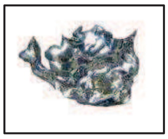
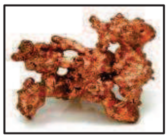
सत्यमेव जयते

Government of India
Ministry of Water Resources,
River Development and Ganga Rejuvnation
Central Water Commission

Status of Trace and Toxic Metals in Indian Rivers

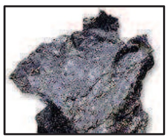

Arsenic

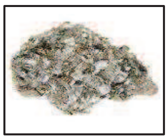

Cadmium


Copper


Chromium


Iron


Lead


Nickel


Zinc

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New Delhi 110066

2018

Status of Trace and Toxic Metals in Indian Rivers

River Data Compilation -2 Directorate
Planning and Development Organisation
New Delhi 110066

April, 2018

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FOREWORD

Water quality monitoring issues in Indian rivers have emerged as a critical challenge in the country; Contaminants, whether industrial effluents or domestic waste, are finding their way to the rivers, adversely affecting their health. Lack of monitoring and enforcement also makes it difficult for countries and regions to understand and deal with this challenge. Metal contamination in the environment is one of the persistent global environmental problems. This contamination is caused by continuous growth in mining, fertilizer, tannery, paper, batteries and electroplating industries which subsequently has shown noxious effects on human health around the globe. Unlike organic contaminants, heavy metals are non-biodegradable and also carcinogenic. Heavy metals such as Zinc, Copper, Nickel, Mercury, Cadmium, Lead, Chromium and Arsenic tend to accumulate in organisms, which may lead to a reduction in species diversity.

Central Water Commission under Ministry of Water Resources, RD & GR has been playing a major role in the monitoring water quality of river water since year 1963 and at present, is observing water quality at 429 key locations covering all major river basins of India. The present report attempts to provide the water quality scenario of Indian rivers in respect of trace & toxic metals. Based on the analysis results of various metal elements, first edition of the Status of Trace and Toxic Metals in Indian Rivers was published by River Data Directorate, CWC, in May 2014. The revised and comprehensive edition of this report is in your hand which includes the data of eight elements viz; Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Nickel and Zinc for the period from May 2014 to August 2017. The report brings out the identified locations having these metal concentrations beyond the exceeding limits according to the BIS 10500:2012.

I would like to place on record my appreciation of Shri Pradeep Kumar, Member (River Management), CWC, Shri Ravi Shankar, Chief Engineer (P&D), CWC and his team for excellently bringing out second edition of this publication.

I hope this report will provide meaningful tool to all concerned agencies in identifying remedial measures to check pollution caused by these metal elements in Indian rivers.

New Delhi
17 April, 2018

(S. Masood Husain)

Pradeep Kumar
Member (River Management)
Central Water Commission
& Ex-Officio Additional Secretary
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Ministry of Water Resources,
River Development and Ganga Rejuvenation

PREFACE

River pollution is an environmental problem in the world. Because of unprecedented development, human beings are responsible for choking several aquatic ecosystems to death. Storm water runoff and carry out of sewage into rivers are two common ways that various nutrients and other pollutants enter the aquatic ecosystems resulting in pollution. Heavy metal contamination particularly the non-essential elements may have distressing effects on the ecological balance of the recipient aquatic environment with a diverse of organisms including fish. It has particular significance in eco-toxicology, since the heavy metals are highly persistent and have the potential to bio-accumulate and bio-magnify in food chain and become toxic to living organisms at higher tropic levels in nature. Trace & toxic metals, as their name indicates present in water in very minute quantity and a few of them are somewhat essential for proper nutrition, but may prove hazardous if their presence exceeds the permissible limit in the water. “Toxic metals” are one of the environmental problems. Today, there are new dimensions of the problem, such as the production of metals in developing countries, leading to occupational exposure and exposure to the general public through the ambient air, drinking water, food, and consumer products.

In CWC, the water quality data generated, as a result of analysis of water samples, are utilised in publication of various water quality Year- Books basin-wise. To observe the current status of toxic metal content of Indian Rivers, river water samples from the water quality monitoring stations spread over 16 river basins of Central Water Commission were collected in three different seasons viz, monsoon (August, 2016 and August, 2017), summer (May, 2014; April, 2016 and April, 2017) and winter (November, 2014; February 2015, December, 2015 and December, 2016). These samples were analyzed for selected eight trace and toxic metals at National River Water Quality Laboratory, Central Water Commission, New Delhi.

I appreciate the commendable efforts put by Shri Ravi Shankar (Chief Engineer, P & D) for bringing out 2nd edition of this book. Efforts put in by the officers of River Data Directorate-2, Shri Rajesh Kumar, Director, Manoj Kumar, Dy. Director, Dr. Jakir Hussain, Research Officer, Shri Sunil Chauhan, Assistant Research Officer, Shri N. Prabhakar Rao and Dr Sakshi Sharma, Senior Research Assistant in the preparation of the report are also appreciated. I also express sincere thanks to all field Chief Engineers of CWC for making arrangements for collection and submission of river water samples to the National River Water Quality Laboratory, CWC, New Delhi

I hope this publication will provide a vision of state of Trace & Toxic Metals in Indian rivers to all stake holders and then ponder to search for remedial measures to check the pollution.

New Delhi
13th April, 2018

(Pradeep Kumar)
Member (RM), CWC

EXECUTIVE SUMMARY

In the developing countries like India, facilities of drinking water treatment before supply are not always available or possible. In many parts of the country people take water directly from the source for their domestic use. Because of the rapid urbanization and industrialization, availability of good quality and quantity of water is a threat.

To observe the current status of toxic metal content of Indian Rivers, river water samples from the water quality monitoring stations spread over 16 river basins of Central Water Commission were collected in three different seasons viz, monsoon (August, 2016 and August, 2017), summer (May, 2014; April, 2016 and- April, 2017) and winter (November, 2014; February 2015, December, 2015 and December, 2016). These samples were analyzed for selected eight trace and toxic metals at National River Water Quality Laboratory, Central Water Commission, New Delhi. Toxic metal wise summary of the results are as under:

Arsenic (As)

As Permissible Limit as BIS 10500; 2012	10 µg/L
No of Samples Tested	1734
No. of Samples Exceed the Limit	0
No. of Stations	0
No.of Rivers	0
No. of Rivers where it exceeded more than one WQ Stations	0

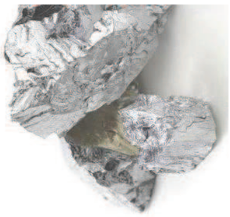
Total 1734 numbers of water samples from 414 water quality monitoring stations were collected and analyzed for arsenic content in Indian Rivers in the period May, 2014 Maximum arsenic concentration (9.53 µg/L) was observed at Buxar water quality monitoring station on Ganga River during April, 2016. During the study period, all the River water quality stations are reported that arsenic concentration well within the acceptable limits according to the Bureau of Indian Standards (BIS) and no toxicity of arsenic in the River waters is observed.

Cadmium (Cd)

Cd Permissible Limit as BIS 10500; 2012	3 µg/L
No of Samples Tested	2349
No. of Samples Exceed the Limit	38
No. of Stations	31
No.of Rivers	25
No. of Rivers where it exceeded more than one WQ Stations	4

Out of 2349 water samples, thirty eight water quality stations from Ganga, Kopili, Rapti, Thungabhadra and Yamuna rivers were found to have cadmium content more than one station above the acceptable limits. The highest cadmium concentration (70.51 µg/L) was observed in the Vautha water quality monitoring station at Sabarmati River during February, 2015. It is also observed that a Cadmium concentration exceeds the acceptable limit during non-monsoon period.

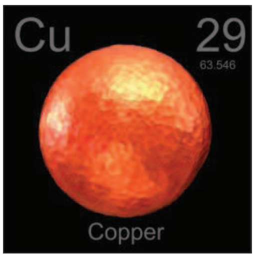
Chromium (Cr)



BIS (Bureau of Indian Standard) 10500-2012) have recommended an acceptable limit of 50 µg/L of chromium in drinking water. Chromium concentration was 450.26 µg/L at Paliakalan water quality monitoring station on Sharda River in August 2016, which is reported as the maximum concentration during entire study period. Out of 2400 water samples, total 41 numbers of water samples from 28 water quality monitoring stations located on 21 major Indian Rivers were found above the tolerance limit of 50µg/L with respect to chromium. Some Indian Rivers viz. Ganga, Ghagra and Rapti have two or more water quality monitoring stations which are polluted with respect to chromium concentration.

Cr Permissible Limit as BIS 10500; 2012	50 µg/L
No of Samples Tested	2400
No. of Samples Exceed the Limit	41
No. of Stations	28
No.of Rivers	21
No. of Rivers where it exceeded more than one WQ Stations	3

Copper (Cu)



2400 water samples from 414 water quality stations were collected and analyzed for copper content from May, 2014 to August, 2017. Out of 2451 water samples, 13 samples were found to contain copper concentrations above the acceptable limits of 50 µg/L during the study period, the maximum Copper concentration 314.93 µg/L was observed at Pingalwada water quality station on Dhadher River in April, 2017. Total 13 numbers of water samples exceeded the BIS prescribed acceptable limit at 12 numbers of WQ monitoring stations situated on 10 Indian Rivers during the study period. Dikhow, Brahmaputra, Buridehing, Damanganga, Dhadher, Ganga, Pranhitha, Sabarmati, Subarnarekha and Tel are the rivers where one or two water quality monitoring stations were found cont aminated with copper.

Cu Permissible Limit as BIS 10500; 2012	50 µg/L
No of Samples Tested	2400
No. of Samples Exceed the Limit	12
No. of Stations	11
No.of Rivers	10
No. of Rivers where it exceeded more than one WQ Stations	1

Iron (Fe)

According to BIS the acceptable limit for Iron is 0.3 mg/L (300µg/L). Higher concentration of iron >300 µg/L has been observed in 524 wate r samples collected from 234 WQ stations of 137 Indian Rivers during the study period. The highest concentration of 14.55 mg/L is observed at Chenimari on Buridehing River. Bagmathi, Baitarni, Bhadar, Brahmani, Brahmaputra, Buridehing, Cauvery,

Fe Permissible Limit as BIS 10500; 2012	300 µg/L
No of Samples Tested	2400
No. of Samples Exceed the Limit	524
No. of Stations	234
No.of Rivers	137
No. of Rivers where it exceeded more than one WQ Stations	44

Desang, Dhansiri, Dikhow, Gandak, Ganga, Ghagra, Godavari, Gomti, Hemavathi, Indravathi, Jaldhaka, Kanhan, Kamala-Balan, Kopili, Krishna, Lohit, Mahananda, Mahi, Narmada, Neo dihing, Purna, Puthimari, Raidak-I, Rapti, Sai, Sone, Subansiri, Subarnarekha, Tapi, Teesta, Thungabhadra, Tors and Wainganga are the Rivers where three or more water quality stations have been found to have Iron concentration above the acceptable limit throughout the study period.

Lead (Pb)

Pb Permissible Limit as BIS 10500; 2012	10 µg/L
No of Samples Tested	2400
No. of Samples Exceed the Limit	122
No. of Stations	91
No.of Rivers	69
No. of Rivers where it exceeded more than one WQ Stations	11

As per Bureau of Indian Standard (10500, 2012) has recommended that the acceptable limit for lead is 0.01 mg/L or 10µg/L in drinking water. Lead concentration was maximum (374.58 µg/L) at Lowara water quality station on Sheturni Rive r during April, 2016. 122 water samples from 91 water quality monitoring stations were observed having lead concentrations above the acceptable limit for drinking water in 69 Indian Rivers during the study period. Brahmaputra, Buridehing, Cauvery, Ganga, Ghagra, Gomti, Ramganga, Rapti, Sone, Thungabhadra, and Yamuna are the rivers where two or more numbers of WQ monitoring stations were found to be contaminated with lead.

Nickel (Ni)

Ni Permissible Limit as BIS 10500; 2012	20 µg/L
No of Samples Tested	2023
No. of Samples Exceed the Limit	35
No. of Stations	31
No.of Rivers	25
No. of Rivers where it exceeded more than one WQ Stations	3

It is observed that Nickel concentration found more than the prescribed limit in 35 water samples out of 2023 samples according to the BIS limits. Nickel concentration at Lowara water quality station on Sheturni river in February, 2015 is reported to be the maximum (184.64 µg/L) during the entire study period. Seonath, Subarnarekha and Thungabhadra are the rivers where 2 or more WQ monitoring stations were found contaminated with Nickel. 35 water samples from 32 water quality monitoring stations over 29 Indian Rivers were observed to have nickel concentration that exceed the acceptable limit during the study period.

Zinc (Zn)

Total 2400 water samples from the 414 water quality monitoring stations were analyzed during t he reporting period. Maximum Zinc concentration (2.65 mg/L) was observed at Manot water quality monitoring station on Narmada River during August, 2016. In the study area, all the River water quality stations are

reported to have zin c concentration well within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Zinc in the River waters is observed.

Zn Permissible Limit as BIS 10500; 2012	5000 µg/L
No of Samples Tested	2400
No. of Samples Exceed the Limit	0
No. of Stations	0
No.of Rivers	0
No. of Rivers where it exceeded more than one WQ Stations	0

GUIDANCE

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Abbreviations

μg/dL	Microgram per Desci Liter
AAS	Atomic Absorption Spectrophotometer
APHA	American Public Health Association
As	Arsenic
BCM	Billion Cubic meter
BIS	Bureau of Indian Standards
Cd	Cadmium
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
ICMR	Indian Council of Medical Research
IUPAC	International Union of Pure and Applied Chemistry
kms	kilo meters
M. ha	Million hectres
MCL	Maximum Contaminant Level
mm	milli meter
MSL	Mean Sea Level
Ni	Nickel
NRWQL	National River Water Quality Laboratory
Pb	Lead
ppb	Parts Per Billion
ppm	Parts Per Million
TEL	Tetra Ethyl Lead
USEPA	United States Environmental Protection Agency
WHO	World Health Organisation
WQ	Water Quality
Zn	Zinc

1. INTRODUCTION

The environmental pollution is caused by a variety of pollutants in water, air and soil. One of the major concerned pollutants of living environment is "Hazardous Metals" also termed as "Trace Elements or heavy metals". The term ''heavy metal'' refers to any metal and metalloid element that has a relatively high density ranging from 3.5 to 7 g/cm^3 and is toxic or poisonous at low concentrations, and includes mercury (Hg), cadmium (Cd), arsenic (As), chromium (Cr), thallium (Tl), zinc (Zn), nickel (Ni), copper (Cu) and lead (Pb). Although ''heavy metals'' is a general term defined in the literature, it is widely documented and frequently applied to the widespread pollutants of soils and water bodies (Duffus, 2002).

According to the World Health Organization (WHO), 2011 the common toxic 'heavy metals' that can be of public health concerns include beryllium (Be), aluminium (Al), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), arsenic (As), selenium (Se), molybdenum (Mo), silver (Ag), cadmium (Ca), tin (Sn), antimony (Sb), barium (Ba), mercury (Hg), thallium (Tl) and lead (Pb). This beryllium, which is the second lightest metallic element (an alkaline earth metal) after lithium with an atomic number of four, as well as aluminium, one of the most widely used industrial light metals with a density of 2.7 g/cm^3, and arsenic and selenium, which are not even metals, but a metalloid and a non-metal, respectively.

These metals are found widely in the earth's crust and are non-biodegradable in nature. They enter into the human body via air, water and food. Metals in environmental waters arise from both natural and anthropogenic sources. In many cases, anthropogenic inputs of metals exceed natural inputs. Living organisms require some metals as essential nutrients, including calcium, sodium, potassium, magnesium, iron, zinc, chromium, cobalt, copper, nickel, manganese, molybdenum, and selenium. Excessive levels or certain oxidation states of some essential metals, however, are detrimental to living organisms. In addition to non-nutrient metals generally recognized as toxic, such as antimony, arsenic, beryllium, cadmium, lead, and mercury, health-based water quality standards will also include the nutrient metals chromium, copper, nickel, selenium, and zinc, all of which can be toxic at too-high levels or in certain oxidation states (Weiner, E.R. 2013).

1.1 Sources of Metal Pollution

Environmental pollution caused by the rapid industrialization and urbanization is one of the most significant problems of the last century. The main sources of heavy metal pollution are mining, milling, plating and surface finishing industries that discharge a variety of toxic metals such as Cr, Cu, Cd, Ni, Co, Zn and Pb into the environment. Over the last few decades, the concentration of these heavy metals in river water and sediments has increased rapidly. Consequently, concentrations of toxic metals in grains and vegetables grown in contaminated soils have increased at alarming rates. This poses a serious threat to humans and the environment because of its toxicity, non-biodegradability and bioaccumulation (Bahadir et al., 2007; Perez-Marin et al., 2008; Reddad et al., 2003).

Metal Pollution from Mining and Processing Ores

Digging a mine, removing ore from it, and extraction and processing of the minerals sometimes cause environmental damage. For example, mining operations can destroy habitat, farmland, and homes; produce soil erosion; and pollute waterways via toxic drainage. Emission of toxic materials from smelters such as arsenic (As), selenium (Se), lead (Pb), cadmium (Cd), and sulfur oxides, among others — causes serious air pollution. Surface mining produces about eight times as much waste as underground mining, but deep mining can produce even worse problems, such as earthquakes. When underground mines cave in, not only do they kill miners but they also cause subsidence of the surface, forming holes into which roads and houses may collapse. As near-surface minerals are depleted, miners have to dig deeper to find the mineral. A study by the National Academy of Science predicted that copper (Cu) mining operations in the year 2000 would produce three times as much waste per ton of copper output compared to the same activities in 1978.

Exposure of pyrite (FeS) and other sulfide minerals to atmospheric oxygen and moisture results in oxidation of this mineral and the formation of acid-mine drainage water. The release of acid-mine drainage from active and abandoned mines, particularly coal mines, has been widely associated with serious water quality problems. It dissolves toxic elements from tailings and soils and carries them into waterways and even groundwater. Water quality problems involve relatively high levels of metals such as iron (Fe), manganese (Mn), zinc (Zn), copper (Cu), nickel (Ni) and cobalt (Co).

Ore processing, smelting, and refining operations can cause deposition of large quantities of trace metals such as lead (Pb), zinc (Zn), copper (Cu), arsenic (As) and silver (Ag), into drainage basins or direct discharge into aquatic environments.

1.2 Other Sources of Metal Pollution

1.2.1 Domestic Wastewater Effluents

Domestic wastewater effluents contain large amounts of trace metals from metabolic waste products, corrosion of water pipes - copper (Cu), lead (Pb), zinc (Zn), and cadmium (Cd), and household products, such as detergents - iron (Fe), manganese (Mn), chromium (Cr), nickel (Ni), cobalt (Co), zinc (Zn), boron (B), and arsenic (As). Wastewater treatment usually removes less than 50% of the metal content of the influent, leaving the effluent with significant metal loading. The sludge resulting from wastewater treatment is also rich in metals. Domestic wastewater and the dumping of domestic and industrial sludge are the major artificial sources of cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), and mercury (Hg) pollution (Csuros & Csuros, (2002).

Stormwater Runoff

Stormwater runoff from urbanized areas is a significant source of metal pollution in the receiving water streams. Metal composition of urban runoff water is dependent on many factors, such as city planning, traffic, road construction, land use, and the physical characteristics and climatology of the watershed (Csuros & Csuros, (2002).

Industrial Wastes and Discharges

In general the concentration of heavy metals in industrial effluents is much greater than their prescribed permissible limits in the aqueous solutions, so there is an urgent need to treat the metal containing effluents before they are discharged into the aquatic bodies. Metals and their concentrations in industrial waste discharges are specifically depend on the profile of that particular industry (Csuros & Csuros, (2002).

Table 1: The anthropogenic sources of heavy metals in the environment

S. No.	Pollutant	Major sources
1.	Arsenic	Arsenic containing fungicides, pesticides and herbicides, metal smelters, by products of mining activities, chemical wastes
2	Cadmium	Cadmium producing industries, electroplating, welding. Byproducts from refining of Pb, Zn and Cu, fertilizer industry, pesticide manufacturers, cadmium–nickel batteries, nuclear fission plants, production of TEL used as additives in petrol
3	Chromium	Metallurgical and chemical industries, processes using chromate compounds, cement and asbestos units
4	Copper	Iron and steel industry, fertilizer industry, burning of wood, discharge of mine tailings, disposal of fly ash, disposal of municipal and industrial wastes are the sources of copper in the atmosphere
5	Iron	Cast Iron, Wrought Iron, steel, alloys, construction, transportation, machine manufacturing
6	Lead	Automobile emissions, lead smelters, burning of coal and oil, lead arsenate pesticides, smoking, mining and plumbing
7	Mercury	Mining and refining of mercury, organic mercurial's used in pesticides, laboratories using mercury
8	Nickel	Metallurgical industries using nickel, combustion of fuels containing nickel additives, burning of coal and oil, electroplating units using nickel salts, incineration of nickel containing substances
9	Zinc	Zinc refineries, galvanizing processes, brass manufacture, metal plating, plumbing

Sanitary Landfills

The metal contents and average concentrations of sanitary-landfill leachates are Cu (5 ppm), Zn (50 ppm), Pb (0.3 ppm), and Hg (60 ppb) (Csuros & Csuros, (2002).

Agricultural Runoff

The metal content of agricultural runoff originates in sediments and soils saturated by animal and plant residues, fertilizers, specific herbicides and fungicides, and use of sewage and sludge as plant nutrients (Csuros & Csuros, (2002).

Fossil Fuel Combustion

Fossil fuel combustion is a major source of airborne metal contamination of natural waters(Csuros & Csuros, (2002).

2. INDIAN WATER RESOURCES SCENARIO

2.1 WATER RESOURCES:

India lies in the south-central peninsula of the Asian continent. Besides the main land, there are two groups of islands, namely Lakshadweep in the Arabian Sea and Andaman & Nicobar Islands in the Bay of Bengal. The mainland of India lies between $8^0$4'N and $37^0$6' N latitude and $68^0$7' E and $97^0$25'E longitude. India occupies 3.29 million km^2 geographical areas, which forms 2.4% of world's land area. It however supports over 15% of world's population.

The geographical area of India is 3,287,590 km^2. The length of its Coastline is about 7500 kms. The climate of India varies from tropical monsoon in south to temperate in north. Its terrain have upland plain (Deccan Plateau) in south, flat to rolling plain along the Ganges, deserts in west, Himalayas in north. India is enviably endowed in respect of water resources. The country is literally cress-crossed with Rivers and blessed with high precipitation mainly due to the southwest monsoon, which accounts for 75% of the annual rainfall.

Out of the total annual precipitation, including snowfall, of 4000 BCM on the entire Indian land mass, the rainfall during monsoon months (June-September) is of the order of 3000 BCM. It has also been estimated that 700 BCM is immediately lost to the atmosphere, 2150 BCM soaks into the ground and 1150 BCM flows as surface runoff. There are also very large temporal and spatial variations of rainfall during monsoon period. While the average annual rainfall of the country is about 1170 mm, the rainfall varies 100 mm in the western parts of Rajasthan to 10,000 mm at Cherrapunji in Meghalaya.

2.2 RIVER BASIN OF INDIA

India is blessed with many rivers. A river basin is the natural context in which water occurs and is perhaps the most appropriate unit for planning, development and management of water resources. The drainage area of a system of rivers normally flowing into a common terminus constitutes a drainage basin.

