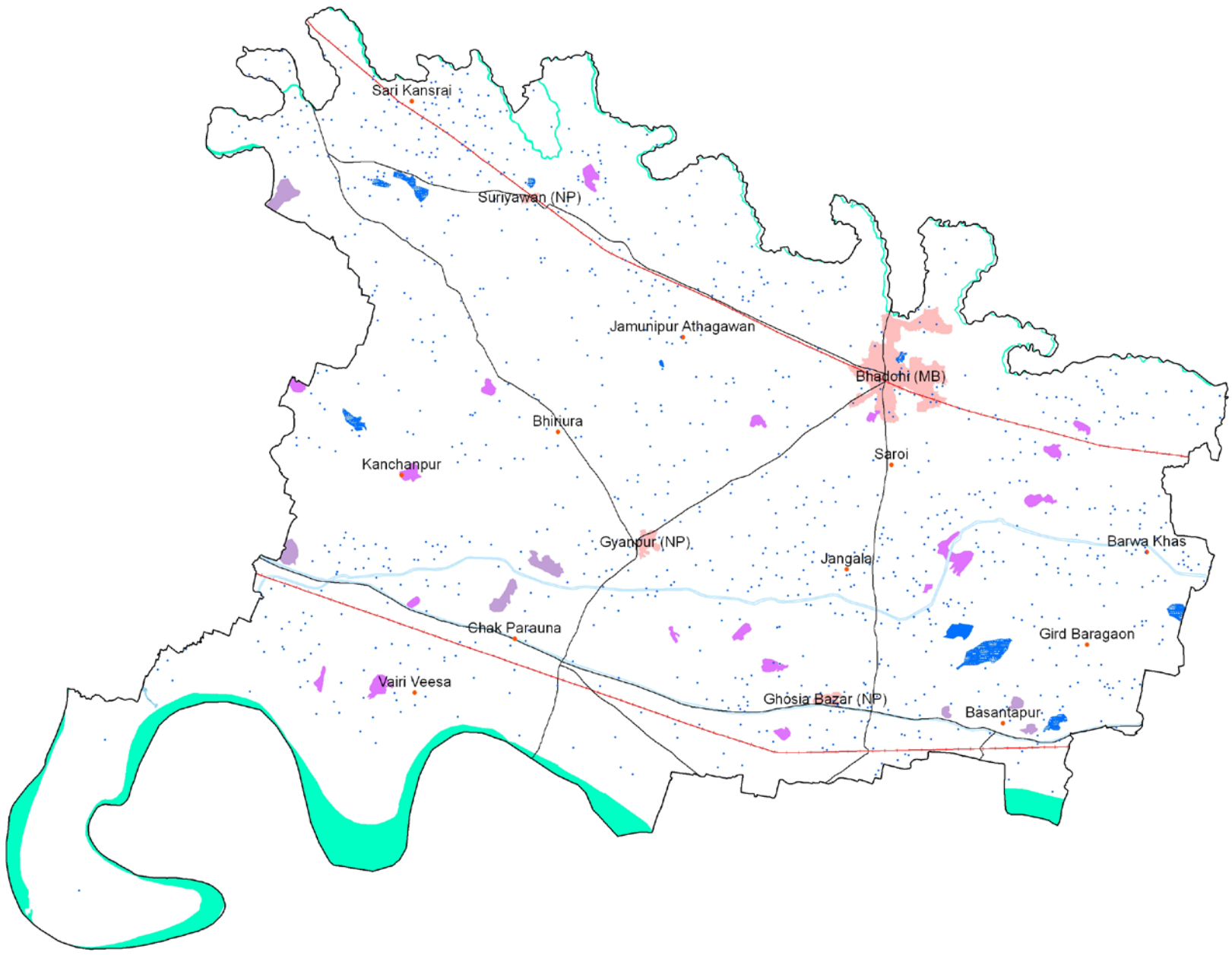
Area under Aquatic Vegetation	844	370

Area under turbidity levels		
Low	5	-
Moderate	2909	2472
High	-	-

State : Uttar Pradesh

WETLAND MAP

District : Sant Rabidas Nagar

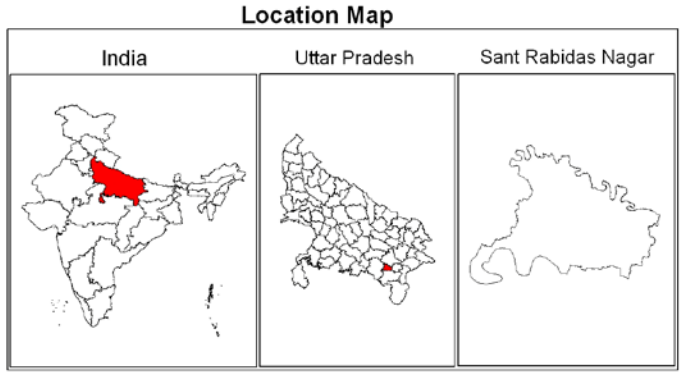


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 2 4 8 12 16 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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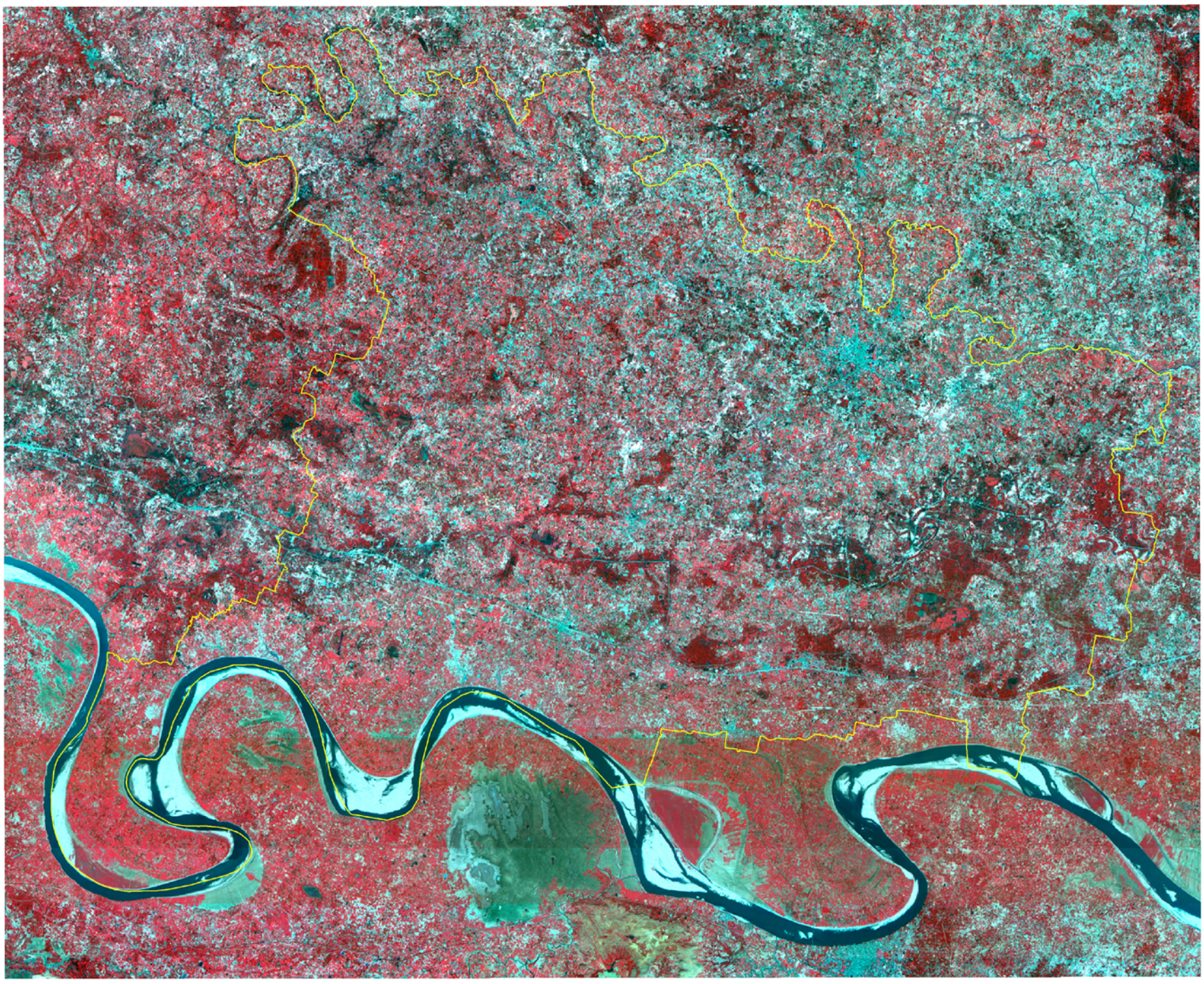
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Government of India

State : Uttar Pradesh

District : Sant Rabidas Nagar



IRS P6 LISS-III post monsoon data (2006)

7.1.69 Mirzapur

Mirzapur is located at 25°09′ to 25.15°N latitude and 82°35′ to 82.58°E longitude. It has an average elevation of 80 metres. The district is bounded on the north and north-east by Varanasi district; on the south by district Sonbhadra; and on the south west by the district of Allahabad. As per 2001 census, the district has a population of 2116042. It has 4 tehsils, 12 blocks and 1966 villages. Average maximum and minimum temperatures are 45.0^{o} C and 4.8^{o}C respectively. Average rainfall is 1043 mm.

Wetland area of the district is 30291ha. Major wetland types of the district are River/Stream, and reservoirs/barrages. These wetlands contribute around 86 per cent wetland area of the district. There are 254 reservoirs/barrages in the district, some of them quite big covering an area of 9960 ha and contribute significantly in term of wetland per cent area (33) of the district. In addition there are 1666 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 74.

Area under aquatic vegetation in post and pre-monsoon season is 627 ha and 384 ha respectively. Aquatic vegetation is mainly observed in reservoirs/barrages and waterlogged area. Water spread area in post-monsoon season is 22594 ha where as in pre-monsoon season it is 14713 ha. Qualitative turbidity of water is in general moderate in both the seasons.

Table 74: Area estimates of wetlands in Mirzapur

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	4	31	0.10	30	10
2	1102	Ox-bow lakes/ Cut-off meanders	5	234	0.77	234	171
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	-	-	-	-	-
5	1105	Waterlogged	43	321	1.06	245	112
6	1106	River/Stream	58	16193	53.46	10937	8608
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	254	9960	32.88	9589	5221
8	1202	Tanks/Ponds	118	515	1.70	455	127
9	1203	Waterlogged	110	1371	4.53	1104	464
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**592**	**28625**	**94.50**	**22594**	**14713**
		Wetlands (<2.25 ha), mainly Tanks	1666	1666	5.50	-	-
		Total	**2258**	**30291**	**100.00**	**22594**	**14713**

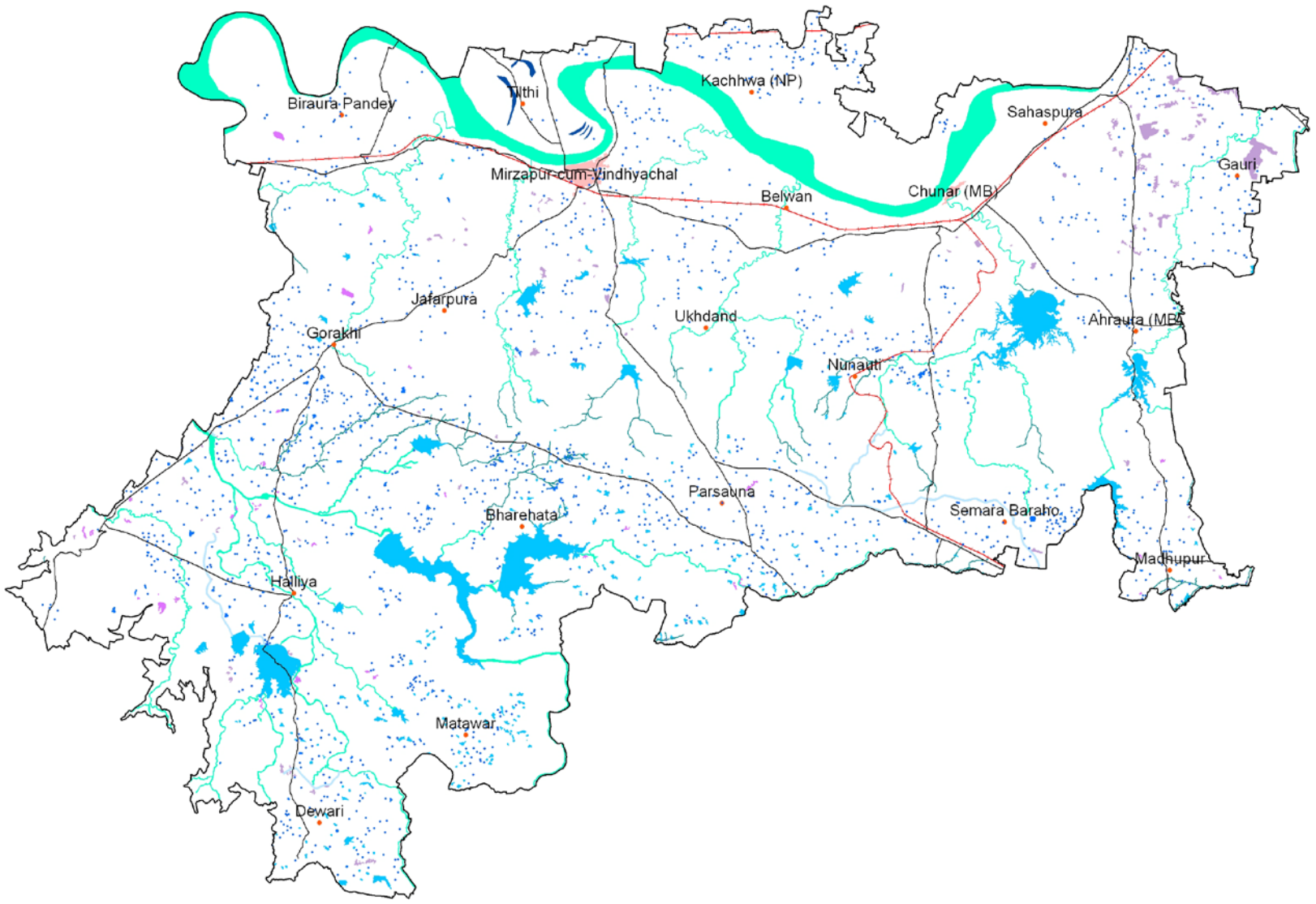
Area under Aquatic Vegetation	627	384

Area under turbidity levels		
Low	2678	1392
Moderate	17937	12834
High	1979	487

State : Uttar Pradesh

WETLAND MAP

District : Mirzapur

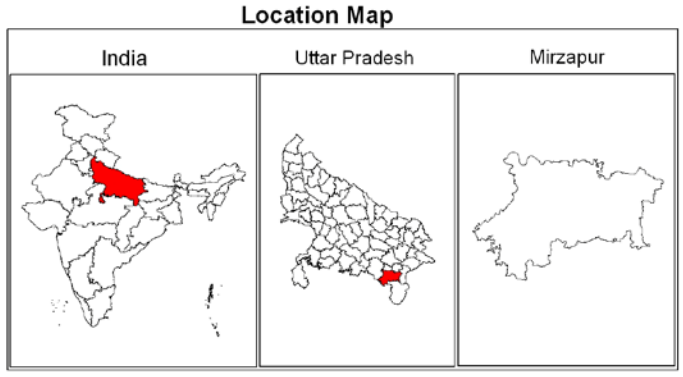


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 4 8 16 24 32 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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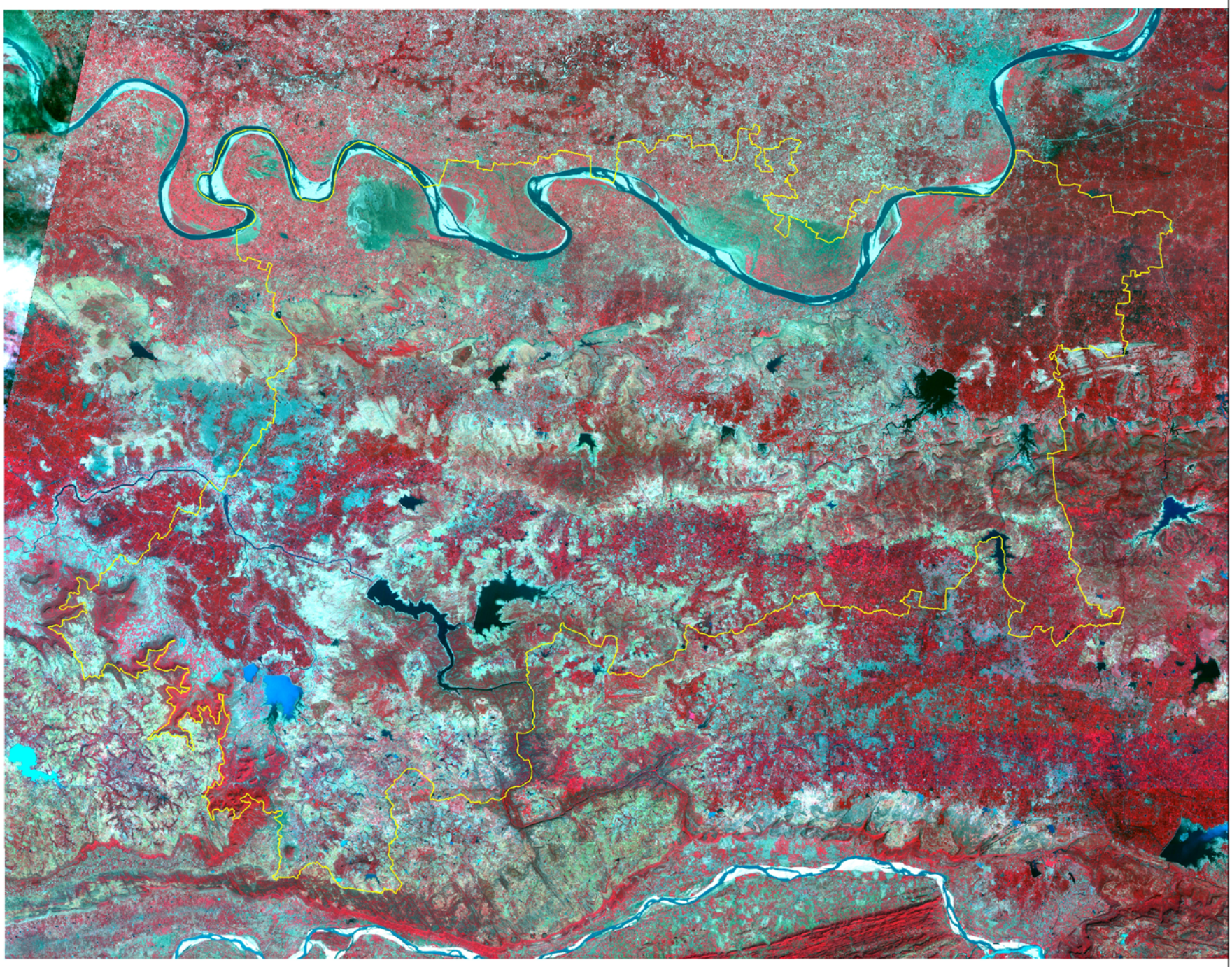
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Government of India

State : Uttar Pradesh

District : Mirzapur



IRS P6 LISS-III post monsoon data (2006)

7.1.70 Sonbhadra

The district is bounded by Mirzapur District to the northwest, Chandoli District to the north, Bihar state to the northeast, Jharkhand state to the east, Chhattisgarh state to the south, and Madhya Pradesh state to the west. The important rivers of the district are River Son and Rihand. The district headquarters is Robertsganj, located at 24.7°N latitude and 83.07°E longitude. It has an average elevation of 301 meters. As per 2001 census, the district has a population of 1463468. It has 3 tehsils, 8 blocks and 1426 villages. Average maximum and minimum temperatures are 45.0^{o}C and 8.0^{o}C respectively.

Wetland area of the district is 63068 ha. Major wetland type of the district is reservoirs/barrages. There are 699 Reservoirs/barrages accounting for 66.0% of total wetland area. River/stream is the second major type. In addition there are 1917 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 75.

Area under aquatic vegetation in post and pre-monsoon season is 633 ha and 298 ha respectively. Aquatic vegetation is mainly observed in reservoirs/barrages and waterlogged area. Water spread area in post-monsoon season is 55984 ha where as in pre-monsoon season it is 42031 ha. Turbidity of water in general is high in both the seasons. This is mainly due to high turbidity of the large Rihand reservoir.

Table 75: Area estimates of wetlands in Sonbhadra

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	9	130	0.21	123	53
2	1102	Ox-bow lakes/ Cut-off meanders	-	-	-	-	-
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	1	19	0.03	19	-
5	1105	Waterlogged	185	1236	1.96	729	297
6	1106	River/Stream	83	17524	27.79	13324	9891
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	699	41509	65.82	41176	31561
8	1202	Tanks/Ponds	115	571	0.91	457	221
9	1203	Waterlogged	23	162	0.26	156	8
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**1115**	**61151**	**96.96**	**55984**	**42031**
		Wetlands (<2.25 ha), mainly Tanks	1917	1917	3.04	-	-
		Total	**3032**	**63068**	**100.00**	**55984**	**42031**

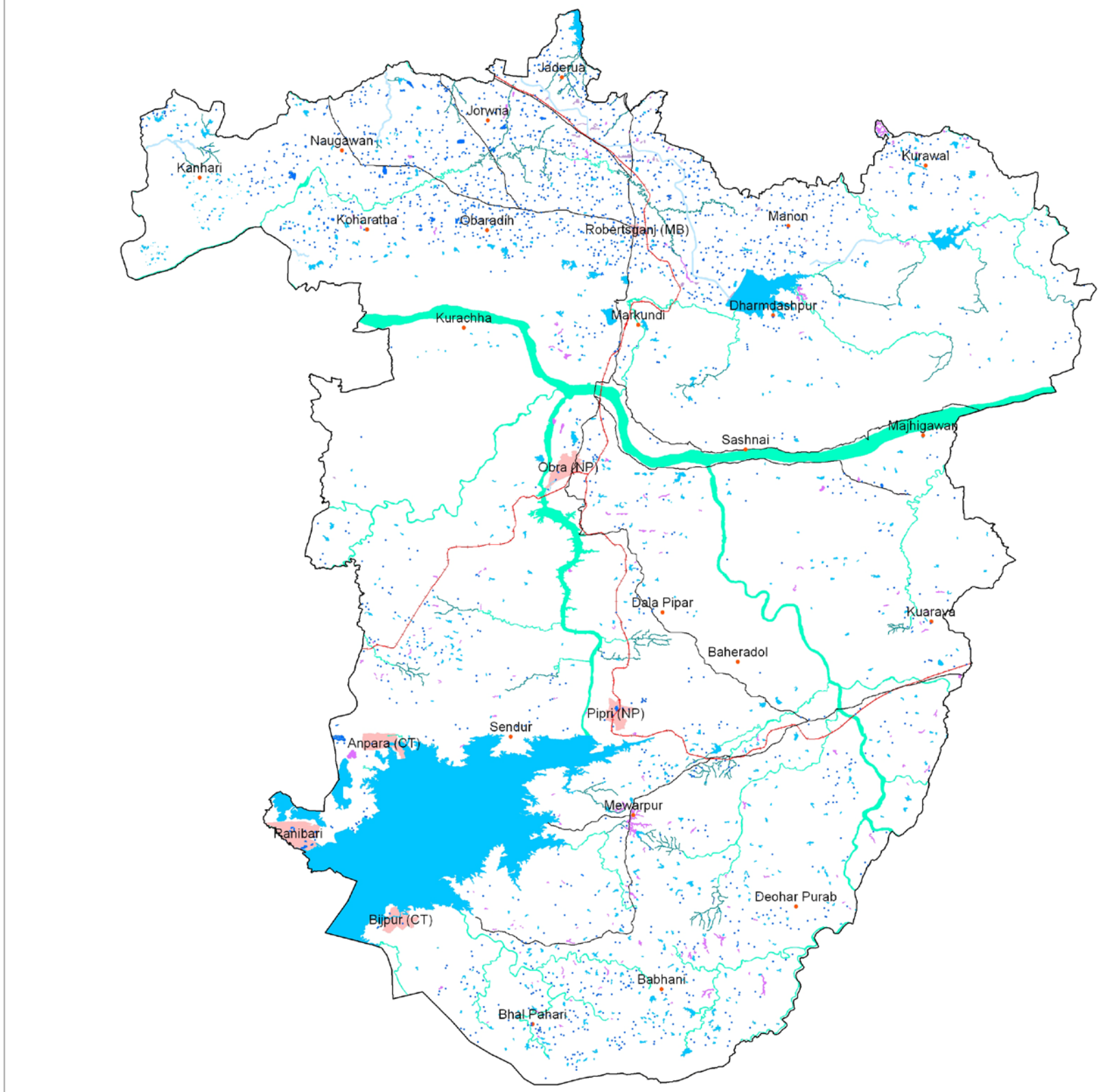
Area under Aquatic Vegetation	633	298

Area under turbidity levels		
Low	3867	1309
Moderate	17834	11844
High	34283	28880

State : Uttar Pradesh

WETLAND MAP

District : Sonbhadra

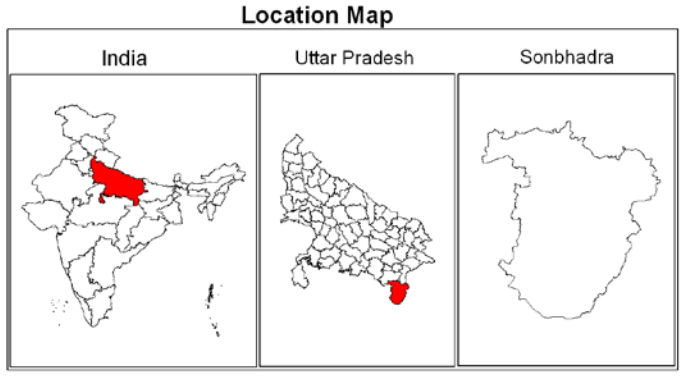


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

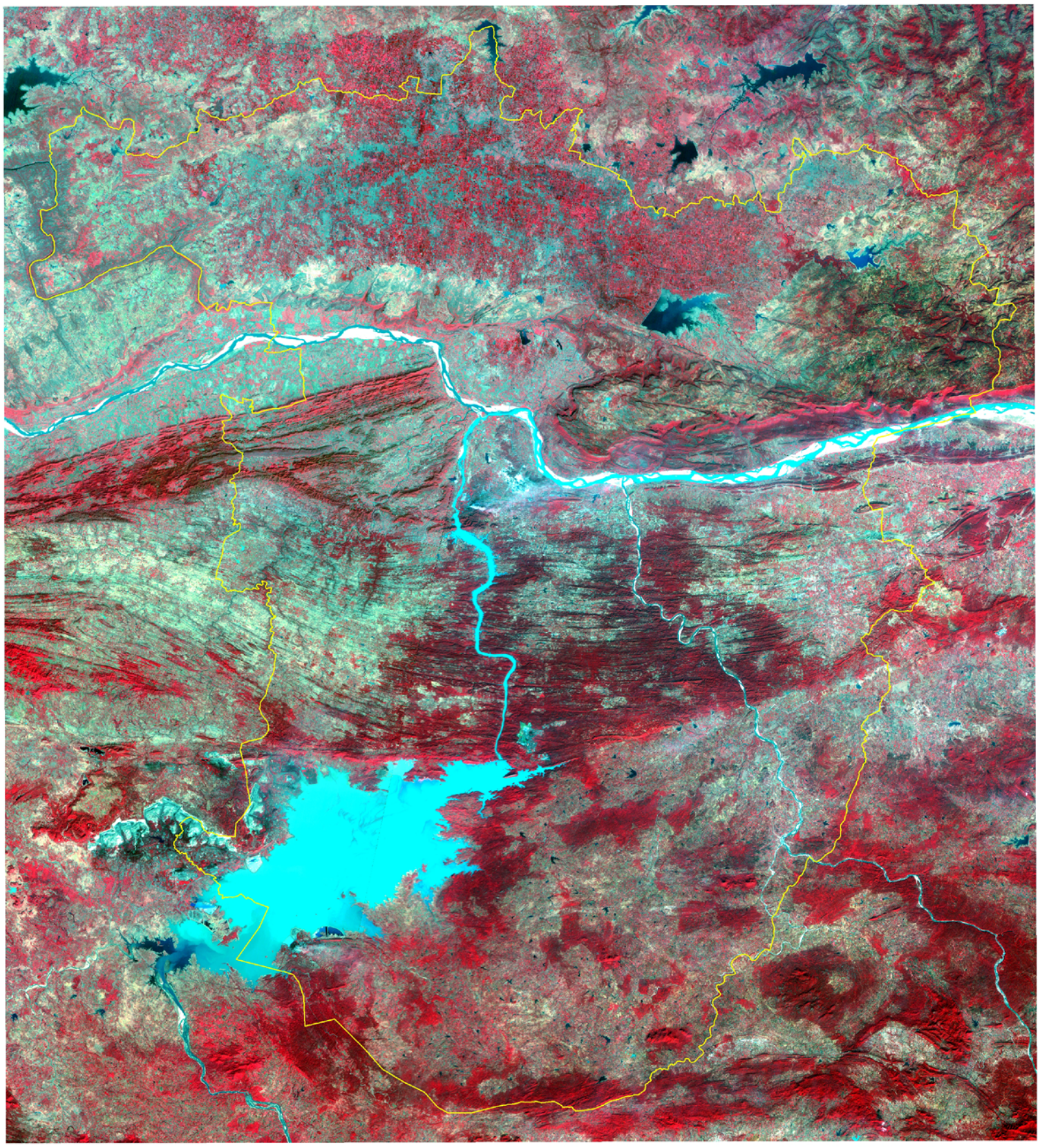
Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
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Space Applications Centre (ISRO), Ahmedabad

Sponsored by

Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

District : Sonbhadra



IRS P6 LISS-III post monsoon data (2006)

7.1.71 Kanshiram Nagar

Kasganj is district headquarter of Kanshi Ram Nagar district. Kasganj is located at 27°49′ to 27.82°N latitude and 78°39′ to 78.65°E longitude. It has an average elevation of 177 metres. As per 2001 census, the district has a population of 92485. It has 2 tehsils and 7 blocks.

Wetland area of the district is 15237 ha. Major wetland types of the district are River/Stream, and riverine wetlands. These wetlands contribute around 88 per cent wetland area of the district. Man-made wetland categories are very less in the district and contribute around 2 per cent wetland area of the district. In addition there are 459 small wetlands (<2.25 ha) scattered through out the district. Wetland area estimates are given in table 76

Area under aquatic vegetation in post and pre-monsoon season is 1317 ha and 713 ha respectively. Aquatic vegetation is mainly observed in riverine wetlands and waterlogged area. Water spread area in post-monsoon season is 8501 ha where as in pre-monsoon season the water spread area is 4340 ha. Most of the wetlands have moderate turbidity in both the season.

Table 76: Area estimates of wetlands in Kashiramnagar

Area in ha

Sr. No.	Wettcode	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open Water	
						Post-monsoon Area	Pre-monsoon Area
	1100	**Inland Wetlands - Natural**					
1	1101	Lakes/Ponds	6	759	4.98	146	63
2	1102	Ox-bow lakes/ Cut-off meanders	15	198	1.30	128	110
3	1103	High altitude wetlands	-	-	-	-	-
4	1104	Riverine wetlands	68	4450	29.21	3604	1233
5	1105	Waterlogged	31	1706	11.20	1308	768
6	1106	River/Stream	65	7446	48.87	3179	2098
	1200	**Inland Wetlands -Man-made**					
7	1201	Reservoirs/Barrages	-	-	-	-	-
8	1202	Tanks/Ponds	20	126	0.83	105	62
9	1203	Waterlogged	10	93	0.61	31	6
10	1204	Salt pans	-	-	-	-	-
		Sub-Total	**215**	**14778**	**96.99**	**8501**	**4340**
		Wetlands (<2.25 ha), mainly Tanks	459	459	3.01	-	-
		Total	**674**	**15237**	**100.00**	**8501**	**4340**

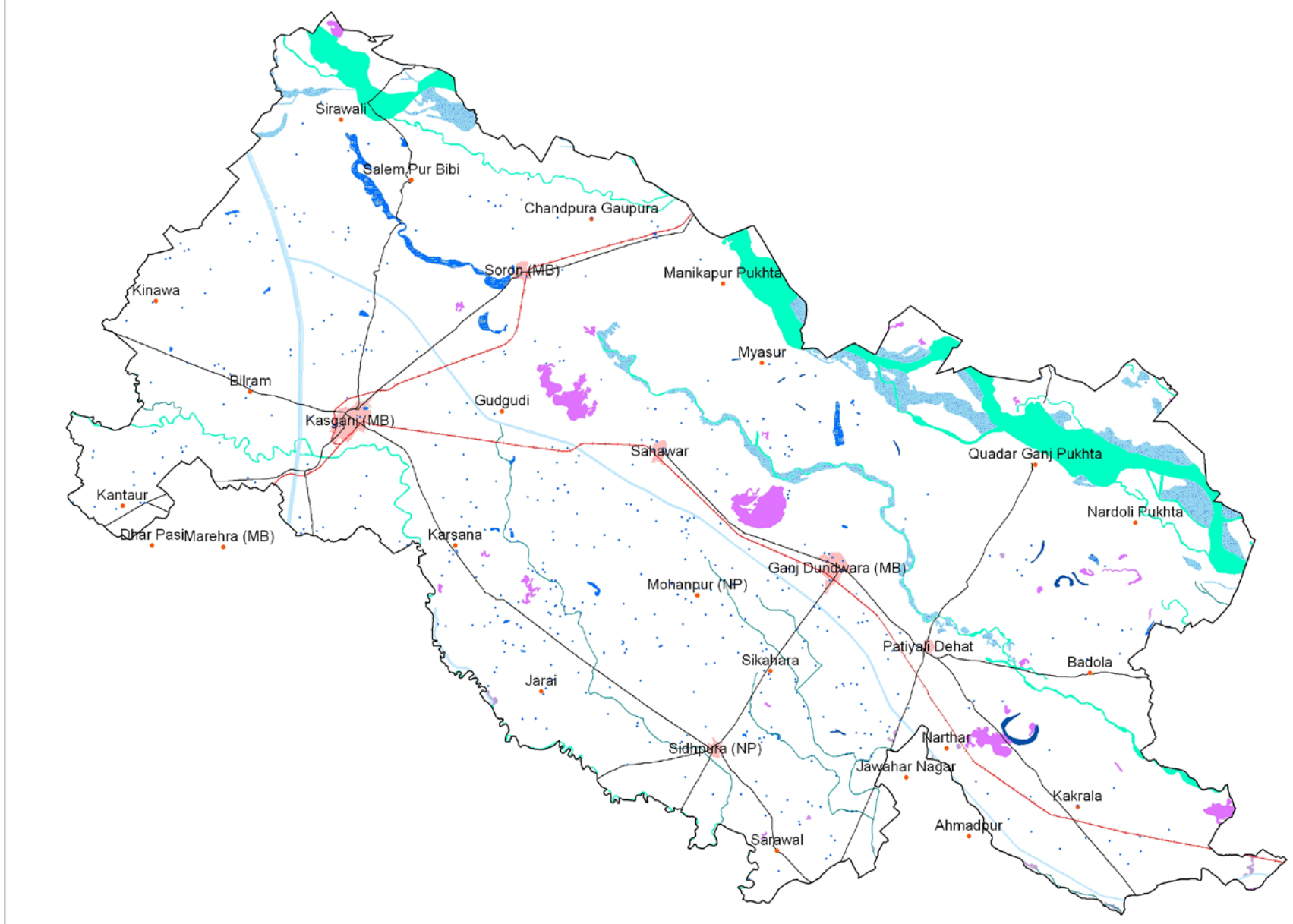
Area under Aquatic Vegetation	1317	713

Area under turbidity levels		
Low	1468	476
Moderate	6995	3800
High	38	64

State : Uttar Pradesh

WETLAND MAP

District : Kansiram Nagar

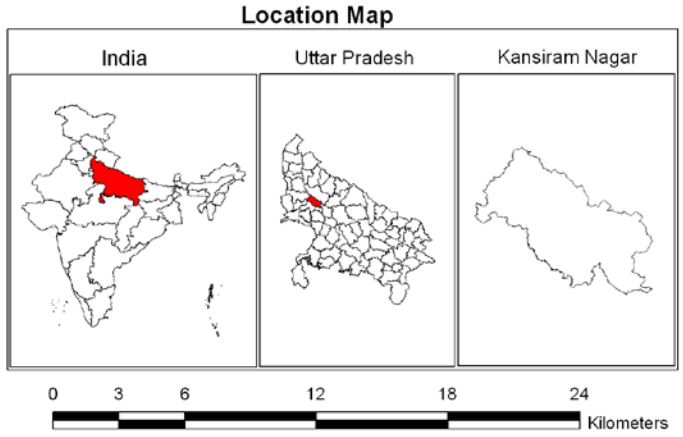


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

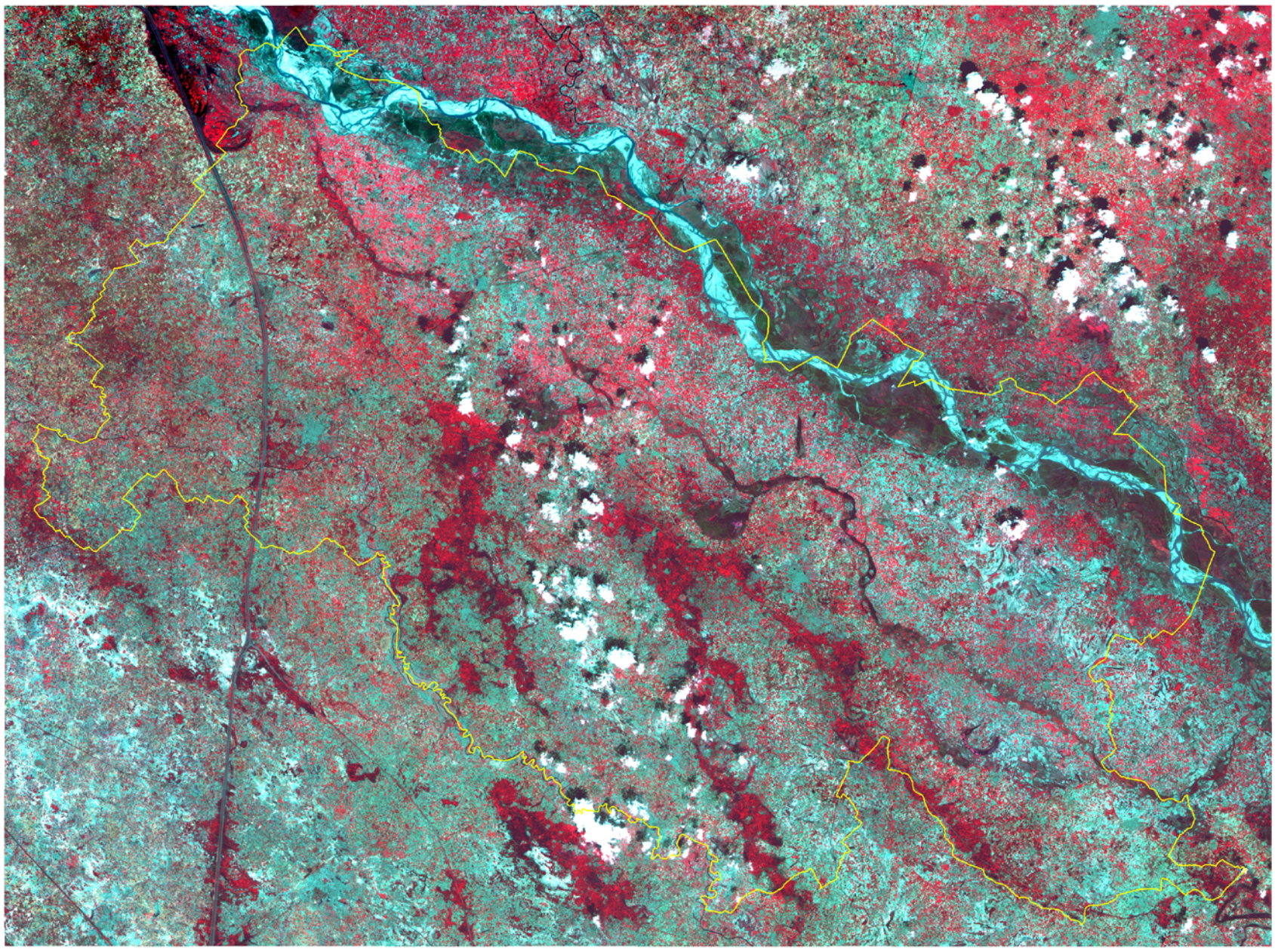
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Government of India

State : Uttar Pradesh

District : Kansiram Nagar



IRS P6 LISS-III post monsoon data (2006)

MAJOR WETLAND TYPES

8.0 MAJOR WETLAND TYPES OF UTTAR PRADESH

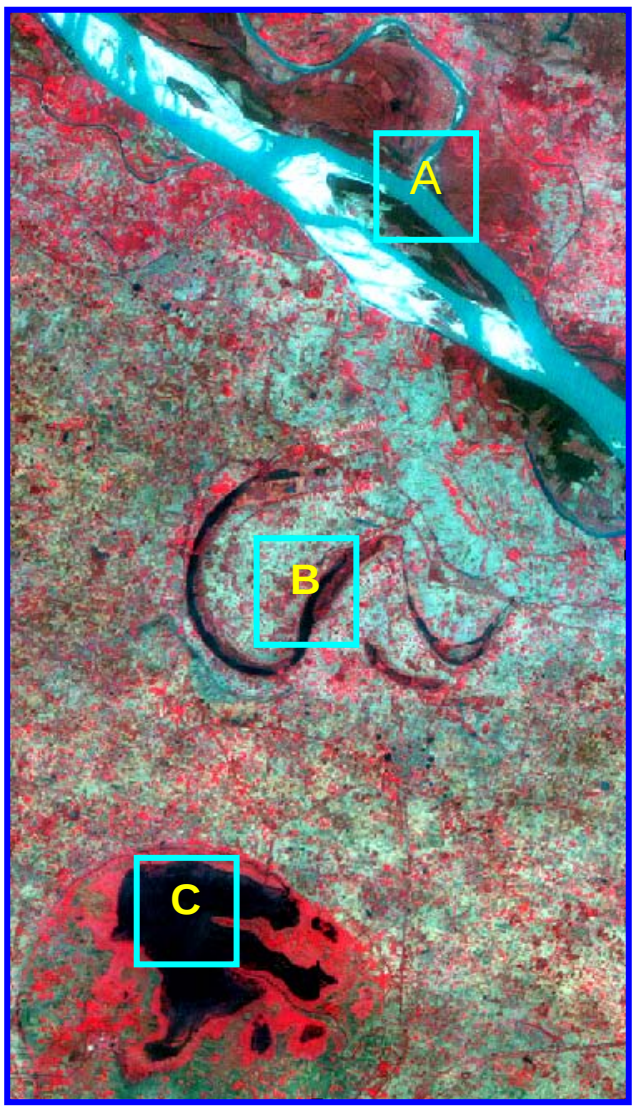
Natural wetlands dominated the state of Uttar Pradesh. Rivers/streams is the major natural wetland type observed, mainly due to the number of rivers traversing the state, like the Ganga, Yamuna, Ghaghra, Rapti, Gandak and tributaries draining into these rivers viz Ramganga, Gomti, Hindan, Chambal, Saryu, Sai, Kosi, Betwa, Belan, Dhasan, Tons, Son etc. Total number of streams mapped at 1:50,000 scale (showing water spread) are 1278 and accounted 49.0 per cent of total wetland area. Some of them are perennial in nature and others seasonal.

Presence of so many rivers in the gentle alluvium plain of the state has given rise to other wetland types: Ox-bow lakes/Cut off meanders, Riverine wetlands and waterlogged areas. All these there types of natural wetlands are found in association and in proximity of each other. The state is dotted with 3684 natural Lakes/ponds. The status of these wetlands in terms of type of aquatic vegetation varied from place to place. The extent of aquatic vegetation varied across the season. In general, area under aquatic vegetation(floating, emergent) is more during post monsoon than during pre monsoon. This is mainly due to reduction in water spread during pre monsoon.

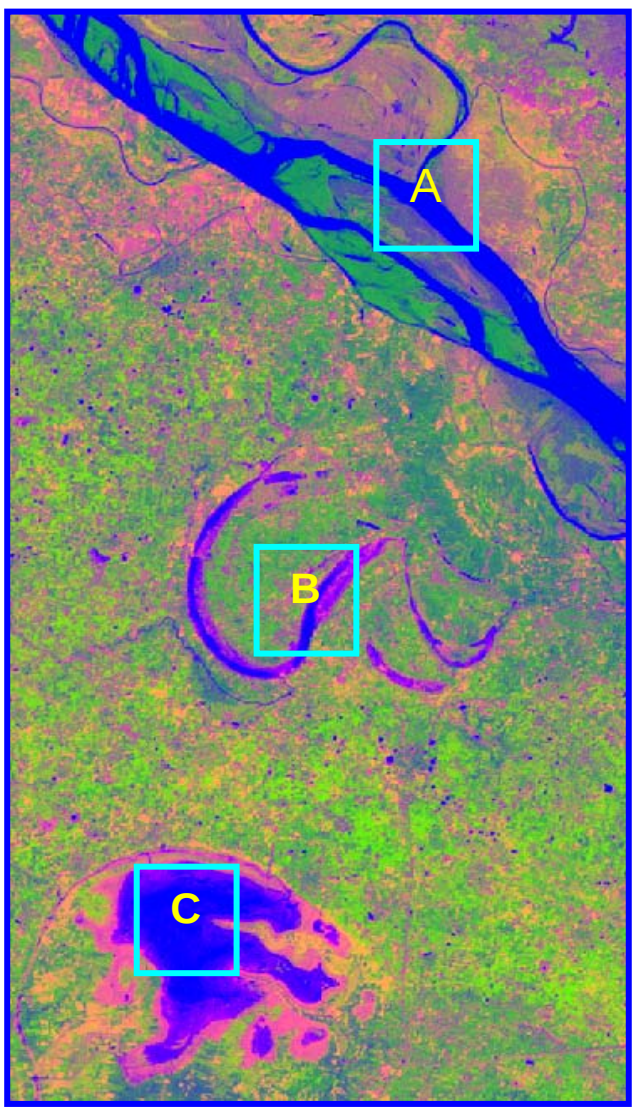
Reservoirs/Barrages, Waterlogged and Tanks/pond are the main man made wetland types of the state. There are 1608 Reservoirs/barrages mapped contributing around 8.5% of total wetland area of the state. There are 5441 Tanks/ponds mapped.

The representative sites of all these wetlands as seen in satellite data is shown in Plate-1.

Field data collected for representative wetland types include: photographs showing water spread, water quality (subjective), status of aquatic vegetation and location of the features as recorded using GPS. This is shown in Plates 2a, 2b, 2c, 2d and 2e.

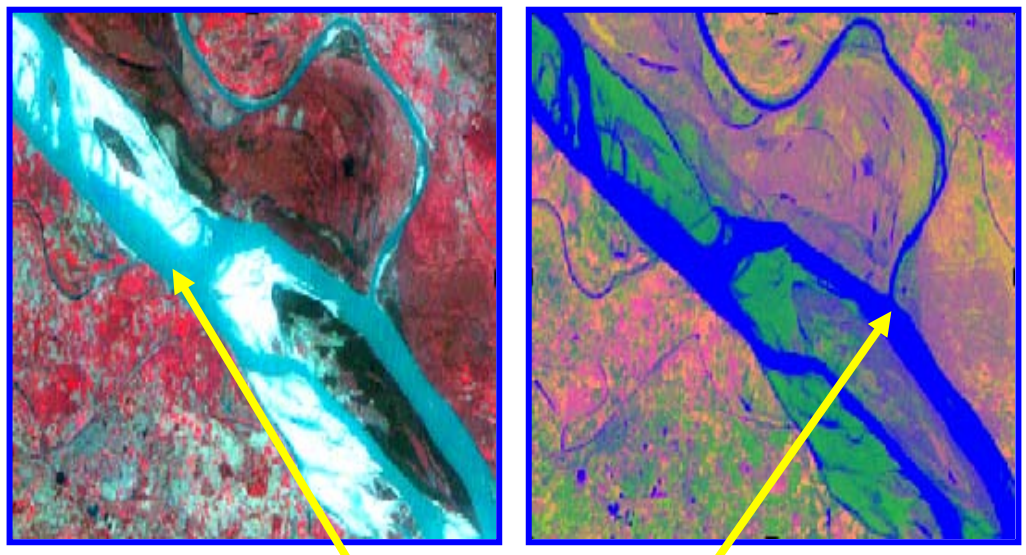


Central Part of Uttar Pradesh
(IRS P6 LISS-III FCC,2006)



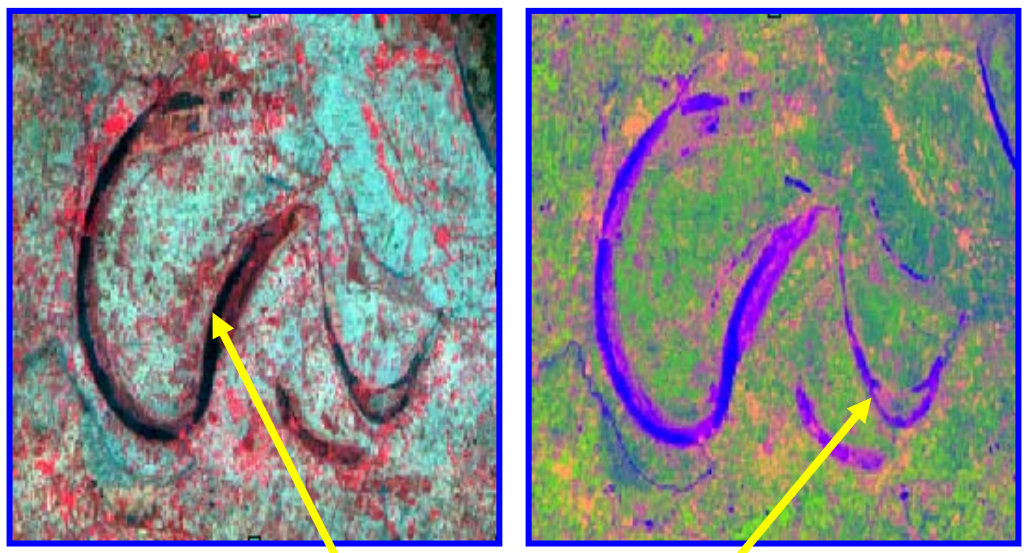
Central Part of Uttar Pradesh
(MNDWI NDPI NDVI from LISS-III data)

A:



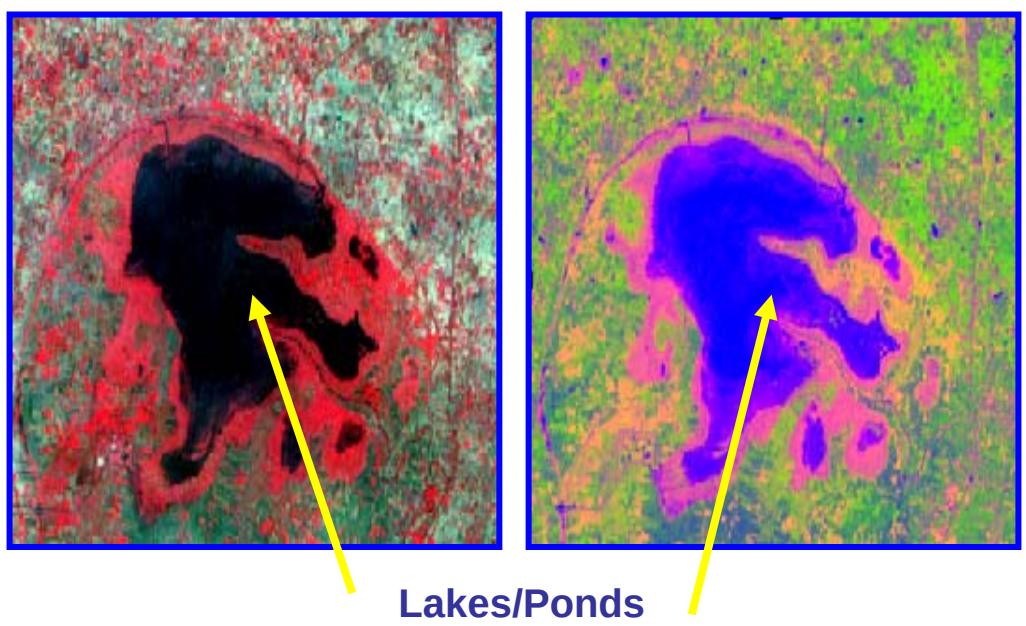
River/Stream

B:



Oxbow Lakes

C:



Lakes/Ponds

Plate - 1: Major wetland types of Uttar Pradesh

Sr. No.	Description	Field Photograph
1.	Wetland Type: Tanks/ Ponds Location: Longitude: 82^{0}17'44" E Latitude: 26^{0}40'38" N Turbidity: Low Aquatic Vegetation: Yes (*Eichhornia crassipes*)	
2.	Wetland Type: River/ Stream Location: Longitude: 82^{0}36'32" E Latitude: 26^{0}30'24" N Turbidity: Moderate Aquatic Vegetation: No	
3.	Wetland Type: Ox-Bow Lakes Location: Longitude: 82^{0}44'23" E Latitude: 26^{0}29'01" N Turbidity: Low Aquatic Vegetation: Yes (*Nelumbo nucifera, Eleocharis dulcis etc.*)	
4.	Wetland Type: Lakes Location: Longitude: 79^{0}30'53" E Latitude: 26^{0}56'07" N Turbidity: Low Aquatic Vegetation: Yes (*Eichhornia crassipes*)	

Plate 2a: Field photographs and ground truth data of different wetland types in Uttar Pradesh

Sr. No.	Description	Field Photograph
5.	Wetland Type: Lakes Location: Longitude: 80^{0}36'44" E Latitude: 26^{0}39'00" N Turbidity: Low Aquatic Vegetation: Yes (*Ipomoea aquatica Nymphaea pubescens etc.)*	
6.	Wetland Type: Lakes Location: Longitude: 79^{0}58'07" E Latitude: 27^{0}18'20" N Turbidity: Low Aquatic Vegetation: Yes (*Typha angustata*, *Eichhornia crassipes etc.*)	
7.	Wetland Type: Lakes Location: Longitude: 77^{0}50'28" E Latitude: 27^{0}15'26" N Turbidity: Low Aquatic Vegetation: Yes (*Ipomoea aquatica*)	
8.	Wetland Type: Lakes Location: Longitude: 77^{0}49'51" E Latitude: 27^{0}15'46" N Turbidity: Low Aquatic Vegetation: Yes (*Ipomoea aquatica*)	

Plate 2b: Field photographs and ground truth data of different wetland types in Uttar Pradesh

Sr. No.	Description	Field Photograph
9.	Wetland Type: Lakes Location: Longitude: 81^{0}42'40" E Latitude: 25^{0}50'53" N Turbidity: High Aquatic Vegetation: Yes (*Eichhornia crassipes, Ipomoea aquatica etc.*)	
10.	Wetland Type: Tanks/ Ponds Location: Longitude: 82^{0}50'18" E Latitude: 24^{0}52'33" N Turbidity: High Aquatic Vegetation: No	
11.	Wetland Type: Tanks/ Ponds Location: Longitude: 82^{0}03'37" E Latitude: 24^{0}59'20" N Turbidity: High Aquatic Vegetation: Yes (*Eichhornia crassipes, Nelumbo nucifera etc.*)	
12.	Wetland Type: Ox-Bow Lakes Location: Longitude: 79^{0}44'40" E Latitude: 27^{0}46'41" N Turbidity: High Aquatic Vegetation: Yes (*Eichhornia crassipes, Azolla pinnata etc.*)	

Plate 2c: Field photographs and ground truth data of different wetland types in Uttar Pradesh

Sr. No.	Description	Field Photograph
13.	Wetland Type: Lakes Location: Longitude: 80^{0}39‘59" E Latitude: 26^{0}37‘20" Turbidity: Low Aquatic Vegetation: Yes (*Eichhornia crassipes, Nymphaea pubescens etc.*)	
14.	Wetland Type: Tanks/ Ponds Location: Longitude: 82^{0}47‘08" E Latitude: 25^{0}46‘21" N Turbidity: Low Aquatic Vegetation: No	
15.	Wetland Type: Tanks/ Ponds Location: Longitude: 80^{0}47‘19“ E Latitude: 26^{0}51'44" N Turbidity: Low Aquatic Vegetation: No	
16.	Wetland Type: Ox-Bow Lakes/ Cut-Off Meanders Location: Longitude: 78^{0}45‘07" E Latitude: 27^{0}53‘06" N Turbidity: Low Aquatic Vegetation: No	

Plate 2d: Field photographs and ground truth data of different wetland types in Uttar Pradesh

Sr. No.	Description	Field Photograph
17.	Wetland Type: River/ Stream Location: Longitude: 78^{0}02‘08" E Latitude: 27^{0}12‘18" N Turbidity: Low Aquatic Vegetation: No	
18.	Wetland Type: Reservoirs/ Barrages Location: Longitude: 78^{0}32‘10" E Latitude: 25^{0}30‘14" N Turbidity: Low Aquatic Vegetation: No	
19.	Wetland Type: Lakes Location: Longitude: 78^{0}25‘10" E Latitude: 24^{0}41‘18" N Turbidity: Moderate Aquatic Vegetation: Yes (*Eichhornia crassipes*, *Trapa bispinosa etc.*)	
20.	Wetland Type: Tanks/ Ponds Location: Longitude: 80^{0}52‘12" E Latitude: 25^{0}52‘12" N Turbidity: Low Aquatic Vegetation: Yes (*Eichhornia crassipes*, *Azolla pinnata etc.*)	

Plate 2e: Field photographs and ground truth data of different wetland types in Uttar Pradesh

IMPORTANT WETLANDS OF UTTAR PRADESH

9.0 IMPORTANT WETLANDS OF UTTAR PRADESH

The wetlands of the state comprise almost all types of inland wetlands. The lakes/ponds and reservoirs/barrages, besides the rivers, constitute the major part of the wetlands of the state. The state has a number of wetlands declared as wildlife sanctuaries. These sanctuaries are known for a large number of bird species, both residents as well as migratory birds. Extensive field work was carried out for these wetland areas. Wetland maps have been prepared for 5km buffer area of each wetland sites. Details of each wetland and wetland map of 5 km buffer area are shown in plates 3 to 23. Details of some of these wetlands are given below;

Baghel Tal (Lake)

The lake, spread over an area of 1432 ha, lies between $27^0$22'44'' to $27^0$25'36'' N lat. and $81^0$42'15'' to $81^0$46'16'' E long. in Bahraich district of Uttar Pradesh in the vicinity of Terhi River. Surrounded by paddy fields, dense bushes, reeds and other plants, the lake is a haven for migratory birds. Birds of rare species such as Lalsar, Pintel, Malai, Seeper, Sandpyper, Ringflover, and Partridge can be spotted here. As seen in post monsoon sattelite data, the open water spread is very less at present.