Table 2: Classification of River Basin in India.

River Basin	Catchment Area (in km^2)
Major	Basin catchment area is more than 20,000
Medium	Basin catchment area is between 2000-20,000
Minor	Basin catchment area is below than 2,000

On the basis of size, the river basins of India could be divided into three groups, major, medium and minor river basin. According to the above classification, the numbers of major and medium river basins are 12 and 46 respectively and these contribute nearly 92% of the total runoff in the country. Minor rivers account for about 8% of the total runoff. Of the major rivers, the Ganga-Brahmaputra – Meghana system is the biggest with a catchment area of about 1.10 million km^2, which is more than 43% of the catchment area of all the major rivers in the country. The other major rivers with a catchment area more than 0.10 million km^2 are Indus, Godavari, Krishna and Mahanadi. The catchment area of medium rivers is about 0.25 million km^2 and Subarnarekha with 19,300 km^2 catchment area is the largest river among the medium rivers in the country. The classification of River basin based on catchment area is given in Table 2.

There are few desert Rivers, which flows till some distance and get lost in deserts. There are complete arid areas where evaporation equals to rainfall and hence there is no surface-flow. The medium and minor River basins are mainly in coastal area. On the east coast and part of Kerala State, the width of land between mountain and sea is about 100 kms, and hence the Riverine length is also about 100 kms whereas, the Rivers in the west coast are much shorter as the width of the land between sea and mountains is less than 10 to 40 kms. Yet, in-spite of the nature's bounty, paucity of water is an issue of national concern resulting in deterioration of water quality in aquatic resources (Bhardwaj, 2005).

3. INDIAN RIVER SYSTEM

Figure 1: Indian River Basin

The Indian River Systems can be divided into four categories– the Himalayan, the Rivers traversing the Deccan Plateau, the Coastal and those in the inland drainage basin (Fig. 1). The Himalayan Rivers are perennial as they are fed by melting glaciers every summer. During the monsoon, these Rivers assume alarming proportions. Swollen with rainwater, they often inundate villages and towns in their path. The Gangetic basin is the largest River system in India, draining almost a quarter of the country.

The Rivers of the Indian peninsular plateau are mainly fed by rain. During summer, their flow is greatly reduced, and some of the tributaries even dry up, only to be revived in the monsoon. The Godavari basin in the peninsula is the largest in the country, spanning an area of almost one-tenth of the country. The Rivers Narmada (India's holiest River) and Tapi flow almost parallel to each other but empty themselves in opposite directions. The two Rivers make the valley rich in alluvial soil and teak forests cover much of the land. While coastal Rivers gush down the peaks of the Western Ghats into the Arabian Sea in torrents during the rains, their flow slow down after the monsoon. Streams like the Sambhar in western Rajasthan are mainly seasonal in character, draining into the inland basins and salt lakes. In the Rann of Kutch, the only River that flows through the salt desert is the Luni. The major River systems of India are discussed below.

3.1 - INDUS RIVER BASIN

The Indus basin lies in four countries viz. Afghanistan, Pakistan, India and China. The basin is bounded on the north by the Karakoram and the Haramosh ranges, on the east by the Himalayas, on the south east by the Arabian Sea and on the west by the Sulaiman and Kirthar ranges. In

India, the basin lies in the States of Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana and Rajasthan.

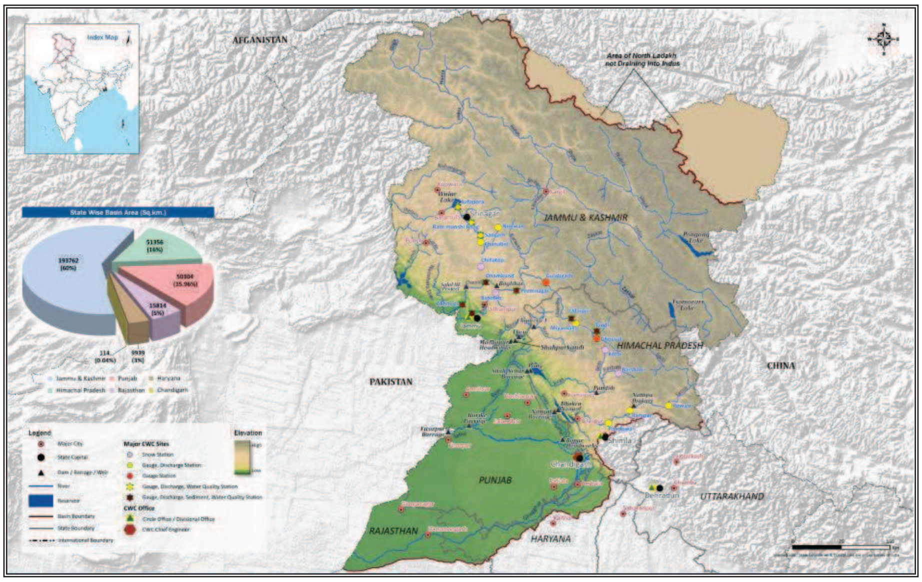


Figure 2: Indus River Basin.

The upper portion of the basin lies in J&K and Himachal Pradesh is mountainous and the lower portion lies in Punjab, Haryana and Rajasthan consist of fertile plains. Total drainage area of the basin is 11, 65,000 km^2, out of which 3, 21,289 km^2 lies in India. The Indus River rises from Mansarovar in Tibet at an elevation of about 5,182 m and flows for about 1,100 kms in India before entering into Pakistan. Main tributaries of the River are the Sutlej, the Beas, the Ravi, the Chenab and the Jhelum.

3.2 - BRAHMAPUTRA RIVER BASIN

As per the Hindu belief, Brahmaputra means 'son of the creator, Lord Brahma'. The Brahmaputra rises in Tibet where it is known as the Tsangpo. In India, it emerges from the foothills in Arunachal Pradesh where it is known as the Siang and the Dihang and it becomes the Brahmaputra after being joined by the Dibang and the Lohit Rivers in its flow through the Assam valley.

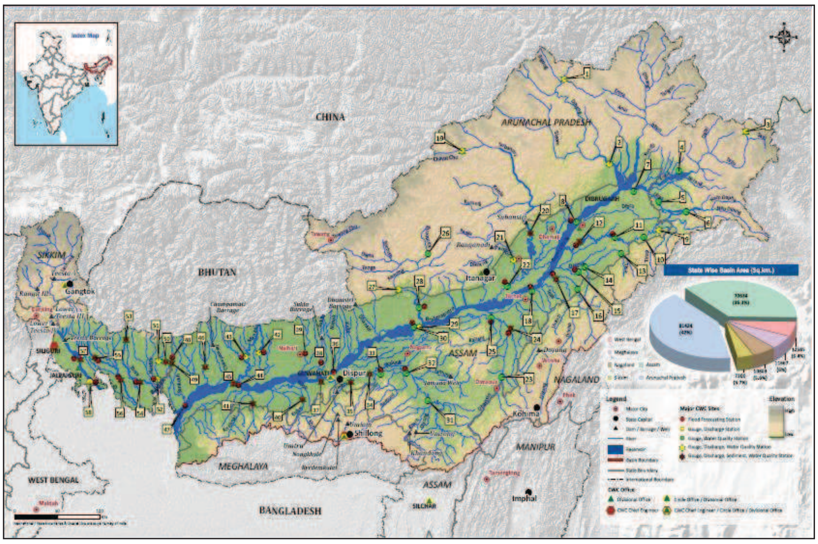
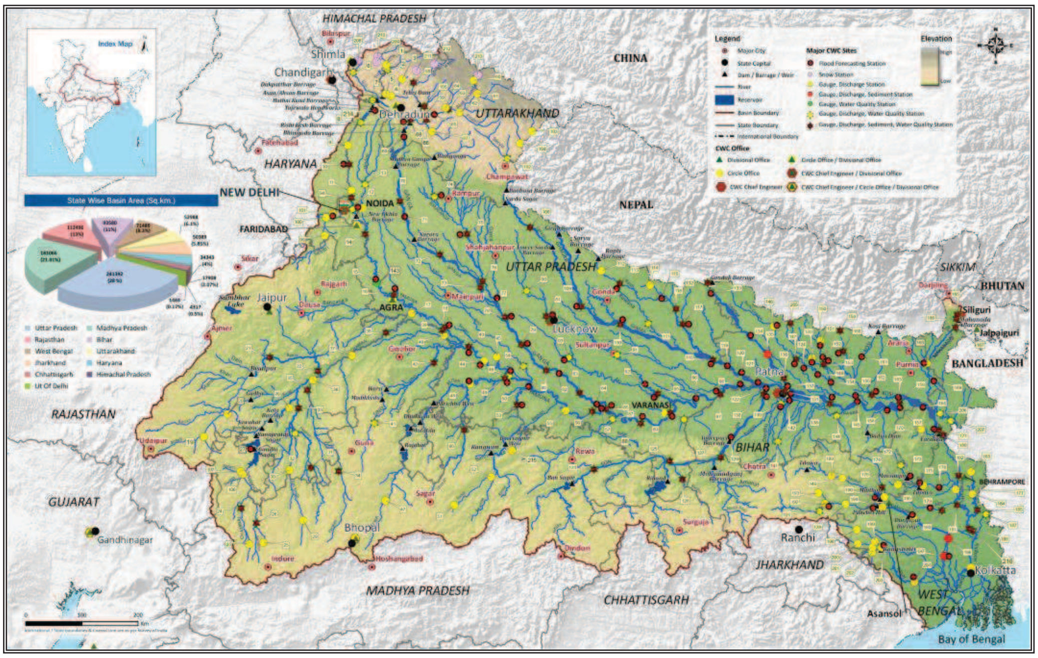


Figure 3: Brahmaputra River Basin.

The Brahmaputra River travels a distance of 2880 kms before joining the Bay of Bengal through three countries, viz. China, India and Bangladesh. It has total catchment area of 580,000 km^2. The basin lies between 23^{0}N to 32^{0}N latitude and 82^{0}E to 97^{0}50' E longitude. The River has a smaller catchment than either the Ganga or the Indus and gathers in its long course through Tibet, India and Bangladesh, waters of the Raka, Tsangpo, the Ngang Chu, the Giamdachu, the Dibang, the Lohit, the Subansiri, the Kameng, the Manas, the Tista, the Burhi Dihing, the Disang, the Kopili and the Dhansiri. After entering in Bangladesh near Dhubri, it flows southward to join the Ganga at Goalundo.

3.3 - GANGA RIVER BASIN



Undoubtedly, the Ganga is the most sacred River of India. The catchment areas of the River Ganga are in four countries viz. India, Nepal, Tibet (China) & Bangladesh. The major part of the geographical area of the Ganga basin lies in India. After merging of the two rivers the Alaknanda & Bhagirathi at Deoprayag, it is named as “Ganga”. Many important tributaries of Ganga originate in the Himalayas in India and Nepal; Bangladesh lies in the deltaic region of the basin. Ganga flows towards south and then south-east through the great plains of India in Uttar Pradesh, Bihar, Madhya Pradesh and Bengal, which is the apex of the Ganga delta. The total length of the Ganga River is 2,525 kms which makes it the 20^{th} longest River in Asia. The index map of the basin is given in figure 4. The Ganga basin lies between east longitudes $73^0$30' to $89^0$0' and north latitudes $22^0$30' to $31^0$30'. The drainage area lying in India is 861452 km^2 which is nearly 26.2% of the total geographical area of the country. In its long course through the foot hills and plains, it gathers the waters of the Ram Ganga, the Yamuna, the Tons, the Gomati, the Ghaghara, the Sone, the Gandak, the Burhi Gandak, the Bhagirathi, the Kosi and the Mahananda.

The river Yamuna, a major tributary of river Ganges, originates from the Yamunotri glacier near Banderpoonch peaks (38°59' N 78°27' E) in the Mussourie range of the lower Himalayas at an elevation of about 6387 meters above mean sea level in district Uttarkashi (Uttrakhand). The catchments of Yamuna river system cover parts of Uttar Pradesh, Uttrakhand, Himachal Pradesh, Haryana, Rajasthan, Madhya Pradesh & Delhi states. The Yamuna, after receiving water through other important tributaries, joins the river Ganga and the underground Saraswati at Prayag (Allahabad) after traversing **about 950 Km.** The Chambal and the Betwa are the two important sub-tributaries of Yamuna. Some channels which flow in north south direction run into Bay of Bengal. Most important of these are the Bhagirathi-Hooghly, the Jalangi, the Bhairab, the Mathabhanga and the Gorai. The Damodar which rises in the hills of Chhota Nagpur flows into the Hooghly which is a branch of the Ganga.

3.4 - BARAK RIVER BASIN

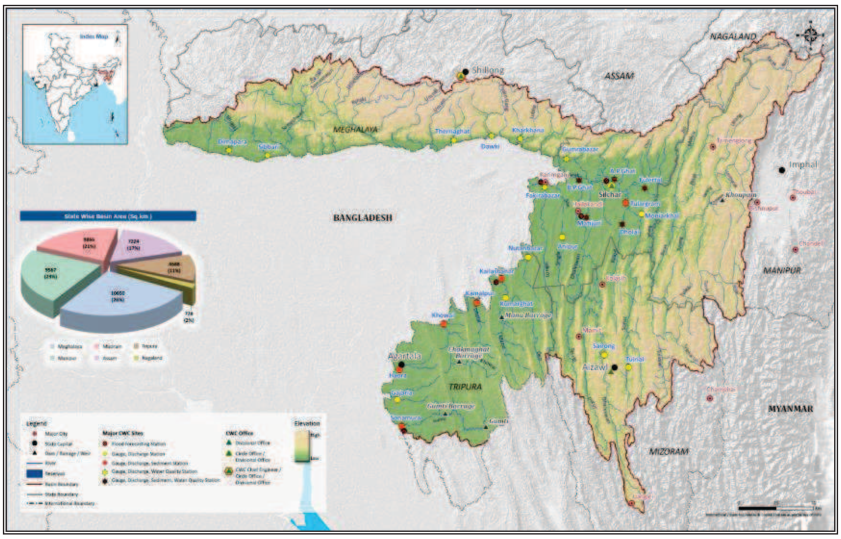


Figure 5: Barak River Basin.

The Barak sub-basin drains areas in India, Bangladesh and Burma. The drainage area of the sub-basin lying in India is 41723 km^2, which is nearly 1.38% of the total geographical area of the country. It is be on the north by the Barail range separating it from the Brahmaputra sub-basin, on the east by the Na Lushai hills and on the south and west by Bangladesh. The sub-basin lies in the States of Meghalaya, Manipur, Mizoram, Assam, Tripura and Nagaland. Barak raises in the Manipur hills and enters the plains near Lakhimpur. The River enters Bangladesh as Surma and Kushiyara. Later, the River is called the Meghna and receives the combined flow of the Ganga and Brahmaputra. The principal tributaries of Barak are the Jiri, the Dhaleswari, the Singla, the Longai, the Sonai and the Katakhal.

3.5 - NARMADA RIVER BASIN

Narmada is the largest West flowing River in India. It drains a large area in Madhya Pradesh besides some area in the states of Maharashtra and Gujarat. It flows through the Decan trap in between the Vindhyachal and the Satpura Range of hills before falling into the Gulf of Khambhat in the Arabian Sea. The total drainage area of the basin is 98,796 km^2 Out of which nearly 87% lies in Madhya Pradesh. In general, the hilly regions are forested. The soils are red, yellow, shallow black in upper reaches, medium black in middle reaches and medium & deep black in the lower reaches of the basin.

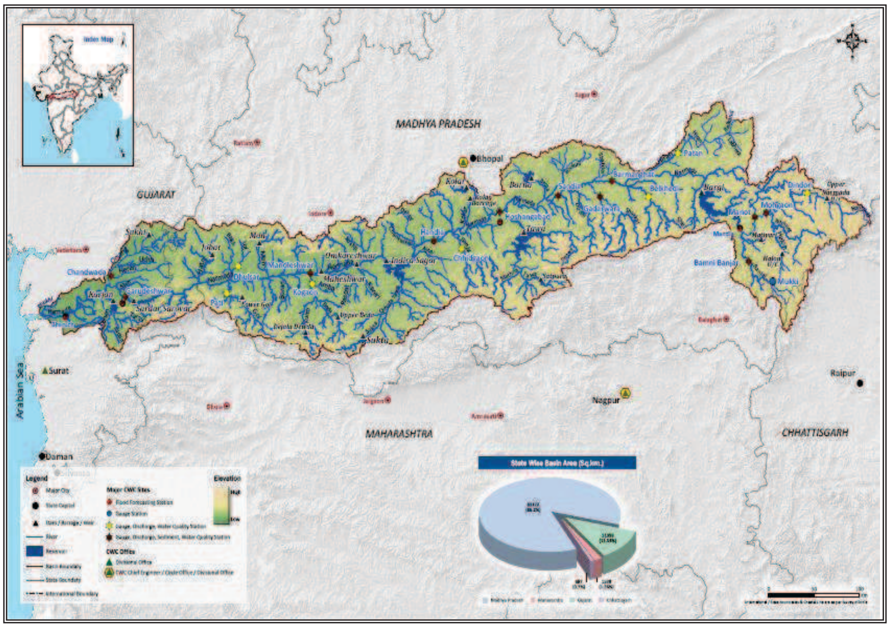


Figure 6: Narmada River Basin.

The Narmada River originates from a Kund (spring) at an elevation of 1,057 m at Amarkantak in the Maikal hill in Shahdol district of Madhya Pradesh and flows through Gujarat, Madhya Pradesh and Maharashtra states between Vindhya and Satpura hill ranges before falling into the Gulf of Khambhat in the Arabian Sea about 10 kms north of Bharuch. The total length of this west flowing River is 1,312 kms. For the first 1,079 kms, it runs in Madhya Pradesh and thereafter forms the common boundary between Madhya Pradesh and Maharashtra, and Maharashtra and Gujarat for 74 kms In Gujarat State, it stretches for 159 kms.

The major tributaries joining the river from the left bank are the Burhner, the Banjar, the Sher, the Shakkar, the Dudhi, the Tawa, the Ganjal, the Chhota Tawa, the Kundi and the Karjan. From the right bank some other tributaries joins the river viz. the Hiran, the Barna, the Tendoni, the Kolar, the Kanar, the Man, the Uri and the Orsang.

3.6 - TAPI RIVER BASIN

Tapi is the second largest west flowing River. It originates from Multai (Betul district) in Madhya Pradesh and flows through the states of Madhya Pradesh, Maharashtra and Gujarat and joins the Arabian Sea about 15 kms west of Surat. The Tapi River has a length of about 724 kms and its basin extends over an area of 65,145 km^2, which is situated in Deccan plateau between East longitude 72°- 38' to 78°- 17' and North latitude 20°- 05' to 22°- 03'. The Tapi basin is bounded on the north by the Satpura Range, on the east by the Mahadeo Hills, on the south by the Ajanta Range and the Satmala Hills and on the west by the Arabian Sea. The Gawilgarh Hills form the dividing line between the upper Tapi and the Purna sub basins. The basin has elongated shape with a maximum length of 587 kms from east to west and a maximum width of 210 kms from north to south. This basin has two well defined physical region viz. the hilly regions and the plains. The hilly regions cover the Satpura, the Satmala the Mahadeo, the Ajanta and the Gawilgarh Hills and are well forested. The plains cover the Khandesh and the Gujarat plains which are broad and fertile areas suitable for cultivation. The major tributaries which join Tapi are the Aner, the Purna, the Waghur, the Girna, the Bori, the Panjhra and the Burdy.

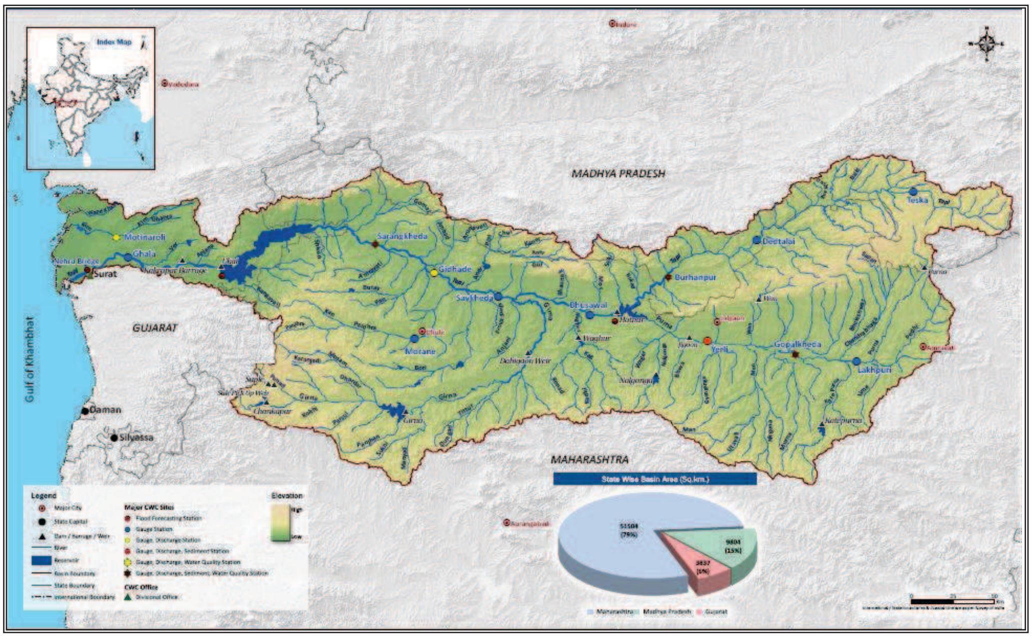


Figure 7: Tapi River Basin.

3.7 - Godavari River Basin

Godavari river basin extends over an area of 3,12,812 km^2 which is nearly 9.5% of the total geographical area of the country. It is bounded on the north by the Satmala Hills, the Ajanta Range and the Mahadeo Hills, on the east and south by the Eastern Ghats and on the west by the Western Ghats. The basin lies in the States of Madhya Pradesh, Odisha, Maharashtra, Karnataka and Andhra Pradesh.

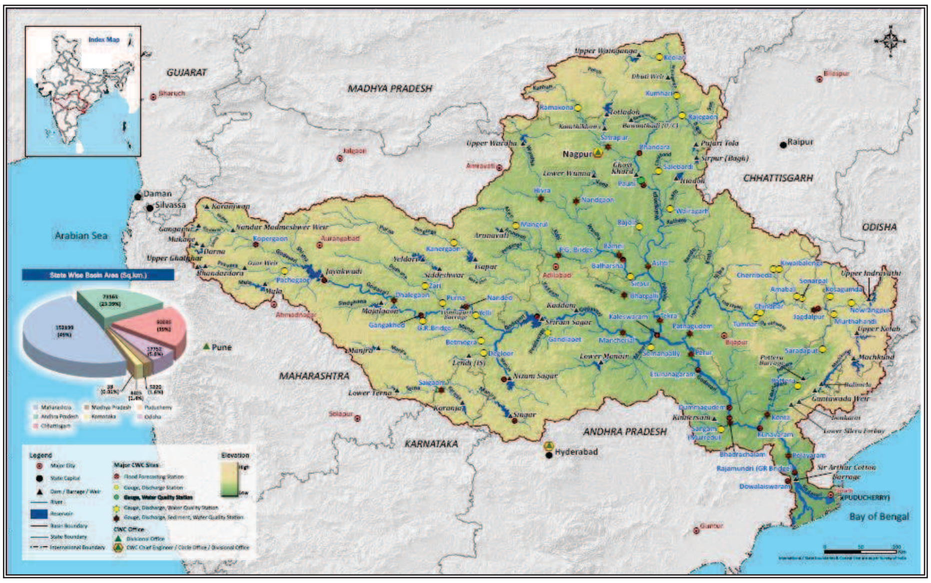


Figure 8: Godavari River Basin.