Bakhira Lake (Wildlife Sanctuary)

Bakhira Lake is one of the largest natural wetlands in the state of U.P. It lies between $26^0$52'10'' to $26^0$56'38'' N lat. and $83^0$05'16'' to $83^0$12'18'' E long. and is situated in Sant Kabir Nagar district. The sanctuary is named after the village Bakhira located adjacent to the lake. The sanctuary was established in 1990 and is situated 44 km east of Gorakhpur city. It is a vast stretch of water body expanding over an area of 3905 ha. This is an important lake which provides a wintering and staging ground for a large number of migratory waterfowls and a breeding ground for resident birds. Some of the important bird species are White Ibis, Brahmin Duck, Purple Moorhen, Pied Kingfisher, Saras Crane ete. There are as many as hundred and eight villages surrounding the lake within the 5 km radius.

Ghaghar Reservoir

Ghaghar is a masonry dam at Dhandraul in Sonbhadra district, which has been constructed across the Ghagar river on its way to join the river Son. The reservoir lies between $24^0$36'01'' to $24^0$38'56''N lat. and $83^0$09'33'' to $83^0$15'03'' E long. and has an area of about 2165 ha. capable of storing more than 140 M.m^3 of water used for irrigation and drinking water.

Samaspur Lake (Wildlife Sanctuary)

Situated near Salon in Raebareli district, it lies between $25^0$55'40'' to $26^0$03'47''N lat. and $81^0$18'33'' to $81^0$27'51'' E long. and situated at about 122 km from Lucknow on Lucknow-Varanasi highway. The lake was established as wildlife sanctuary in 1987 having an area of 791 ha. Over 250 varieties of birds are found here including local birds such as Comb duck, Spot bill, Spoon bill, Kingfisher, Vulture etc. and migratory birds such as Grey-leg Googe, Pin Tail, Whistling Teel, Common Teel, Black-naked Stork, White Ibis etc.The lake at Samaspur has more than twelve kinds of fishes also. As seen in sattelite data, it is a coglomerate of Ox-bow lakes/Cut off meanders. Presence of dense aquatic vegetation is seen clearly.

Dahar Lake (Sandi Bird Sanctuary)

Dahar Lake is a wetland located at a distance of 20 km from Hardoi railway station and about 1 km from Sandi town. Situated in the Hardoi district it lies between $27^0$17'57'' to $27^0$19'42''N lat. and $79^0$57'47'' to $79^0$59'10'' E long.The sanctuary was created in the year 1990 in order to protect the natural habitats and aquatic vegetation for the local resident birds and migratory birds. The Sandi Bird sanctuary is also known by its ancient name as "Dahar Jheel" area of which is 309 ha. River Garra, formerly known as Garur Ganga, passes near the sanctuary.

Keetham lake (Soorsarovar Wildlife Sanctuary)

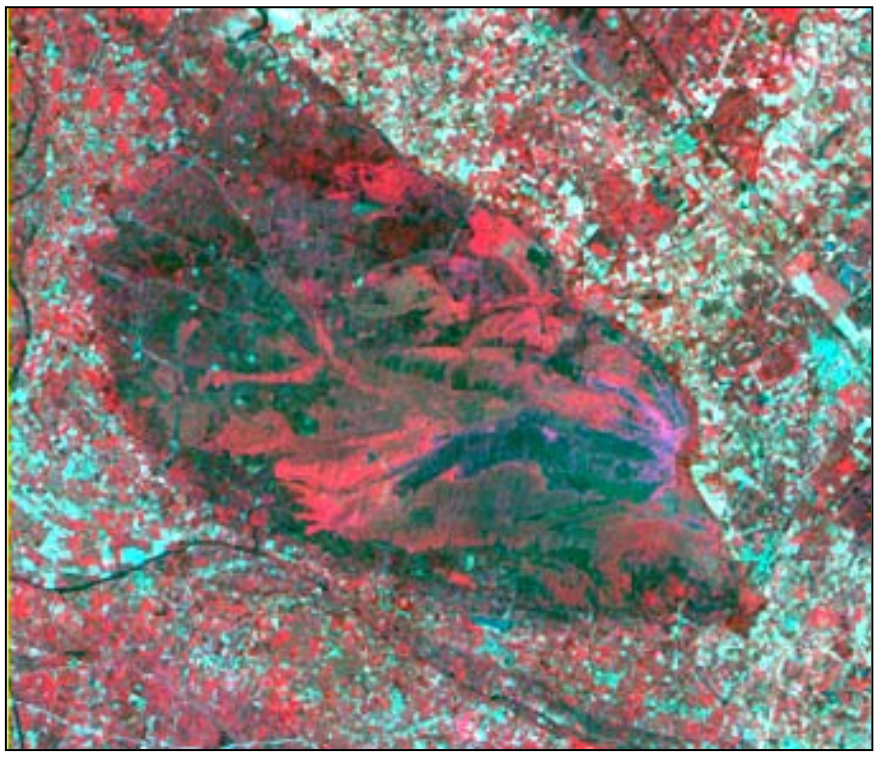
This scenic lake, is about 20 km distance from Agra and 12 km from Shikandra, is located within Soorsarovar bird sanctuary. The lake is situated in Agra district on the bank of river Yamuna between $27^0$14'25'' to $27^0$15'57''N lat. and $77^0$49'41'' to $77^0$51'37'' E long. Keetham Lake was declared as Bird Sanctuary in march 1991 by U.P. Forest Department on the name of great poet Soor Das. The riverine belt of river Yamuna surrounds the area of Soorsarovar. The entire lake having an area of 403 ha is pentagonal in shape and has artificially created islands for sheltering and breeding of the migratory birds. The raw water for Keetham Lake is obtained from Agra Canal originating from Okhla barrage on River Yamuna in Delhi. The lake water of Keetham is also used as raw water intake for Mathura Refinery Water Treatment Plant located in vicinity of Keetham Lake. More than 200 species of migratory and resident birds are known to have their resting habitats at Soor Sarovar. The entire lake area gets covered by profuse growth water hyacinth (*Eichhornia* sp.) and *Potamogeton* sp. As seen in sattelite image, even during post monsoon period, a large tract is under vegetation..

Surha Lake

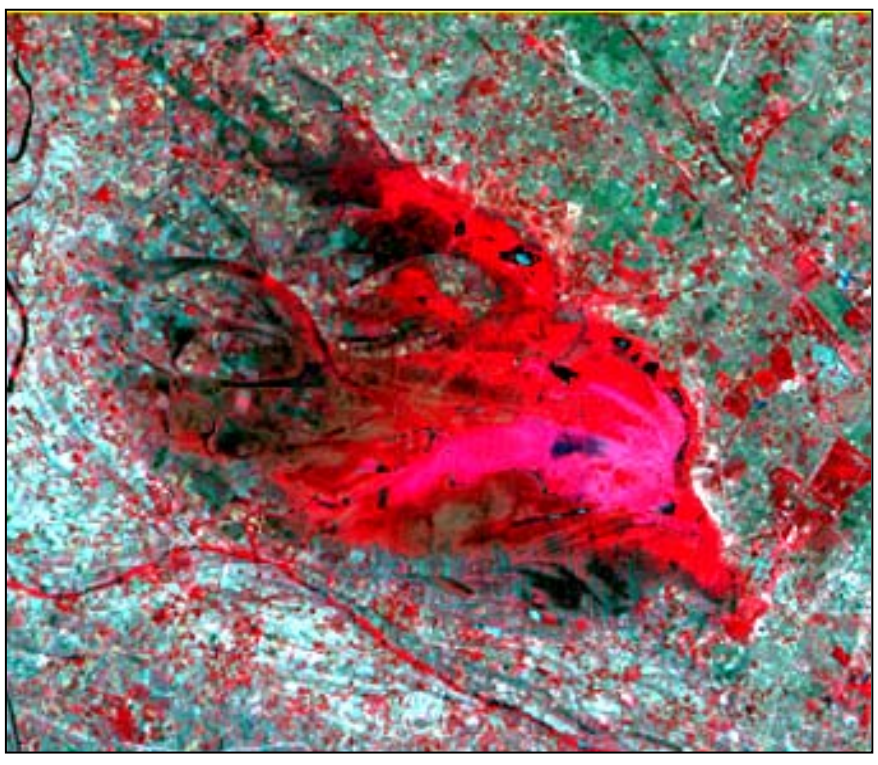
The Suraha Tal which, lies between $25^0$48'58'' to $25^0$52'13'' N lat. and $84^0$08'15'' to $84^0$12'54'' E long., is the most important lake in Ballia district and one of the biggest wetlands of U.P., covering an area of about 2357 ha. The lake receives water from Katehar river. Some other channels draining into the lake are Kharid parganas, Garari, Kharid and Kopachit East and finally draining into the river Ganga towards southern border of the district. The lake is a natural habitat of a large number of resident and migratory birds. As seen in sattelite data, a large portion of surrounding peripheral area of the lake are under dense aquatic vegetation. The channels draining to the lake also show siltation and hardly show presence of water even during post monsoon.

9.1 Baghel Tal

Name	**Baghel Tal**
Location	Between $27^0$22’44” N and $27^0$25’36” N latitudes and $81^0$42’15’’ E and $81^0$46’16’’ E longitudes
Area	1432 ha
Salient features	It is a shallow lake infested by all types of aquatic vegetation- floating, submerged and emergent.
Turbidity	Moderate



Post-Monsoon 2006



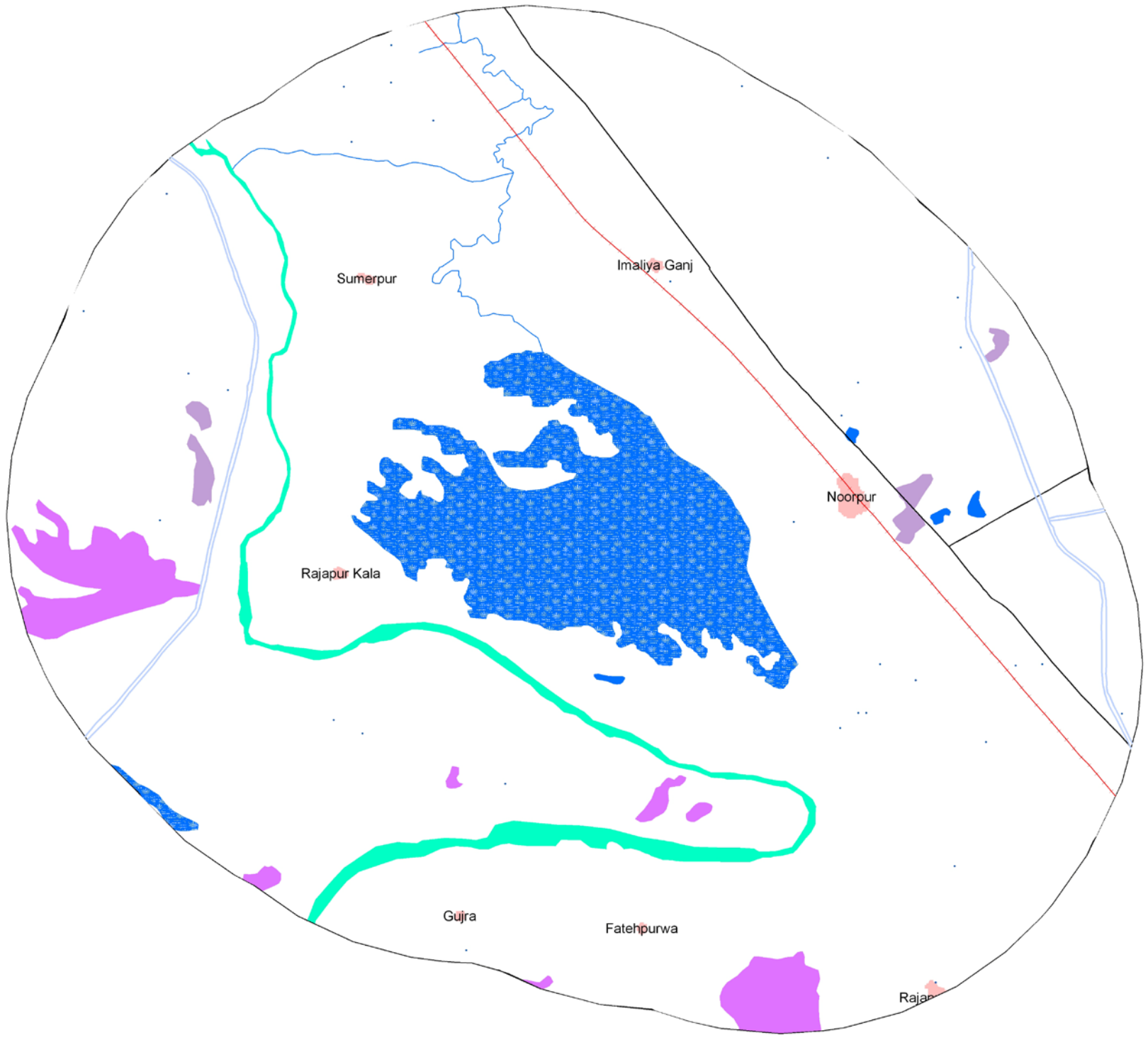
Pre-Monsoon 2007

Plate 3: Baghel Tal

State : Uttar Pradesh

WETLAND MAP

Baghel Tal

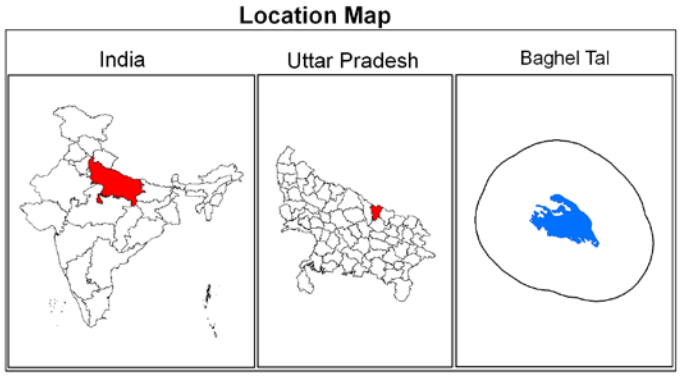


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 0.5 1 2 3 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

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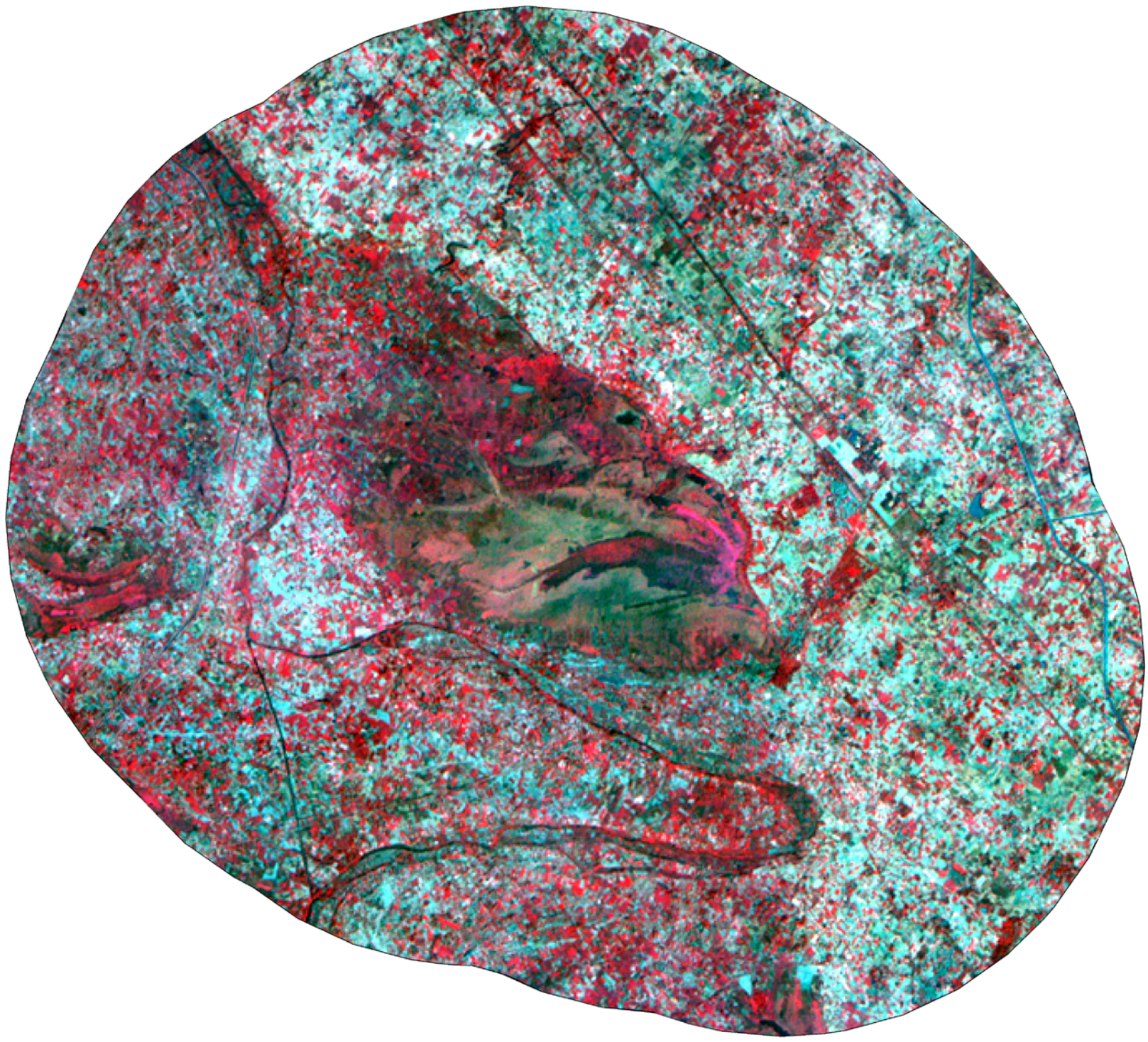
Ministry of Environment and Forests
Government of India

Plate 4: Wetland map - 5 km buffer area of Baghel Tal

State : Uttar Pradesh

WETLAND MAP

Baghel Tal

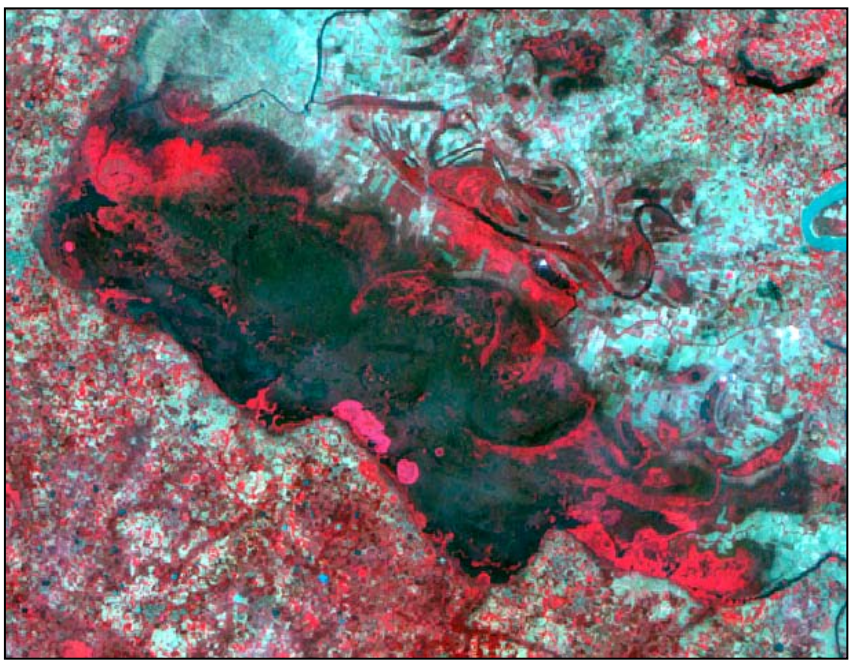


IRS P6 LISS-III post monsoon data (2006)

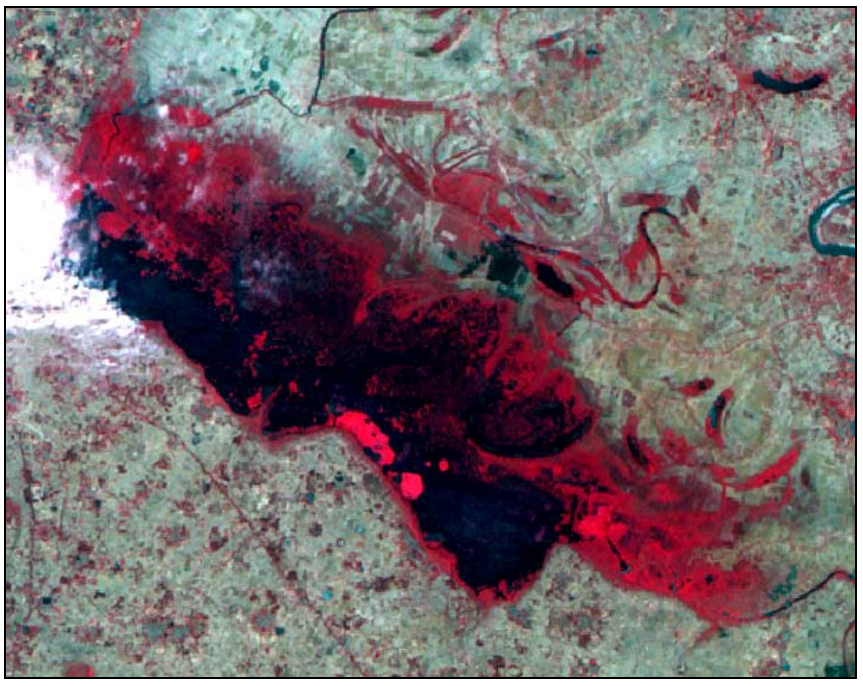
Plate 5: IRS LISS-III FCC - 5 km buffer area of Baghel Tal

9.2 Bakhira Wildlife Sanctuary

Name	**Bakhira Wildlife Sanctuary**
Location	Between $26^0$52’10’’ N and $26^0$56’38’’ N latitudes and $83^0$05’16’’ E and $83^0$12’18’’ E longitudes
Area	3905 ha
Salient features	Bakhira Wildlife Sanctuary is situated in Sant Kabir Nagar district. The sanctuary is named after the village Bakhira located adjacent to the lake. The sanctuary was established in 1990 and is situated 44 km east of Gorakhpur city. Poaching, hunting, shooting of birds are common threat to this wetlands. Fishing is also very common.
Turbidity	Moderate
Vegetation	Dense aquatic vegetation occurs along the margins and within the lake are *Ipomoea aquatica, Ipomoea purpures fistulosa, N;ymphaea spp., Pistia stratiotes, Eichhornia crassipes, Trapa bispinosa, Nelumbo nucifera, Hydrillia spp., Lemna paucicostata, Wolftic, Spirodela, Azolla* etc.
Fauna	Migratory and resident birds visiting this sanctuary are Pintail, Greylag Goose, Barheaded Goose, Teals, Mallard, Wigeon, Garganey, Shoveller, Red, Crested Pochard, Tufted duck, comb duck, Goosander, Darter, Spoon Bill, Herons, Egrets, White Ibis, Painted stork, The Brahminy kite, Hawk Eagle, Indian Moorhen, Water hen, Purple Moorhen, Bronze Winged Jacauna, Plover, Koel, Parrot, Peacock, Cuckoo, Cormorant etc.