Except the hills along the boundary of the basin including the Sahyadri range of the Western Ghats, the entire drainage area comprises rolling and undulating country. It consists of large undulating plains divided by low flat-topped hill ranges. A wide belt of River borne alluvium forms the delta of the basin. The important soil types found in the basin are black cotton soils, red soils, laterites and lateritic soils, alluvium, mixed soils and saline and alkaline soils. The cultivable area in the basin is about 18.93 M ha, which is 9.7% of the total cultivable area of the country.

The River Godavari rises in the Nashik district of Maharashtra, about 80 kms from the Arabian Sea, at an elevation of 1067 m and after flowing for about 1465 kms in a generally south-east direction, through Maharashtra and Andhra Pradesh it outfalls into the Bay of Bengal. River Pravara, Manjira and Maner are notable right bank tributaries and the Purna, the Pranhita, the Indravathi and the Sabari are important left bank tributaries of Godavari.

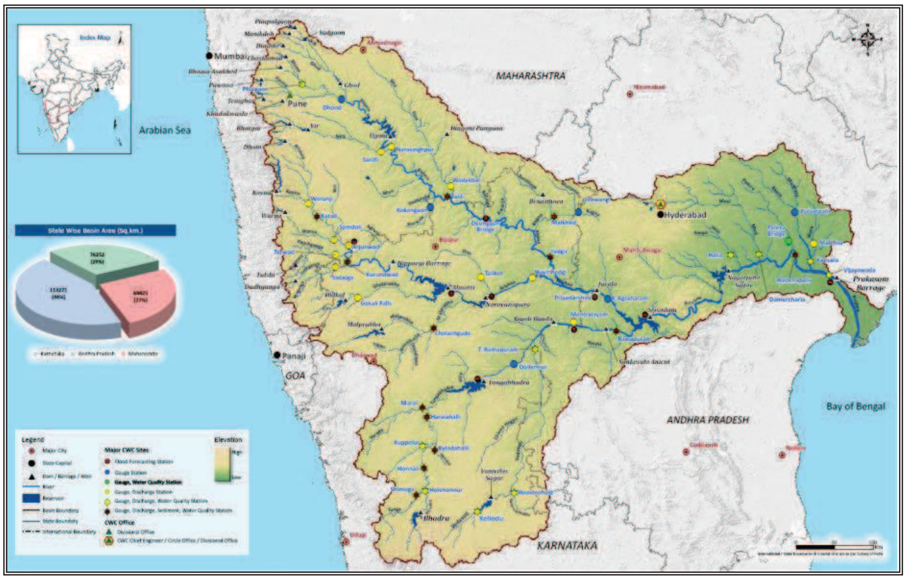


Figure 9: Krishna River Basin.

3.8 - Krishna River Basin

Krishna basin extends over an area of 2,58,948 km^2, which is ne-arly 8% of the total geographical area of the country. It is bounded on the north by the range separating it from the Godavari basin, on the south and east by the Eastern Ghats and on the west by the Western Ghats. The basin lies in the States of Maharashtra, Karnataka and Andhra Pradesh.

Most part of this basin comprises rolling and undulating country except the western border which is formed by an unbroken line of ranges of the Western Ghats. The important soil types found in the basin are black soils, red soils, laterite and lateritic soils, alluvium, mixed soil, red and black cotton soil and saline and alkaline soils. The cultivable area in the basin is about 20.59 M ha, which is 10.4% of the total cultivable area of the country.

The Krishna River rises in the Western Ghats at an elevation of about 1337 m. just north of Mahabaleswar in Maharashtra, about 64 kms from the Arabian Sea and flows for about 1,400 kms before out falling into the Bay of Bengal. The principal tributaries joining Krishna are the Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra, the Musi and the Munneru.

3.9 - Cauvery River Basin

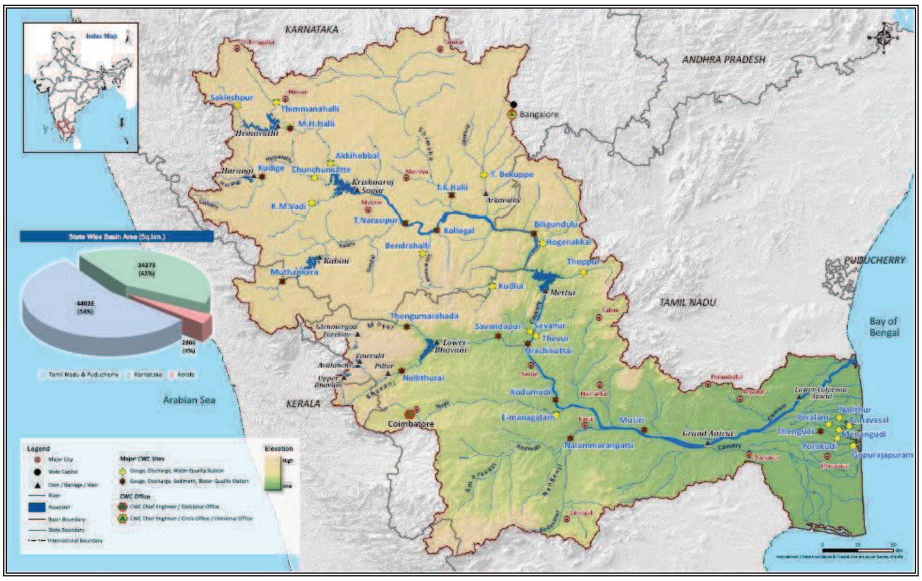


Figure 10: Cauvery River Basin.

Cauvery Basin extends over an area of 81,155 km^2 which is nearly 2.7% of the total geographical area of the country. It is bounded on the west by the Western Ghats, on the east and south by the Eastern Ghats and on the north by the ridges separating it from Tungabhadra and Pennar basins.

The basin lies in the states of Tamil Nadu, Karnataka and Kerala. Physio-graphically, the basin can be divided into three parts - The Western Ghats, the Plateau of Mysore and the Delta. The delta area is the most fertile tract in the basin. The principal soil types found in the basin are black soils, red soils, laterites, alluvial soils, forest soils and mixed soils. Red soils occupy large areas in the basin. Alluvial soils are found in the delta areas. The cultivable area of the basin is about 5.8 Mha, which is about 3% of the cultivable area of the country.

The Cauvery, which is the 4th largest of the east flowing Rivers, is one River whose potential has been almost completely utilized. Cauvery River rises at Talakaveri on the Brahmagiri Range in the Western Ghats in Karnataka at an elevation of about 1,841 m and flows for about 800 kms before it outfalls into the Bay of Bengal. It is joined in its course through Karnataka and Tamil Nadu by a large number of Rivers such as the Harangi, the Hemavathi, the Arkavathi, the Lakshmantirtha, the Kabini and the Bhavani. Near Srirangam, in Tamilnadu it divides into branches, the northern arm taking the name Coteroon which remains the main River, and the southern arm which retains the name of Cauvery.

3.10 - Mahanadi River Basin

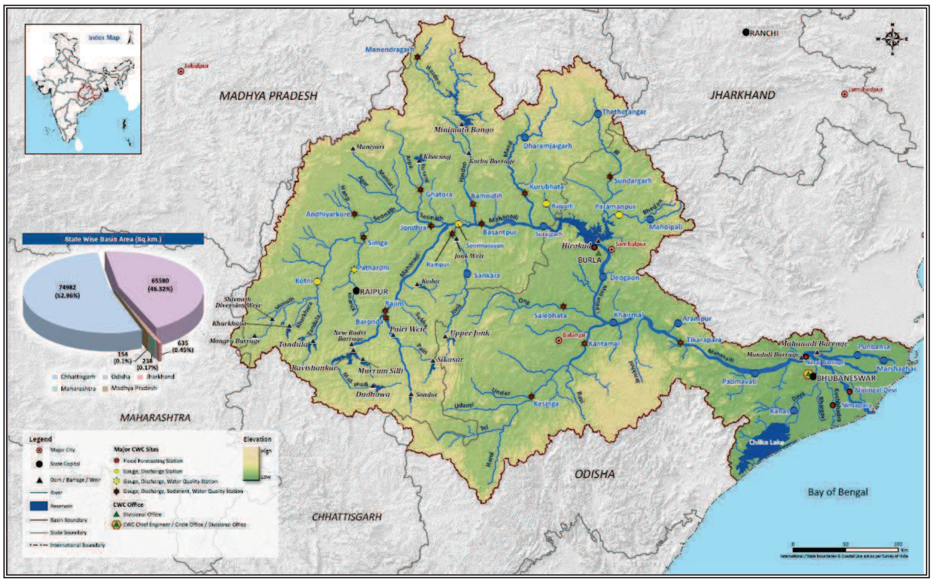


Figure 11: Mahanadi River Basin.

The River Mahanadi is one of the major inter-state east flowing Rivers in peninsular India. In the course of its traverse, it drains fairly large areas of Madhya Pradesh & Odisha and comparatively small areas in the States of Bihar & Maharashtra.

The basin is physically bounded in the north by the Central India hills, in the south and east by the Eastern Ghats and in the West by Maikala Hill Range. The total catchment area of the basin is 1,41,589 km^2. The River Mahanadi originates at an elevation of about 442 m above MSL near Pharsiya village in Raipur district of Madhya Pradesh. The total length of the River from its origin to its out fall into the Bay of Bengal is about 851 kms, of which, 357 kms is in Madhya Pradesh and the remaining 494 kms is in Odisha.

During its traverse, a number of tributaries join the River on both the banks. The important tributaries are the Seonath, the Hasdeo, the Mand, the Ib, the Bhadar, the Jonk, the Ong and the Tel.

3.11 - Subernarekha and Burhabalang River Basin

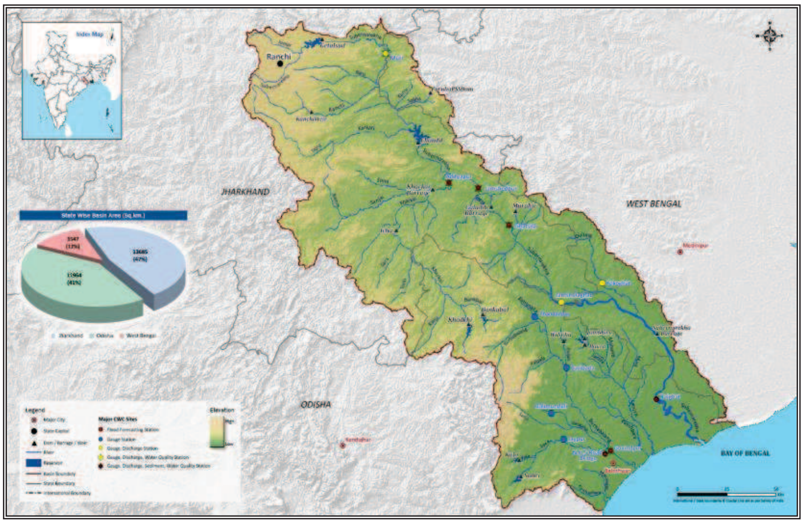
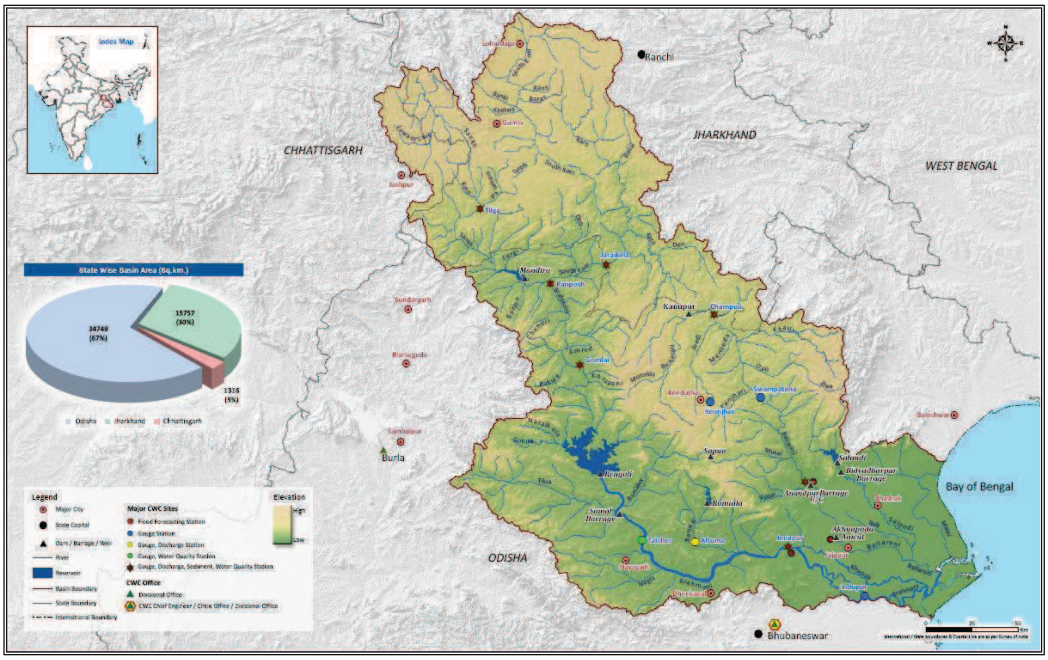


Figure 12: Subernrekha and Burhabalang River Basin.

The Subernarekha & Burhabalang basin extends in an area of 23,751 km^2. The Subernarekha River drains large areas of Bihar and some parts of West Bengal and Odisha and the Burhabalang covers parts of the areas in Mayurbhanj and Balasore districts of Odisha. The basins lie between latitude 21°- 22' N to 23°- 32' N and longitude 85°- 09 E to 87°- 27 E and is situated in the north-east corner of the peninsular India. It is bounded on the north-west b-y the Chhotanagpur Plateau, in the south-west by Brahmani basin, in the south by the Baitarni basin and in the south-east by the Bay of Bengal.

The Subernarekha River originates near Nagri village in Ranchi district of Bihar at an elevation of 600 m. The total length of the River is about 395 kms. The principal tributaries of the River are the Kanchi, the Kharkai and the Karkari. The Burhabalang is a flashy River which originates at an elevation of 800 m and after traversing a distance of 125 kms drops into the Bay of Bengal. The River drains parts of areas in Mayurbhanj and Balasore districts of Odisha.

3.12 - Brahmani and Baitarni Basin



The Brahmani and the Baitarni Rivers are the major inter-state east flowing Rivers amongst the peninsular Rivers in India. The basin is bounded in the north by the Chhotanagpur Plateau, in the north-east by Subernarekha and Burhabalang basin, in the west and south by Mahanadi basin and in the east by the Bay of Bengal. The basin lies in the states of Madhya Pradesh, Jharkhand and Odisha and drains an area of about 51,822 km^2.

The Brahmani, known as the South Koel in the upper reaches, originates near Nagri village in Ranchi district of Jharkhand at an elevation of about 600m. The total length of its run is about 799 kms. The principal tributaries of this River are the Sankh, the Tikra and the Karo. The Baitarani River rises in the hill ranges of Keonjhar District of Odisha near Mankarancho village at an elevation of about 900 m above MSL. On its way, many tributaries join the River from both the banks. Salandi River is the main tributary of the River. The River is flashy in nature having a total length of 355 kms, with the upper reach up to Anandpur in the hilly region.

3.13 - Pennar Basin

Pennar Basin extends over an area of 55,213 km^2 which is nearly 1.7% of the total geographical area of the country. It is bounded on the north by the Erramala Range, on the east by the Nallamala and Velikonda Ranges of the Eastern Ghats, on the south by the Nadidurg Hills and on the west by the narrow ridge separating it from the Vedavati Valley of the Krishna basin. The basin lies in the states of Andhra Pradesh and Karanataka.

Pennar River rises from the Chenna Kesava hills of the Nandi Ranges of Karnataka and flows for about 597 Kms before out-falling into the Bay of Bengal. The principal tributaries of the River are the Kunderu, the Sagileru, the Chitravathi, the Papagni and the Cheyyeru.

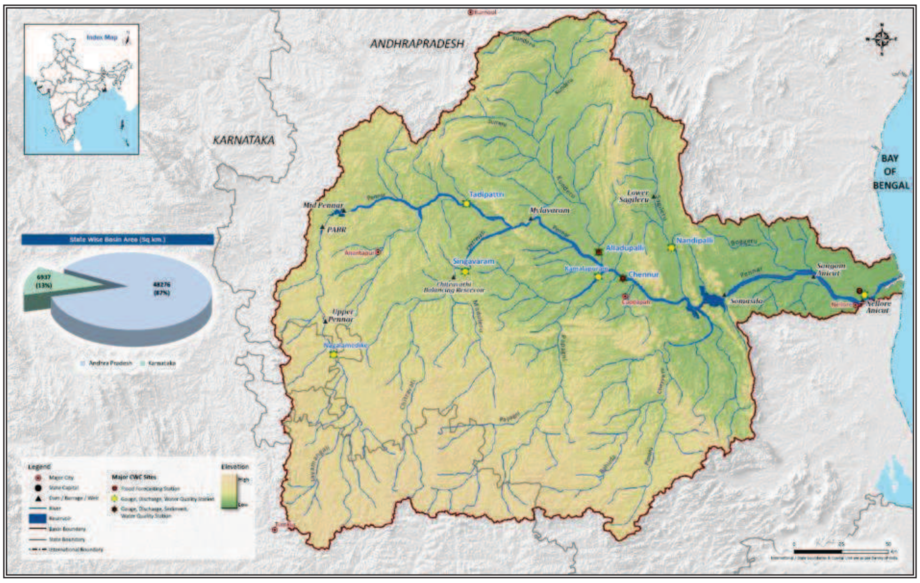


Figure 14: Pennar River Basin.

3.14 - Mahi Basin

The River Mahi is one of the major interstate Rivers of India, draining into the Gulf of Khambhat. The basin is bounded on the north and the north-west by the Aravalli Hills, on the east by the ridge separating it from the Chambal basin, on the south by the Vindhyas and on the west by the Gulf of Khambhat. The basin has a maximum width of about 250 kms. Mahi River originates on the northern slope of Vindhyas at latitude 22°- 35 N and longitude 74°- 58 E near the village of Sardarpur in the Dhar district of Madhya Pradesh at an elevation of 500 m above MSL.

Its length is 583 kms and traverses through the states of Madhya Pradesh, Rajasthan and Gujarat. The Mahi River drains an area of 34,842 km^2. Initially the River flows towards north passing through Dhar and Jhabua districts of Madhya Pradesh State, and then turns left and passes through the Ratlam district of Madhya Pradesh State. There after the river turns to north-west and enters in the Banswara district of Rajasthan and flows in south-western direction and finally enters in the Panchmahal district of the Gujarat State. The River continuously flows in the same direction through Kheda district of Gujarat and finally falls into the Mahi Sagar in the Gulf of Khambhat in the Arabian Sea. The River receives several tributaries on both the banks; some of them are the Som, the Anas and the Panam.

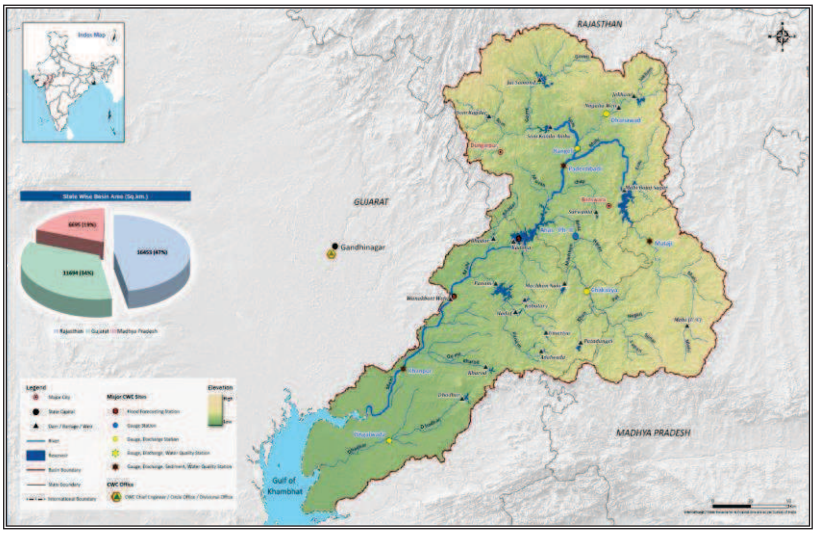


Figure 15: Mahi River Basin.

3.15 - Sabarmati Basin

The Sabarmati is one of the major interstate Rivers in India, which is draining into the Gulf of Khambhat. The basin is bounded by the Aravali Hills in the north and the north-east, by ridge separating it from basins of minor streams and draining into the Rann of Kutch in the west and by Gulf of Khambhat in the south.

The basin has a maximum length of 300 kms and maximum width of 105 kms. It is triangular in shape with the main River as the base and the source of the Watrak as the apex point. It originates in the Aravali Hills at latitude 24°- 40' N and longitude 73°- 20' E in the Rajasthan State at an elevation of 762 m above MSL. The Sabarmati drains with an area of 21, 674 km^2.

The Sabarmati River with its origin in Rajasthan flows generally in south-west direction and after entering in the Gujarat state, it passes through the Dharoi Gorge. Emerging from the gorge it flows through the plains in the same direction and joins the Gulf of Khambhat in the Arabian Sea.

The River is joined by the Wakal, the Harnav and the Hathmathi Rivers from the left bank and the Sei on the right bank, the Hathmathi River is its major tributary. River Sabarmati continuing to flow in south-west direction, the River passes through Ahmedabad. The River is further joined by another major tributary, the Watrak on the left bank before it out-falls in the Gulf of Khambhat.

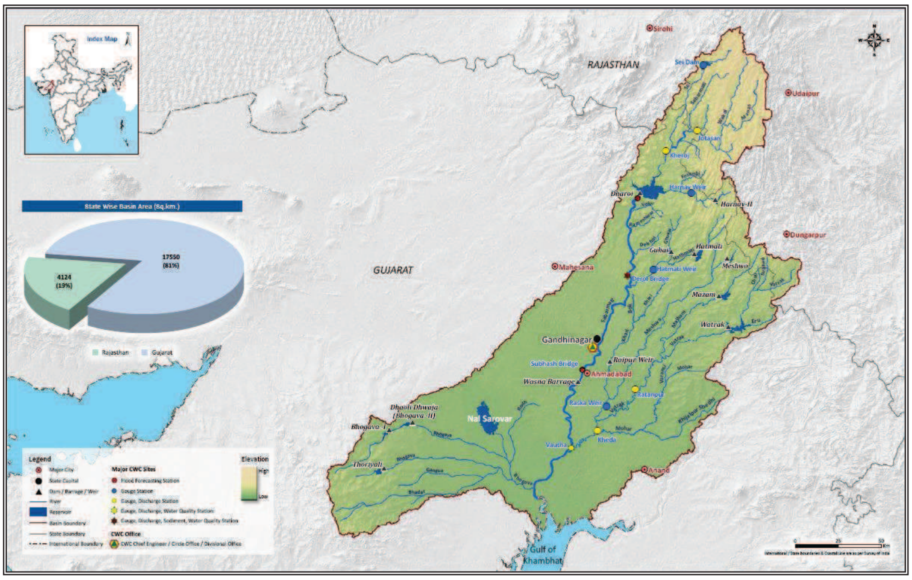


Figure 16: Sabarmati River Basin.