Post-Monsoon 2006



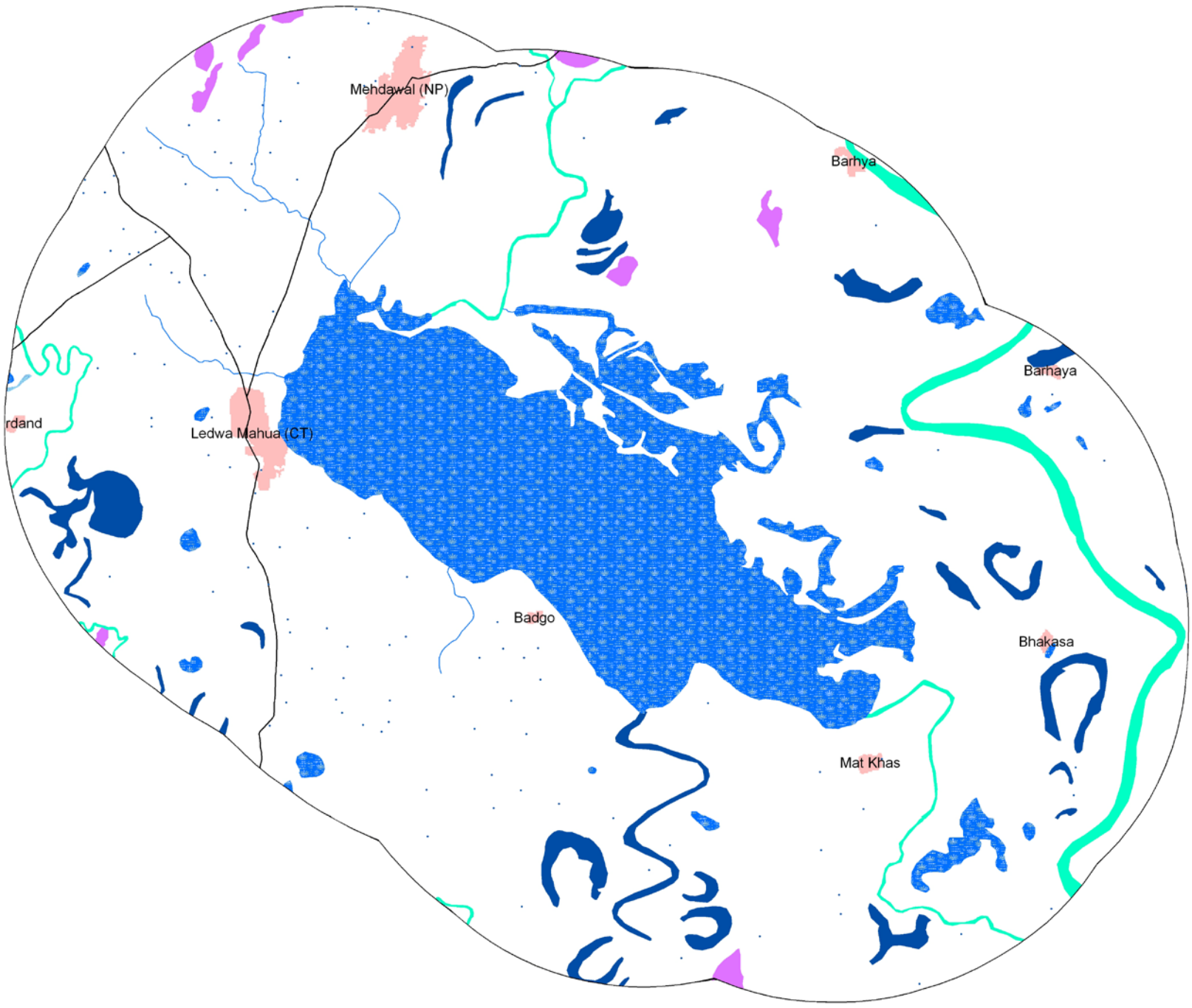
Pre-Monsoon 2007

Plate 6: Bakhira Wildlife Sanctuary

State : Uttar Pradesh

WETLAND MAP

Bakhira Wildlife Sanctuary

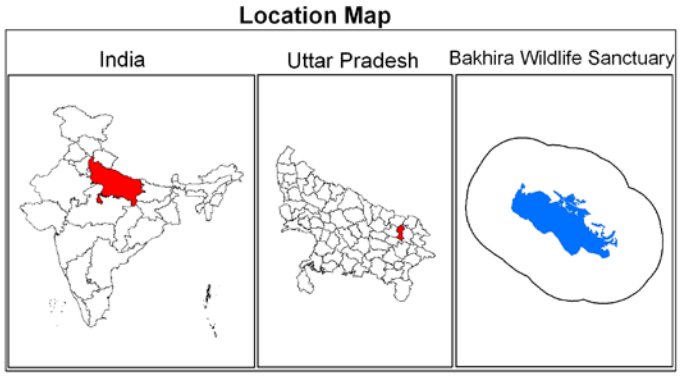


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 1 2 4 6 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

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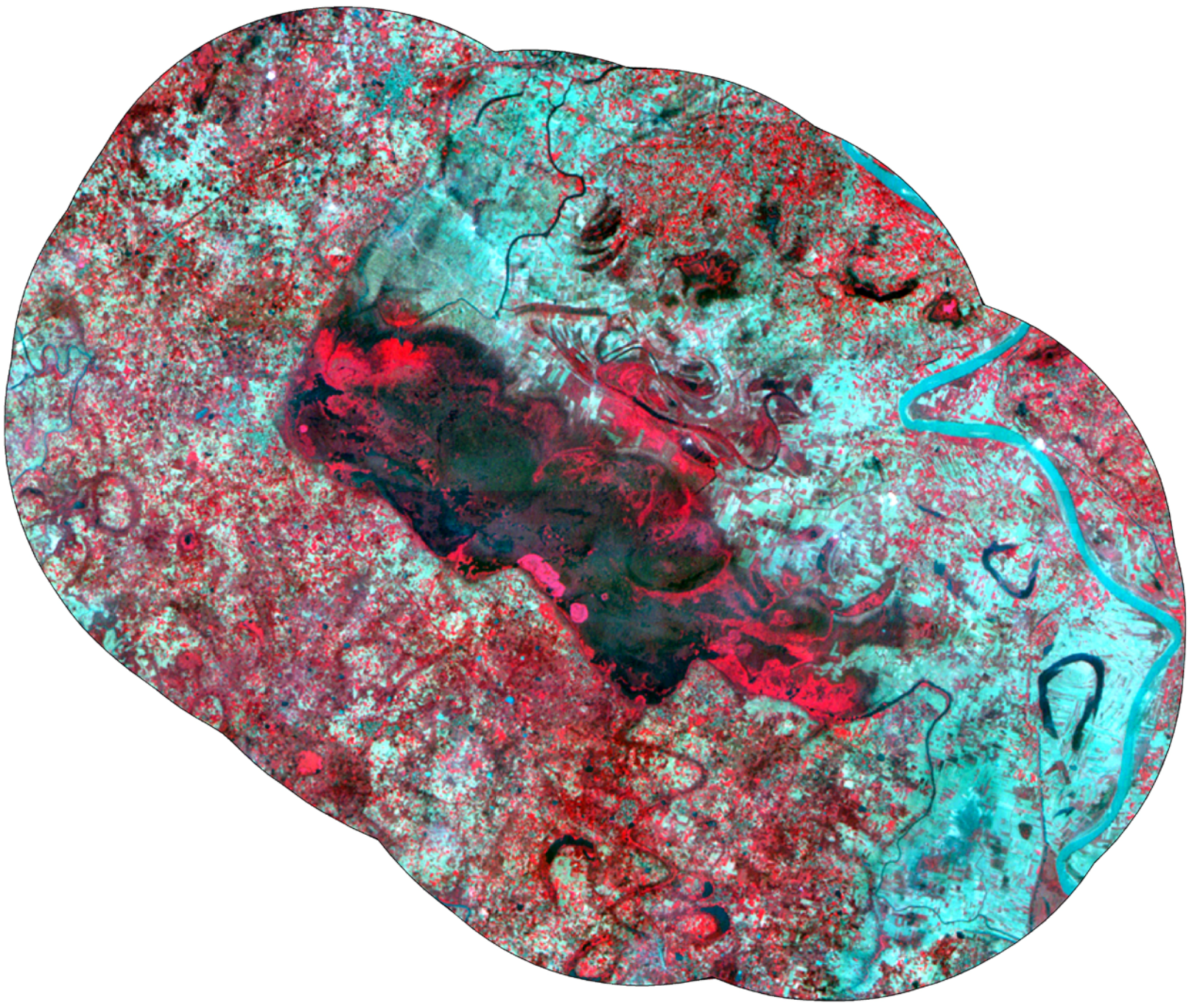
Ministry of Environment and Forests
Government of India

Plate 7: Wetlands map- 5 km buffer area Bakhira Wildlife Sanctuary

State : Uttar Pradesh

WETLAND MAP

Bakhira Wildlife Sanctuary

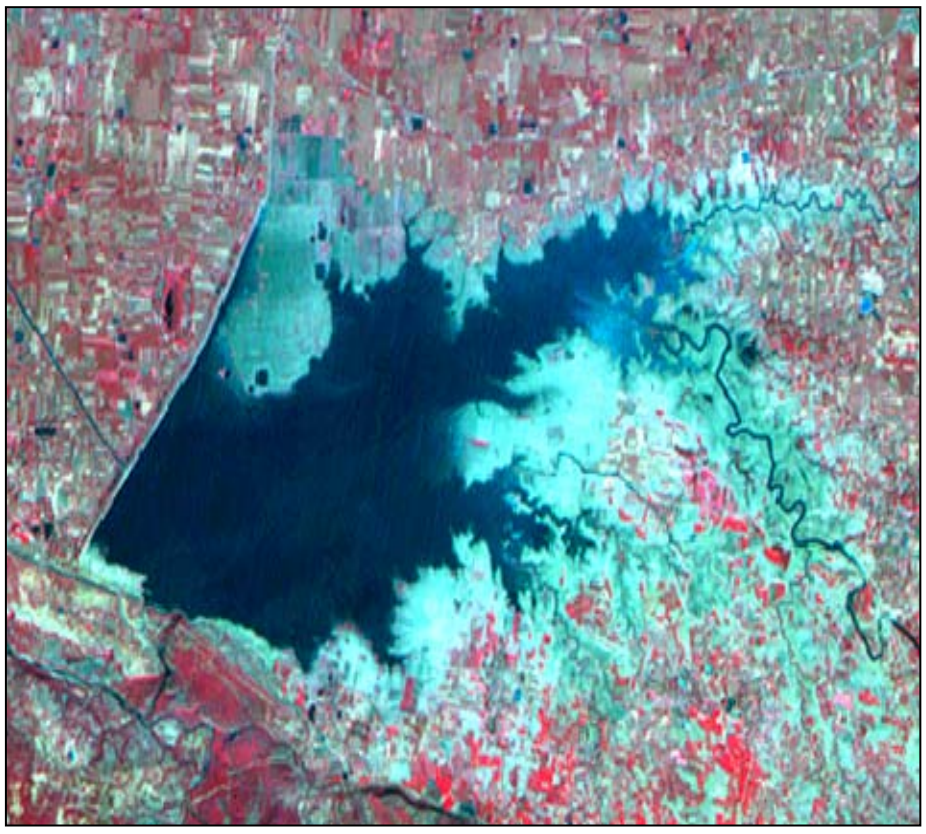


IRS P6 LISS-III post monsoon data (2006)

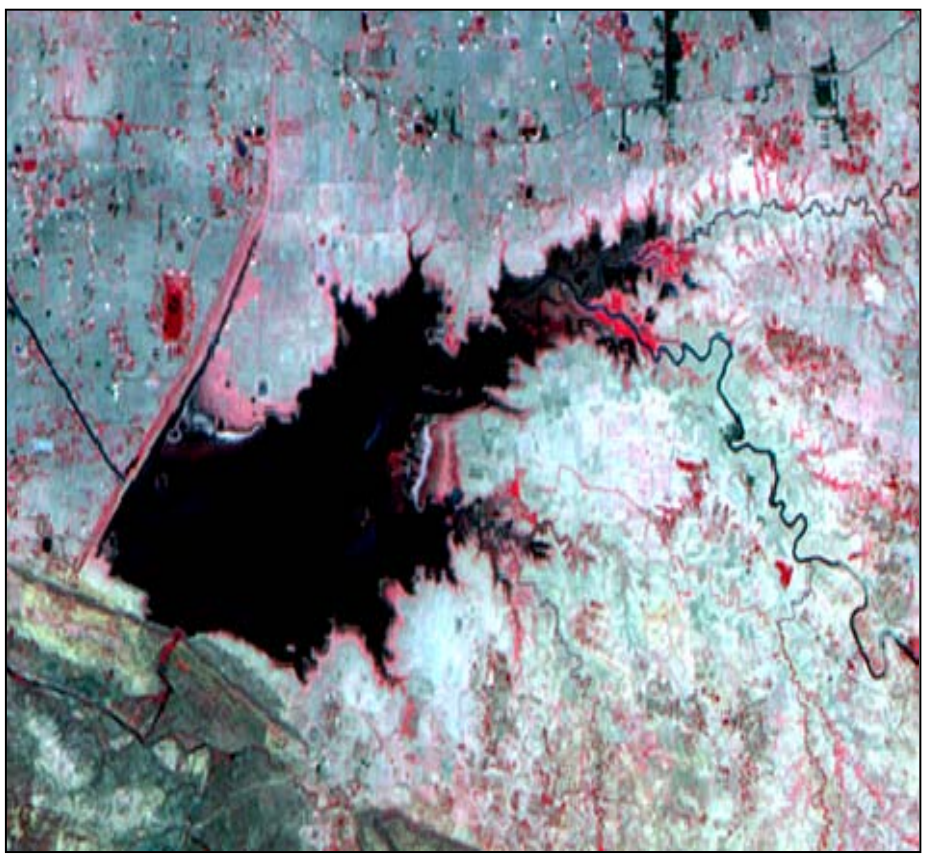
Plate 8: IRS LISS-III FCC – 5 km buffer area of Bakhira Wildlife Sanctuary

9.3 **Ghaghar Reservoir**

Name	**Ghaghar Reservoir**
Location	Between $24^0$36’01’’ N and $24^0$38’56’’ N latitudes and $83^0$09’33’’ E and $83^0$15’03’’ E longitudes
Area	2165 ha
Turbidity	Moderate



Post-Monsoon 2006



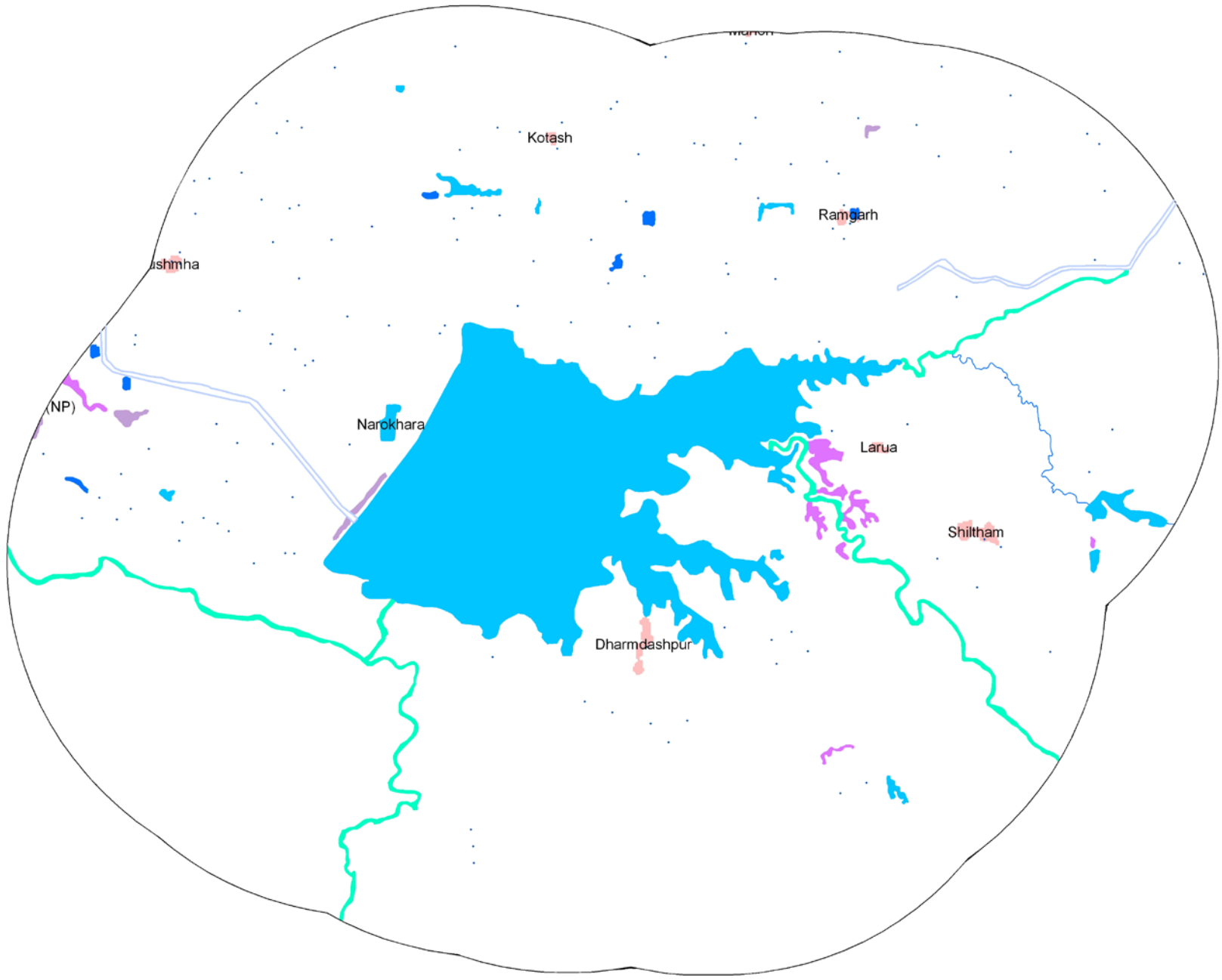
Pre-Monsoon 2007

Plate 9: Ghaghar Reservoir

State : Uttar Pradesh

WETLAND MAP

Ghaghar Reservoir

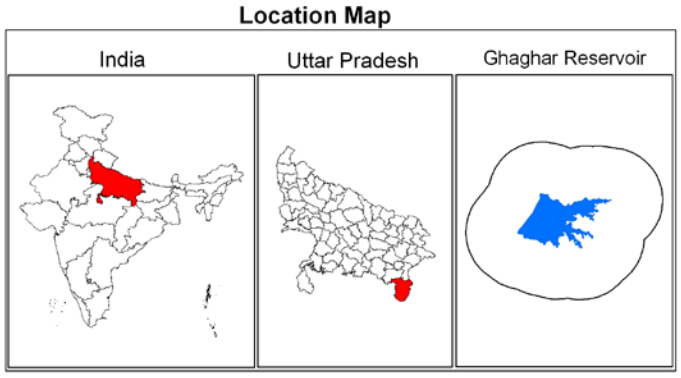


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

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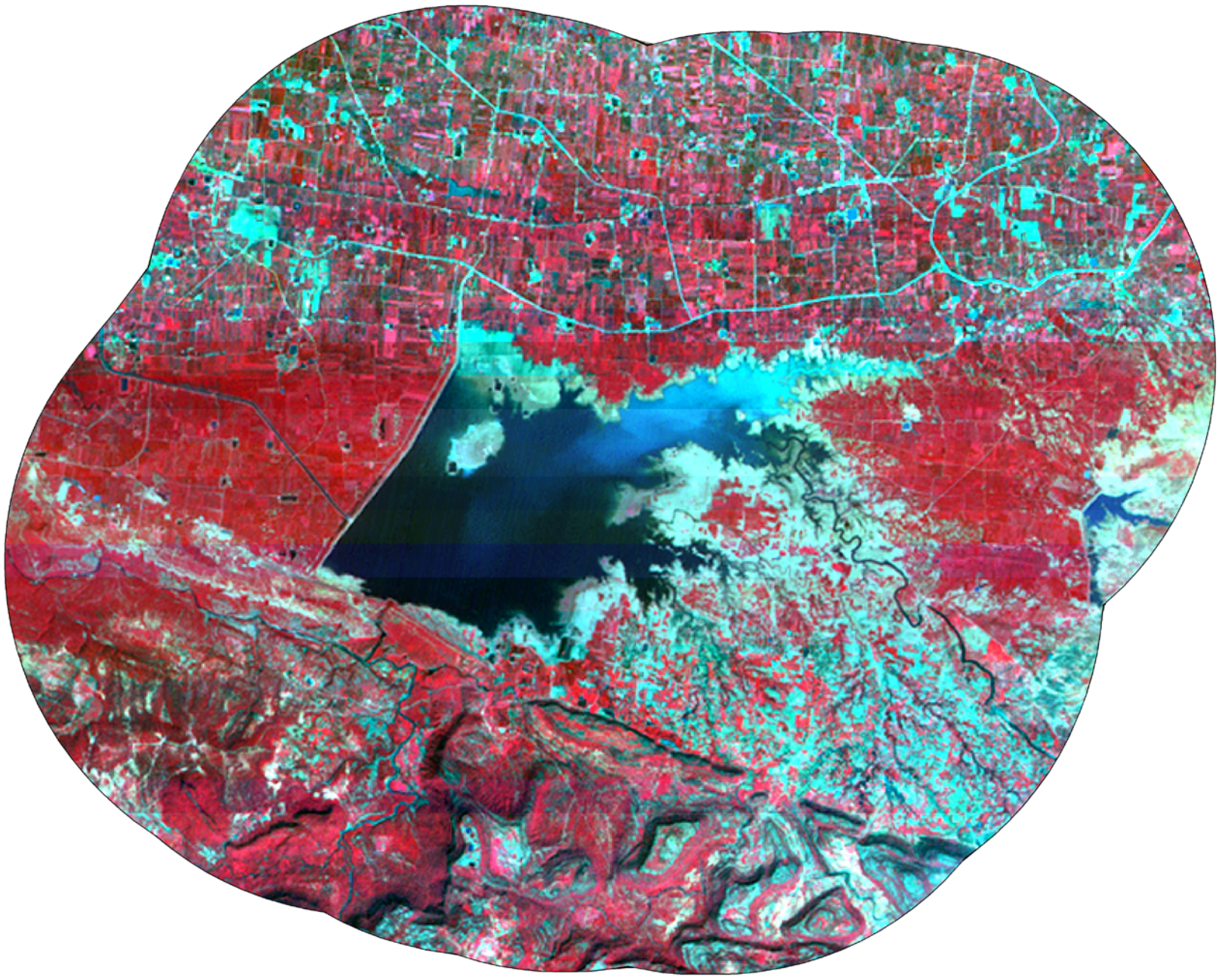
Ministry of Environment and Forests
Government of India

Plate 10: Wetland map – 5 km buffer area of Ghaghar Reservoir

State : Uttar Pradesh

WETLAND MAP

Ghaghar Reservoir

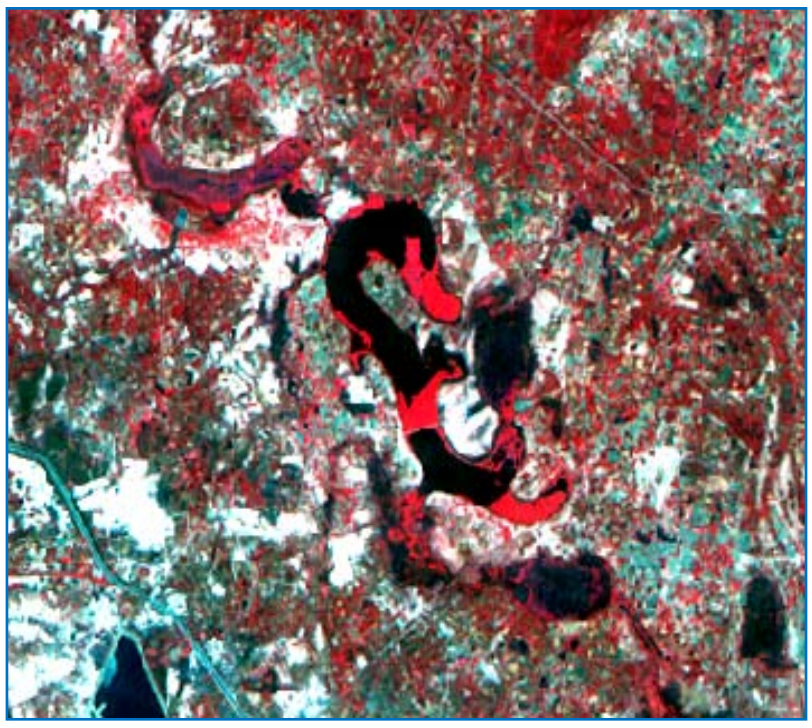


IRS P6 LISS-III post monsoon data (2006)

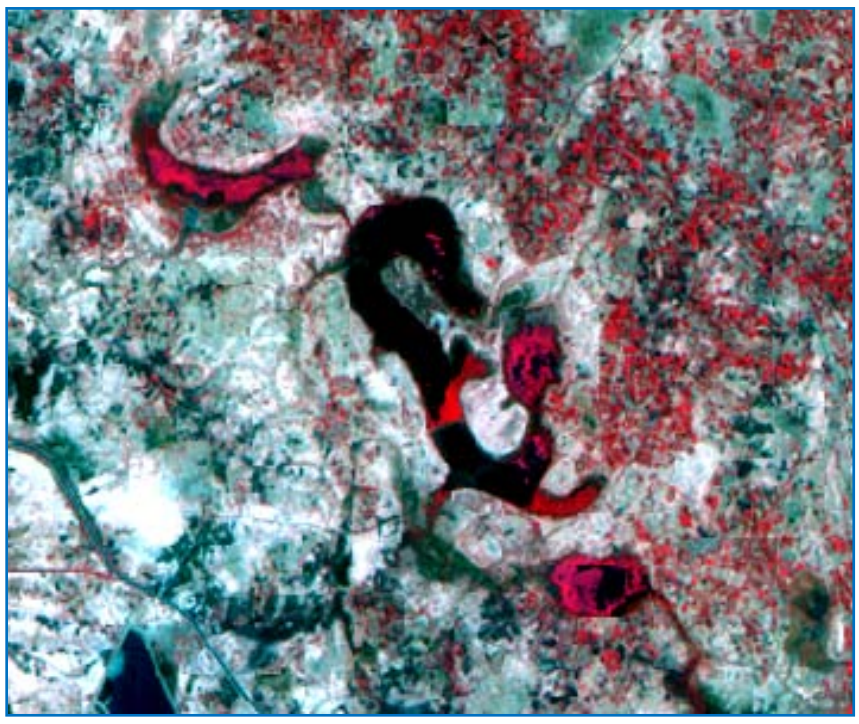
Plate 11: IRS LISS-III FCC – 5 km buffer area of Ghaghar Reservoir

9.4 Samaspur Wildlife Sanctuary

Name	**Samaspur Wildlife Sanctuary**
Location	Between $25^0$55'40'' N and $26^0$03'47'' N latitudes and $81^0$18'33'' E and $81^0$27'51'' E longitudes
Area	791 ha
Salient features	The State Forest Department notified this Sancturarty, which is located 30 km from Raebareli in Salon tehsil of Raebareli district, in 1987. Major part of this wetland is swampy/marshy. This wetland is seen full of migratory and resident birds during winter season. Migratory birds start returning in the month of March, while some of the resident birds stay here permanently by making their own nests.
Turbidity	Moderate
Vegetation	Aquatic vegetation seen in this wetland are Ipomoea aquactica, Eichhornia crassipes, Typha typha , Pistia Stratioites, Hydrilla, Nehumbo mcifera, etc. Agriculture is the general landuse in surrounding area of this sanctuary.
Fauna	Migratory birds visiting this wetland site are Anser (Greyag Goose), Anser indicus (Bar headed Goose), Pintail, Common teal, Gargancy teal, Pochard, Gadwall, Surkhab, Shoveller, Wigeon, Coot, and Mallard. Resident birds include Comb duck, Whistling teal, Pochard, Spot billed duck, Saras Crane, Painted Stork, Open billed Stork., White necked stork, black necked stork, Spoon bi;;, White ibis, Bonze winged jacauna, Pheseant tailed jacauna, Purple Moorhen, Water hen Cormoorannt, Darter, Egret, Plover, Purple Heron, Grey Heron, Pond Heron, Lopwing, King fisher, Ten Kite, Titar, Hawk Eagle, Koel, King Crow, Muniya, Golden Oriol, Barbet, Drongo, Peacock, Brain fever bird etc.