3.16 - West Flowing Rivers Basin from Tapi to Tadri

The West Flowing Rivers Basin between Tapi to Tadri is a composite basin lying in Gujarat and Maharashtra states. The basin consists of a number of small independent River systems of peninsular India. The basin is bounded on the north by Tapi basin, on the east by Western Ghat and on the west by the Arabian Sea.

All the Rivers in the basin originate from Western Ghat and exhibit similar character. The Rivers have steep high banks. Important Rivers in the basin are the Purna, the Ambica, the Damanganga, the Vaitarna, the Ulhas, the Kal, the Gad the Mandovi etc. Brief description of the Rivers is as follows:-

- The River Purna is one of the important western flowing Rivers in Gujarat state. It originates from the Satpura Hill Ranges and after flowing for a length of 142 kms falls in the Arabian Sea. The catchment area of the Purna basin is 2,431 km^2.

- The Damanganga is one of the main westward draining interstate River basins. The River originates at an elevation of 930.5 m in Sahyadri Hills in Nashik district. Majority of its catchment area lies in the state of Maharashtra besides some catchment area lying in the state of Gujarat and the Union Territory of Dadra & Nagar Haveli and Daman. The Damanganga drains an area of 2,318 km^2.

- The River Vaitarna originates from the hilly terrain of Maharashtra at Trimbak, in district Nashik. After running for 120 kms in Maharashtra towards west, it falls in the Arabian Sea. The catchment area of the basin is 3,637 km^2.

- The Ulhas River raises from the Sahyadri hill Ranges in the Raigad district of Maharashtra at an elevation of 600 m above MSL. The total length of this west flowing River from its origin to its out fall into the Arabian Sea is 122 kms The River drains an area of 4,637 km^2 which lies completely in Maharashtra state.

- The Kal River is one of the western flowing Rivers in Maharashtra state. This is a major tributary of the River Savitri. The River rises from the Sahyadri Hill Ranges in the Raigad district of Maharashtra at an elevation of 652 m above MSL. The total length of the River from its origin to its confluence with the Savitri River is 40 Kms. The River drains an area of 670 km^2 which lies completely in the Raigad district.

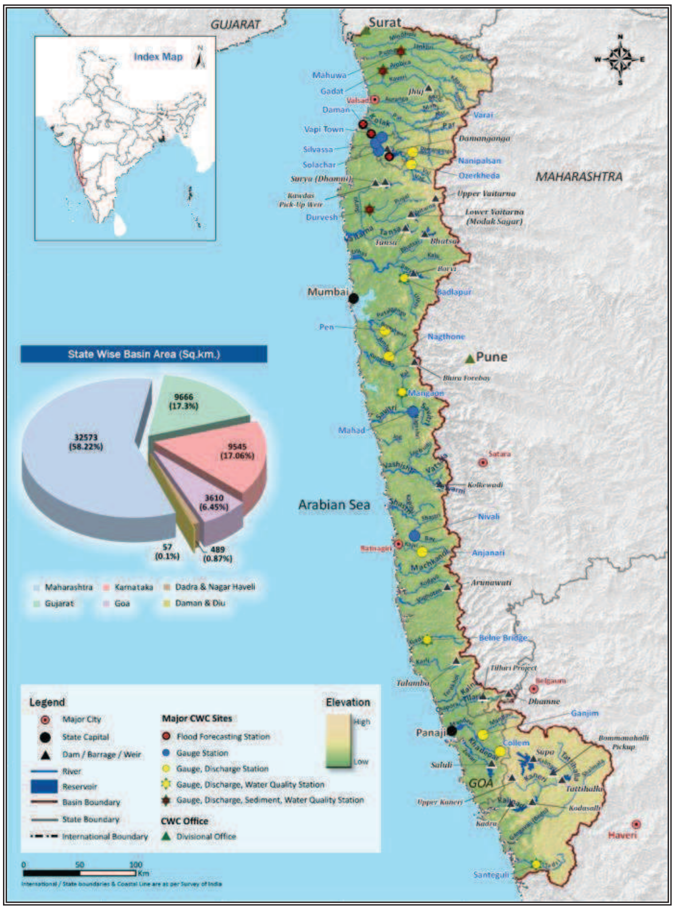


Figure 17: West Flowing Rivers Basin from Tapi to Tadri.

- The Gad River rises from the Sahyadri Hill Ranges in the Sindhudurg district of Maharashtra at an elevation of 600 m above MSL. The total length of the west flowing River from its origin to its out fall into the Arabian Sea is 66 kms The River drains an area of 890 km^2 which lies completely in Sindhudurg district of Maharashtra state.

3.17 - West Flowing Rivers Basin from Tadri to Kanyakumari

The basin extends over states of Kerala, Karnataka, Tamil Nadu and Union Territory of Puducherry having an area of 56,177 km^2 which is 1.73 % of total geographical area of the country with a maximum length and width of 777 km and 135 km. It spreads between 74°25’ to 77°36’ east longitudes and 8°3’ to 14°24’ north latitudes. The basin is bounded by Sahyadri hills on the north, by the Western Ghats on the east, by Indian Ocean on the south and by the Arabian Sea on the west. The major independent rivers (directly draining into Arabian Sea) in the basin are the Varahi, the Netravati, the Payaswani, the Valapattanam, the Chaliyar, the Kadalundi, the Bharathapuzha, the Periyar, the Muvattupula, the Minachil, the Pamba, the Achankovil, the Kallada and the Vamanapuram.

3.18 - WEST Flowing Rivers of Kutch and Saurashtra including Luni

The basin extends over large areas in Rajasthan and Gujarat and covers whole of Diu having an area of 3,21,851 km^2 with maximum length and width of 865 km and 445 km. It lies between 67°52’ to 75°19’ east longitudes and 20°53’ to 26°57’ north latitudes. The basin is bounded by Aravali range and Gujarat plains on the east, by Rajasthan desert on north, and by the Arabian Sea on the south and the west.

Luni is the major river system of the basin and it originates from western slopes of the Aravalli ranges at an elevation of 772 m in Ajmer district of Rajasthan. The total length of the river is 511 km and it drains a total area of 32,879 km^2. The river flows up to Rann of Kutch forming a delta where the water spreads out and does not contribute any runoff. The main tributaries of Luni joining from left are the Lilri, the Guhiya, the Bandi (Hemawas), the Sukri, the Jawai, the Khari Bandi, the Sukri Bandi and the Sagi whereas the Jojri joins it from right. Other independent rivers of the basin are the Shetrunji, the Bhadar, the Machhu, the Rupen, the Saraswati and the Banas. The Shetrunji drains into the Gulf of Khambhat, the Bhadar outfalls into Arabian Sea, and the Machhu, the Rupen, the Saraswati and the Banas drains into Little Rann of Kutch.

3.19 - EAST Flowing Rivers between Mahanadi and Pennar

The basin spreads over states of Andhra Pradesh and Odisha having an area of 86,643 km^2 and stretches between 78°40’ to 85°1’ east longitudes and 14°34’ to 20°22’ north latitudes. It is bounded by the Eastern Ghats on the north and west, by Nallamala Range and Andhra plains on the south and by the Bay of Bengal on the east. This composite basin comprises of three river systems. The river systems between Mahanadi and Godavari covers an area of 49,685 km^2 and the river systems between Krishna and Pennar extends over an area of 24,669 km^2. In addition, there is also a small area between Godavari and Krishna drained mainly by the small stream of Palleru. This minor portion of the basin has an area of about 12,289 km^2.

The independent rivers (directly draining into Bay of Bengal) in the basin from north to south are the Rushikulya, the Bahuda, the Vamsadhara, the Nagavali, the Sarada, the Varaha, the Tandava, the Eluru, the Gundlakamma, the Musi, the Paleru and the Manneru.

3.20 - EAST Flowing Rivers between Pennar and Kanyakumari

The basin extends over states of Tamil Nadu, Andhra Pradesh, Karnataka and Union Territory of Puducherry having a total area of 1,00,139 km^2 and accounts for 3.08% of the total geographical area of the country. The basin extends between 77°1’ to 80°17’ east longitudes and 8°11’ to

14°27' north latitudes. It is bounded by the Eastern Ghats on the north, by Tamil Nadu uplands on the west, by the Indian Ocean on the south and by the Bay of Bengal on the east.

The composite basin comprises of the river systems between Pennar and Cauvery having an area of 65,049 km^2 and the river systems between Cauvery and Kanyakumari with an area of 35,090 km^2. The independent rivers (directly draining into Bay of Bengal) are the Kandleru, the Swarnamukhi, the Arani, the Korttalaiyar, the Cooum, the Adyar, the Palar, the Gingee, the Ponnaiyar, the Vellar, the Varshalei, the Vaigai, the Gundar, the Vaippar and the Tambraparni.

4. RIVER WATER MONITORING BY CWC

Central Water Commission is monitoring River water quality at 429 key locations covering all the major River basins of India. The details of basin wise water quality stations are given below. The basin wise WQ stations monitored by Central Water Commission are depicted in Table 3.

Table 3: Basin-wise Water Quality Stations of Central Water Commission

Sr.	Name of the Basin	Type of Stations			Total
		GDQ	GDSQ	GQ	
1	Brahmaputra/Meghna/Barak Basin	16	26	21	63
2	Brahmani-Baitarni Basin	0	9	0	9
3	Cauvery Basin	18	15	0	33
4	East Flowing Rivers between Mahanadi and Pennar	0	5	0	5
5	East Flowing Rivers between Pennar and Kanyakumari	18	8	0	26
6	Ganga	34	83	4	121
7	Godavari Basin	4	29	2	35
8	Indus Basin	3	6	0	9
9	Krishna Basin	11	21	1	33
10	Mahanadi Basin	1	18	0	19
11	Mahi Basin	1	3	0	4
12	Narmada Basin	7	11	0	18
13	Sabarmati Basin	2	2	0	4
14	Subernarekha Basin	1	4	0	5
15	Tapi Basin	1	3	0	4
16	WFR from Tapi to Tadri	4	3	1	8
17	WFR from Tadri to Kanyakumari	11	17	0	28
18	WFR of Kutchh & Saurashtra	2	3	0	5
	Total	134	266	29	429

Note: GQ = Gauge & Water Quality; GDQ= Gauge, discharge & Water Quality; GDSQ= Gauge, Discharge, Sediment & Water Quality

The State wise WQ stations monitored by Central Water Commission are depicted in Table 4.

Table 4: State wise Water Quality Stations of Central Water Commission

S.No	Name of the Basin	Type of Station			
		GDQ	GDSQ	GQ	Grand Total
1	Andhra Pradesh	13	14	1	28
2	Arunachal Pradesh	2	1	4	7
3	Assam	7	17	17	41
4	Bihar	4	14	-	18
5	Chhattishgarh	1	16	-	17
6	Delhi	1	1	-	2
7	Gujarat	5	10	-	15
8	Haryana	-	1	-	1
9	Himachal Pradesh	2	2	-	4
10	Jammu & Kashmir	3	4	-	7
11	Jharkhand	3	6	1	10
12	Karnataka	18	17	-	35
13	Kerala	4	17	-	21
14	Madhya Pradesh	11	23	-	34
15	Maharashtra	6	26	1	33
16	Meghalaya	5	-	-	5
17	Odisha	-	19	-	19
18	Pondicherry	3	-	-	3
19	Rajasthan	3	7	-	10
20	Tamilnadu	20	15	-	35
21	Tripura	-	1	-	1
22	Uttar Pradesh	14	34	2	50
23	Uttarakhand	3	6	-	9
24	West Bengal	6	18	-	24
	Grand Total	**134**	**268**	**26**	**429**

5. REVIEW OF TRACE & TOXIC METALS

Heavy metals are one of the most widespread causes of pollution both in water and the soil; Further, increasing levels of these metals concentration in the environment is causing serious concern in public opinion owing to the toxicity shown by most of them. Heavy metals are usually defined as metals with high atomic number, atomic weight and a density greater than 5.0 g/cm^3, but in the literature it is possible to find so many different definitions. Recently, International Union of Pure and Applied Chemistry (IUPAC) defined the term “heavy metal” as a confusing and misleading one. Generally speaking, metals are natural components of the Earth’s crust and some of them (e.g. copper, selenium, and zinc) are essential as trace elements to maintain the metabolism of the human body although at higher concentrations, they may show toxic effects. Many other metals (e.g. mercury, cadmium, lead, etc.) have direct toxic effects on human health. Owing to their chemical characteristics, metals remain in the environment, in many cases only changing from one chemical state to another one and eventually accumulating in the food chain. These pollutants enter the environment through a variety of human activities such as mining, refining and electroplating industries. The effluents produced by these industries contain a variety of heavy metals such as cadmium, copper, chromium, nickel, lead and zinc, subsequent release of these effluents into water bodies may significantly contribute to the increment in loads of toxic heavy metals in aquatic environments. Because of their highwater solubility, heavy metals can be easily absorbed by living organisms and, due to their mobility in natural water ecosystems and their toxicity to living forms, have been ranked as major inorganic contaminants in surface and ground waters. Even if they may be present in dilute, almost undetectable quantities, their recalcitrance to degradation and consequent persistence in water bodies imply that, through natural processes such as bio-magnification, their concentration may become elevated to such an extent that they begin exhibiting toxic effects. Out of the 35 metals considered dangerous for human health, 23 have been defined as heavy metals: antimony, arsenic, bismuth, cadmium, cerium, chromium, cobalt, copper, gallium, gold, iron, lead, manganese, mercury, nickel, platinum, silver, tellurium, thallium, tin, uranium, vanadium, and zinc. However, the major lethal effects to human health caused by these heavy metals are associated with exposure to lead, cadmium, mercury and arsenic (this element is a metalloid but it is usually defined as a heavy metal). Large amounts of any of these metals may cause acute or chronic toxicity (poisoning), resulting in damaged or reduced mental and central nervous functions, modify blood composition, damage the lung, kidney, liver, and other vital organs.

Long-term exposure to the above-mentioned heavy metals may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer’s disease, Parkinson’s disease, muscular dystrophy and multiple sclerosis. Allergies are not uncommon and repeated long term contact with some metals or their compounds may even cause cancer. Heavy metals may enter the human body through food, water and air, or it may be absorbed through the skin when they enter into contact with humans in agriculture and in manufacturing, pharmaceutical, industrial or residential settings. Although several adverse health effects of heavy metals have been known since a long time, exposure to these metals is continuing and even increasing in some parts of the world. Thus, the control of heavy metal dumplings and the removal of toxic heavy metals from waters has become a challenge for the twenty-first century.

6. METAL TOXICITY:

Important issues related to selected toxic metals like occurrences in nature, sources of water pollution, toxic effects etc. are described here under:

6.1 - Toxicity of Arsenic

Arsenic is ubiquitous and ranks 20th in natural abundance, comprising about 0.00005% of the earth's crust, 14th in the seawater, and 12th in the human body (Mandal and Suzuki, 2002). Arsenic occurs in the environment in rocks, soil, water, air and in biota.

The element occurs in the environment in different oxidation states e.g. As as As(V), As(III), As(0) and As(-III). The chemical forms and oxidation states of arsenic are more important as regards to toxicity. Generally, inorganic forms are more toxic and mobile than organo-arsenic species, while arsenite is considered to be more toxic than arsenate. It has been reported that As(III) is 4 to 10 times more soluble in water than As(V) (Squibb and Fowler 1983; Xu et al. 1988; Lambe and Hill 1996; US EPA, 2002). Moreover, it has been found that As(III) is 10 times more toxic than As(V) and 70 times more toxic then Mono Methyl Arsonate {MMA(V)} and Di Methyl Arsinate {DMA(V)}. However, the trivalent methylated arsenic species, i.e., MMA(III) and DMA(III) have been found to be more toxic than inorganic arsenic because they are more efficient at causing DNA breakdown (Styblo et al. 2000; Dopp et al. 2004). Arsenic enters the human body through ingestion, inhalation or skin absorption. Most ingested and inhalated arsenic is well absorbed through the gastrointestinal tract and lung into the bloodstream.

People drinking arsenic contaminated water generally show arsenical skin lesions, which are a late manifestation of arsenic toxicity. Long term exposure to arsenic contaminated water may lead to various diseases such as conjunctivitis, hyperkeratosis, hyperpigmentation, cardiovascular diseases, disturbance in the peripheral vascular and nervous systems, skin cancer, gangrene, leucomelonisis, non pitting swelling, hepatomegaly and splenomegaly (Kiping, 1977; WHO, 2001; Pershagen, 1983). Chronic symptoms caused by a long exposure to As are unspecific (weight loss, chronic weakness) but a long exposure provokes arsenicosis, cardiovascular diseases, skin lesions among other organ function disorders (Bissen and Frimmel 2003). Arsenicosis is a chronic illness resulting from drinking water with high As level over a long period of time (Kapaj et al. 2006). The effects on the lungs, uterus, genitourinary tract and other parts of the body have been detected in the advance stages of arsenic toxicity. Besides, high concentrations of arsenic in drinking water also result in an increase in stillbirths and spontaneous abortions (Csanady and Straub, 1995).

6.2 - Toxicity of Cadmium

Cadmium is an element that occurs naturally in the earth's crust. It is uniformly distributed in the Earth's crust, where it is estimated to be present at an average concentration of between 0.10 and 0.50 µg/L. Cadmium occurs in nature in the form of various inorganic compounds and as complexes with naturally occurring chelating agents; organo-cadmium compounds are extremely unstable and have not been detected in the natural environment. Cadmium is produced during extraction of zinc and is used in plating industry, pigments, in manufacture of plastic material, batteries and alloys. The water is contaminated with cadmium by industrial discharge, leaches from land filled area. Drinking water is generally contaminated with galvanized iron pipe, plated plumbing fitting of the water distribution pipes.

Cadmium ranks next to mercury in its toxicity. Exposure at low levels usually does not produce immediate health effects, but may cause severe health problems over long periods. The gastrointestinal tract is the major route of Cd uptake in both humans and animals. Cadmium is toxic to humans, animals, micro-organisms and plants, however only a small amount of cadmium intake is absorbed by the body and will be stored mainly in bones, liver and, in case of chronic exposure, in kidneys. In the last few years there have been some evidences that relatively low cadmium exposure may give rise skeletal damage due to low bone mineral density (osteoporosis) and fractures. The toxicity of the metal lies in that, after absorption, it accumulates in soft tissues. Animal tests have shown that cadmium may be a risk factor for cardiovascular disease (Jarup, 2003). For acute exposure, absorbed cadmium can cause symptoms such as salivation, difficulty in breathing, nausea, vomiting, a pain, anemia, kidney failure, and diarrohea. Inhalation of cadmium dust or smoke may cause dryness of the throat, headache, chest pain, coughing, increased uneasiness and bronchial complications (Lu et al., 2007). The adverse health effects caused by ingestion or inhalation of Cd include renal tubular dysfunction due to high urinary Cd excretion, high blood pressure, lung damage and lung cancer.

Furthermore, cadmium accumulation in animals and humans occurs throughout their life spans. The sites of greatest cadmium accumulation are the liver and kidney. After inhalation or absorption from the gastrointestinal, cadmium is concentrated in the kidney, where its half-life may exceed 10 to 20 years. One of the most widely known toxic effects manifested by Cd poisoning is nephro-toxicity. Adverse renal effects are more commonly seen with exposure to low levels of Cd. The effects are manifested by excretion of low-molecular-weight plasma proteins, such as β2-microglobulin and retinol-binding protein (RBP). The widely reported Cd poisoning ***itai-itai byo*** episode occurred in Japan after World War II. In Japan cadmium from mining and refinery factories polluted Jinzo River water which was used for irrigation purpose. The rice grown on such cadmium accumulated fields, which the humans consumed through water and food chain affected by ostomolacia and skeletal deformation. There was sever pain in body and joints and the people cried *ITAI –ITAI* (it hurts-it hurts).

6.3 - Toxicity of Chromium

Chromium can exist in valencies from -2 to 6 but it present in the environment mainly as trivalent or hexavalent state. Trivalent chromium (Cr [III]) is the most common naturally occurring state; most soils and rocks contain small amounts of chromic oxide (Cr_2O_3). Hexavalent chromium (Cr[VI]) occurs frequently in nature as chromates (CrO_4^{2-}) and dichromates ($Cr_2O_7^{2-}$) which are generally obtained from industrial and domestic emissions. Chromium is considered as an essential nutrient and a health hazard because Cr exists in more than one oxidation state. Specifically, Cr in oxidation state +6, written as Cr(VI), is considered harmful even in small intake quantity (dose) whereas Cr in oxidation state +3, written as Cr(III), is considered essential for good health in moderate intake. Chromium (III) is an essential nutrient for humans and shortages may cause heart conditions, disruptions of metabolisms and diabetes. Trivalent chromium is necessary for the synthesis of fat from glucose and also for the oxidation of fat to carbon dioxide. But the uptake of too much chromium (III) can cause health effects as well, for instance (NAS, 1974; NRCC, 1976; Chromium, Canada.ca, 1986).

Chromium (VI) is a danger to human health, mainly for people who work in the steel and textile industry. People who smoke tobacco also have a higher chance of exposure to chromium. Chromium (VI) is known to cause various health effects. When it is a compound in leather products, it can cause allergic reactions, such as skin rash. After breathing in, chromium (VI) can cause nose irritations and nosebleeds. Other health problems that are caused by chromium (VI) are:

- Skin rashes
- Upset stomachs and ulcers
- Respiratory problems
- Weakened immune systems
- Kidney and liver damage
- Alteration of genetic material
- Lung cancer
- Death

The health hazards associated with exposure to chromium are dependent on its oxidation state. The metal form (chromium as it exists in this product) is of low toxicity and the hexavalent form is toxic. Adverse effects of the hexavalent form on the skin may include ulcerations, dermatitis, and allergic skin reactions. Inhalation of hexavalent chromium compounds can result in ulceration and perforation of the mucous membranes of the nasal septum, irritation of the pharynx and larynx, asthmatic bronchitis, bronchospasms and edema. Respiratory symptoms may include coughing and wheezing, shortness of breath and nasal itch (lenntech.com-Cr).

Hexavalent chromium is toxic to plants and animals. It causes yellowing of leaves of wheat and paddy. Maximum permissible limit of chromium in drinking water as recommended by WHO is 0.05 mg/L.

6.4 - Toxicity of Copper

Copper is an essential micronutrient (Underwood 1977; Goyer 1991). The Food and Nutrition Board (FNB) recommends dietary copper intake for adults of 1.53 mg/day (NRC, 1989). Three major valence states: copper metal Cu(0), Cu(I) and Cu(II). Copper is commonly found in ores. Copper occurs in nature as the metal and in minerals, most commonly cuprite (Cu_2O) and malachite ($Cu_2CO_3(OH)_2$). The principal copper ores are sulphides, oxides, and carbonates.