Post-Monsoon 2006



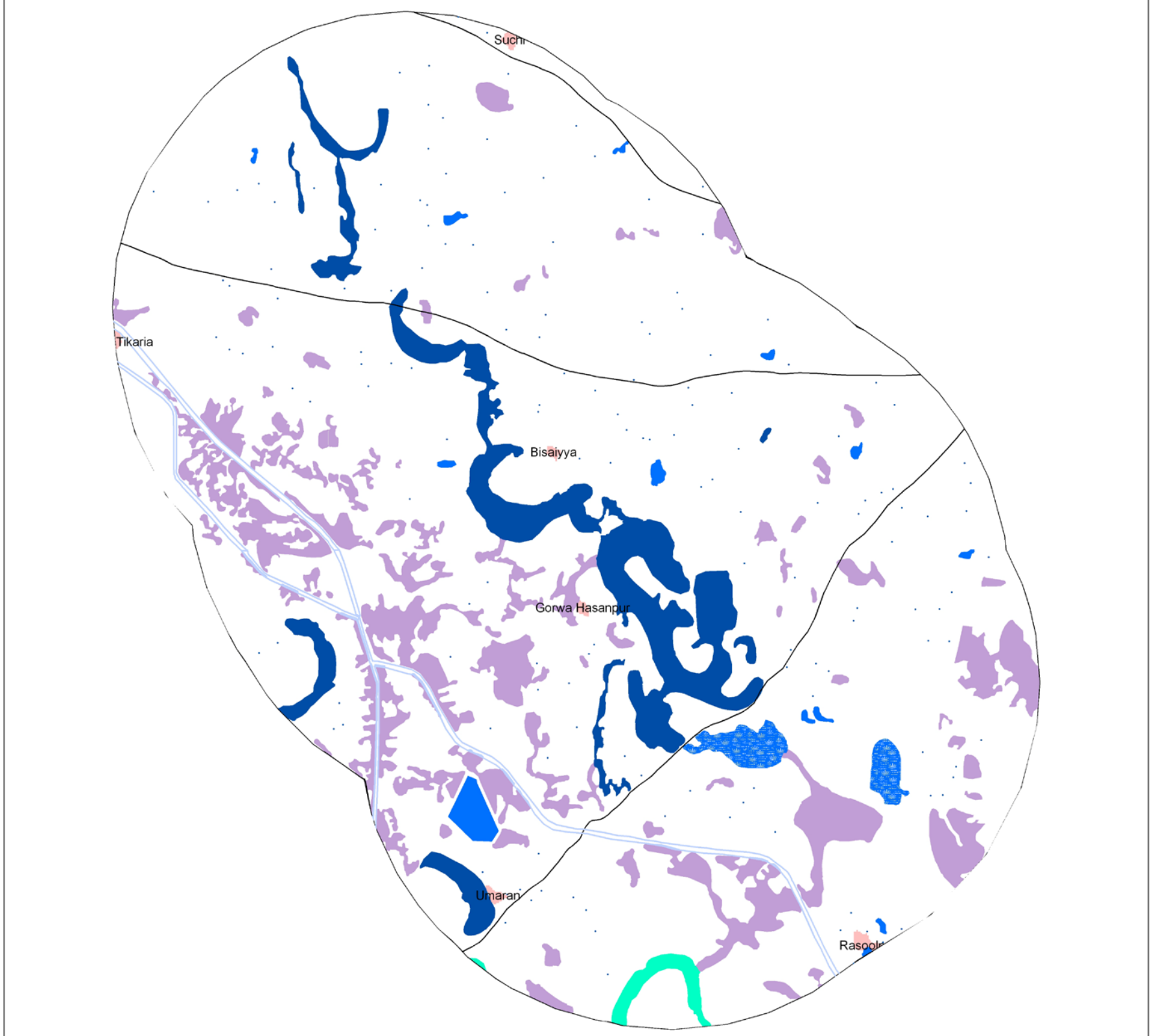
Pre-Monsoon 2007

Plate 12: Samaspur Wildlife Sanctuary

State : Uttar Pradesh

WETLAND MAP

Samaspur Wildlife Sanctuary

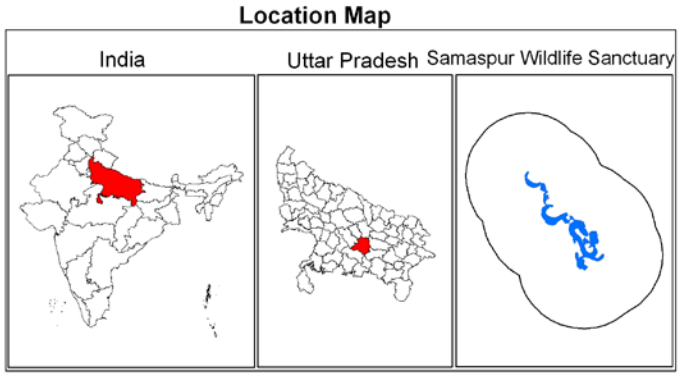


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



0 0.5 1 2 3 Kilometers

Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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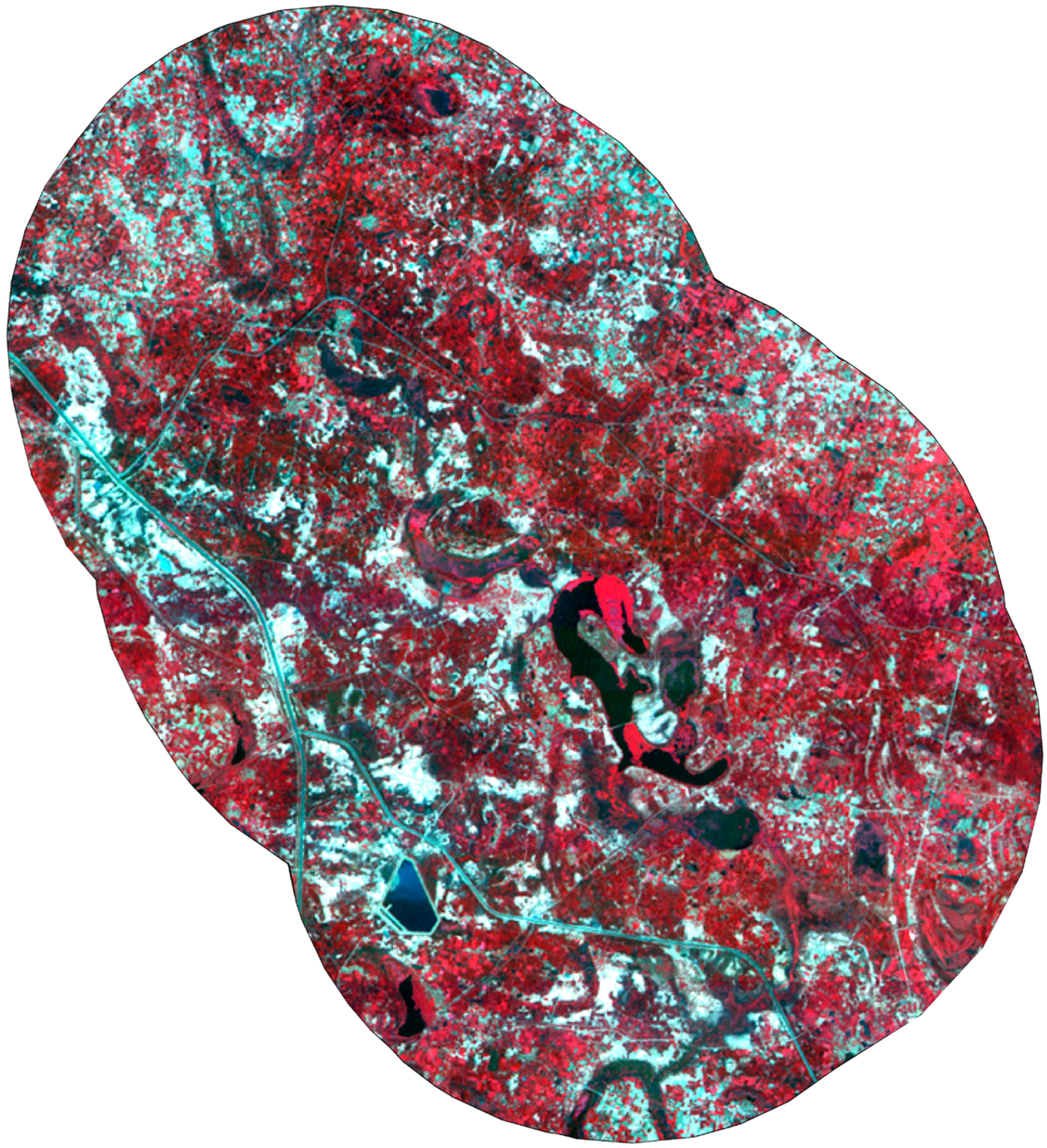
Ministry of Environment and Forests
Government of India

Plate 13: Wetland map – 5 km buffer area of Samaspur Wildlife Sanctuary

State : Uttar Pradesh

WETLAND MAP

Samaspur Wildlife Sanctuary

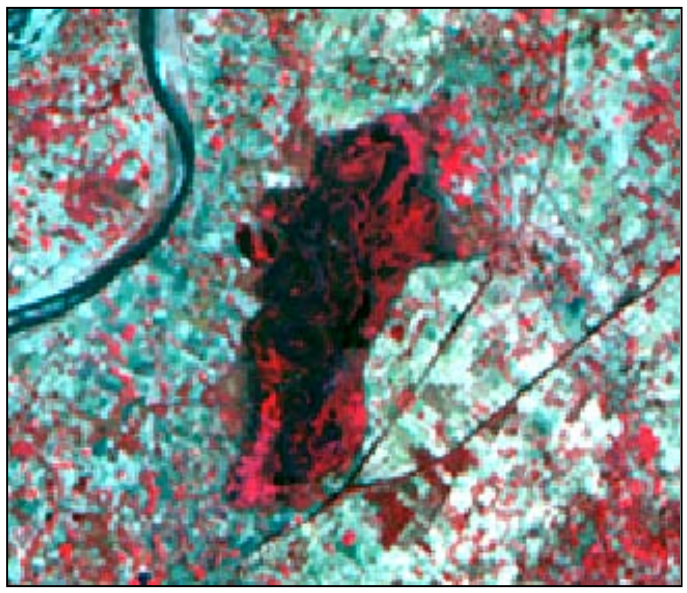


IRS P6 LISS-III post monsoon data (2006)

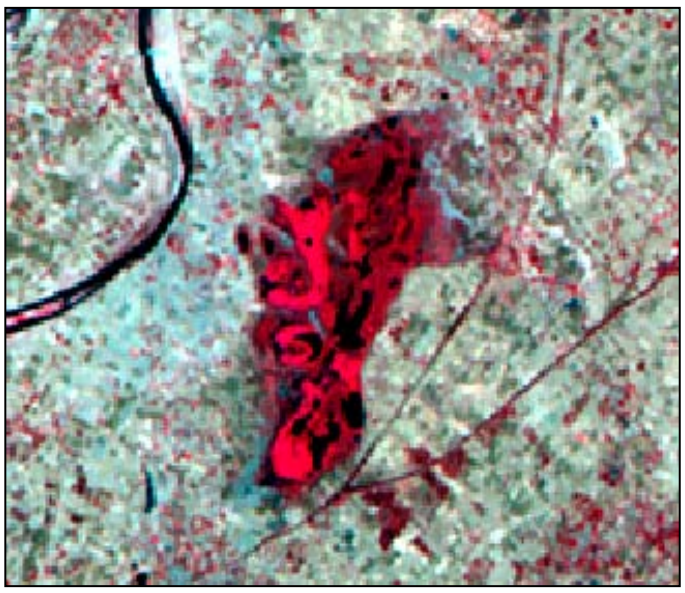
Plate 14: IRS LISS-III FCC – 5 km buffer area of Samaspur Wildlife Sanctuary

9.5 **Dahar Lake (Sandi Wildlife Sanctuary)**

Name	**Dahar Lake (Sandi Wildlife Sanctuary)**
Location	Between $27^0$17'57'' N and $27^0$19'42'' N latitudes and $79^0$57'47'' E and $79^0$59'10''E longitudes
Area	309 ha
Salient features	The State Forest Department notified Dahar jheel north of Sandi town as wildlife sanctuary in Bilgram tehsil of Hardoi district in 1990. Extensive use of water for irrigation may result in the conversion of jheel area into agricultural land within the next few decades. The principal threats to the wetlands are excessive hunting, trapping, shooting, fishing and watering of domestic animals which cause a considerable amount of disturbance.
Turbidity	Low
Vegetation	The dominant aquatic vegetation occurring here are free floating *Ipomoea* aquatic, *Enhydra fluctuans, Eclipta prostate, Jussiea repans, Nymphaea spp., and Enryale ferox,* submerged vegetation include *Potamogelon Crispus, Hydrilla verticillata, Ceratophylhm domersum, Vallisneria spiralis* and *Najas graminea*. Emergent vegetation includes *Cyperus sp., C. rotundus, Hygroryzea sp., Oryza Sativa, Scirpus articulsus, S. littoralis and Paspalidium geminathum. Trapa Bispinosa* is also seen along the margins of this wetland.
Fauna	The birds visiting the sanctuary are Greylag Goose, Bar headed Goose, Pintail, Mallard, Wigeon, Shoveller, Red crested Pochard, Teals, Darter, Egret, Herons, White necked stork, Black necked stork, Painted stork, Kites, Hwak Eagle, Water hen, Purple Moorhen, Plover, Pied king fisher etc.



Post-Monsoon 2006



Pre-Monsoon 2007



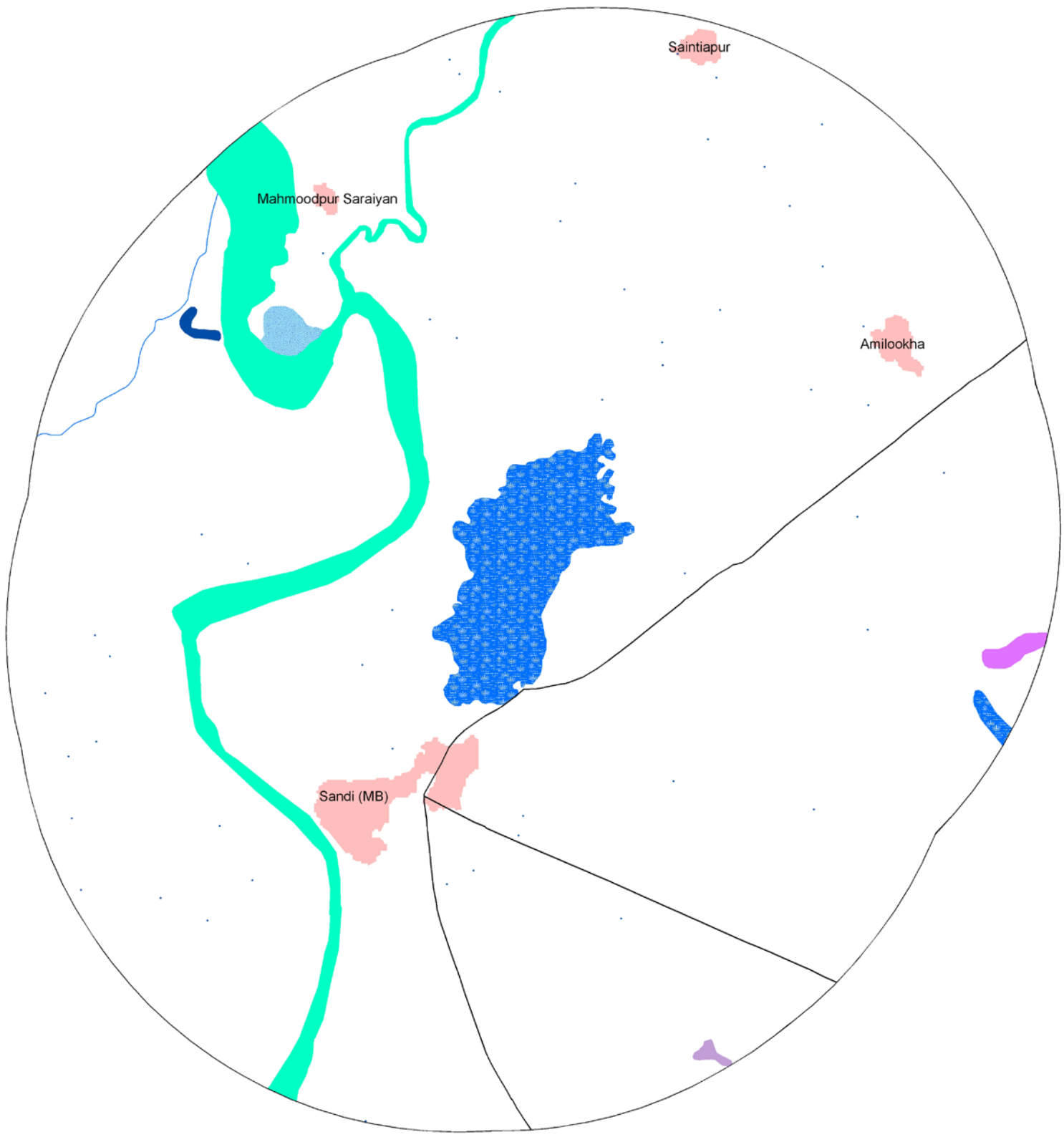


Plate 15: Dahar Lake (Sandi Wildlife Sanctuary)

State : Uttar Pradesh

WETLAND MAP

Dahar Lake (Sandi WLS)

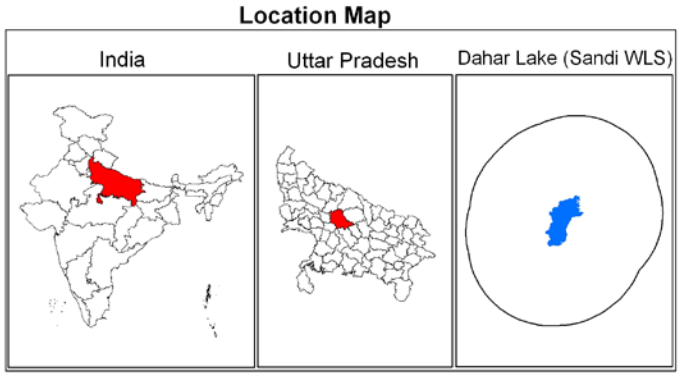


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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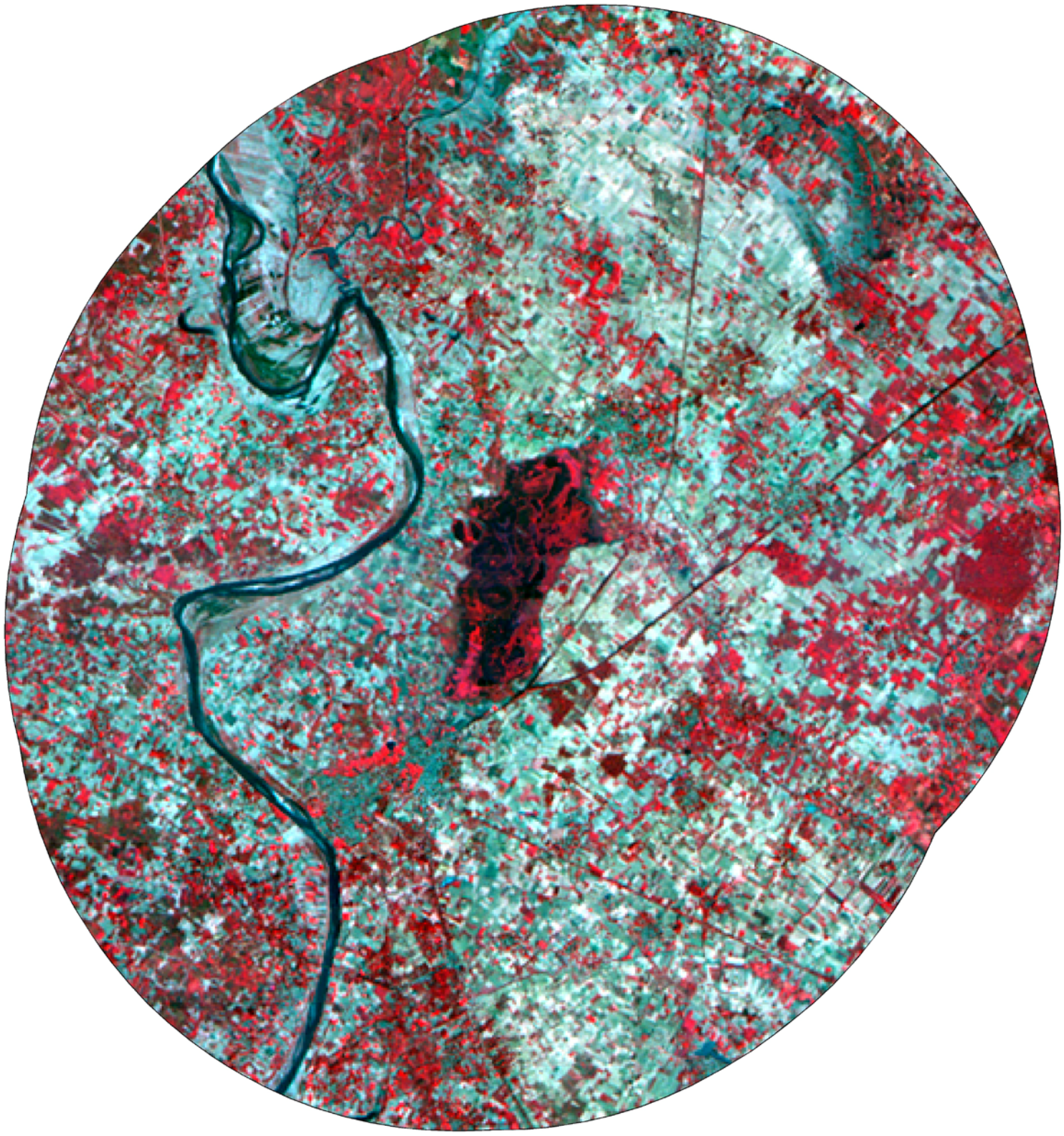
Ministry of Environment and Forests
Government of India

Plate 16: Wetland map – 5 km buffer area of Dahar Lake (Sandi Wildlife Sanctuary)

State : Uttar Pradesh

WETLAND MAP

Dahar Lake

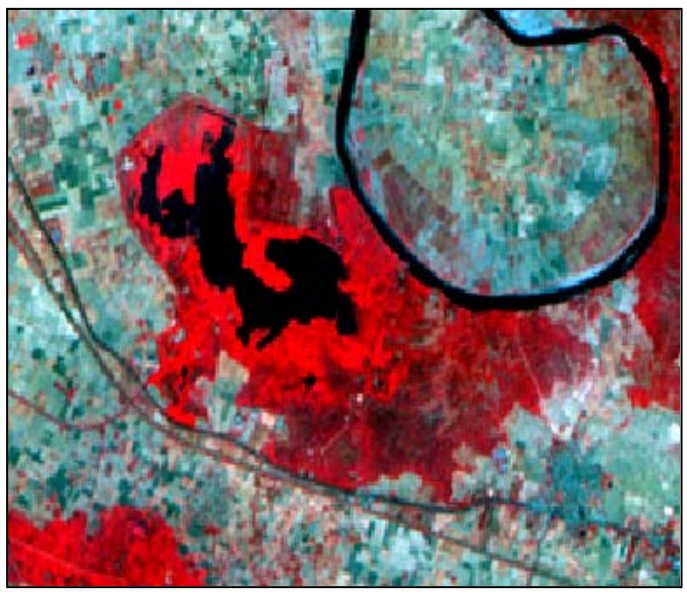


IRS P6 LISS-III post monsoon data (2006)

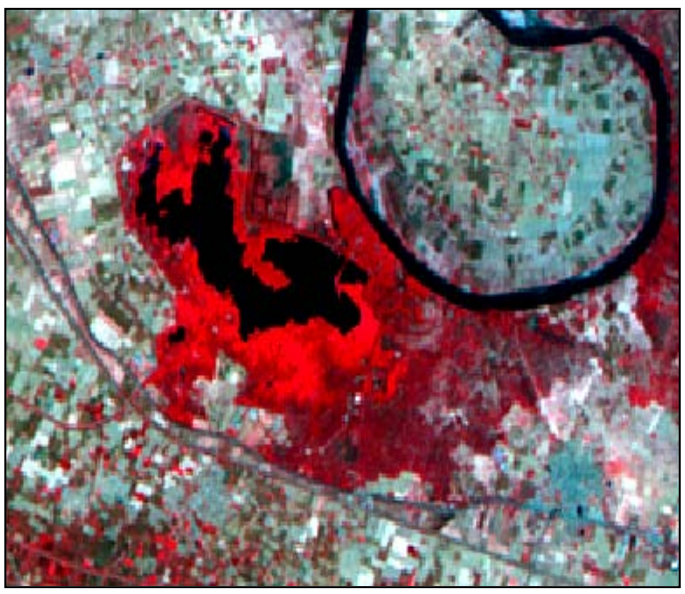
Plate 17: IRS LISS-III FCC – 5 km buffer area of Dahar Lake (Sandi Wildlife Sanctuary)

9.6 Keetham Reservoir (Soorsarovar Wildlife Sanctuary)

Name	Keetham Reservoir (Soorsarovar Wildlife Sanctuary)
Location	Between $27^0$14’25’’N and $27^0$15’57’’N latitudes and $77^0$49’41’’E and $77^0$51’37’’E longitudes
Area	403 ha
Salient features	Soor Sarovar Sanctuary is located 20 km west of Agra on Agra-Delhi National highway in Kiraoli tehsil of Agra district. Wetland is surrounded by riparian forest. It is an attractive picnic spot visited by tourists.
Turbidity	Low
Vegetation	Aquatic vegetation is dominant in this wetland and comprises of *Ipomoea spp., Typha spp.*, Isoetes spp., etc.
Fauna	Migratory birds visiting this sanctuary during winter season are Sinkapur, Common Teal, Cotton teal, Garganey, Teal, Pochard, Gadwall, Surkhab, Wigeon, Coots, allard, Pelican etc. Resident birds include Comb duck, Whitling Teal, Spot billed duck, Saras crane, Painted stork, Open billed stork, White necked stork, black necked stork, Spoon bill, White ibes, Egrets, Bronze winged jacauna, Pheasant tailed jacauna, Grey Herons, Purple moorhen, White breasted king fisher, Pond king fisher, Fishing Eagle, Hawk Eagle, Koel, Muniya, Nilkanth, Bee-eater, Dronga, Brain fever bird etc.



Post-Monsoon 2006



Pre-Monsoon 2007



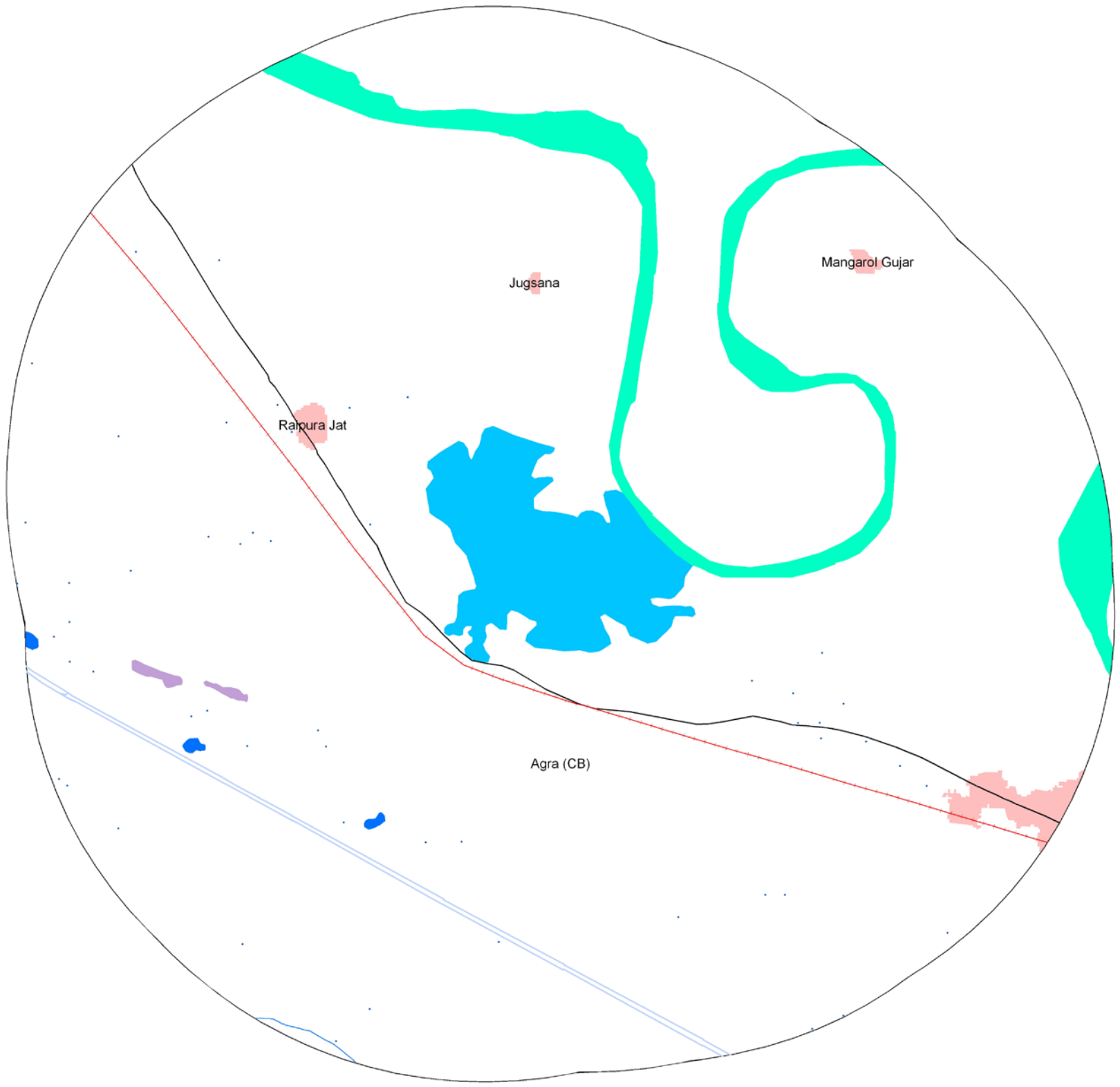


Plate 18: Keetham Reservoir (Soorsarovar Wildlife Santuary)

State : Uttar Pradesh

WETLAND MAP

Keetham Reservoir (Soorsarovar WLS)

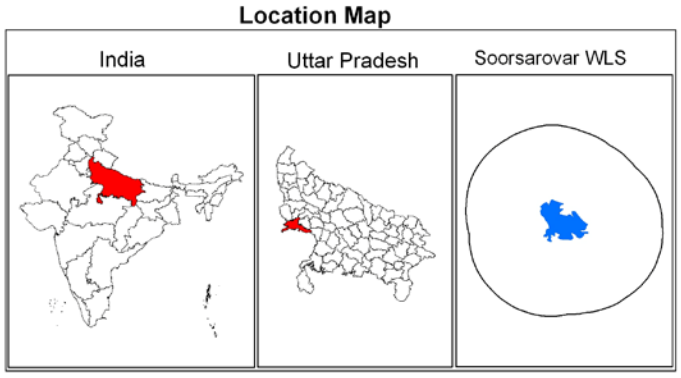


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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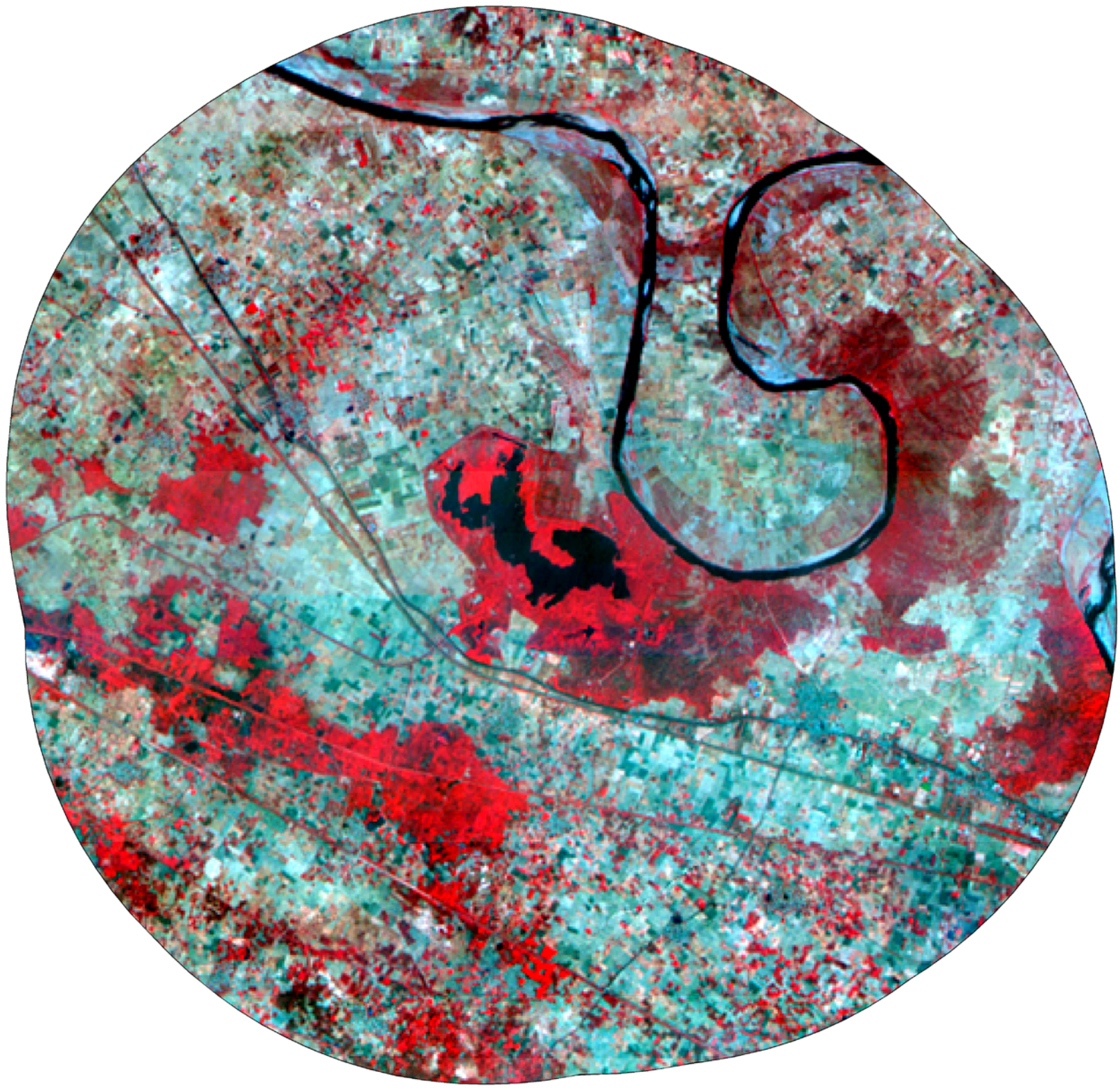
Ministry of Environment and Forests
Government of India

Plate 19: Wetland map – 5 km buffer area of Kheetam Reservoir (Soor Sarovar Wildlife Sanctuary)

State : Uttar Pradesh

WETLAND MAP

Keetham Reservoir (Soorsarovar WLS)

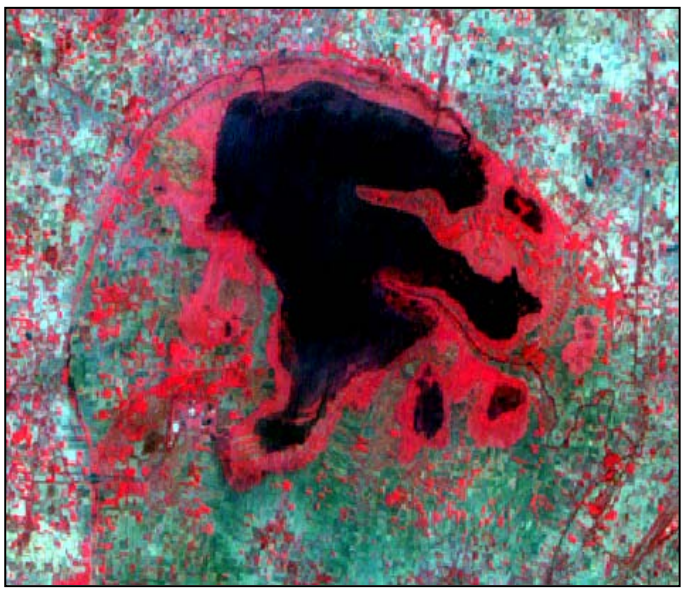


IRS P6 LISS-III post monsoon data (2006)

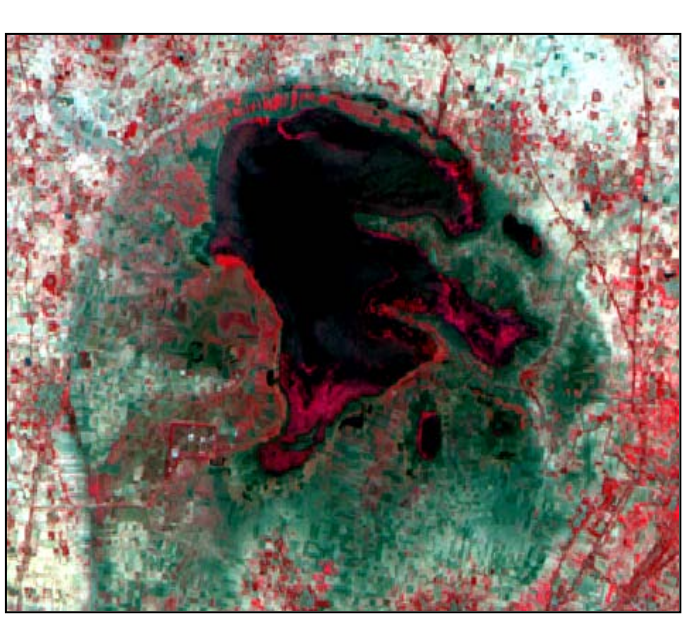
Plate 20: IRS LISS-III FCC – 5 km buffer area of Kheetam Reservoir (Soor Sarovar Wildlife Sanctuary)

9.7 **Surha Tal**

Name	**Surha Tal**
Location	Between $25^0$48’58’’N and $25^0$52’13’’N latitudes and $84^0$08’15’’E and $84^0$12’54’’E longitudes
Area	2357 ha
Salient features	Surha Tal is very large natural lake located north of Ballia town in Ballia district. Surha tal is surrounded by very good agricultural land. The lake water is used for irrigation. Local people utilize the wetland vegratation as fodder for domestic livestock, and as fuel for cooking.
Turbidity	Low
Vegetation	Eichhornia crassipes is dominant hydrophyte occurring within and along the margins of this lake. Blue green and red algae are also seen inthis lake. The other aqvatic vegetation include *Pistia stratioites, Hydrilla verticillata, Ottelia alismoides, Limnophila aquatica, Nelumbo nicifera, Nymphaea spp., and Ipomoea spp. etc.*
Fauna	Migratory birds visiting this wetland site are Goose, Teal, Coots, Pintail, Mallard, Shoveller, Pelican, Wigeon, White ibes, Black ibes, Water hen, Spot billed duck, Painted Stork, White stork, black necked stork, Purple Moorhen, Brahminy kite, Plover, Koel etc. Poaching, shooting and hunting are reported, which is a major threat to fauna of this wetland.



Post-Monsoon 2006



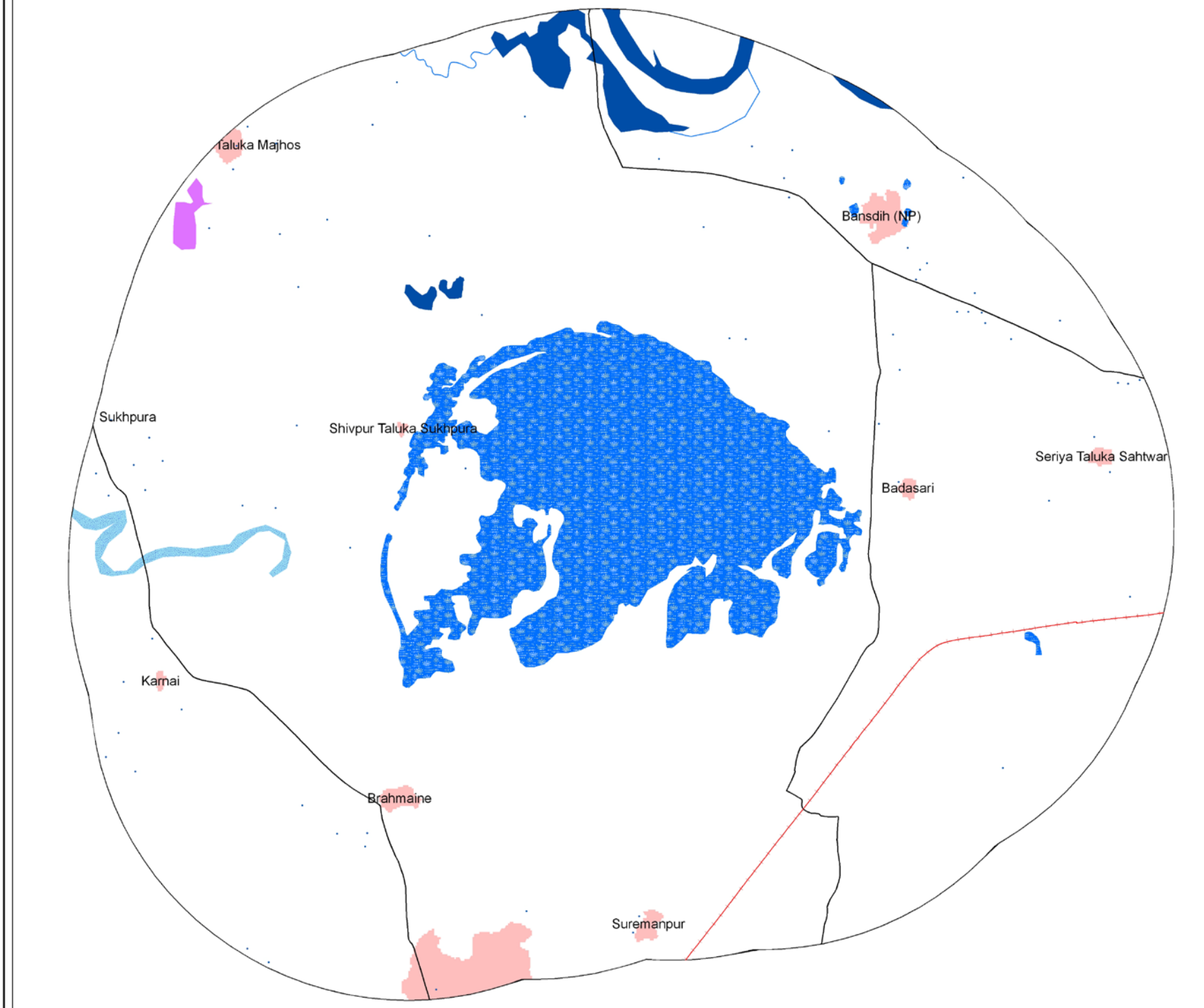
Pre-Monsoon 2007

Plate 21: Surha Tal

State : Uttar Pradesh

WETLAND MAP

Surha Tal

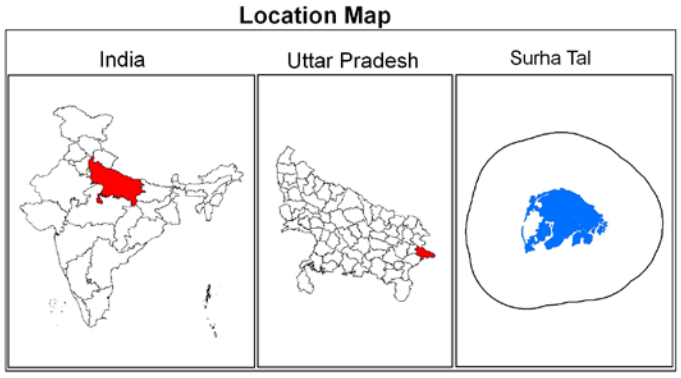


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
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	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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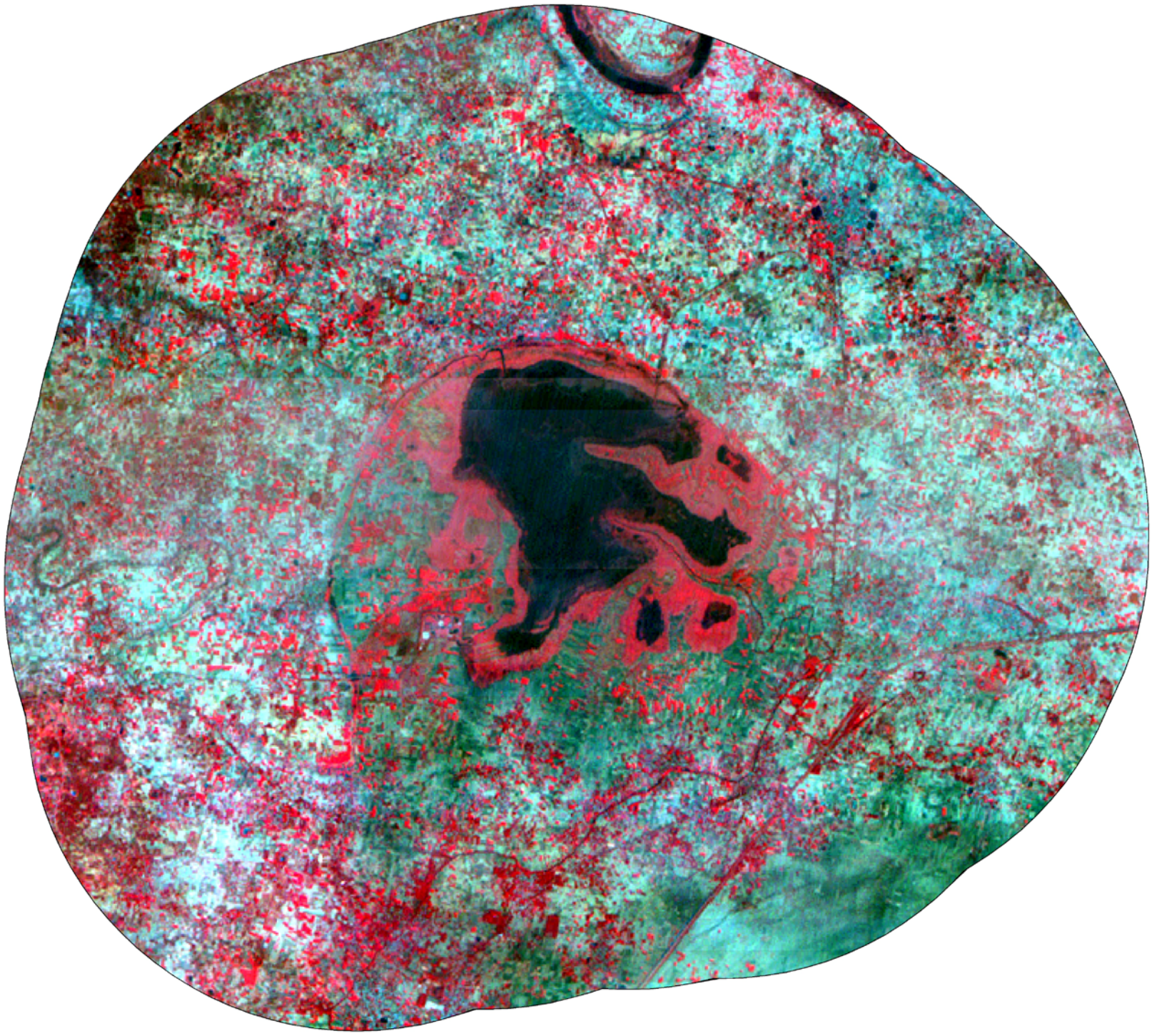
Ministry of Environment and Forests
Government of India

Plate 22: Wetland map – 5 km buffer area of Surha Tal

State : Uttar Pradesh

WETLAND MAP

Surha Tal



IRS P6 LISS-III post monsoon data (2006)

Plate 23: IRS LISS-III FCC – 5 km buffer area of Surha Tal

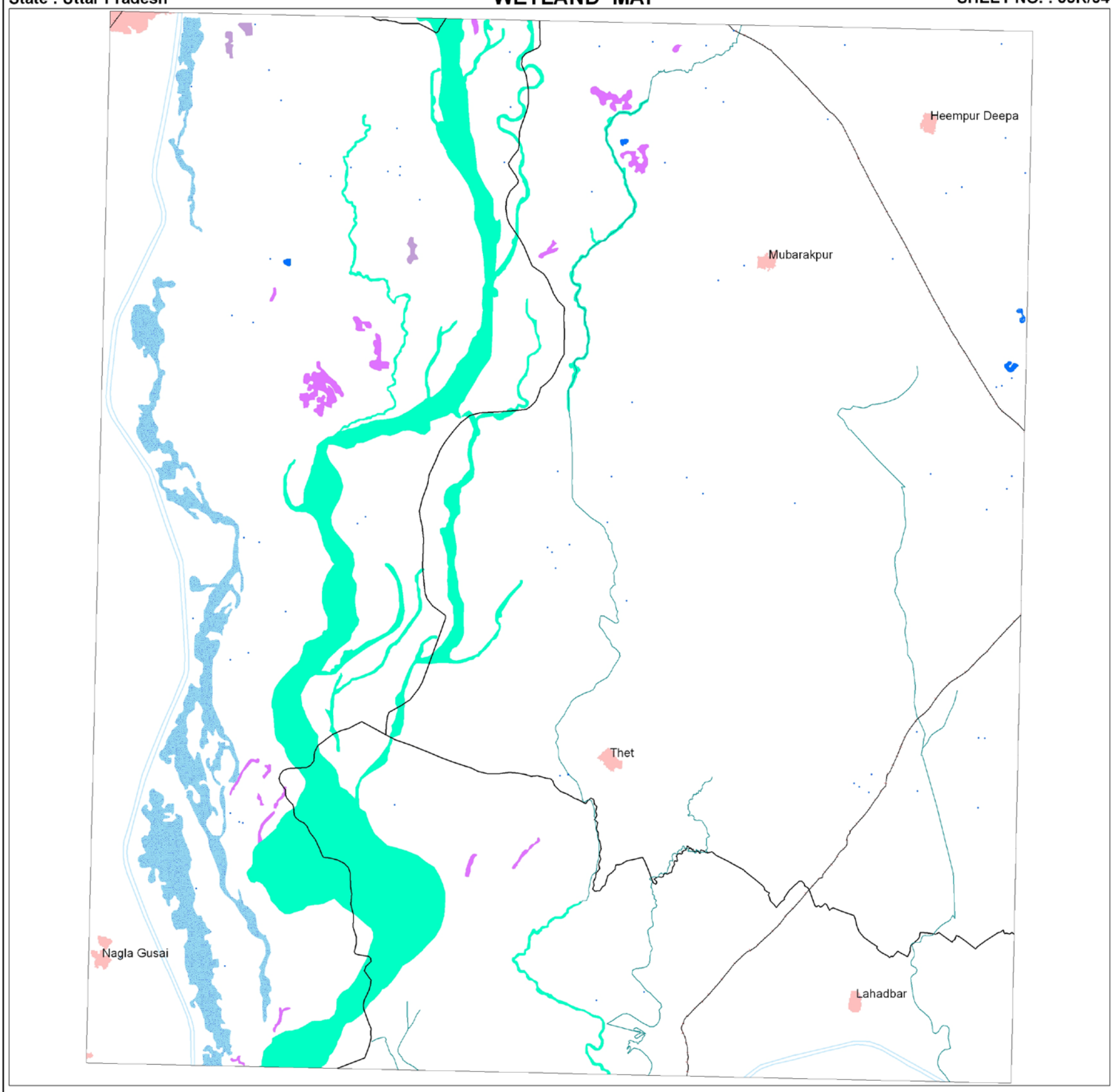
SOI MAP SHEET-WISE WETLAND MAPS

(Selected)

State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 53K/04

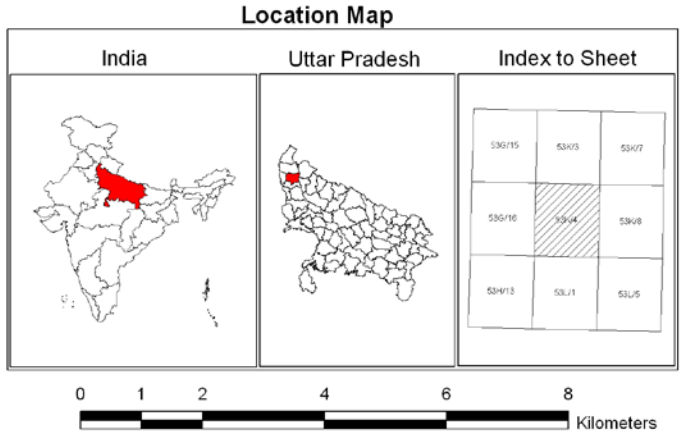


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Legend

- Wetlands (<2.25 ha)
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- International Boundary

Location Map



Data Source

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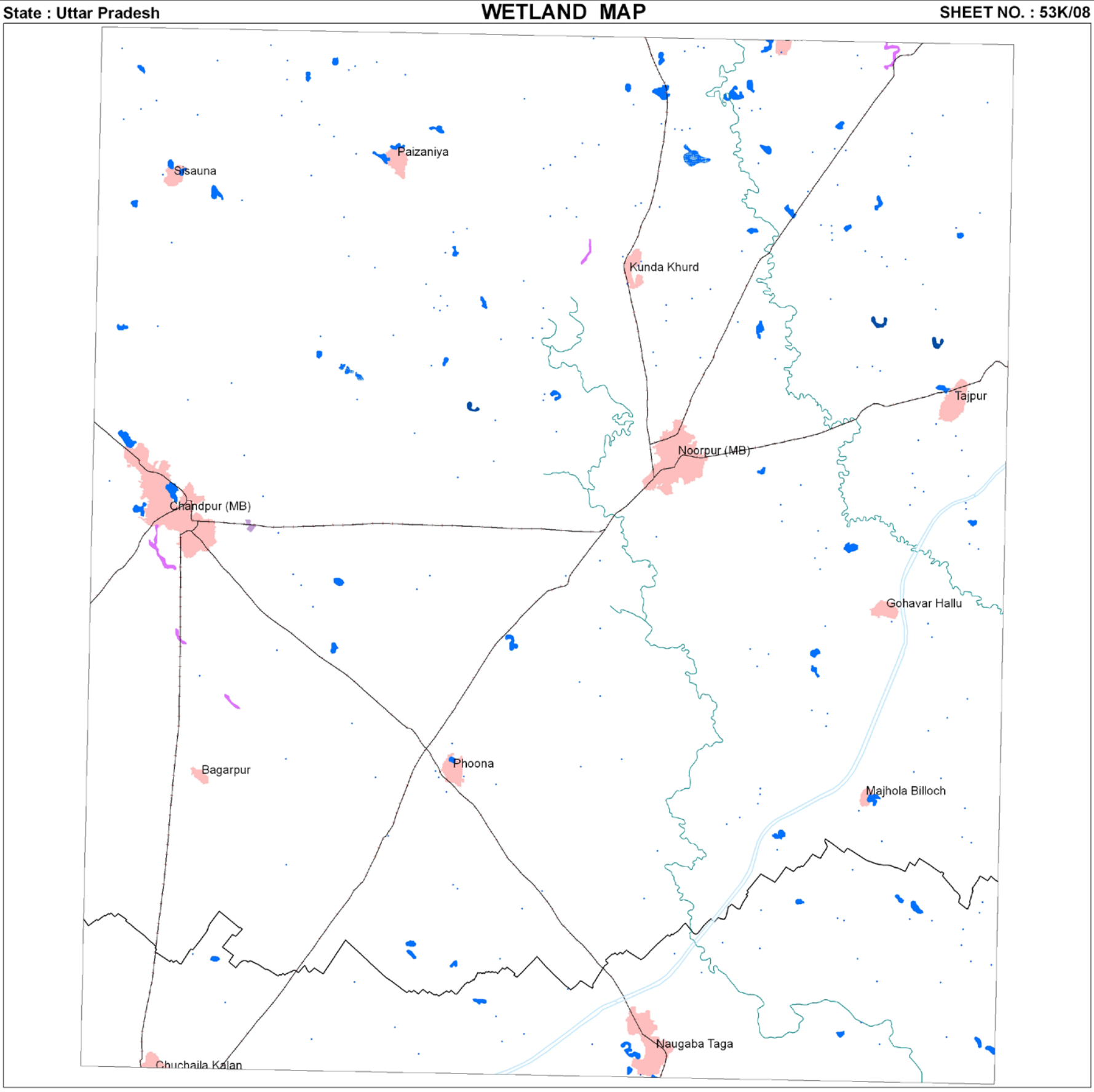
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 53K/08

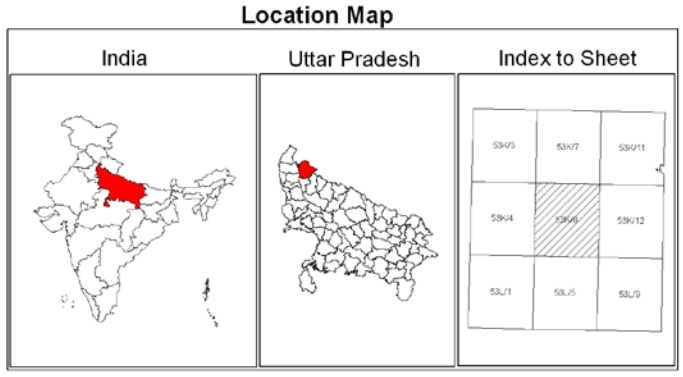


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Legend

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Location Map



Data Source

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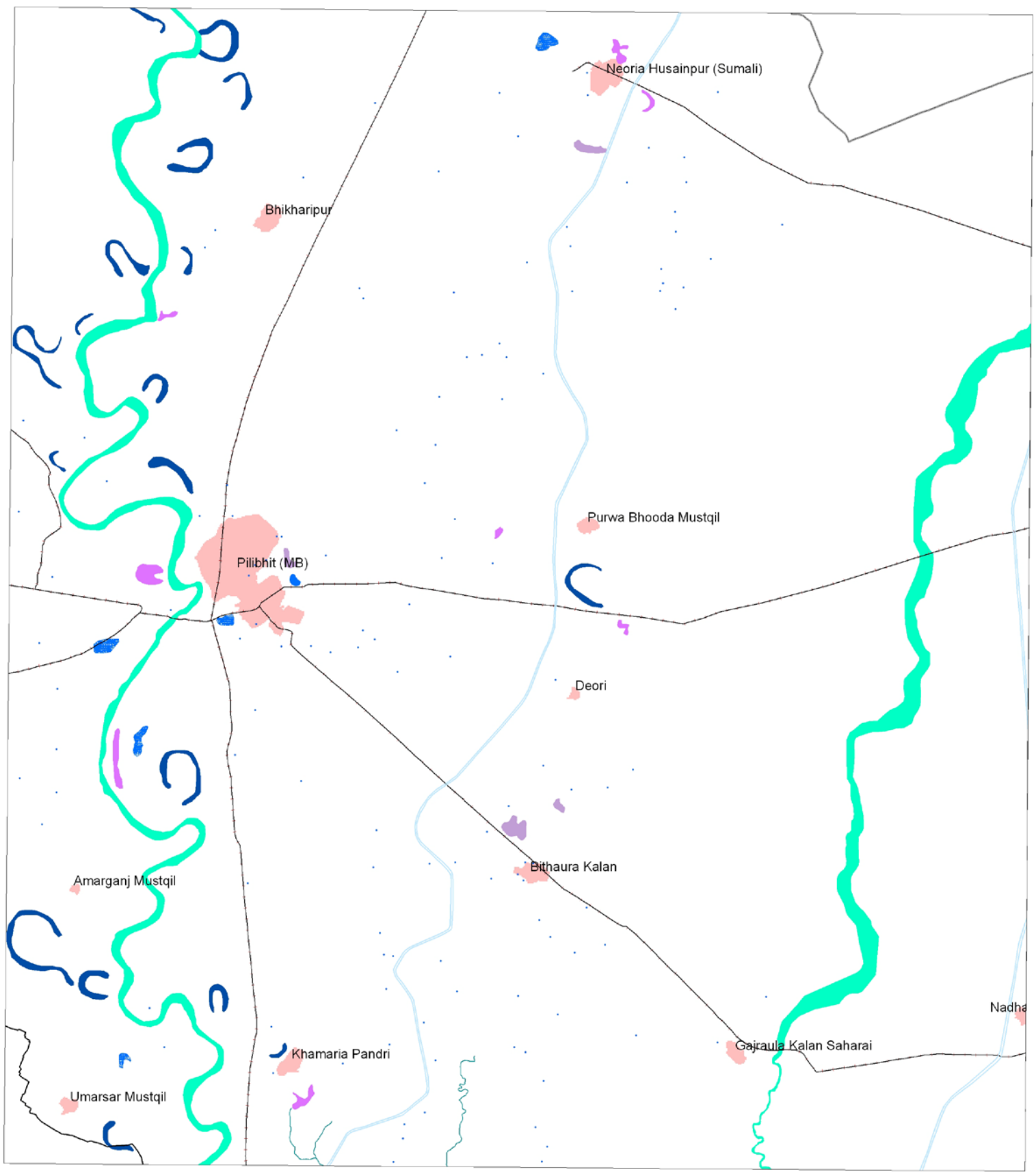
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 53P/14