Copper is both essential and toxic to living systems. As an essential metal, copper is required for adequate growth, cardiovascular integrity, lung elasticity, neovascularization, neuroendocrine functions, and iron metabolism. An average adult human ingests about 1 mg of copper per day in the diet; about half of which is absorbed (Harris 1997). Copper is obligatory for enzymes involved in aerobic metabolism, such as cytochrome oxidase in the mitochondria, lysyl oxidase in connective tissue, dopamine mono-oxygenase in brain, and ceruloplasmin. As a co-factor for apo-copper-zinc superoxide dismutase (apoCuZnSOD), copper protects against free-radical damage to proteins, membrane lipids, and nucleic acids in a wide range of cells and organs. Severe copper deficiencies, either gene defects due to mutations or low dietary copper intakes, although relatively rare in humans, have been linked to mental retardation, anemia, hypothermia, neutropenia, diarrhea, cardiac hypertrophy, bone fragility, impaired immune function, weak connective tissue, impaired central-nervous-system (CNS) functions, peripheral neuropathy, and loss of skin, fur (in animals), or hair color (CCREM, 1987; Linder and Goode 1991; Uauy et al. 1998; Cordano 1998; Percival 1998).

Long-term exposure to copper can cause irritation of the nose, mouth and eyes and it causes headaches, stomachaches, dizziness, vomiting and diarrhea. Intentionally high uptakes of copper may cause liver and kidney damage and even death. Whether copper is carcinogenic has not been determined yet. There are scientific articles that indicate a link between long-term exposure to high concentrations of copper and a decline in intelligence with young adolescents. Whether this should be of concern is a topic for further investigation. Industrial exposure to copper fumes, dusts, or mists may result in metal fume fever with atrophic changes in nasal mucous membranes. Chronic copper poisoning results in *Wilson's Disease*, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea. (Schroeder,1966; Hoogenraad 1978; CCREM, 1987).

Excess amount of copper sulphate also shows detrimental effect on botanical environment. Copper in ionic form is very toxic to the photosynthesis of the green algae, Chlorella pyrenoidosa and the diatom, Nitzchiz palea in concentrations of copper normally found in natural waters. Copper accumulates progressively in soils where copper fungicides are used, particularly in vineyards and orchards, which are spread repeatedly. Thus, it is seen that though copper is essential of life and health, its deficiency or excesses both cause adverse effects.

6.5 - Toxicity of Iron

Iron is essential to almost all living things, from micro-organisms to humans. Iron is the fourth most abundant element in the earth's crust and the most abundant heavy metal; it is present in the environment mainly as Fe (II) or Fe (III). Iron is generally present in surface waters as salts containing Fe (III) when the pH is above 7. Most of those salts are insoluble and settle out or adsorbed onto surfaces; therefore, the concentration of iron in well-aerated waters is seldom high. Under reducing conditions, which may exist in groundwater, some lakes or reservoirs, and in the absence of sulphide and carbonate, high concentrations of soluble Fe(II) may be found. The presence of iron in natural waters can be attributed to the weathering of rocks and minerals, acidic mine water drainage, landfill leachates, sewage effluents and iron-related industries (Hem, 1972; DNHW, 1983; CCREM, 1987).

Iron, an essential element in human nutrition, is an integral component of cytochromes, porphyrins and metalloenzymes. Dietary iron requirements vary according to sex and age; older infants, children and women of menstrual age are most vulnerable to iron deficiency. Iron is an essential constituent in plant metabolism. It is indispensable for the synthesis of chlorophyll in green plants, although it does not enter in the constituent of the chlorophyll molecules. Most of the iron in plants is present as a constituent of organic molecules, enzymes and carries catalase, peroxide and cyto-chromes which play important role in cellular metabolism. Iron is indispensable for the synthesis of chlorophyll molecules. Deficiency of iron in plants causes chlorosis. It is one of the most immobile elements in plants (DNHW, 1983; CCREM, 1987).

Iron is also widely distributed in human body where it exists in the ionic (loosely bound, inorganic iron) and nonionic (tightly bound organic form) state. It is also a constituent of hemoglobin molecule. It is more often suggested that iron deficiency predispose children to lead poisoning. Deficiency of iron with other trace elements is the cause of pica (a morbid appetite for unusual or unfit food, as clay, chalk, ashes, bricks etc., showing itself especially in hysteria, pregnancy and chlorosis). Iron deficiency also affects the transport of lead to the tissue. According to Dr. Ronald Hoffman, depending upon the age, sex and body weight, minimum daily requirement of iron varies from 6 mg/day to 30 mg/day. Following are the recommendations for intakes of iron, according to Dr. Hoffman:

- Infants upto 6 months require 6 mg/day.
- From 6 months to 1 year, 10 mg/day is required.
- Children age 1 to 10 years, require 10 mg/day.
- Males age 11 to 18 years, require 12 mg/day.
- Males age 19 to 51+ years, require 10 mg/day.
- Females age 11 to 50 years, require 15 mg/day.
- Females over 51 years, require 10 mg/day.
- Pregnant women require 30 mg/day.
- Lactating women require 15 mg/day.

Thus while normal amount of iron is essential, the normally large amount adversely affects the human system, which may result in haemochromatosis. Iron absorption is enhanced by heme, ascorbic acid, amino acids and inhibited by tannins, calcium, phosphate, phytic acid and fibers. Although the human body contains only about 0.004% iron, this element plays a central role in the life processes. As a constituent of the respiratory pigment haemoglobin, iron is essential for the functioning of every organ and tissue of the human body. Over half of the iron is present in the form of haemoglobin; the remaining iron is stored mainly in the liver. Nutritional anaemia is one of the most prevalent deficiency diseases throughout the world. Although anaemia may result from many different causes, the form most frequently encountered is iron deficiency anaemia (Tsai, 1975). Anaemia is a major health problem in India, with over half of ever-married woman having the condition. The problem clearly requires immediate attention and intervention (Ming, 2005).

Iron usually exists in natural water both in ferric and ferrous form. The form of iron however may be altered as a result of oxidation or reduction due to the growth of bacteria in the water during storage, usually the ferric form is predominant in the most of the natural waters. Iron in water may be either in true solution or in a colloidal state or in the form of relatively coarse suspended particles. The iron determination is helpful in assessing the extent of corrosion and aiding in the solution of these problems. Research on corrosion and methods of corrosion control requires the use of many types of tests to evaluate the extent of metal loss. The most important one of them is the iron determination (Sawyer, 1978). In drinking water 0.3 mg/L is the highest desirable limit and 1 mg/L the maximum permissible limit of iron in absence of alternative sources.

6.6 - Toxicity of lead

Lead is the most common in the heavy elements. Several stable isotopes exist in nature, ^{208}Pb being the most abundant. Lead is used mainly in the production of lead-acid batteries, solder and alloys. The organo-lead compounds tetraethyl and tetramethyl lead have also been used extensively as antiknock and lubricating agents in petrol, although their use for these purposes in many countries is being phased out. Owing to the decreasing use of lead containing additives in petrol and of lead containing solder in the food processing industry, concentrations in air and food are declining, and intake from drinking water constitutes a greater proportion of total intake (Greenwood & Earnshaw, 1984; RSC, 1986; CCREM, 1987; Ming, 2005)

Lead toxicity has been known for over two thousand years. The early Greeks used Pb as a glazing for ceramic pottery and became aware of its harmful effects when it was used in the presence of acidic foods. Researchers suggest that some Roman emperors became ill and even died as a result of Pb poisoning from drinking wines contaminated with high levels of Pb.

Lead is found in all human tissues and organs though it is not needed nutritionally. It is known as one of the systemic poisons because, once absorbed into the circulation it will distribute throughout the body, where it affects various organs and tissues. It inhibits hematopoiesis (formation of blood or blood cells) because it interferes with heme synthesis, and Pb poisoning may cause anaemia. Pb also affects the kidneys by inducing renal tubular dysfunction. This, in turn, may lead to secondary effects. Effects of Pb on the gastrointestinal tract include nausea, anorexia, and severe abdominal cramps (lead colic) associated with constipation. Pb poisoning is also manifested by muscle aches and joint pain, lung damage, difficulty in breathing, and diseases such as asthma, bronchitis, and pneumonia. Pb poisoning can also damage the immune system, interfering with cell maturation and skeletal growth. Pb can pass the placental barrier and may reach the fetus, causing miscarriage, abortions and stillbirths (Ming, 2005)..

According to the CDC, lead poisoning is the most common and serious environmental disease affecting young children. Children are much more vulnerable to Pb exposure than adults because of their more rapid growth rate and metabolism. Pb absorption from the gastrointestinal tract in children is also higher than in adults (25% vs. 8%), and ingested Pb is distributed to a smaller tissue mass. Children also tend to play and breathe closer to the ground, where Pb dust concentrates. One particular problem has been the Pb poisoning of children who ingest flakes of lead-based paint. This type of exposure accounts for as much as 90% of childhood Pb poisoning. The main health concern in children is retardation and brain damage. High exposure may be fatal (USNRC, 1980; Ryan, et al., 2004; Ming, 2005)

Plants grown in lead mining area are known to accumulate high levels of lead. Plants near highways accumulate atmospheric dust containing Pb as foliar deposits, from the combustion of petrol as well as absorb if from soil.

6.7- Toxicity of Nickel

Nickel is the 24th most abundant element (twice as Cu) and comprises approximately 0.008% of the content of the earth's crust; hence, it is a natural component of soil (parent material) and water (Alloway 1995; Hostynek and Maibach 2002; Hedfi et al. 2007). It is the 5th most abundant element in the biosphere, Ni was only discovered through the mining of other metals. Its principal ores are nickelite (NiAs), millerite (NiS), and pentlandite ([Ni, Fe]S).

Nickel is released into the environment from a variety of natural and anthropogenic sources. Among industrial sources, a considerable amount of environmental Ni derives from the combustion of coal, oil, and other fossil fuels. Other industrial sources that contribute to nickel emissions are mining and refining processes, nickel alloy manufacturing (steel), electroplating, and incineration of municipal wastes (Sharma 2005; Ensink et al. 2007). Wastewater from municipal sewage treatment plants also contributes to environmental metal accumulation (van der Hoek et al. 2002).

In small quantities nickel is essential, but when the uptake is too high it can be a danger to human health. Humans may be exposed to nickel by breathing air, drinking water, eating food or smoking cigarettes. Skin contact with nickel-contaminated soil or water may also result in nickel exposure. The most common type of Ni exposure for the public is through direct skin contact with Ni plating. $Ni(CO)_4$ gas is the most toxic out of the Ni compounds and it is the first to cause deaths in refineries. The immediate symptoms included headaches, nausea, weakness, dizziness, vomiting, and epigastric pain. There was a latency period of 1 to 5 days, followed by secondary symptoms which included chest constriction, chills and sweating, shortness of breath, coughing, muscle pains, fatigue, gastrointestinal discomfort and in severe cases, convulsions and delirium.

Nickel fumes are respiratory irritants and may cause pneumonitis. Exposure to nickel and its compounds may result in the development of a dermatitis known as “nickel itch” in sensitized individuals. The first symptom is usually itching, which occurs up to 7 days before skin eruption occurs. The primary skin eruption is erythematous or follicular which may be followed by skin ulceration. Nickel sensitivity once acquired appears to persist indefinitely. High level occupational exposure has been associated with renal problems, vertigo and dyspnoea (Commission of European Communities, 1976). Nickel and certain nickel compounds have been listed by the National Toxicology Program (NTP) as being reasonably anticipated to be carcinogens. The International Agency for Research on Cancer (IARC) has listed nickel compounds within group 1 (there is sufficient evidence for carcinogenicity in humans) and nickel within group 2B (agents which are possibly carcinogenic to humans).

6.8- Toxicity of Zinc

Zinc is the twenty-fifth most abundant element. It is widely found in nature and makes up 0.02% by weight of the earth’s crust (Budavari, 1989). Zinc normally appears dull grey owing to coating with an oxide or basic carbonate. It is extremely rare to find zinc metal free in nature (Beliles, 1994). The major source of zinc is sphalerite, smithsonite, hemimorphite and franklinite. The largest natural emission of zinc to water results from erosion. Natural inputs to air are mainly due to igneous emissions and forest fires. Anthropogenic and natural sources are of a similar magnitude. The main anthropogenic sources of zinc are mining, zinc production facilities, iron and steel production, corrosion of galvanized structures, coal and fuel combustion, waste disposal and incineration, and the use of zinc-containing fertilizers and pesticide (Ming, 2005).

Zinc is an essential element for both animals and man which is necessary for the functioning of various enzyme systems. Nutritional zinc deficiency in humans has been reported in a number of countries. In Egypt endemic zinc deficiency syndrome among young men has been reported (Prasad, et al., 1961; Halsted et al., 1972). This syndrome having characters of retarded growth, signs of immaturity and anemia is probably caused by low intestinal absorption of zinc. Its complete cure was observed by administration of large doses of zinc sulfate.

Acute toxicity arises from the ingestion of excessive amounts of zinc salts, either accidentally or deliberately as an emetic or dietary supplement. Vomiting usually occurs after the consumption of more than 500 mg of zinc sulfate. Mass poisoning has been reported following the drinking of acidic beverages kept in galvanized containers; fever, nausea, vomiting, stomach cramps and diarrhea occurred 3–12 h after ingestion. Food poisoning attributable to the use of galvanized zinc containers in food preparation has also been reported; symptoms occurred within 24 h and included nausea, vomiting, and diarrhea, sometimes accompanied by bleeding and abdominal cramps (ATSDR, 2003).

Symptoms of zinc toxicity in humans include vomiting dehydration, electrolyte imbalance, abdominal pain, nausea lethargyness, dizziness and lack of muscular co-ordination (Prasad and Oberleas, 1976). Acute renal failure caused by zinc chloride has also been reported (Csata, 1968). Zinc unlike Hg, Pb or Cd is an essential trace element for organism and plays a vital role in the physiological and metabolic processes of many organisms. However, zinc can be toxic to the organisms in high concentrations (Kapaj, 2006).

Zinc is an essential trace element for plants and animals including human begins and it plays vital role in metabolic processes. The most common effect of zinc poisoning in human are non fatal 'metal fume' fever caused by inhalation of zinc oxide fumes and illness arising from the ingestion of acidic foods prepared in zinc galvanized containers. Particularly, zinc chloride in Zn salts produce dermatitis upon contact with the skin (ATSDR, 2003).

7. WATER QUALITY CRITERIA

As it is a well-known fact that the sources of usable water on the earth are limited, any kind of pollution in such sources will further reduce its availability. Polluted water cannot be utilized for drinking because of its inherent health risk. Water with high salt contents is not suitable for agriculture and most industries. The quality of water also interferes with the aesthetic and economic pursuits of water bodies by affecting marine and fresh water life. However, the water which is not suitable for irrigation may be quite suitable for industrial cooling. Every use of water requires a certain minimum quality standards with regards to the presence of dissolved and suspended materials of both chemical and biological nature. The desirable quality of water ensures no harm to the user.

To maintain the minimum quality standard for diverse user has led to the formulation of water quality criteria and water quality standards. Water quality criteria can be considered as specific requirements on which a decision or judgment to support a particular use will be based. The criteria for the various uses are developed based on the experimental data and our current knowledge of the health, ecology and other issues and assessing its overall economical effect these are not a set of fixed values, but subject to modification as the scientific data get updated and more and more knowledge is gathered. The term standard applies to any definite principle or measure established by an authority by limiting concentration of different constituents in water to ensure the safe use of water and safeguard the environment.

7.1 - Drinking Water Standards

In view of the direct consumption of water by human beings, the domestic water supply is considered to be most important use of water and drinking use has been given first priority on utilization of water resource in the National Water Policy. In India, agencies like the Bureau of Indian Standards (BIS) and Indian Council of Medical Research (ICMR) have formulated drinking water standards. The World Health Organization (WHO) has also laid down drinking water standards, which are considered as international standards. Drinking water standards for trace and toxic metals according to BIS code 10500-2012 are given below in table 5.

Table 5: Drinking Water Standards for Trace & Toxic metals (BIS-10500-2012)

Sr.	Toxic metal	Requirement (Acceptable Limit)		Permissible Limit in the Absence of Alternative Source	
		(mg/L)	(µg/L)	(mg/L)	(µg/L)
1	**Total arsenic as As**	0.01	10	0.05	50
2	**Cadmium as Cd**	0.003	3	No relaxation	
3	**Total Chromium as Cr**	0.05	50	No relaxation	
4	**Copper as Cu**	0.05	50	1.5	1500
5	**Iron as Fe**	0.30	300	No relaxation	
6	**Lead as Pb**	0.01	10	No relaxation	
7	**Mercury as Hg**	0.001	1	No relaxation	
8	**Nickel as Ni**	0.02	20	No relaxation	
9	**Zinc as Zn**	5	5000	15	15000

Regulatory Limits of Heavy Metals US Environmental Protection Agency (US EPA)

Several types of toxic heavy metals frequently pollute surface water bodies and their maximum permissible limits according to WHO and US EPA are presented in Table 6. These limits are mandatory for all water supply systems. Naturally occurring water (both surface and groundwater) frequently contains some of these heavy metals at concentrations 100 or 1000 times more than the prescribed MCL values. Since these heavy metals are valuable resources for different industrial applications, their removal, recovery and recycling assume greater significance.

Table 6: Maximum acceptable limits of several toxic heavy metal ions in the surface waters based on WHO and US EPA regulations.

Heavy Metal	Toxicity rank	WHO (µg/L)	USEPA (µg/L)
Arsenic	1	10	10
Lead	2	10	15
Mercury	3	1	2
Cadmium	8	3	5
Chromium	17	50	100
Nickel	57	70	100
Zinc	75	NGL	5000
Copper	125	2000	1300
Iron	-		300
Note : NGL = NO Guideline			

In accordance with toxicity data obtained from human clinical investigations, and various other studies such as animal experiments, drinking water standards have been proposed by various governmental bodies. A brief summary is given in Table 7 compiled by Hattingh, 1977.

Table 7: Drinking water quality criteria for trace metals which might affect public health

Parameter	USPHS (1962)	Japan (1968)	USSR (1970)	WHO European (1970)	WHO Intern. (1971)	SABS (1971)	NAS (1972)	Australia (1973)	US EPA (1975)	FRG (1975)
Arsenic	10	50	50	50	50	50	100	50	50	40
Barium	1,000	–	4,000	1,000	–	–	1,000	1,000	1,000	–
Cadmium	10	–	10	10	10	50	10	10	10	6
Chromium	50	50	100	50	–	50	50	50	50	50
Copper	1,000	10,000	100	50	50	1,000	1,000	10,000	–	–
Lead	50	100	100	100	100	50	50	50	50	40
Mercury	–	1	5	–	1	–	2	–	2	4
Selenium	10	–	1	10	10	–	10	10	10	8
Silver	50	–	–	–	–	–	–	50	50	–
Zinc	5,000	100	1,000	5,000	5,000	5,000	5,000	5,000	–	2,000

[a] As proposed by the World Health Organization (WHO), US Public Health Service (USPHS), South African Bureau of Standards (SABS), Russia (USSR), USA National Academy of Sciences (NAS), Australia, Japan and Environmental Protection Agency (EPA) of the USA. All concentrations in µg/l. Compiled by Hattingh (1977), except for F.R.G. data (Schöttler, 1977).

Finally, it is worth noting that maximum permissible concentrations (USSR) and threshold limit values (US) have been established within the field of occupational hygiene (Roschin and Timofeevskaya, 1975). These values pertain to the control of occupational exposure with regard to airborne particulates. In consequence, they are of no relevant importance in the present context.

7.2 - Quality Criteria for Livestock

A safe water supply is essential for healthy livestock. Contaminated water can affect growth, reproduction and productivity of animals as well as safety of animal products for human consumption. Contaminated water supplies for livestock and poultry can also contaminate human drinking water. For these reasons, farm water supplies should be protected against contamination from bacteria, nitrates, sulfates, and pesticides. The Environmental Protection Agency has set drinking water standards for human consumption, but no set of standards exists for drinking water for livestock or poultry. However, The National Academy of Science has recommended maximum levels for some contaminants.

The permissible daily intake of substances is greatly dependent on the concentration of the substances and the quality of water ingested. The daily water requirement of animals vary with a number of factors such as temperature and humidity, the water content in the food, the degree of exertion of the animal and the salinity of the water supply. Therefore, the recommended concentrations of specific substance are based on typical usage.

Excessive salinity in livestock drinking water can upset the animals' water balance and cause even death. High levels of specific ions in water can cause animal health problems and death. The National Academy of Sciences offers upper limits for toxic substances in water (Table 8).

Table 8: Recommendations for levels of toxic substances in drinking water for livestock

Sr.	Toxic metal	Upper Limit in mg/L	Sr.	Toxic metal	Upper Limit in mg/L
1.	Arsenic	0.2	5.	Iron as Fe	-
2.	Cadmium as Cd	0.05	6.	Mercury as Hg	0.01
3.	Chromium as Cr	1.0	7.	Zinc as Zn	24
4.	Copper as Cu	0.5			

Sources: Environmental Studies Board, Nat. Acad. Of Sci., Nat Acad of Eng., Water Quality Criteria, 1972
Ayers, R.S. and D.W. Wescot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations, Rome, 1976

7.3 - Water Quality for Irrigation

Nearly all waters contain dissolved salts and trace elements, many of which results from the natural weathering of the earth's surface. In addition, drainage waters from irrigated lands and effluent from city sewage and industrial waste water can impact water quality. In most irrigation situations, the primary water quality concern is salinity levels, since salts can affect both the soil structure and crop yield. However, a number of trace elements are found in water which can also limit its use for irrigation.

The required quality of Irrigation water varies substantially, depending upon the salinity, soil permeability, toxicity and some miscellaneous concerns such as excessive nitrogen loading or unusual pH of water. Some elements in irrigation water may be directly toxic to crops. Establishing toxicity limits in water is complicated by reactions which take place once the water is applied to the soil. When an element is added to the soil from irrigation, it may be inactivated by chemical reactions or it may build up in the soil until it reaches a toxic level. An element at a given concentration in water may be immediately toxic to a crop because of foliar effects if sprinkler irrigation is used. If furrow irrigation is used, it may require a number of years for the element to accumulate to toxic levels, or it may be immobilized in the soil and never reach toxic levels. The recommended water quality for irrigation is shown in Table 9.

Table 9: Recommended limits for constituents in reclaimed water for irrigation.

Constituent	Long-term use (mg/L)	Short-term use (mg/L)	Remarks
Aluminum (Al)	5.0	20	Can cause nonproductivity in acid soils, but soils at pH 5.5 to 8.0 will precipitate the ion and eliminate toxicity.
Arsenic (As)	0.10	2.0	Toxicity to plants varies widely, ranging from 12 mg/L for Sudan grass to less than 0.05 mg/L for rice.
Beryllium (Be)	0.10	0.5	Toxicity to plants varies widely, ranging from 5 mg/L for kale to 0.5 mg/L for bush beans.
Boron (B)	0.75	2.0	Essential to plant growth, with optimum yields for many obtained at a few-tenths mg/L in nutrient solutions. Toxic to many sensitive plants (e.g., citrus) at 1 mg/L. Most grasses relatively tolerant at 2.0 to 10 mg/L.
Cadmium (Cd)	0.01	0.05	Toxic to beans, beets, and turnips at concentrations as low as 0.1 mg/L in nutrient solution. Conservative limits recommended.
Chromium (Cr)	0.1	1.0	Not generally recognized as essential growth element. Conservative limits recommended due to lack of knowledge on toxicity to plants.
Cobalt (Co)	0.05	5.0	Toxic to tomato plants at 0.1 mg/L in nutrient solution. Tends to be inactivated by neutral and alkaline soils.
Copper (Cu)	0.2	5.0	Toxic to a number of plants at 0.1 to 1.0 mg/L in nutrient solution.
Fluoride (F^-)	1.0	15.0	Inactivated by neutral and alkaline soils.
Iron (Fe)	5.0	20.0	Not toxic to plants in aerated soils, but can contribute to soil acidification and loss of essential phosphorus and molybdenum.
Lead (Pb)	5.0	10.0	Can inhibit plant cell growth at very high concentrations.
Lithium (Li)	2.5	2.5	Tolerated by most crops at up to 5 mg/L; mobile in soil. Toxic to citrus at low doses recommended limit is 0.075 mg/L.
Manganese (Mg)	0.2	10.0	Toxic to a number of crops at a few-tenths to a few mg/L in acid soils.
Molybdenum (Mo)	0.01	0.05	Nontoxic to plants at normal concentrations in soil and water. Can be toxic to livestock if forage is grown in soils with high levels of available molybdenum.
Nickel (Ni)	0.2	2.0	Toxic to a number of plants at 0.5 to 1.0 mg/L; reduced toxicity at neutral or alkaline pH.
Selenium (Se)	0.02	0.02	Toxic to plants at low concentrations and to livestock if forage is grown in soils with low levels of added selenium.
Vanadium (V)	0.1	1.0	Toxic to many plants at relatively low concentrations.
Zinc (Zn)	2.0	10.0	Toxic to many plants at widely varying concentrations; reduced toxicity at increased pH (6 or above) and in fine-textured or organic soils.

Source: Rowe and Abdel-Magid, 1995

8. STUDY AREA

A total number of 414 water quality stations covering all the major River Basins of CWC right from East to West and North to South were studied for Trace and Toxic metals during May, 2014; November, 2014; February, 2015; December, 2015; April, 2016; August, 2016; December, 2016; April, 2017 and August 2017. The details of the 414 monitoring stations on the Indian Rivers with their latitude, longitude, district and states are enclosed as **Annexure-1**. River water samples were collected by Punjab type sampler. The water samples were stored in acid leached polyethylene bottles and preserved by adding ultra pure nitric acid as recommended (APHA, 2012). During the study period, water samples from other than the registered water quality monitoring stations of CWC were also received at National River Water Quality Laboratory, CWC, New Delhi.

9. METHODOLOGY

Living organisms require trace amounts of some metals including cobalt, copper, iron, manganese, molybdenum, vanadium, strontium and zinc. Excessive levels of these essential metals are detrimental to the organisms. Non- essential metals like cadmium, chromium, mercury, lead, arsenic and antimony are of more concern to surface water system because these metals produce undesirable effects on human and animal life. Once these metals enter into the system, they remain for relatively longer periods. Once absorbed, inorganic metals are capable of reacting with a variety of binding sites in the human body and have strong attraction to biological tissues. Natural water contains toxic metals in traces. Industrial wastes containing metals have aggravated the problem of metal pollution. Electroplating, metallurgical industry, galvanising plants, tanneries and thermal power stations are few of the major contributors of metal pollution in surface water. All metals exist in surface water in colloidal, particulate and dissolved forms, although dissolved concentrations are generally low. The soluble forms are generally ions or unionized, organo-metallic chelates or complexes. The solubility of trace metals in surface water is predominately controlled by pH, the type and concentration of legends on which the metal can absorb and the oxidation state of the mineral components.

9.1 - Metal Detection Techniques

The analytical methods commonly used in estimation of heavy metals in water and waste waters are:

- Inductively coupled plasma analyser (ICP)
- Atomic absorption spectrophotometry (AAS)
- Colorimetric methods
- Polarographic estimation
- Ion Selective Electrodes (ISE)

Inductively coupled plasma (ICP) techniques and atomic absorption spectrophotometry are applicable over a broad linear range and are especially sensitive for refractory elements. In general, detection limits for ICP methods are higher than AAS. Colorimetric methods are applicable when interferences are known to be within the limit of the particular method. Extreme care should be taken in sampling and analysis to prevent contamination.

In the present study, samples were collected in polyethylene containers. These water samples were prepared for the determination of heavy metals, viz., arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel and zinc by atomic absorption spectrophotometer. This instrumental technique was developed by Asian Walsh in 1955 by means of Atomic Absorption Spectrophotometer (AAS) and since then AAS techniques have been considered as most reliable and have become more common in recent times although the colorimetric/ spectrophotometric techniques have also been in use because of the exorbitant cost of the AAS. AAS techniques are usually favored due to its rapidity, accuracy and controllability while other methods do not respond if the metals are present in traces. It is generally employed when exact quantity of interfering radicals or ions is known. The study was carried out on Agilent 240FS atomic absorption spectrophotometer by graphite tube analyzer (GTA) using argon gas and Iron analyzed by flame operation using air and acetylene gas.

9.2 - Chemicals and Reagents

All chemicals and reagents used in the chemical analysis during the study were of analytical reagent grade (Merck). Standard solutions of metals ions were procured from Merck, Germany. De-ionized water was used throughout the study. All glassware and containers used were thoroughly cleaned by soaking in detergent followed by soaking in 10% nitric acid for 48hrs and finally rinsed with de-ionized water several times prior to use.

9.3 - Method

Trace and toxic metals were analysed by using Agilent 240FS atomic absorption spectrophotometer. The wave length, current, slit and method employed using atomic absorption spectrophotometer is given in Table 10.

Table 10: The wavelength, current, slit and method used for chemical analysis by AAS

Sr.	Parameter	Wave length (nm)	Current (mA)		Slit (nm)	Method used for analysis
			Recommended	Maximum		
1	Arsenic	193.7	10	12	0.5	By AAS with VGA
2	Cadmium	228.8	4	10	0.5	By AAS with Graphite Tube Analyzer (GTA)
3	Chromium	357.9	7	15	0.2	
4	Copper	324.8	4	10	0.5	
5	Iron	248.3	7	10	0.2	By AAS with Flame
6	Lead	217	10	12	1.0	By AAS with Graphite Tube Analyzer (GTA)
7	Nickel	232	4	10	0.2	
8	Zinc	213.9	5	10	1.0	

10. RESULTS AND DISCUSSION

Details of the Indian rivers and their water quality monitoring sites where the water was found fit for use in terms of toxic metal contamination in the study period is presented in **Annexure-2**. Details of WQ monitoring stations where the water was found unfit for use due to excess presence of Iron only above the acceptable limits during the study period is presented in **Annexure-3**. Details of WQ monitoring stations where the water was found unfit for use due to presence of more than two toxic metals above acceptable limits during the study period is presented in **Annexure-4**. Toxic metal-wise details of water quality monitoring stations where the respective metal concentration was found above the acceptable limits as prescribed by BIS is presented in **Annexure-5**.

Surface/ground water contamination through toxic metals is a problem since long. Many countries in the world have experienced menace of metal pollution in water and large number of people has been affected. Causes of this pollution have been well documented. However, the main sources of metal toxicity in surface water have been thought to be natural occurrence and subsequent degradation of the environment.

The analytical results obtained from the trace and toxic metal analysis in the water samples of Indian Rivers are expressed in µg/L (Microgram per Litre) throughout the report. During the entire period of study, maximum concentration of all eight metals in the Indian Rivers observed are as: Arsenic (9.530µg/L), Cadmium (70.518 µg/L), Chromium (450.260µg/L), Copper (314.930 µg/L), Lead (374.580 µg/L), Nickel (304.640 µg/L), Zinc (2.658 mg/L) and Iron (14.555 mg/L).

Table 11: Minimum and Maximum concentration of Metal during the May, 2014 to August, 2017

Metal	Min/Max	WQS	River	Month/Year	Season	Con.
Arsenic	Minimum	Ram M.Bagh	Jhelum	May, 2014	Summer	0.010 µg/L
	Maximum	Buxar	Ganga	April, 2016	Summer	9.530 µg/L
Cadmium	Minimum	Jammu Tawi	Chenab/Tawi	November, 2014	Winter	0.010 µg/L
	Maximum	Vautha	Sabarmati	February, 2015	Winter	70.518 µg/L
Chromium	Minimum	Tuini	Tuini	April, 2016	Summer	0.002 µg/L
	Maximum	Paliakalan	Sharda	August, 2016	Monsoon	450.26 µg/L
Copper	Minimum	Nellithurai	Bhavani	November, 2014	Winter	0.003 µg/L
	Maximum	Pingalwada	Dhadher	April, 2017	Summer	314.93 µg/L
Nickel	Minimum	Chapra	Jalangi	April, 2017	Summer	0.005 µg/L
	Maximum	Lowara	Sheturni	February, 2015	Winter	304.64 µg/L
Lead	Minimum	Y.Nagar	Giri	April, 2016	Summer	0.003 µg/L
	Maximum	Lowara	Sheturni	April, 2016	Summer	374.58 µg/L
Zinc	Minimum	Y.Nagar	Giri	August, 2016	Monsoon	0.0003 mg/L
	Maximum	Manot	Narmada	August, 2016	Monsoon	2.6579 mg/L
Iron	Minimum	Safapora	Jhelum	April, 2016	Summer	0.001 mg/L
	Maximum	Chenimari	Buridehing	August, 2017	Monsoon	14.555 µg/L

Results were statistically analysed and minimum, maximum, average and standard deviation were calculated using MS Excel (Table 12).

Table 12: Summary and statistical analysis of analytical results of water samples (From May, 2014 to August, 2017)

Period	Particulars	As	Cd	Cr	Cu	Ni	Pb	Fe	Zn
May, 2014	Minimum	0.01	0.01	0.04	0.02	0.01	0.02	0.00	0.00
	Maximum	8.95	10.39	40.65	58.34	83.83	19.76	5.34	0.77
	Average	3.97	0.30	2.85	5.11	6.93	2.07	0.21	0.03
	Standard Deviation	2.44	0.88	4.29	6.53	8.37	2.52	0.50	0.07
	Total Analysis	296	313	313	313	313	313	313	313
	Unfit	0	6	0	1	10	4	51	0
November, 2014	Minimum	0.39	0.00	0.01	0.00	0.07	0.01	0.00	0.00
	Maximum	6.30	11.77	230.90	269.63	37.32	28.41	9.06	1.50
	Average	2.09	0.28	13.46	8.53	2.81	1.93	0.39	0.03
	Standard Deviation	1.44	0.69	34.09	16.47	4.05	4.68	1.01	0.10
	Total Analysis	20	355	355	355	355	355	355	355
	Unfit	0	1	14	2	4	24	81	0
February, 2015	Minimum	0.30	0.00	0.01	0.19	0.01	0.01	0.00	0.00
	Maximum	4.28	70.52	61.26	72.87	184.64	116.29	1.92	1.94
	Average	1.91	1.06	3.31	6.55	5.85	6.88	0.03	0.02
	Standard Deviation	0.95	4.69	7.16	6.58	16.41	10.64	0.11	0.11
	Total Analysis	12	326	326	326	326	326	326	326
	Unfit	0	16	2	2	18	50	1	0
December, 2015	Minimum	0.03	0.00	0.07	0.01	0.01	0.06	0.00	0.00
	Maximum	8.88	9.17	81.70	34.30	17.14	19.83	3.81	0.22
	Average	1.55	0.25	2.73	2.34	1.08	1.97	0.21	0.01
	Standard Deviation	1.81	0.96	7.56	3.75	2.40	2.73	0.37	0.03
	Total Analysis	174	174	174	174	174	174	174	174
	Unfit	0	4	1	0	0	3	28	0
April, 2016	Minimum	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.00
	Maximum	9.53	28.05	224.33	44.20	68.48	374.58	1.79	0.26
	Average	3.16	0.48	4.69	3.58	1.57	4.13	0.08	0.01
	Standard Deviation	1.91	2.14	15.86	5.14	4.82	24.02	0.16	0.02
	Total Analysis	247	196	247	247	213	247	247	247
	Unfit	0	5	1	0	1	7	15	0
August, 2016	Minimum	0.02	0.00	0.01	0.02	0.01	0.01	0.01	0.00
	Maximum	8.16	0.65	450.26	27.22	32.72	51.52	6.12	2.66
	Average	1.54	0.11	15.70	5.30	1.30	3.36	0.66	0.04
	Standard Deviation	1.65	0.06	44.53	5.40	2.90	6.10	1.10	0.20
	Total Analysis	210	210	210	210	210	210	210	210
	Unfit	0	0	12	0	1	16	94	0

Period	Particulars	As	Cd	Cr	Cu	Ni	Pb	Fe	Zn
December, 2016	**Minimum**	0.02	0.00	0.02	0.02	0.01	0.02	0.00	0.00
	Maximum	8.91	3.25	68.56	26.89	85.94	156.07	4.32	0.30
	Average	2.09	0.14	4.45	3.19	2.30	4.06	0.26	0.02
	Standard Deviation	1.76	0.30	11.01	3.61	6.31	11.71	0.48	0.03
	Total Analysis	220	220	220	220	220	220	220	220
	Unfit	0	1	5	0	1	11	56	0
April, 2017	**Minimum**	0.02	0.00	0.03	0.04	0.01	0.04	0.01	0.00
	Maximum	9.52	3.94	202.71	314.93	12.58	227.93	6.13	1.08
	Average	2.76	0.23	6.96	8.83	1.20	3.38	0.45	0.03
	Standard Deviation	2.75	0.55	16.68	23.43	2.53	16.74	0.89	0.09
	Total Analysis	218	218	218	218	212	218	218	218
	Unfit	0	5	3	5	0	5	48	0
August, 2017	**Minimum**	0.02	0.00	0.01	0.01	-	0.01	0.04	0.00
	Maximum	9.39	2.51	133.49	75.58	-	16.81	14.56	0.80
	Average	2.23	0.25	7.03	4.82	-	2.24	0.92	0.02
	Standard Deviation	1.66	0.35	11.38	7.58	-	2.00	2.03	0.06
	Total Analysis	337	337	337	337	-	337	337	337
	Unfit	0	0	3	2	0	2	150	0
TOTAL	**Minimum**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**
	Maximum	**9.53**	**70.52**	**450.26**	**314.93**	**184.64**	**374.58**	**14.56**	**2.66**
	Average	**2.55**	**0.37**	**6.89**	**5.59**	**3.28**	**3.35**	**0.36**	**0.02**
	Standard Deviation	**2.18**	**1.95**	**21.38**	**10.99**	**8.40**	**11.11**	**1.02**	**0.09**
	Total Analysis	**1734**	**2349**	**2400**	**2400**	**2023**	**2400**	**2400**	**2400**
	Unfit	**0**	**38**	**41**	**12**	**35**	**122**	**524**	**0**

Analytical results obtained were also compared with the Indian Standards, prescribed as acceptable toxic metal content in the drinking water by the Bureau of Indian Standards ("Drinking Water – Specification", 10500:2012). Number of water samples analysed for each of nine metals and total number of water samples exceeded the acceptable limits during the study period are summarized for all five sampling occasions here under in Table13.

Table 13: Number of samples analysed and found above acceptable limits of toxic metals.

Sampling Month/Year	Total Anal. /Unfit	As	Cd	Cr	Cu	Ni	Pb	Fe	Zn
May, 2014	A	303	320	320	320	320	320	320	320
	B	0	6	0	1	10	8	51	0
November, 2014	A	20	365	365	365	365	365	365	365
	B	0	1	14	2	4	27	84	0
February, 2015	A	12	336	336	336	336	336	336	336
	B	0	16	2	2	18	54	1	0
December, 2015	A	175	175	175	175	175	175	175	175
	B	0	4	1	0	0	5	28	0
April, 2016	A	253	201	253	253	218	253	253	253
	B	0	5	1	0	1	7	15	0
August, 2016	A	210	210	210	210	210	210	210	210
	B	0	0	12	0	1	17	94	0
December, 2016	A	222	222	222	222	222	222	222	222
	B	0	1	5	0	1	13	56	0
April, 2017	A	223	223	223	223	217	223	223	223
	B	0	7	3	5	0	5	48	0
August, 2017	A	347	347	347	347	-	347	347	347
	B	0	0	3	2	0	4	156	0
A - Total No. of samples analyzed; B - Total No. of samples exceeded the acceptable limits									

From the above table, it is evident that Iron ranks first among the metals that exceeded their respective acceptable limits on maximum occasions followed by Lead, Chromium, Cadmium, Nickel, and Copper. Exceeding the acceptable limits in Indian River waters by Lead, Cadmium, Nickel, Chromium and Copper are more common in non-monsoon periods while Iron, Lead, Chromium and Copper are the metals whose concentrations have exceeded their tolerance limits in monsoon periods most of the time. This kind of tendency to exceed the tolerance limits is not seen in case of other metals like Arsenic and Zinc. Arsenic and Zinc are the two toxic metals whose concentration was always obtained within the limits throughout the study period.

During the study period, the samples were collected during monsoon (August, 2016 and August, 2017), non-monsson (May, 2014; November, 2014; February 2015, December, 2015; April, 2016; December, 2016 and April, 2017). For these monsoon and non-monsoon occasions of analysis, seasonal average values of the toxic metal concentration were evaluated and shown in Pie charts (Figures 18-19). From these figures, it is observed that out of eight metals analysed, the concentration of Iron is always found maximum in all the time during monsoon and nonmonsson period.

During all the monsoon and non-monsson period, the pattern of higher concentration occurrence of these toxic metals is almost same but the percentage of the othermetals except iron is less during the monsoon season. The order of higher occurrence of these toxic metals in Indian Rivers during non-monsoon period is Fe > Zn > Cr > Cu > Pb > Ni> As > Cd (Figure-18).

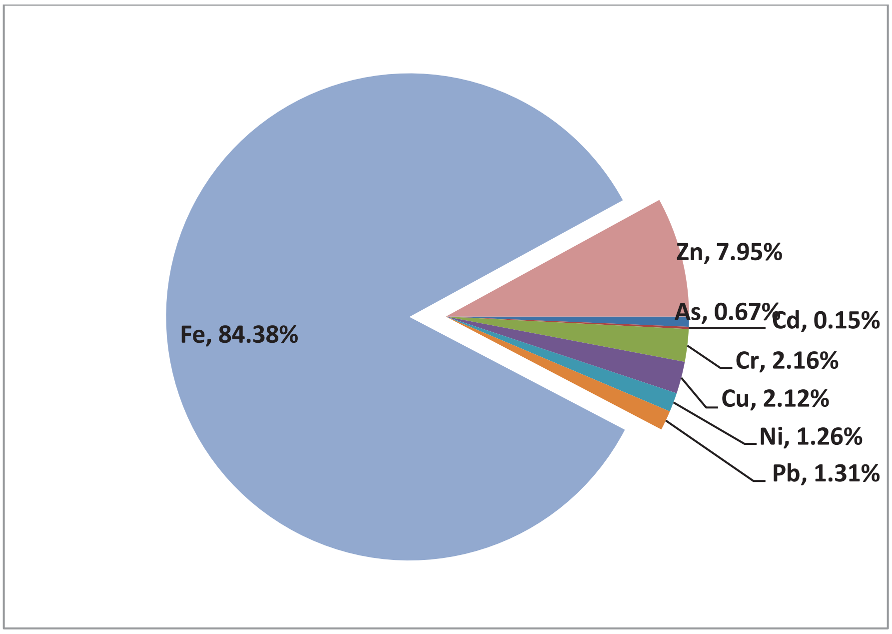


Figure 18 : Order of higher occurrence in non-monsoon period

Order of higher occurrence of these eight metals is different in different seasons. In monsoon periods, the levels of many toxic metals like Zn, Ni and Cu fall down significantly. The order of higher occurrence in monsoon period is Fe > Zn > Cr > Cu > Pb > As > Cd > Ni (Figure-19).

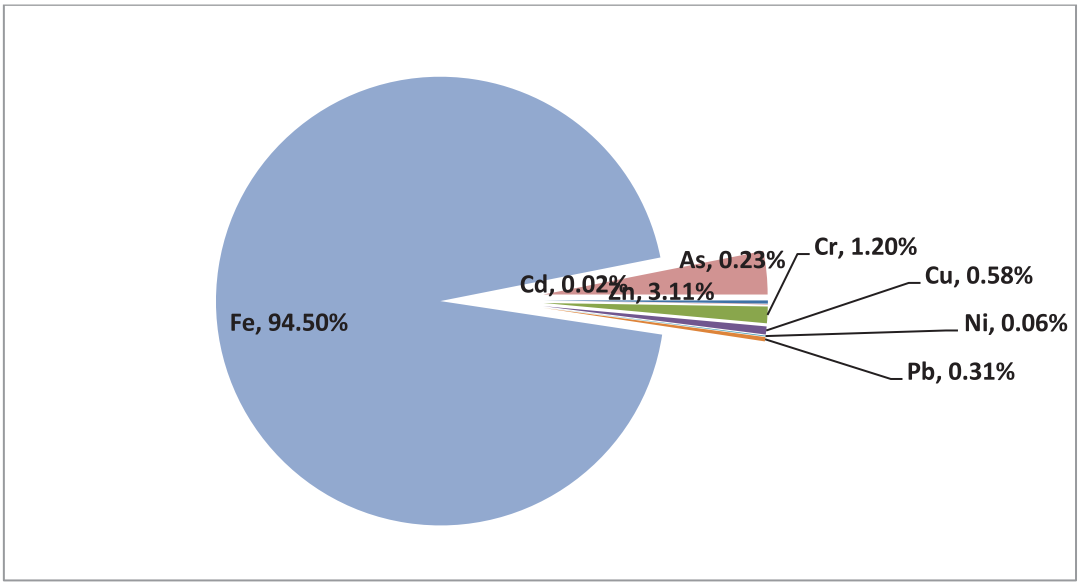


Figure 19 : Order of higher occurrence in monsoon period

The parameter wise discussion on the results obtained from the trace and toxic metal analysis in the water samples collected from the 414 water quality monitoring stations functioning under Central Water Commission are given in subsequent paragraphs.

Summary of ARSENIC content in Indian Rivers

Arsenic (As) is a ubiquitous element that is comparatively rare, but widely distributed in the atmosphere, soils and rocks, natural waters and organisms. It is mobilised in the environment through a combination of natural processes such as weathering reactions, biological activity and volcanic emissions as well as through a range of anthropogenic activities. Most environmental arsenic problems are the result of mobilisation under natural conditions, but man has had an important impact through mining activity, combustion of fossil fuels, the use of arsenical pesticides, herbicides and crop desiccants and the use of arsenic as an additive to livestock feed, particularly for poultry. Although the use of arsenical products such as pesticides and herbicides has decreased significantly in the last few decades, their use for wood preservation is still common. The impact on the environment of the use of arsenical compounds, at least locally, will remain for some years.

BIS has recommended 0.01 mg/L (10µg/L) as acceptable concentration of arsenic in drinking water. Total 1765 numbers of water samples were analysed and collected from 414 water quality monitoring stations for arsenic content in Indian Rivers in the period May, 2014 to August 2017. The arsenic concentration varies from 0.01 to 9.53 µg/L. Maximum arsenic concentration (9.53 µg/L) was observed at Buxur water quality monitoring station on Ganga River during April, 2016. From reported data of all River water quality stations, it was found that arsenic concentration well within the acceptable limits as per Bureau of Indian Standards (BIS) and no toxicity of arsenic in the River waters is observed during the study period.