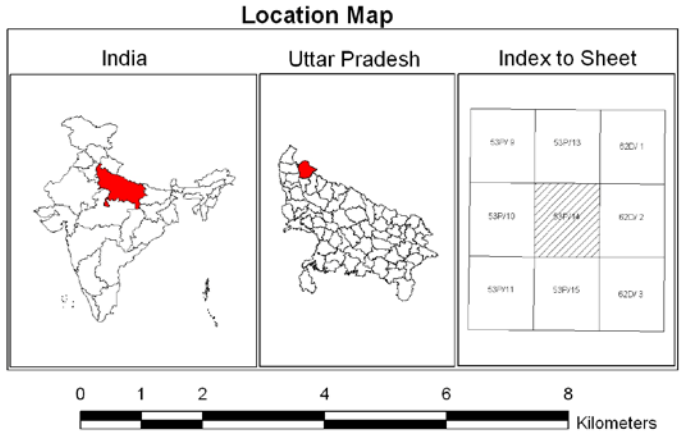


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
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Legend

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Location Map



Data Source

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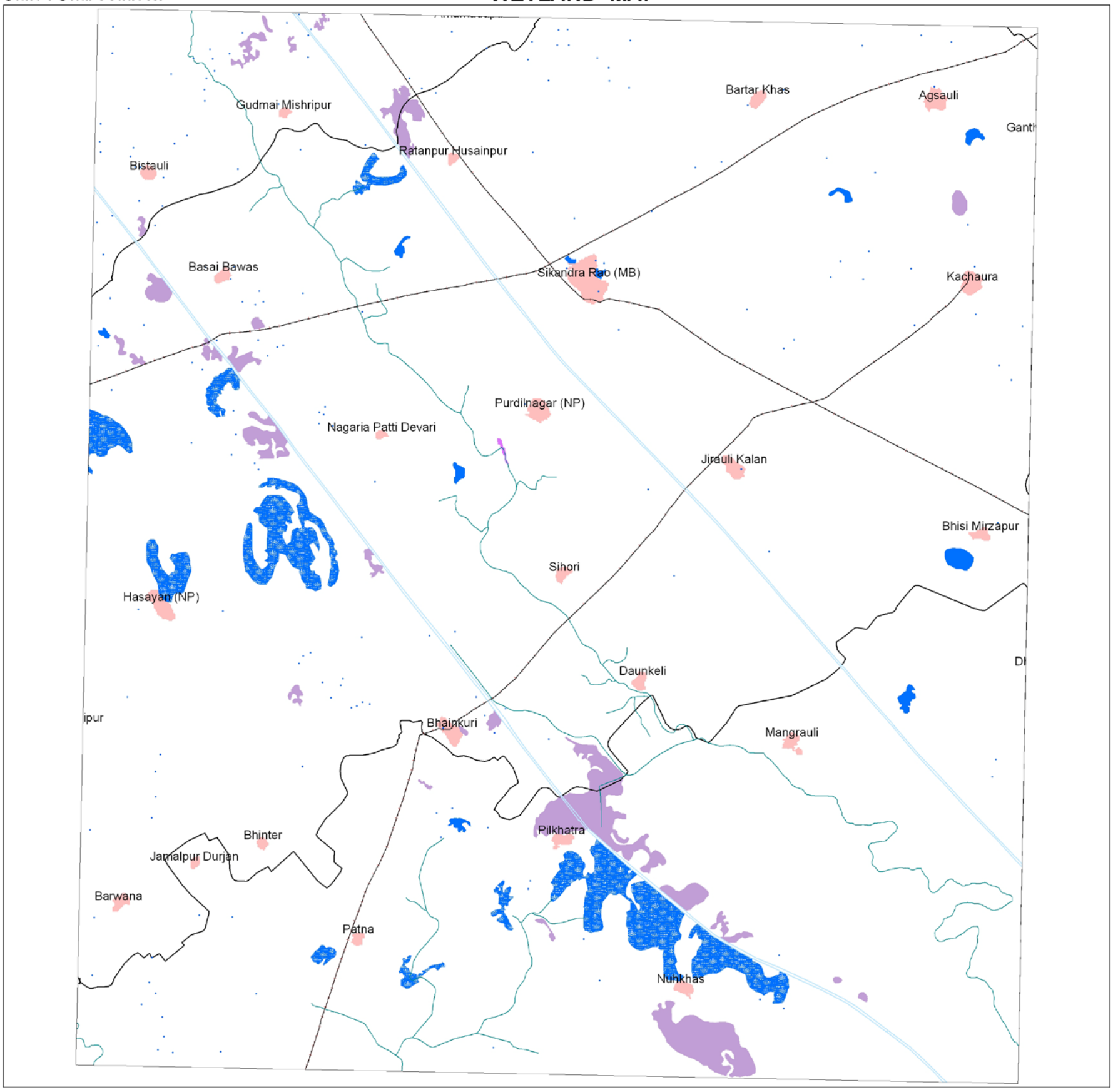
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 54L/06

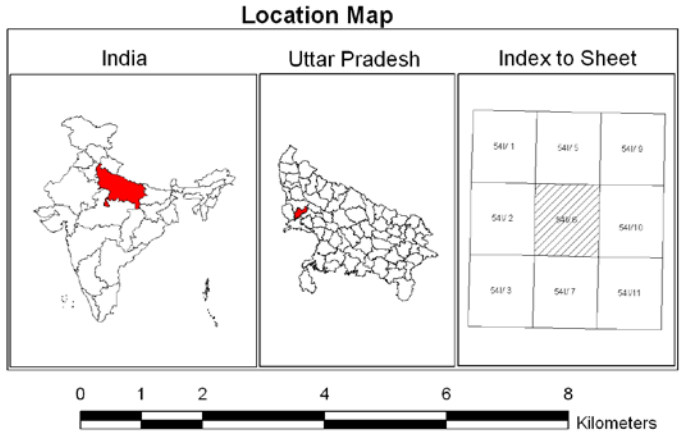


Symbol Typecode	Level I	Level II	Level III
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1103			High altitude wetlands
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Legend

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- International Boundary

Location Map



Data Source

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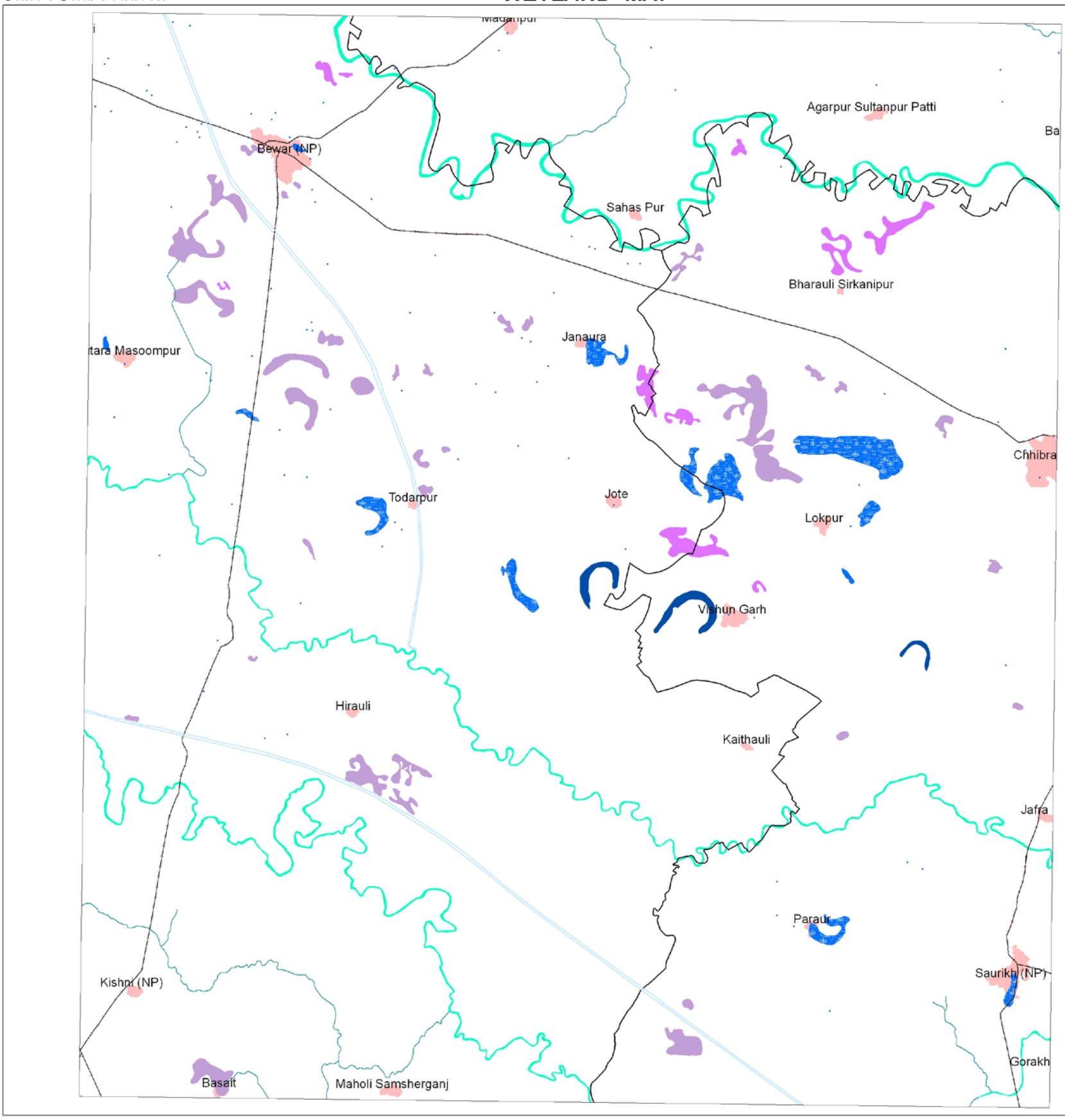
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 54M/08

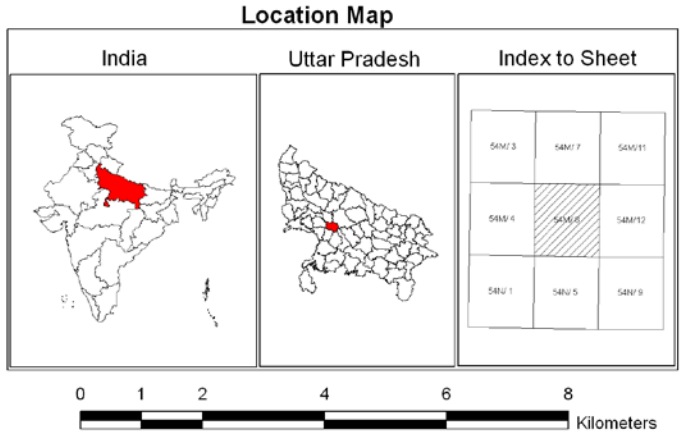


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Legend

- Wetlands (<2.25 ha)
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- International Boundary

Location Map



Data Source

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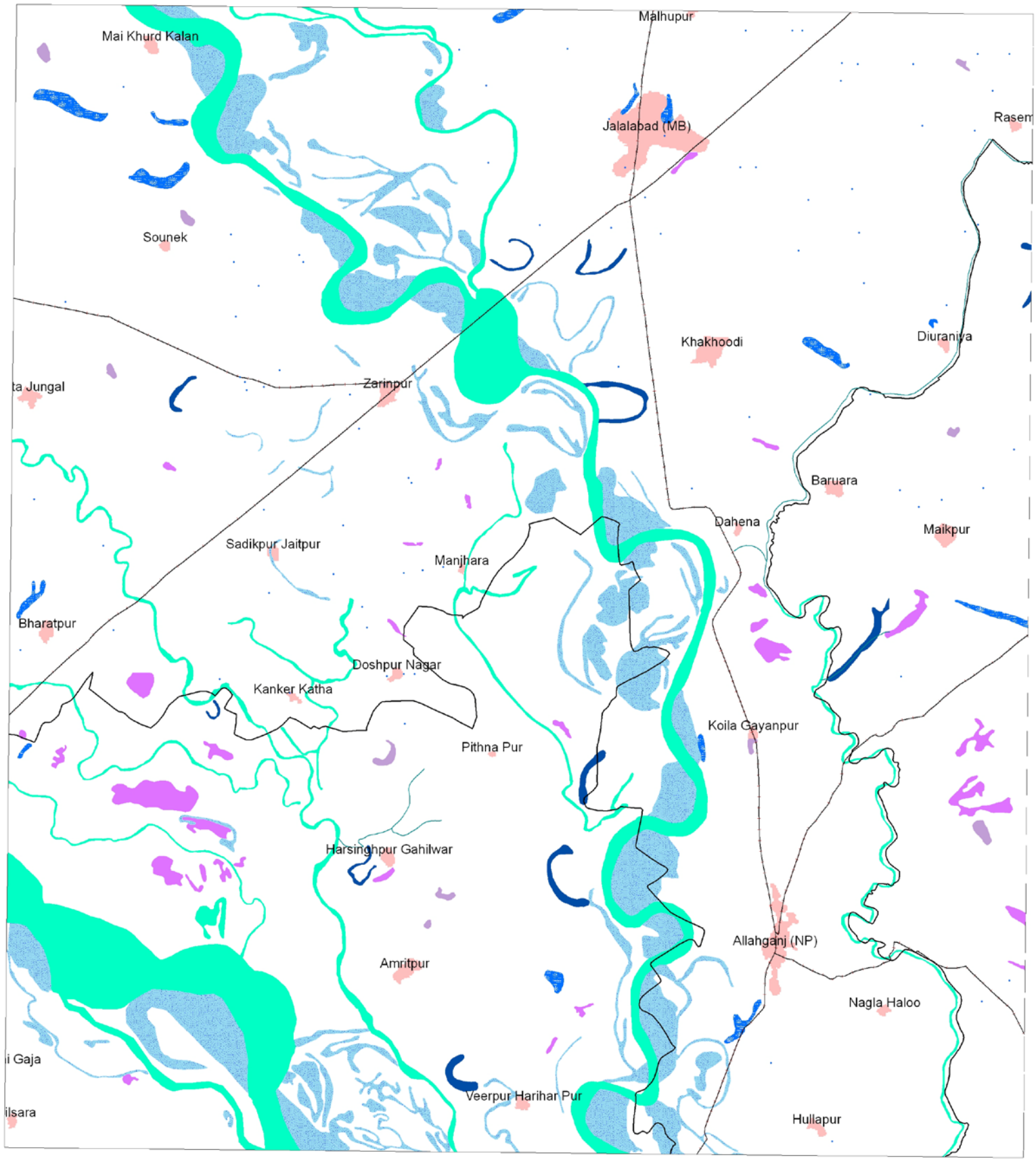
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 54M/10

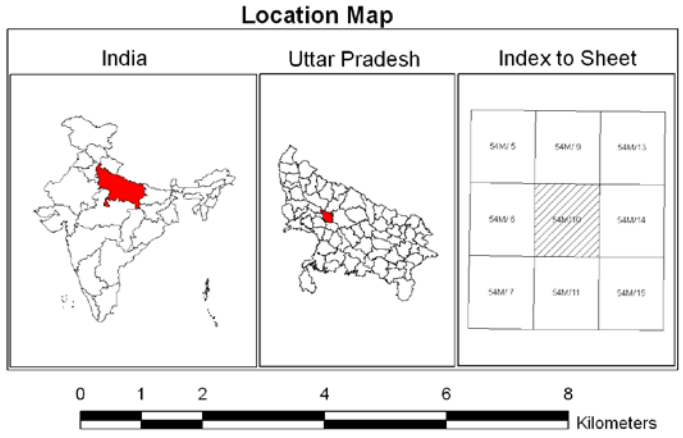


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		Man-made	
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Legend

- Wetlands (<2.25 ha)
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- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

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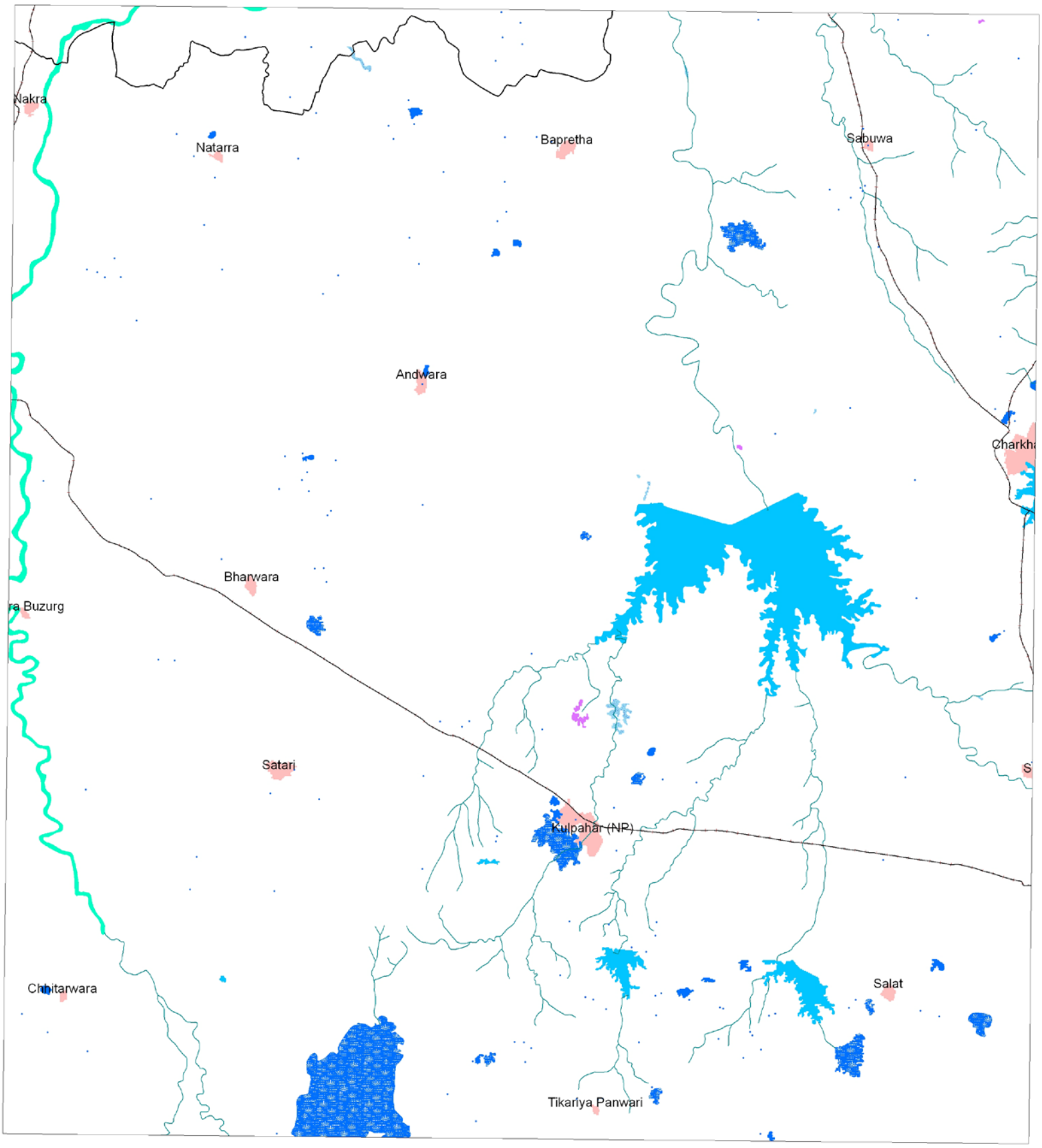
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 54O/11

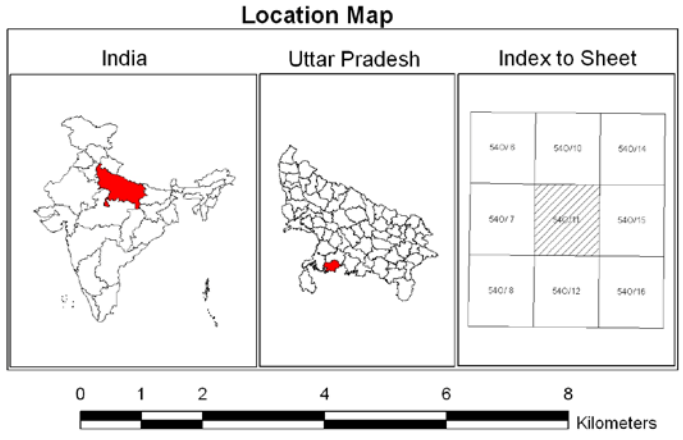


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Legend

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- District Boundary
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- International Boundary

Location Map



0 1 2 4 6 8 Kilometers

Data Source

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Space Applications Centre (ISRO), Ahmedabad

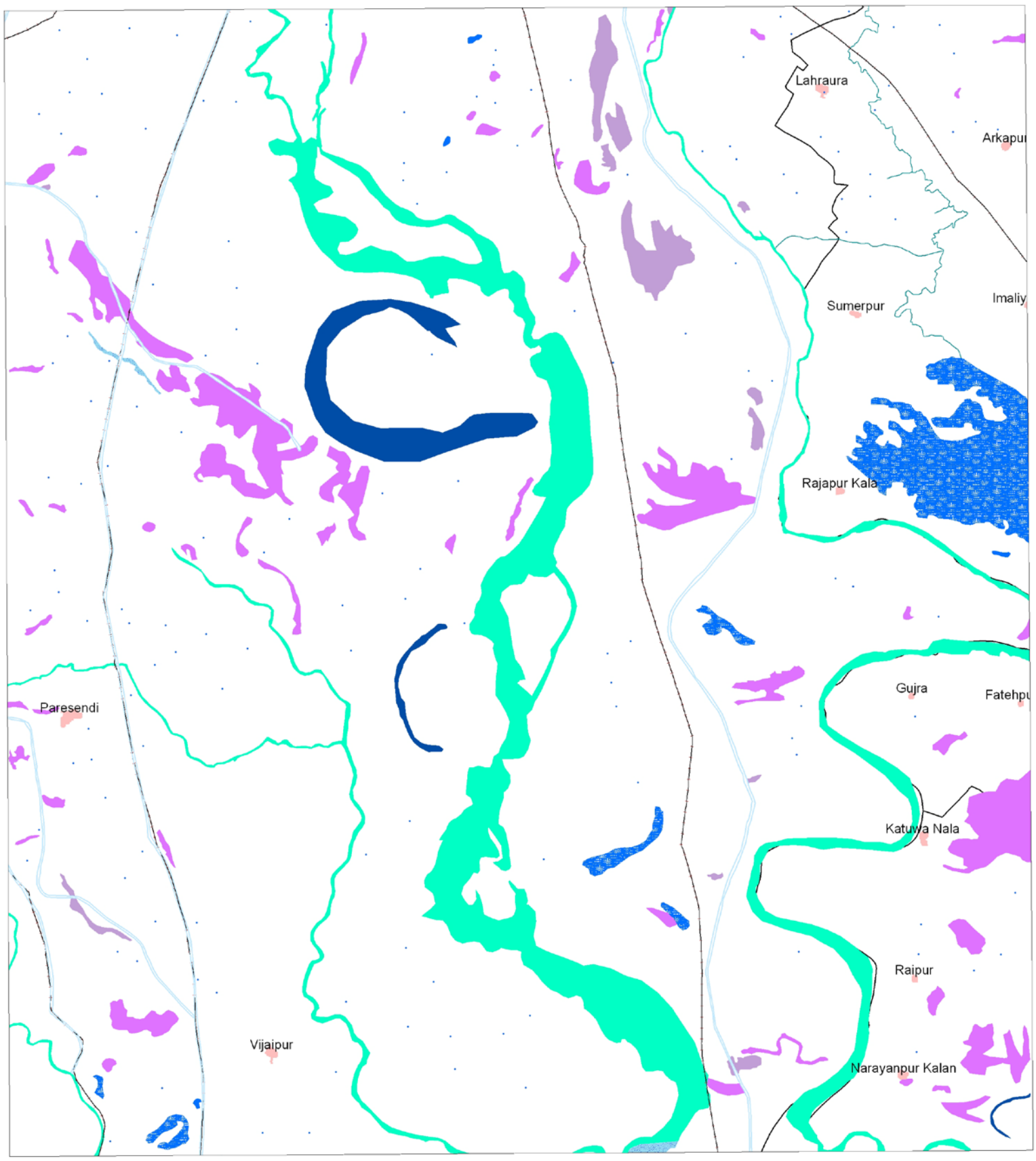
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State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 63E/11

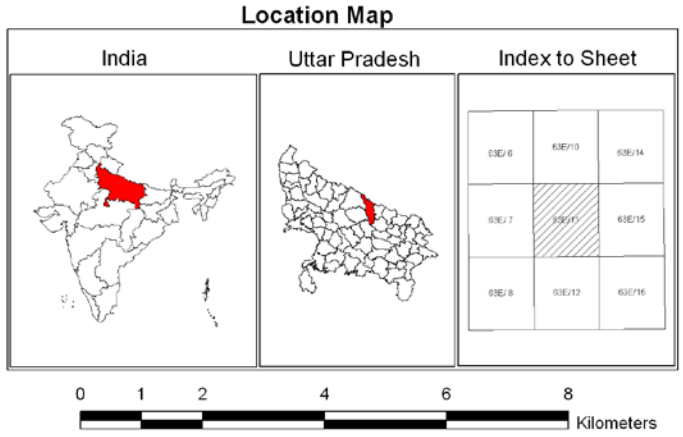


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		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
and
Space Applications Centre (ISRO), Ahmedabad

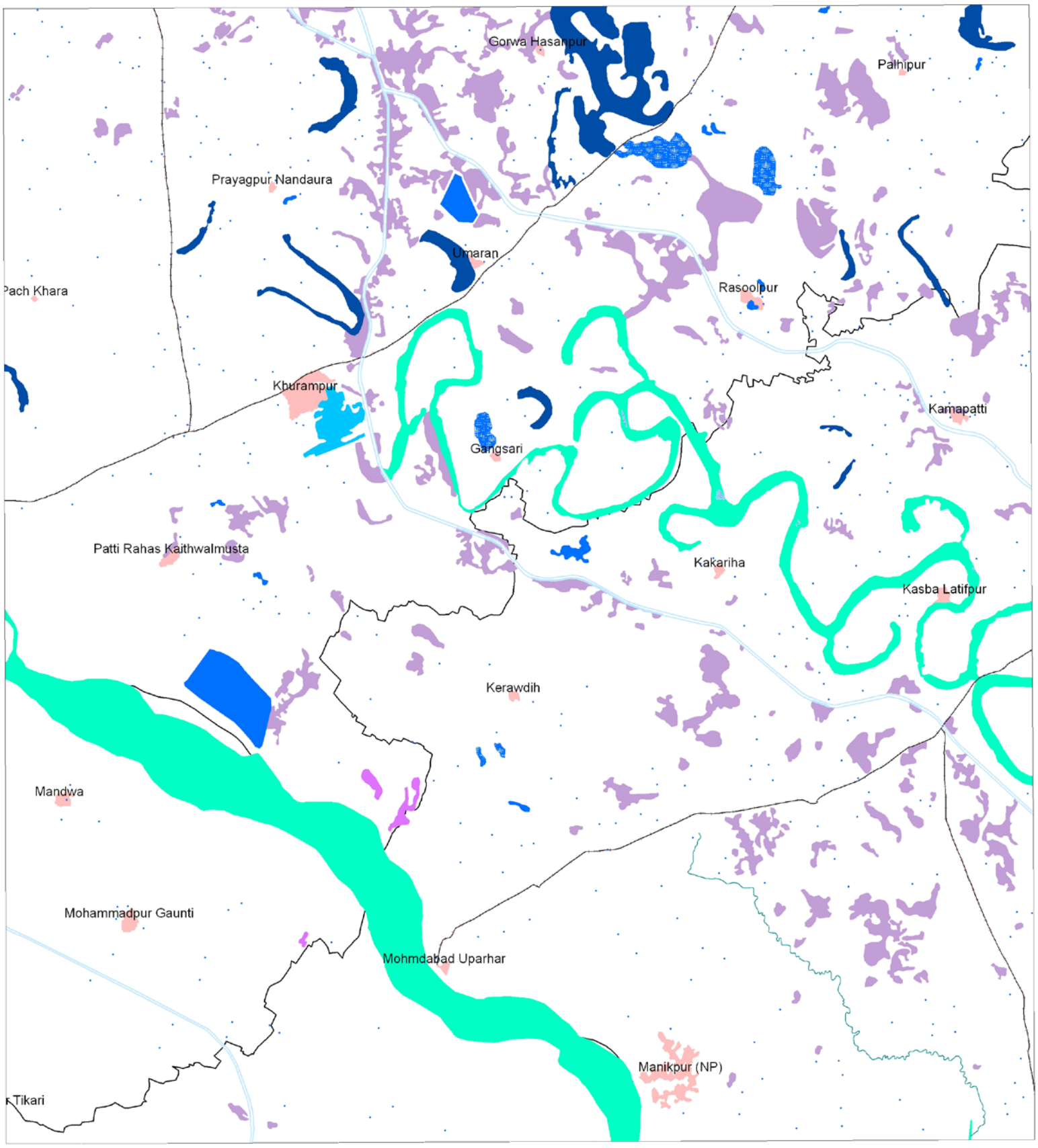
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Ministry of Environment and Forests
Government of India