Summary of CADMIUM content in Indian Rivers

Cadmium is a rare natural element which is widely distributed in the earth's crust in very small amount. It is uniformly distributed in the Earth’s crust, where it is generally estimated to be present at an average concentration of between 0.15 and 0.2 mg/kg. Cadmium may be present in the aquatic environment at relatively low levels as inorganic complexes such as carbonates, hydroxides, chlorides or sulphates, or as organic complexes with humic acids. Even in polluted rivers the cadmium levels in aqueous phase may be significantly low and even sometimes below detection limit.

A maximum acceptable concentration for cadmium in drinking water has been established on the basis of health considerations. BIS proposed the maximum desirable limit of cadmium is 0.003 mg/L or 3µg/L and there is no relaxation in maximum permissible limit in absence of another source. The concentration of cadmium in unpolluted fresh waters is generally less than 0.001 mg/L. Surface waters containing in excess of a few micrograms of cadmium per litre have probably been contaminated by industrial wastes from metallurgical plants, plating works, plants manufacturing cadmium pigments, textile operations, cadmium-stabilized plastics, or nickel–cadmium batteries, or by effluents from sewage treatment plants.

2349 numbers of river water samples from 414 WQ monitoring stations were collected and analyzed for cadmium content during the study period from May 2014 to August 2017. Out of 2349 water samples, thirty eight water quality stations from Ganga, Kopili, Rapti, Thungabhadra and Yamuna rivers were found to have cadmium content in more than one station above the acceptable limits. The highest cadmium concentration (70.51 µg/L) was observed in the Vautha water quality monitoring station at Sabarmati River during February, 2015. It is also observed that, the acceptable limit exceed only during non-monsoon period. Annexure-5 shows the names of the water quality monitoring stations and the Rivers affected by high cadmium content than the acceptable limits and these WQ stations are hot spots from the point of view of cadmium pollution in the Indian Rivers.

Table 14: Rivers and WQ monitoring stations where Cadmium exceeded the acceptable limits

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Arkavathi	T. Bekuppe (Feb, 2015)	1	1
2	Buridehing	Chenimari (May, 2014)	1	1
3	Dareng	Sibbari (Dec, 2016)	1	1
4	Dikhow	Sivasagar (May, 2014)	1	1
5	Ganga	Mirzapur (April, 2017); Shahzadpur (April, 2017);	2	2
6	Ghagra	Elginbridge (Feb, 2015)	1	1
7	Hagari	T. Ramapuram (Feb, 2015)	1	1
8	Hindon	Galeta (Dec, 2015; April, 2016)	1	2
9	Kamang	Seppa (May, 2014)	1	1
10	Kopili	Dharamtul (May, 2014); Kampur (May, 2014)	2	2
11	Noyyal	Elunuthimanagalam (Feb, 2015)	1	1
12	Orsang	Chanwada (Feb, 2015)	1	1
13	Ponnaiyar	Vazhavachanur (Feb, 2015)	1	1
14	Rapti	Balrampur (Feb, 2015); Bansi (April, 2017); Regauli (Feb, 2015)	3	3
15	Sabarmati	Vautha (Nov, 2014 ; Feb, 2015);	1	2
16	Saryu	Ayodhya (Feb, 2015)	1	1
17	Sharda	Paliakalan (Feb, 2015)	1	1
18	Sheturni	Lowara (May, 2014 ; Feb, 2015 ; April, 2016)	1	3
19	Sone	Chopan (April, 2017)	1	1
20	Thungabhadra	Bawapuram (Feb, 2015); Mantralayam (Feb, 2015)	2	2
21	Tirap	Udaipur (April, 2017)	1	1
22	Ulhas	Badlapur (Feb, 2015)	1	1
23	Vaitarna	Durvesh (Feb, 2015)	1	1
25	Yamuna	Delhi Rly Bridge (Dec, 2015; April, 2016); Mathura (Dec, 2015; April, 2016) ; Mohana(Dec, 2015; April, 2016)	3	6
		Total	**31**	**38**

Summary of CHROMIUM content in Indian rivers

Chromium is used to call as metal with two faces, that it can be either beneficial or toxic to animals and humans depending on its oxidation state and concentrations (Zayed et al., 1998). It can exist in valences from -2 to 6 but is present in the environment mainly in the trivalent or hexavalent state. Cr(III) is considered to be a trace element essential for the proper functioning of living organisms (Wang et al., 2009). Nutritionally, at lower concentrations, Cr(III) is an essential component of a balanced human and animal diet for preventing adverse effects in the metabolism of glucose and lipids, e.g., impaired glucose tolerance, increased fasting insulin, increased cholesterol and triglycerides, and hypoglycemic symptoms (Zayed and Terry, 2003). Cr(III) at increased concentrations can interfere with several metabolic processes because of its high capability to coordinate various organic compounds resulting in inhibition of some metalloenzyme systems (Zayed et al., 1998).

On a worldwide basis, the major chromium source in aquatic ecosystems is domestic waste water effluents (32.2% of the total) (Barceloux 1999). The other major sources are metal manufacturing (25.6%), ocean dumping of sewage (13.2%), chemical manufacturing (9.3%), smelting and refining of nonferrous metals (8.1%), and atmospheric fallout (6.4%) (Nriagu and Pacyna 1988). Annual anthropogenic input of chromium into water has been estimated to exceed anthropogenic input into the atmosphere (Nriagu and Pacyna 1988). However, land erosion, a natural source of chromium in water, was not included in the Nriagu and Pacyna (1988) estimation of chromium contributions to the aquatic environment.

BIS (Bureau of Indian Standard) 10500-2012) have recommended an acceptable limit of 50 µg/L of chromium in drinking water. Total 2400 numbers of water samples from 414 water quality stations were collected and analyzed for chromium content during the study period. Data reveals that 41 water samples have the Chromium concentrations above the acceptable limit of 50 µg/L. Chromium concentration at Paliakalan water quality monitoring station on Sharda River in August 2016, which is reported as the maximum concentration 450.26 µg/L during the entire study period. Annexure-5 shows the names of the WQ stations and the Rivers affected by high chromium concentration (>50 µg/L) and these WQ stations are hot spots from point of view of chromium pollution.

Total 41 numbers of water samples from 28 water quality monitoring stations located on 21 major Indian Rivers were found to have chromium concentration exceeding the tolerance limit of 50µg/L. Some Indian Rivers viz. Ganga, Ghagra and Rapti have two or more water quality monitoring stations which are polluted with chromium.

Table 15: Rivers and WQ monitoring stations where Chromium exceeded the acceptable limits.

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Brahmaputra	Tezpur (Aug, 2016)	1	1
2	Churni	Hanskhali (Nov, 2014)	1	1
3	Desang	Desangpani (Aug, 2016)	1	1
4	Dikhow	Bihubar (April, 2017)	1	1
5	Gad	Belne Bridge (Aug, 2017)	1	1
6	Ganga	Bhitaura (Nov, 2014); Fatehgarh (Nov, 2014); Kachlabridge (Nov, 2014; Aug, 2016); Kanpur (Nov, 2014);	4	5
7	Ghagra	Elginbridge (Nov, 2014; Aug, 2016); Turtipar (Aug, 2016)	2	3
8	Hamp	Andhiyar Kore (Feb, 2015)	1	1
9	Jiabharali	Jiabharali NT Road Xing (Aug, 2016)	1	1
10	Kal	Mangaon (Aug, 2017)	1	1
11	Krishna	Karad (Aug, 2017)	1	1
12	Mahi	Khanpur (Dec, 2015)	1	1
13	Mahananda	Labha (Nov, 2014)	1	1
14	Purna	Mahuwa(Aug, 2016)	1	1
15	Ramganga	Moradabad (Nov, 2014)	1	1
16	Rapti	Balrampur (Nov, 2014; Aug, 2016; Dec, 2016); Bansi (Nov, 2014; April, 2016; April, 2017) ; Birdghat (Nov, 2014; Aug, 2016; Dec, 2016); Regauli (Nov, 2014; Aug, 2016; Dec, 2016)	4	11
17	Sai	Raibareli (Dec,2016)	1	1
18	Sarju	Ghat (Nov, 2014; April, 2017)	1	2
19	Sharda	Paliakalan (Nov, 2014; Aug, 2016; Dec, 2016)	1	1
20	Surma/Myntdu	Kharkhana (Aug, 2016)	1	1
21	Tel	Kantamal (Feb, 2015)	1	1
		Total	**28**	**41**

Summary of COPPER content in Indian rivers

Copper is a very common substance that occurs naturally in the environment and spreads to the environment through natural phenomena. Humans widely use copper. For instance it is applied in the industries and in agriculture. The production of copper has lifted over the last decades. Due to this, copper quantities in the environment have increased. It is an essential element in human metabolism, and it is well-known that deficiency results in a variety of clinical disorders, including nutritional anaemia in infants. BIS, 10500, 2012 has recommended an acceptable limit of 0.05 mg/L (50µg/L) of copper in drinking water; this concentration limit can be extended to 1.5 mg/L (1500 µg/L) of copper in case no alternative source of water with desirable concentration is available. The intake of large doses of copper has resulted in adverse health effects. Copper and its compounds are widely distributed in nature, and copper is found frequently in surface water and in some groundwater.

2451 water samples from 414 water quality stations were collected and analyzed for copper content from May, 2014 to August 2017. Out of 2451 water samples, 13 samples were found to contain copper concentrations above the acceptable limits of 50µg/L throughout the study period, the maximum Copper concentration 314.93 µg/L was observed at Pingalwada water quality station on Dhadher River in April, 2017. Annexure-5, shows the names of water quality stations and the Rivers affected by high copper concentration (>50 µg/L) and these WQ stations are water quality hot spots from the point of view of copper contamination in Indian Rivers.

Total 13 numbers of water samples from 12 numbers of WQ monitoring stations exceeded according to the BIS prescribed acceptable limit situated on 10 Indian Rivers during the study period. Dikhow, Brahmaputra, Buridehing, Damanganga, Dhadher, Ganga, Pranhitha, Sabarmati, Subarnarekha and Tel are the rivers where one or two water quality monitoring stations were contaminated with copper (Table 16).

Table 16: Rivers and WQ monitoring stations where Copper exceeded the acceptable limit.

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Dikhow	Bihubar (April, 2017)	1	1
2	Brahmaputra	Tezpur (April, 2017)	1	1
3	Buridehing	Margherita (Nov. 2014)	1	1
4	Damanganga	Vapi (April 2017)	1	1
5	Dhadher	Pingalwada (April, 2017)	1	1
6	Ganga	Kachlabridge (Nov., 2014)	1	1
7	Pranhitha	Tekra (April, 2017)	1	1
8	Sabarmati	Vautha (May, 2014)	1	1
9	Subarnarekha	Ghatsila (Feb., 2015; Aug., 2017); Jamsolghat (Aug. 2017)	2	3
10	Tel	Kantamal (Feb., 2015)	1	1
		Total	**11**	**12**

Summary of LEAD content in Indian rivers

Lead is the one of the most common of the heavy elements. It has therefore been used extensively since Roman times and, as a result, has become widely distributed throughout the environment. The acceptable limit (AL) for lead in drinking water is 0.010 mg/L (10µg/L). Above the acceptable limit lead is a cumulative general poison, with foetuses, infants, children up to six years of age and pregnant women (because of their foetuses) being most susceptible to adverse health effects. Lead can severely affect the central nervous system. Overt signs of acute intoxication include dullness, restlessness, irritability, poor attention span, headaches, muscle tremor, hallucinations and loss of memory. Signs of chronic lead toxicity, including tiredness, sleeplessness, irritability, headaches, joint pain and gastrointestinal symptoms, may appear in adults. After one or two years of exposure, muscle weakness, gastrointestinal symptoms, lower scores on psychometric tests, disturbances in mood and symptoms of peripheral neuropathy were observed in occupationally exposed populations.

Bureau of Indian Standard (10500, 2012) have recommended an acceptable limit of lead is 0.01 mg/L or 10µg/L in drinking water. India some rivers have lead concentration above the acceptable limit prescribed by Bureau of Indian Standards, 10500; 2012. 2400 numbers of water samples from 414 water quality monitoring stations across India were collected and analyzed for lead content using AAS. It is observed that the lead concentrations in 122 water samples are greater than the acceptable limits of lead in drinking water i.e. 10 µg/L as set by BIS. Lead concentration was maximum (374.58 µg/L) at Lowara water quality station on Sheturni River during April, 2016. One hundred twenty two water samples from 91 water quality monitoring stations are observed to have lead concentrations exceeding the acceptable limits in drinking water in 69 Indian Rivers during the study period (Table 17). Brahmaputra, Buridehing, Cauvery, Ganga, Ghagra, Gomti, Ramganga, Rapti, Sone, Thungabhadra, and Yamuna are the rivers where two or more numbers of WQ monitoring stations are contaminated with lead.

Table 17: Rivers and WQ monitoring stations where Lead exceeded the acceptable limit.

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Achankovil	Thumpamon (April, 2016)	1	1
2	Aliyar	Ambarampalayam (Feb, 2015)	1	1
3	Arkavathi	T. Bekuppe (Feb, 2015; Dec, 2016)	1	2
4	Barak	Fulertal (Dec, 2016)	1	1
5	Brahmani	Gomlai (April, 2017)	1	1
6	Brahmaputra	Pancharatna (Aug., 2016); Pandu (Aug., 2016); Dibrugarh (Aug., 2016);	3	3
7	Bugi	Dimapara (Aug. 2016; April, 2017)	1	2
8	Buridehing	Chenimari (Aug, 2016); Margherita (Dec, 2016)	2	2
9	Cauvery	Kodumudi (Feb, 2015); Urachikottai (Feb, 2015)	2	2
10	Chhoti Sarju	Akarbarpur (Feb, 2015; Dec., 2015)	1	2
11	Damanganga	Vapi (Aug., 2016)	1	1
12	Dhadher	Pingalwada (Feb, 2015)	1	1
13	Digaru	Sonapur (Aug., 2016)	1	1
14	Dikhow	Sivasagar (Aug., 2016)	1	1
15	Dudhnai	Dudhnai (Aug., 2016)	1	1
16	Ganga	Shahzadpur (Feb, 2015); Bhitaura (Nov, 2014; Feb, 2015); Fatehgarh (Nov, 2014); Kachlabridge (Nov, 2014; Feb, 2015); Kanpur (Nov, 2014; Feb, 2015); Azmabad (Feb, 2015); Buxar (Feb, 2015); Hathidah (Feb, 2015); Ankinghat (Nov, 2014);	9	12
17	Ghagra	Elginbridge (Nov, 2014); Turtipar (Nov, 2014; Feb, 2015)	2	3
18	Godavari	Polavaram (Feb, 2015)	1	1
19	Gomti	Lucknow (Nov, 2014; Dec, 2016); Neemsar (Nov, 2014 ; Feb, 2015 ; Dec, 2016))	2	5
20	Hagari	T. Ramapuram (Feb, 2015)	1	1

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
21	Haladi	Haladi (Feb, 2015)	1	1
22	Hemavathi	Sakleshpur (Feb, 2015)	1	1
23	Hindon	Galeta (Nov, 2014)	1	1
24	Indravathi	Nowrangpur (April, 2016)	1	1
25	Jaldhaka	Jaldhaka NH-31 (Nov, 2014)	1	1
26	Jiabharali	Jiabharali NT Road Xing (Feb, 2015)	1	1
27	Kallada	Pattazhy (Feb, 2015; April, 2016)	1	2
28	Kamang	Seppa (Dec, 2016 ;Aug, 2017)	1	2
29	Kanhan	Ramakona (Feb, 2015)	1	1
30	Kharkai	Adityapur (April, 2016)	1	1
31	Kopili	Kheronighat (Feb, 2015)	1	1
32	Krishna	Huvin Hedgi (Feb, 2015)	1	1
33	Kunderu	Alladupalli (Feb, 2015; April, 2017)	1	2
34	Kwano	Basti (Nov, 2014)	1	1
35	Lohit	Dholabazar (Aug., 2016)	1	1
36	Longai	Fakirabazar (May, 2014)	1	1
37	Mahananda	Champasari (Feb, 2015)	1	1
38	Mahi	Khanpur (Dec., 2015)	1	1
39	Munneru	Keesara (Feb, 2015)	1	1
40	Narmada	Garudeshwar (Feb, 2015)	1	1
41	Neo dihing	Miao (Feb, 2015; Dec, 2016)	1	2
42	Noyyal	Elunuthimanagalam (Feb, 2015)	1	1
43	Orsang	Chanwada (Feb, 2015; Aug., 2016)	1	2
44	PagladiYa	Pagladiya N.T.Road Crossing (Aug., 2016)	1	1
45	Palar	Arcot (Aug., 2016)	1	1
46	Pennar	Chennur (Feb, 2015)	1	1
47	Ponnaiyar	Gummanur (Feb, 2015)	1	1
48	Purna	Gopalkheda (Feb, 2015; Aug., 2016)	1	2
49	Puthimari	Puthimari D.R.F. (Feb, 2015)	1	1
50	Raidak-I	Tufanganj (Feb, 2015)	1	1
51	Ramganga	Bareilly (Nov, 2014) ; Dabri (Nov, 2014 ; Feb, 2015); Moradabad (May, 2014 ; Nov, 2014 ; Feb, 2015)	3	6
52	Rapti	Balrampur (Nov, 2014); Bansi (Nov, 2014); Birdghat (May, 2014; Nov, 2014; Feb, 2015); Regauli (May, 2014; Nov, 2014; Feb, 2015)	4	8
53	Sabarmati	Vautha (Nov, 2014 ; Dec., 2015; Dec, 2016)	1	3
54	Sai	Raibareli (Nov, 2014 ; Dec, 2016)	1	2
55	Sankosh	Sankosh LRP (Feb, 2015)	1	1
56	Saryu	Ayodhya (Nov, 2014)	1	1
57	Seonath	Simga (Feb, 2015)	1	1
58	Sheturni	Lowara(April, 2016; Dec, 2016)	1	2

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
59	Sone	Kuldah Bridge (Aug., 2016) ; Koelwar(April, 2016)	2	2
60	Subansiri	Badatighat (Feb, 2015)	1	1
61	Subarnarekha	Ghatsila (April, 2016)	1	1
62	Swarnamukhi	Naidupet (Feb, 2015)	1	1
63	Tapi	Sarangkheda (April, 2017)	1	1
64	Thungabhadra	Bawapuram (Feb, 2015); Mantralayam (Feb, 2015)	2	2
65	Ulhas	Badlapur (Feb, 2015)	1	1
66	Umsohrynkiew	Therriaghat (Aug, 2017)	1	1
67	Vaitarna	Durvesh(Feb, 2015 ; Aug., 2016 ; Dec, 2016 ; April, 2017)	1	4
68	Yagachi	Thimmanahalli (Feb, 2015)	1	1
69	Yamuna	Delhi Rly Bridge (Nov, 2014); Mohana (Nov, 2014; Feb, 2015)	2	3
		Total	91	122

Summary of NICKEL content in Indian rivers

Nickel is a nutritionally essential trace metal for at least several animal species, micro-organisms and plants, and therefore either deficiency or toxicity symptoms can occur when, respectively, too little or too much Ni is taken up. According to BIS-10500 (2012) the acceptable limit of nickel in drinking water is 20 µg/L.

Nickel and nickel compounds have many industrial and commercial uses, and the progress of industrialization has led to increased emission of pollutants into ecosystems. Nickel is easily accumulated in the biota, particularly in the phytoplankton or other aquatic plants, which are sensitive bio-indicators of water pollution. It can be deposited in the sediment by such processes as precipitation, complexation and adsorption on clay particles and via uptake by biota.

Total 2023 numbers of water samples from 414 WQ monitoring stations of Central Water Commission were collected and analyzed for Nickel content in Indian Rivers. From the results, it is observed that Nickel concentration in 35 water samples are more than the prescribed limits of BIS. Nickel concentration at Lowara water quality station on Sheturni river in February, 2015 is reported to be the maximum (184.64 µg/L) during the entire study period. Seonath, Subarnarekha and Thungabhadra are the rivers where 2 or more WQ monitoring stations are observed being contaminated with Nickel (Table 18).

35 water samples from 32 water quality monitoring stations over 29 Indian Rivers were observed to have nickel concentration that exceed the acceptable limit during the study period (Table-15). Water quality monitoring stations and Rivers affected by high nickel concentration (>20 µg/L) are presented in Annexure-5 and these WQ stations are hot spots from point of view of nickel pollution.

Table 18: Rivers and WQ monitoring stations where Nickel exceeded the acceptable limit

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Arkavathi	T. Bekuppe (Feb, 2015)	1	1
2	Brahmani	Panposh (Feb, 2015)	1	1
3	Ganga	Kachlabridge (Nov, 2014)	1	1
4	Hagari	T. Ramapuram (Feb, 2015)	1	1
5	Hasdeo	Bamnidih (May, 2014)	1	1
6	Ib	Sundergarh (Nov, 2014)	1	1
7	Jiabharali	Bhalukpong(May, 2014)	1	1
8	Jonk	Rampur (May, 2014)	1	1
9	Ken	Banda (Feb, 2015)	1	1
10	Krishna	Huvin Hedgi (Feb, 2015)	1	1
11	Kunderu	Alladupalli (Feb, 2015)	1	1
12	Mahanadi	Basantpur (May, 2014)	1	1
13	Mand	Kurubhata (May, 2014)	1	1
14	Narmada	Barmanghat (Feb, 2015; Dec., 2016)	1	2
15	Noyyal	Elunuthimanagalam (Feb, 2015)	1	1
16	Ong	Salebhata(May, 2014)	1	1
17	Orsang	Chanwada (Feb, 2015)	1	1
18	Pennar	Chennur (Feb, 2015)	1	1
19	Periyar	Vandiperiyar(Feb, 2015)	1	1
20	Purna	Gopalkheda (Feb, 2015)	1	1
21	Sabarmati	Vautha (Nov, 2014; Feb, 2015)	1	2
22	Saryu	Ayodhya (Feb, 2015)	1	1
23	Seonath	Ghatora(May, 2014) ; Simga (May, 2014)	2	2
24	Sharda	Paliakalan (August, 2016)	1	1
25	Sheturni	Lowara (Feb, 2015; April, 2016)	1	2
26	Siang	Passighat (Nov, 2014)	1	1
27	Subarnarekha	Ghatsila(May, 2014) ; Jamshedpur (May, 2014)	2	2
28	Thungabhadra	Bawapuram (Feb, 2015) ; Mantralayam (Feb, 2015)	2	2
29	Vaitarna	Durvesh (Feb, 2015)	1	1
		Total	**32**	**35**

Summary of ZINC content in Indian rivers

Zinc is an essential element for all living things, including man. Zinc-containing proteins and enzymes are involved in every aspect of metabolism, including the replication and translation of genetic material. BIS has recommended 5 mg/L (5000 µg/L) acceptable concentration of zinc in drinking water, which can be extended to 15 mg/L in case no alternative source of water is available, but the water with more than 5000 µg/L zinc content is not suitable for drinking purpose.

Total 2451 water samples from the 414 water quality monitoring stations were collected and analyzed for zinc content in Indian Rivers in the period between May, 2014 and August 2017. Maximum Zinc concentration (2.65 mg/L) was observed at Manot water quality monitoring station on Narmada River during August, 2016. In the study area, all the River water quality stations are reported to have zinc concentration well within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Zinc in the River waters is observed during the study period.