State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 63G/05

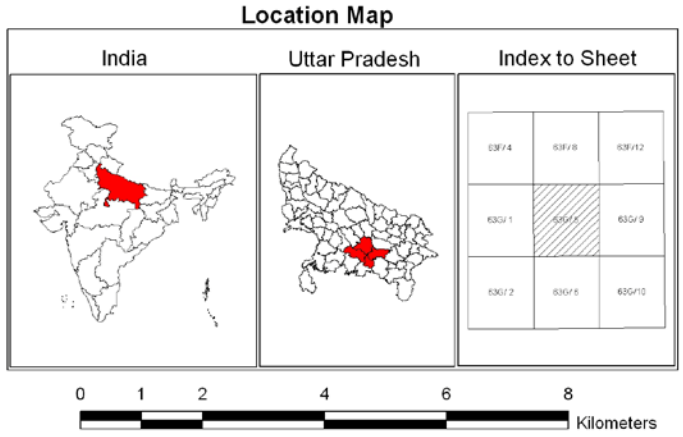


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
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- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

Remote Sensing Applications Centre, Uttar Pradesh, Lucknow
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Space Applications Centre (ISRO), Ahmedabad

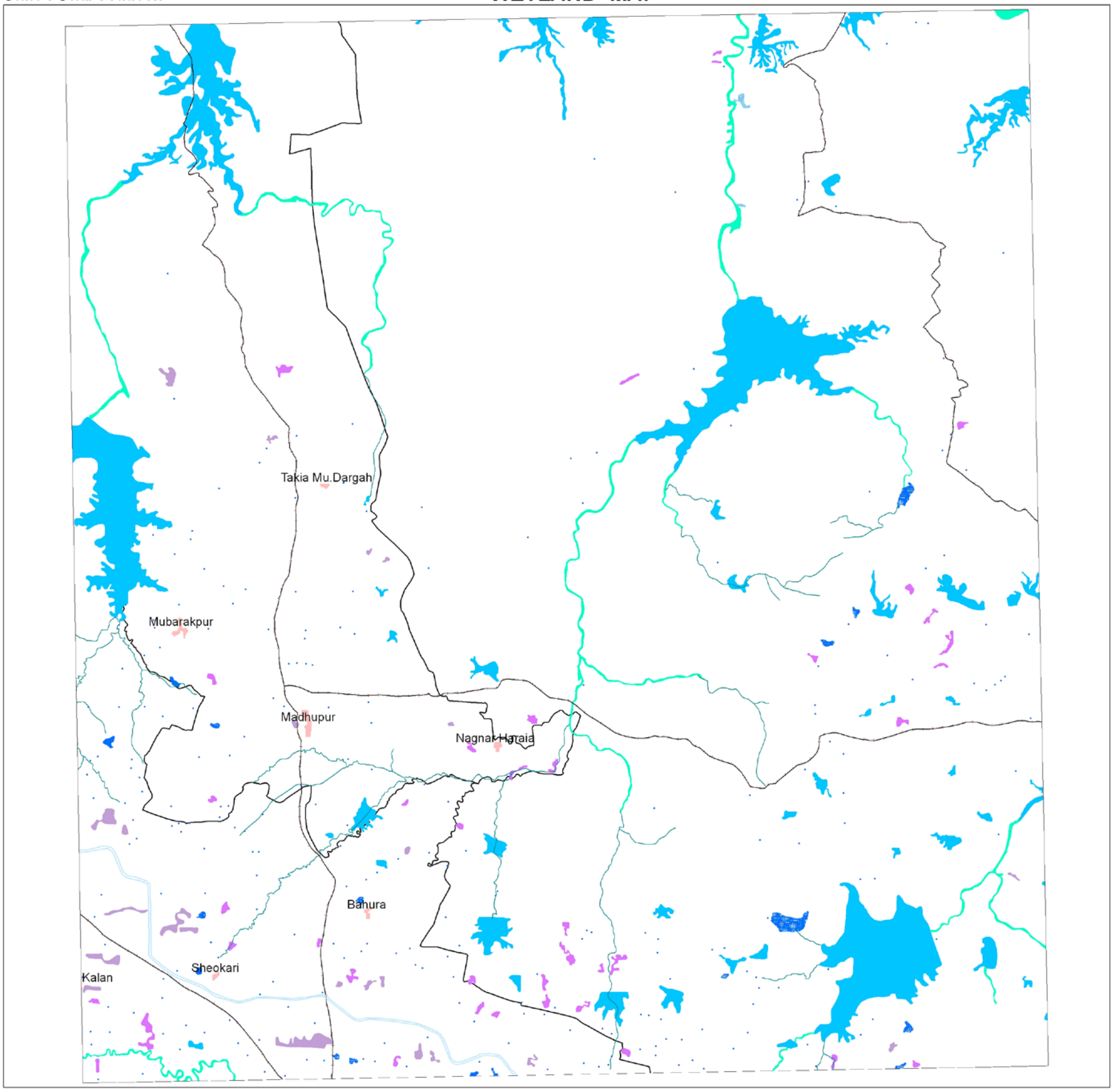
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Government of India

State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 63P/01

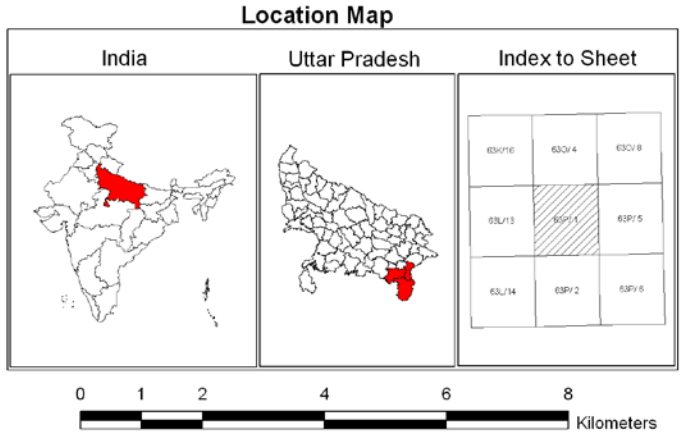


Symbol Typecode	Level I	Level II	Level III
	Inland Wetlands		
		Natural	
1101			Lakes/Ponds
1102			Ox-bow lakes/ Cut-off meanders
1103			High altitude wetlands
1104			Reverine wetlands
1105			Waterlogged
1106			River/Stream
		Man-made	
1201			Reservoirs/Barrages
1202			Tanks/Ponds
1203			Waterlogged
1204			Salt pans
	Coastal Wetlands		
		Natural	
2101			Lagoons
2102			Creeks
2103			Sand/Beach
2104			Intertidal mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral reefs
		Man-made	
2201			Salt pans
2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
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- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

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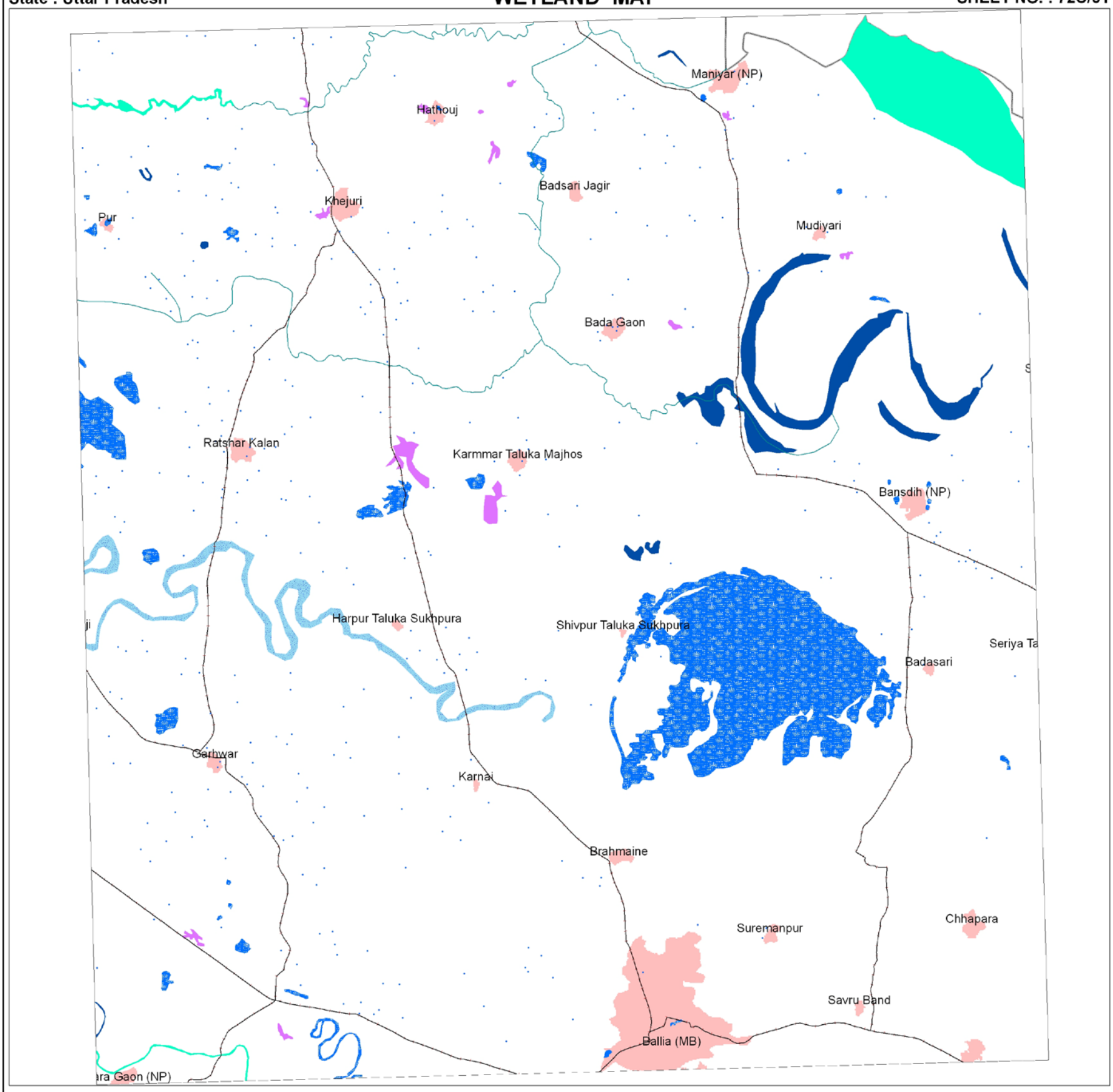
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Government of India

State : Uttar Pradesh

WETLAND MAP

SHEET NO. : 72C/01

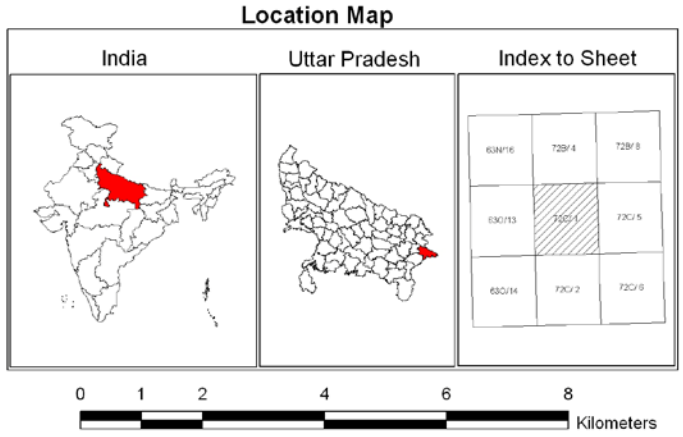


Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Reverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Legend

- Wetlands (<2.25 ha)
- Settlements
- Drainage (line)
- Canal
- Roads
- Railways
- Town/Settlements
- District Boundary
- State Boundary
- International Boundary

Location Map



Data Source

IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared by

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Annexure I
Definitions of wetland categories used in the project

For ease of understanding, definitions of wetland categories and their typical appearance on satellite imagery is given below:

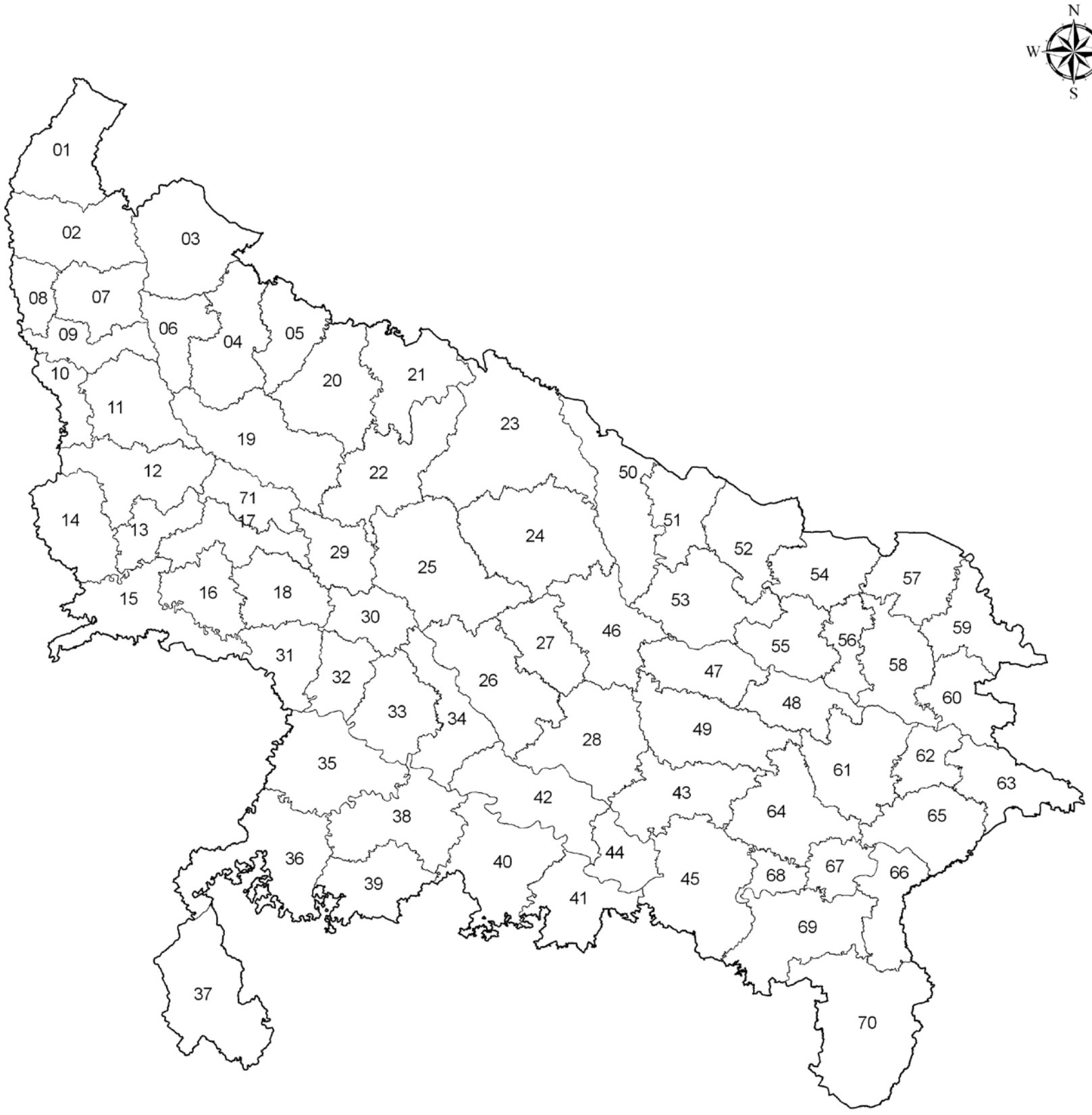
Wetland type code	Definition and description
1000	**Inland Wetlands**
1100	**Natural**
1101	**Lakes**: Larger bodies of standing water occupying distinct basins (Reid *et al*, 1976). These wetlands occur in natural depressions and normally fed by streams/rivers. On satellite images lakes appear in different hues of blue interspersed with pink (aquatic vegetation), islands (white if un-vegetated, red in case of terrestrial vegetation). Vegetation if scattered make texture rough.
1102	**Ox-bow lakes/ Cut off meanders**: A meandering stream may erode the outside shores of its broad bends, and in time the loops may become cut-off, leaving basins. The resulting shallow crescent-shaped lakes are called oxbow lakes (Reid *et al*, 1976). On the satellite image Ox-bow lakes occur near the rivers in plain areas. Some part of the lake normally has aquatic vegetation (red/pink in colour) during pre-monsoon season.
1103	**High Altitude lakes:** These lakes occur in the Himalayan region. Landscapes around high lakes are characterized by hilly topography. Otherwise they resemble lakes in the plain areas. For keeping uniformity in the delineation of these lakes contour line of 3000 m above msl will be taken as reference and all lakes above this contour line will be classified as high altitude lakes.
1104	**Riverine Wetlands**: Along the major rivers, especially in plains water accumulates leading to formation of marshes and swamp. **Swamps** are 'Wetland dominated by trees or shrubs' (U.S. Definition). In Europe, a forested fen (a peat accumulating wetland that has no significant inflows or outflows and supports acidophilic mosses, particularly *Sphagnum*) could be called a swamp. In some areas reed grass - dominated wetlands are also called swamps). (Mitsch and Gosselink, 1986). **Marsh**: A frequently or continually inundated wetland characterised by emergent herbaceous vegetation adapted to saturated soil conditions. In European terminology a marsh has a mineral soil substrate and does not accumulate peat (Mitsch and Gosselink, 1986). Tone is grey blue and texture is smooth. **Comment**: Using satellite data it is difficult to differentiate between swamp and marsh. Hence, both have been clubbed together.
1105	**Waterlogged:** Said of an area in which water stands near, at, or above the land surface, so that the roots of all plants except hydrophytes are drowned and the plants die (Margarate *et al*, 1974). Floods or unlined canal seepage and other irrigation network may cause water logging. Spectrally, during the period when surface water exists, waterlogged areas appear more or less similar to lakes/ponds. However, during dry season large or all parts of such areas dry up and give the appearance of mud/salt flats (grey bluish).
1106	**River/stream:** Rivers are linear water features of the landscape. Rivers that are wider than the mapping unit will be mapped as polygons. Its importance arises from the fact that many stretches of the rivers in Indo-Gangetic Plains and peninsular India are declared important national and international wetlands (Ex. The river Ganga between Brajghat and Garh Mukteshwar, is a Ramsar site, Ranganthattu on the Cavery river is a bird sanctuary etc.). Wherever, rivers are wide and features like sand bars etc. are visible, they will be mapped.
1200	**Man-made**
1201	***Reservoir****: A pond or lake built for the storage of water, usually by the construction of a dam across a river (Margarate et al, 1974). On RS images, reservoirs have irregular boundary behind a prominent dyke. Wetland boundary in case of reservoir incorporates water, aquatic vegetation and footprint of water as well. In the accompanying images aquatic vegetation in the reservoir is seen in bright pink tone. Tone is dark blue in deep reservoirs while it is ink blue in case of shallow reservoirs or reservoirs with high silt load. These will be annotated as Reservoirs/Dam.* **Barrage:** Dykes are constructed in the plain areas over rivers for creating Irrigation/water facilities. Such water storage areas develop into wetlands (Harike Barrage on Satluj – a Ramsar site, Okhla barrage on the Yamuna etc. – a bird sanctuary). Water appears in dark blue tone with a smooth texture. Aquatic vegetation appears in pink colour, which is scattered, or contiguous depending on the density. Reservoirs formed by barrages will be annotated as reservoir/barrage.

1202	**Tanks/Ponds:** A term used in Ceylon and the drier parts of Peninsular India for an artificial pond, pool or lake formed by building a mud wall across the valley of a small stream to retain the monsoon (Margarate *et al*, 1974). **Ponds** Generally, suggest a small, quiet body of standing water, usually shallow enough to permit the growth of rooted plants from one shore to another (Reid *et al*, 1976). Tanks appear in light blue colour showing bottom reflectance. In this category **Industrial ponds/mining pools mainly comprising Abandoned Quarries are also included (**Quarry is defined as "An open or surface working or excavation for the extraction of stone, ore, coal, gravel or minerals." In such pits water accumulate (McGraw Hill Encyclopaedia of Environmental Sciences, 1974), **Ash pond/Cooling pond** (The water body created for discharging effluents in industry, especially in thermal power plants (Encyclopaedic Directory of Environment, 1988) and **Cooling pond**: An artificial lake used for the natural cooling of condenser-cooling water serving a conventional power station (Encyclopaedic Directory of Environment, 1988). These ponds can be of any shape and size. Texture is rough and tonal appearance light (quarry) to blue shade (cooling pond).
1203	**Waterlogged :** Man-made activities like canals cause water logging in adjacent areas due to seepage especially when canals are unlined. Such areas can be identified on the images along canal network. Tonal appearance is in various hues of blue. Sometimes, such waterlogged areas dry up and leave white scars on the land. Texture is smooth.
1204	**Salt pans:** Inland salt pans in India occur in Rajasthan (Sambhar lake). These are shallow rectangular man-made depressions in which saline water is accumulated for drying in the sun for making salt.
2000	**Coastal Wetlands**
2100	**Natural**
2101	**Lagoons/Backwaters:** Such coastal bodies of water, partly separated from the sea by barrier beaches or bass of marine origin, are more properly termed lagoons. As a rule, lagoons are elongate and lie parallel to the shoreline. They are usually characteristic of, but not restricted to, shores of emergence. Lagoons are generally shallower and more saline than typical estuaries (Reid *et al*, 1976). **Backwater**: A creek, arm of the sea or series of connected lagoons, usually parallel to the coast, separated from the sea by a narrow strip of land but communicating with it through barred outlets (Margarate *et al*, 1974).
2102	**Creek:** A notable physiographic feature of salt marshes, especially low marshes. These creeks develop as do rivers "with minor irregularities sooner or later causing the water to be deflected into definite channels" (Mitsch and Gosselink, 1986). Creeks will be delineated, however, their area will not be estimated.
2103	**Sand/Beach:** Beach is an un-vegetated part of the shoreline formed of loose material, usually sand that extends from the upper berm (a ridge or ridges on the backshore of the beach, formed by the deposit of material by wave action, that marks the upper limit of ordinary high tides and wave wash to low water mark(Clark,1977).Beach comprising rocky material is called rocky beach.
2104	**Intertidal mudflats**: Most un-vegetated areas that are alternately exposed and inundated by the falling and rising of the tide. They may be mudflats or sand flats depending on the coarseness of the material of which they are made (Clark, 1977).
2105	**Salt Marsh**: Natural or semi-natural halophytic grassland and dwarf brushwood on the alluvial sediments bordering saline water bodies whose water level fluctuates either tidally or non- tidally (Mitsch and Gosselink, 1986). Salt marshes look in grey blue shade when wet.
2106	**Mangroves**: The mangrove swamp is an association of halophytic trees, shrubs, and other plants growing in brackish to saline tidal waters of tropical and sub-tropical coastlines (Mitsch and Gosselink, 1986). On the satellite images mangroves occur in red colour if in contiguous patch. When mangrove associations are scattered or are degraded then instead of red colour, brick red colour may be seen.
2107	**Coral reefs:** Consolidated living colonies of microscopic organisms found in warm tropical waters. The term coral reef, or organic reef is applied to the rock- like reefs built-up of living things, principally corals. They consist of accumulations of calcareous deposits of corals and corraline algae with the intervening space connected with sand, which consists largely of shells of foraminefera. Present reefs are living associations growing on this accumulation of past (Clark, 1977). Reefs appear in light blue shade.
2200	**Man-made**
2201	**Salt pans**: An un-drained usually small and shallow rectangular, man-made depression or hollow in which saline water accumulates and evaporates leaving a salt deposit (Margarate *et al*, 1974). Salt pans are square or rectangular in shape. When water is there appearance is blue while salt is formed tone is white.
2202	**Aquaculture ponds**: Aquaculture is defined as "The breeding and rearing of fresh-water or marine fish in captivity. Fish farming or ranching". The water bodies used for the above are called aquaculture ponds (Encyclopaedic Directory of Environment, 1988). Aquaculture ponds are geometrical in shape usually square or rectangular. Tone is blue.

Annexure – II
Details of District information followed in the atlas

State : Uttar Pradesh

District Boundary Map



List of Districts

District code	District name
01	Saharanpur
02	Muzaffarnagar
03	Bijnor
04	Moradabad
05	Rampur
06	Jyotiba Phule Nagar
07	Meerut
08	Baghpat
09	Ghaziabad
10	Gautambudh Nagar
11	Bulandshahr
12	Aligarh
13	Hathras
14	Mathura
15	Agra
16	Firozabad
17	Etah
18	Mainpuri
19	Budaun
20	Bareilly

District code	District name
21	Pilibhit
22	Shahjahanpur
23	Lakhimpur
24	Sitapur
25	Hardoi
26	Unnao
27	Lucknow
28	Raebareli
29	Farrukhabad
30	Kannauj
31	Etawah
32	Auraiya
33	Kanpur (dehat)
34	Kanpur (nagar)
35	Jalaun
36	Jhansi
37	Lalitpur
38	Hamirpur
39	Mahoba
40	Banda

District code	District name
41	Chitrakoot
42	Fatehpur
43	Pratapgrah
44	Kaushambi
45	Allahabad
46	Barabanki
47	Faizabad
48	Ambedkar nagar
49	Sultanpur
50	Bahraich
51	Shrawasti
52	Balrampur
53	Gonda
54	Siddharthnagar
55	Basti
56	St.kabir Nagar
57	Maharajganj
58	Gorakhpur
59	Kushinagar
60	Deoria

District code	District name
61	Azamgarh
62	Mau
63	Ballia
64	Jaunpur
65	Ghazipur
66	Chandauli
67	Varanasi
68	St.Ravidas Nagar
69	Mirzapur
70	Sonbhadra
71	Kansiramnagar

Legend

State Boundary

District Boundary

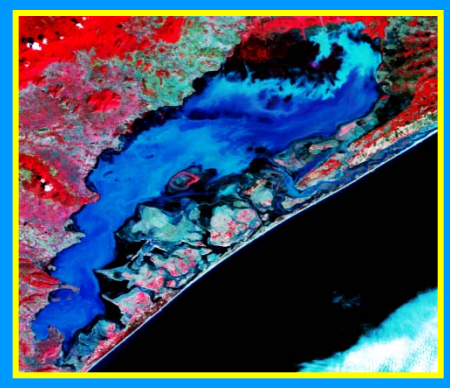
Source : Survey of India (Surveyed in 2004 and published in 2005)

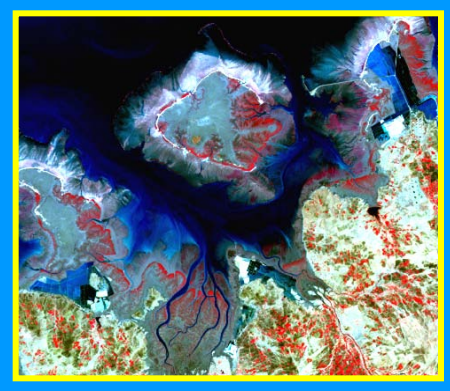
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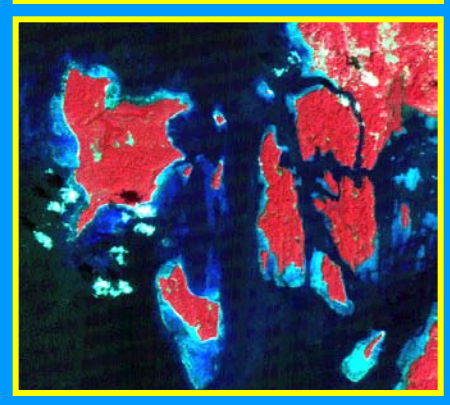
http://www.isro.org



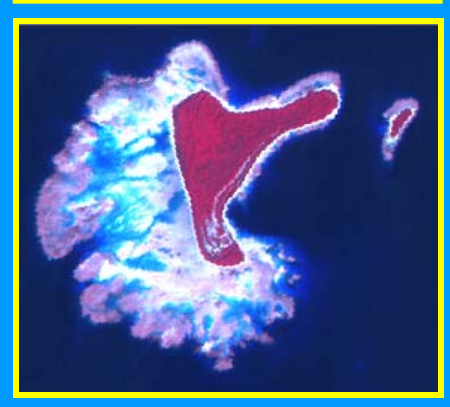












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