Summary of IRON content in Indian rivers

According to BIS the acceptable limit of Iron is 0.3 mg/L (300µg/L). The occurrences of iron in River water above maximum acceptable limit (>300 µg/L) have been shown in the table 18. Total 2400 numbers of water samples from 414 WQ monitoring stations were collected and analyzed. Higher concentration of iron >300 µg/L has been observed in 524 water samples collected from 234 WQ stations of 137 Indian Rivers during the study period. The highest concentration of 14.55 mg/L is observed at Chenimari on Buridehing River. Table 19 shows the names of the water quality stations and the Rivers affected by high iron concentration 300 µg/L and these WQ stations are hot spots in terms of Iron concentration (Annexure-5).

Bagmathi, Baitarni, Bhadar, Brahmani, Brahmaputra, Buridehing, Cauvery, Desang, Dhansiri, Dikhow, Gandak, Ganga, Ghagra, Godavari, Gomti, Hemavathi, Indravathi, Jaldhaka, Kanhan, Kamala-Balan, Kopili, Krishna, Lohit, Mahananda, Mahi, Narmada, Neo dihing, Purna, Puthimari, Raidak-I, Rapti, Sai, Sone, Subansiri, Subarnarekha, Tapi, Teesta, Thungabhadra, Tors and Wainganga are the Rivers where three or more water quality stations have been found to have Iron concentration that exceed the limits throughout the study period.

Table 19: Rivers and WQ monitoring stations where Iron exceeded the acceptable limit

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
1	Aghanashini	Santeguli (Nov, 2014; Aug, 2017)	1	2
2	Aie	Aie NH Crossing (Nov, 2014)	1	1
3	Alakananda	Srinagar (Nov, 2014)	1	1
4	Alaknanda	Rudraprayag (May, 2014; Nov, 2014; April, 2016)	1	3
5	Ambika	Gadat (Aug, 2016; Aug, 2017)	1	2
6	Arkavathi	T. Bekuppe (Dec, 2016)	1	1
7	Bagh	Rajegaon (Aug, 2016; Aug, 2017)	1	2
8	Bagmathi	Dheng Bridge (Aug, 2017); Ekmighat (Dec, 2015, Aug, 2016, Dec, 2016, Aug, 2017); Hayaghat (Dec, 2016; Aug, 2017)	3	7
9	Baitarni	Anandpur (Aug, 2017); Champua (Aug, 2017)	2	2
10	Balason	Matigara (May, 2014; Nov, 2014)	1	2
11	Banas	Kamalpur (Aug, 2017)	1	1
12	Banjar	Bamni (Aug, 2016; Aug, 2017)	1	2
13	Barak	B.P. Ghat (Aug, 2017)	1	1

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
14	Beki	Beki Road Bridge (Nov, 2014); Beki Mathanguri (May, 2014; Nov, 2014)	1	3
15	Bhadar	Ganod (Dec, 2015; Aug, 2017); Holehonnur (Aug, 2017)	2	3
16	Bhadra	Holehonnur (Aug, 2017)	1	1
17	Bhagirath	Deoprayag (May, 2014; Nov, 2014); Koteshwar (Nov, 2014); Tehri (May, 2014); Uttarkashi (May, 2014; Nov, 2014)	4	6
18	Bhagirathi	Katwa (Nov, 2014)	1	1
19	Bhavani	Nellithurai (Nov, 2014)	1	1
20	Brahmani	Gomlai (Aug, 2017); Jenapur(Nov, 2014; Aug, 2017); Panposh (Nov, 2014; April, 2016; Aug, 2017); Talcher (Aug, 2017)	4	7
21	Brahmaputra	Pancharatna (May, 2014; Nov, 2014; Aug, 2017); Pandu(May, 2014; April, 2017; Aug, 2017); Bhomoraguri (Dec, 2015; April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Dibrugarh (April, 2016; Aug, 2016; April, 2017; Aug, 2017); Dhubri (Nov,2014); Neamatighat (April, 2016; Aug, 2016; April, 2017; Aug, 2017); Tezpur (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	7	26
22	Bugi	Dimapara(Dec, 2016)	1	1
23	Burhabalang	Govindapur (Aug, 2017)	1	1
24	Burhi Gandak	Sikandarpur (Aug, 2017)	1	1
25	Burhner	Mohgaoan (Aug, 2016; Aug, 2017)	1	2
26	Buridehing	Chenimari (April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Margherita (April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Naharkatia (Dec, 2015; April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	3	16
27	Burisuti	Panbari (Nov, 2014)	1	1
28	Cauvery	Chuchankatte (Aug, 2017); Kudige (Dec, 2015; Aug, 2017)	2	3
29	Champamati	Bahalpur (Nov, 2014)	1	1
30	Chel	Chel (May, 2014; Nov, 2014)	1	2
31	Chhoti Sarju	Akabarpur (Aug, 2016)	1	1
32	Churni	Hanskhali (Nov, 2014)	1	1
33	Damanganga	Vapi (Nov, 2014; Aug, 2016; April, 2017; Aug, 2017)	1	4
34	Desang	Desangpani (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Dillighat(Aug, 2016; April, 2017; Aug, 2017); Nanglamoraghat (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	3	11
35	Dhadher	Pingalwada (Aug, 2016; April, 2017; Aug, 2017)	1	3
36	Dhansiri	Bokajan (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Golaghat(Aug, 2016; Dec, 2016; April, 2017;	3	14

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
		Aug, 2017); Numaligarh (April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)		
37	Digaru	Sonapur (May, 2014; Dec, 2015; April, 2017)	1	3
38	Dikhow	Bihubar (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Sivasagar (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	2	9
39	Doyang	Gelabil (Dec, 2015; Aug, 2016; April, 2017; Aug, 2017)	1	4
40	Dudhnai	Dudhnai (May, 2014; Nov, 2014; Dec, 2015; April, 2017; Aug, 2017)	1	5
41	Gandak	Lalganj (Aug, 2016; April, 2017; Aug, 2017); Tribeni (April, 2017; Aug, 2017)	2	5
42	Ganga	Haridwar (Nov, 2014); Rishikesh (May, 2014; Nov, 2014); Allahabad (Aug, 2017); Mirzapur (Aug, 2017); Shahzadpur (Aug, 2017); Varanasi (Aug, 2017); Ankinghat (May, 2014; Nov, 2014; Dec, 2016); Bhitaura (May, 2014; Nov, 2014; Aug, 2016; Aug, 2017); Fatehgarh (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017); Garhamukteshwar (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; April, 2017); Kachlabridge (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017); Kanpur (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017); Azmabad (Aug, 2016; Dec, 2016; Aug, 2017); Buxar (April, 2017; Aug, 2017); Hathidah (April, 2017; Aug, 2017); Patna (Aug, 2016; April, 2017; Aug, 2017)	16	44
43	Ganjal	Chhidgaon (Aug, 2017)	1	1
44	Gaurang	Kokrajhar (May, 2014; Nov, 2014)	1	2
45	Ghagra	Elginbridge (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017); Turtipar (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016)	2	9
46	Ghish	Ghish (May, 2014; Nov, 2014)	1	2
47	Godavari	Bhadrachalam (Aug, 2017); Koperagaon (Aug, 2017); Perur (Aug, 2017); Polavaram (Aug, 2017)	4	4
48	Gomti	Maighat (Aug, 2017); Sultanpur (Aug, 2016; Aug, 2017); Lucknow (May, 2014; Aug, 2016); Neemsar (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016)	4	9
49	Gurupur	Addoor (Aug, 2017)	1	1
50	Haladi	Haladi (Aug, 2017)	1	1
51	Harohar/Phalgu	Gaya (Aug, 2017)	1	1
52	Hemavathi	M.H. Halli (Dec, 2015); Sakleshpur (Aug, 2017)	2	2
53	Hiran	Patan (Aug, 2017)	1	1
54	Indravathi	Jagdalpur (Aug, 2017); Nowrangpur (Feb, 2015; Aug, 2017); Pathagudem (Aug, 2017)	3	4
55	Jaldhaka	Jaldhaka NH-31 (May, 2014; Nov, 2014); Mathabhanga (Nov, 2014); Nagrakata(Nov, 2014)	3	4

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
56	Jiabharali	Bhalukpong (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Jiabharali NT Road Xing (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	2	9
57	Kamala-Balan	Jai Nagar (April, 2016; Aug, 2017); Jhanjharpur (Dec, 2016; Aug, 2017)	2	4
58	Kamang	Seppa (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	1	5
59	Kanhan	Ramakona(Aug, 2016; Aug, 2017); Satrapur (Aug, 2016); Duddhi(Aug, 2016; Aug, 2017)	3	5
60	Kharkai	Adityapur (Aug, 2017)	1	1
61	Khobragarhi	Wairagarh (Aug, 2016)	1	1
62	Kim	Motinaroli (Aug, 2016; Aug, 2017)	1	2
63	Kiul	Lakhisarai (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	1	4
64	Koel	Jaraikela (Aug, 2017)	1	1
65	Kopili	Dharamtul (Dec, 2015; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Jagibhakatgaon (Dec, 2015; April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Kampur (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Kheronighat (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	4	19
66	Kosi	Baltara (May, 2014; Dec, 2015; Aug, 2016; Dec, 2016; Aug, 2017)	1	5
67	Krishna	Huvin Hedgi (Aug, 2017); Arjunwad (Aug, 2017)	2	2
68	Kulsi	Kulsi (May, 2014; Dec, 2015; April, 2017; Aug, 2017)	1	4
69	Kwano	Basti (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017)	1	5
70	Lakshmantirtha	K.M. Vadi (Aug, 2017)	1	1
71	Lohit	Dholabazar (Dec, 2015; Aug, 2016; April, 2017; Aug, 2017); Tezu (Aug, 2016; April, 2017; Aug, 2017)	2	7
72	Mahanadi	Tikarpara (Aug, 2017)	1	1
73	Mahananda	Champasari (May, 2014; Nov, 2014); Sonapur (May, 2014; Nov, 2014)	2	4
74	Mahi	Khanpur (Dec, 2015; Aug, 2017); Mataji (Aug, 2016; Aug, 2017)	2	4
75	Manas	Manas NH Crossing (Nov, 2014)	1	1
76	Meenachi	Kidangoor (April, 2016)	1	1
77	Murti	Murti (Nov, 2014)	1	1
78	Nagavali	Srikakulam (Nov, 2014)	1	1
79	Naora	Neora (Nov, 2014)	1	1
80	Narmada	Garudeshwar(Aug, 2016); Barmanghat (Nov, 2014; Aug, 2017); Hoshangabad (Nov, 2014; Aug, 2017); Manot (Aug, 2016; Aug, 2017); Sandia (Nov, 2014; Aug, 2017)	5	9

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
81	Neo dihing	Miao (Aug, 2016; Dec, 2016; April, 2017; Aug, 2017); Namsai (April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	2	9
82	Nethravathi	Bantwal (Aug, 2017)	1	1
83	Orsang	Chanwada (Aug, 2016; Aug, 2017)	1	2
84	Pagladiya	Pagladiya N.T.Road Crossing (May, 2014)	1	1
85	Papagni	Kamalapuram (Aug, 2017)	1	1
86	Pazhayar	Ashramam (Nov, 2014)	1	1
87	Penganga	P.G.Bridge (Aug, 2016)	1	1
88	Pranhitha	Tekra (Aug, 2016)	1	1
89	Pravara	Pachegaon (Aug, 2017)	1	1
90	Punpun	Sripalpur (Dec, 2015; Aug, 2016; April, 2017; Aug, 2017)	1	4
91	Purna	Gopalkheda (Nov, 2014; Aug, 2016; Aug, 2017); Mahuwa (Dec, 2015; Aug, 2016; Aug, 2017)	2	6
92	Puthimari	Puthimari D.R.F.(May, 2014); Puthimari NH Road crossing (May, 2014)	2	2
93	Raidak-I	Chepan (Nov, 2014); Tufanganj (Nov, 2014)	2	2
94	Raidak-II	Barobisha (Nov, 2014)	1	1
95	Ramganga	Bareilly (Aug, 2016; Dec, 2016; Aug, 2017)	1	3
96	Ramganga	Dabri (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017)	1	5
97	Ramganga	Moradabad (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016)	1	4
98	Ramyala	Alutuma (Aug, 2017)	1	1
99	Ranganadi	Ranganadi NT-Road Xing (Dec, 2015; Aug, 2016; Dec, 2016; Aug, 2017)	1	4
100	Rangit	Majhitar (May, 2014); Singla-Bazar (May, 2014; Nov, 2014)	2	3
101	Rangpochu	Rangpo (May, 2014; Nov, 2014)	1	2
102	Rapti	Balrampur (Nov, 2014; Dec, 2016); Bansi (Nov, 2014; Aug, 2016; Dec, 2016; April, 2017); Birdghat (May, 2014; Nov, 2014; Dec, 2016); Regauli (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016; Aug, 2017)	4	14
103	Sabari	Konta (Aug, 2017)	1	1
104	Sabarmati	Derol Bridge (Aug, 2017); Vautha (Nov, 2014; Dec, 2015; Aug, 2016; April, 2017; Aug, 2017)	2	6
105	Sagaileru	Nandipalli (Aug, 2017)	1	1
106	Sai	Pratapgarh (Aug, 2016; Aug, 2017); Raibareli (Nov, 2014; Aug, 2016; Dec, 2016)	2	5
107	Sankh	Tilga (Aug, 2017)	1	1
108	Sankosh	Sankosh LRP (Nov, 2014)	1	1
109	Sarju	Ghat (May, 2014; Nov, 2014; Dec, 2016; April, 2017)	1	4
110	Saryu	Ayodhya (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016)	1	4

Sr.	River	WQ Sites (Period)	Total number of WQ sites	Total number of water samples
111	Sharda	Paliakalan (May, 2014; Nov, 2014; Aug, 2016; Dec, 2016)	1	4
112	Sher	Belkhedi (Aug, 2016)	1	1
113	Sheturni	Lowara (Aug, 2016; Aug, 2017)	1	2
114	Sita	Avershe (Aug, 2017)	1	1
115	Som	Rangeli (Aug, 2016; April, 2017)	1	2
116	Sone	Chopan (Aug, 2016; Dec, 2016); Kuldah Bridge (Aug, 2016; Aug, 2017); Japla (Aug, 2017); Koelwar(Aug, 2016: Aug, 2017)	4	7
117	Sonkosh	Golagang (Nov, 2014)	1	1
118	Subansiri	Badatighat (Dec, 2015; Aug, 2016; Dec, 2016); Chouldhowaghat (Dec, 2015; Aug, 2016; Dec, 2016; Aug, 2017)	2	7
119	Subarnarekha	Ghatsila (Aug, 2017) ; Jamshedpur (Aug, 2017); Jamsolghat (Aug, 2017); Muri (Aug, 2017)	4	4
120	Suklai	Suklai (May, 2014; Nov, 2014; Dec, 2015; Dec, 2016; April, 2017)	1	5
121	Suruliar	Theni (Dec, 2016)	1	1
122	Tapi	Burhanpur (Aug, 2016; April, 2017; Aug, 2017) Sarangkheda (Nov, 2014, Aug, 2016, Aug, 2017)	2	6
123	Teesta	Coronation (May, 2014; Nov, 2014); Domohani(May, 2014 Nov, 2014); Khanitar (Nov, 2014); Mekhliganj(Nov, 2014); Sankalan (May, 2014; Nov, 2014); Sevoke(May, 2014, Nov, 2014); Teesta-Bazar (May, 2014, Nov, 2014); Gojaldoba (May, 2014; Nov, 2014)	8	14
124	Thunga	Shimoga (Aug, 2017)	1	1
125	Thungabhadra	Harlahalli (Aug, 2017); Honnali(Aug, 2017)	2	2
126	Tirap	Udaipur (Dec, 2015; April, 2016; Aug, 2016; Dec, 2016; April, 2017; Aug, 2017)	1	6
127	Tons	Meja Road (Aug, 2017)	1	1
128	Torsa	Ghugumari(Nov, 2014); Hasimara(Nov, 2014)	2	2
129	Umngot	Dawki(Aug, 2017)	1	1
130	Vaitarna	Durvesh (Aug, 2016; Aug, 2017)	1	2
131	Valapatnam	Perumannu (April, 2016)	1	1
132	Vamsadhara	Gunupur (May, 2014; Nov, 2014; Aug, 2017)	1	3
133	Varada	Marol (Aug, 2017)	1	1
134	Wainganga	Ashti (Aug, 2016; Aug, 2017); Keolari (Aug, 2016); Kumhari (Aug, 2016, Aug, 2017); Pauni (Aug, 2016; Aug, 2017)	4	7
135	Wardha	Hivra (Aug, 2017)	1	1
136	Yamuna	Agra (Aug, 2016; Aug, 2017)	1	2
137	Yennehole	Yennehole (Aug, 2017)	1	1
		Total	**234**	**524**

11. CONCEPT OF NORMALIZATION:

In statistics and applications of statistics like data interpretation, normalization can have a range of meanings. In the simplest cases, normalization of ratings means adjusting values measured on different scales to a notionally common scale, often prior to averaging. In more complicated cases, normalization may refer to more sophisticated adjustments where the intention is to bring the entire probability distributions of adjusted values into alignment. In another usage in statistics, normalization refers to the creation of shifted and scaled versions of statistics, where the intention is that these normalized values allow the comparison of corresponding normalized values for different datasets in a way that eliminates the effects of certain gross influences, as in an anomaly time series

In this present case normalization concept is adopted to normalize the water quality Trace & Toxic parameters for data interpretation to attain alignment in representation and to make its respective permissible limit value into one unique value as 1 (one).

Normalized Value: *Each parameter is divided with its own permissible limit. Following that, permissible limit for all parameters also turns as 1 (one) and taking it as Threshold Value.*

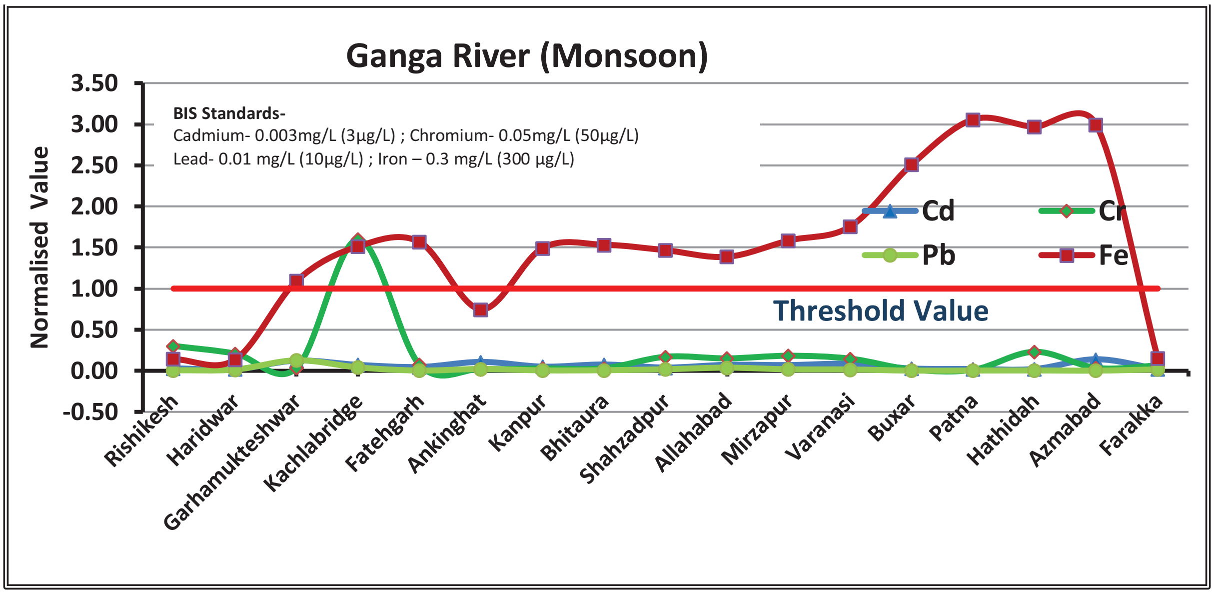
Threshold Value for all parameters is - 1

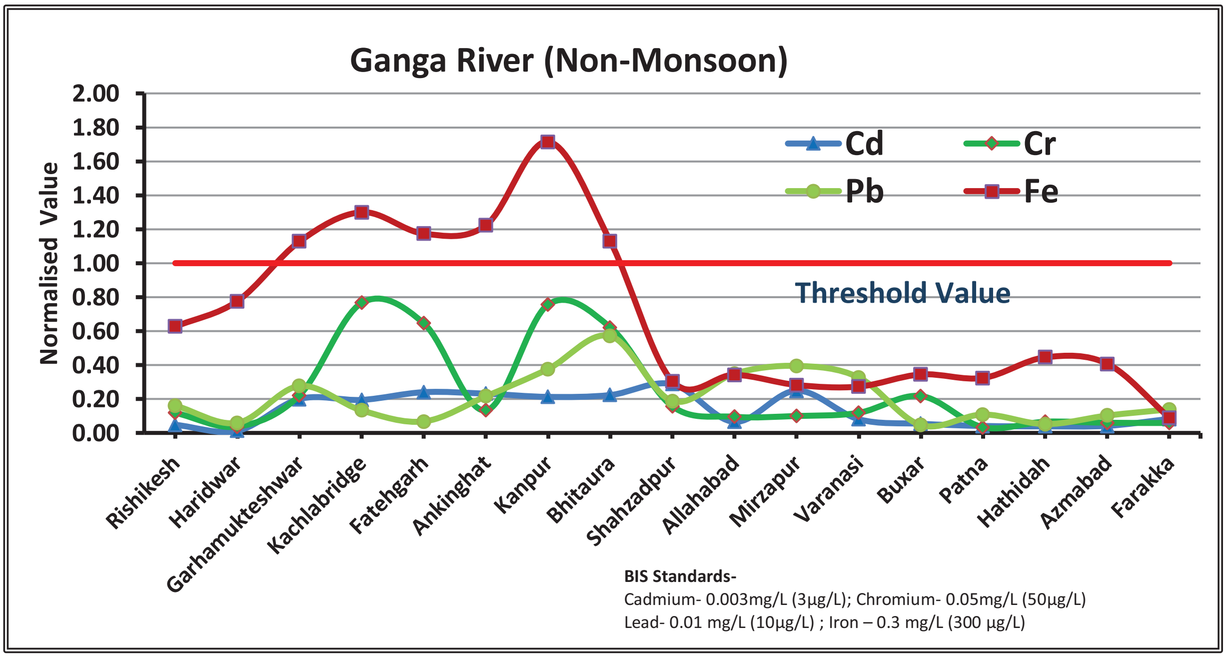
Seasonal wise normalized value graphs plotted here by considering the parameters such as Cadmium (Cd), Chromium (Cr) and Lead (Pb) with respect to their lethal capacity and Iron (Fe) taken into account because of its more availability as pollutant during the study period.

11.1 GANGA RIVER

The Ganga is the 20th longest river in the Asia and the 41st longest in the world (Source: Philips World Atlas). The headwaters region of Ganga is the Himalayas dotted by number of mighty tributaries. The Bhagirathi river that rises from the Gangotri glacier near Gomukh at an elevation of about 7,010 m above mean sea level in the Uttarkashi district of Uttarakhand is considered as the source of Ganga river. It descends down the valley up to Devprayag where after joining another hill stream Alaknanda, it is called Ganga. Flowing downhill, the river is joined by a number of streams, such as the Mandakini, the Dhuli Ganga and the Pindar. The principal tributaries joining the river from right are the Yamuna and the Son. The Ramganga, the Ghaghra, the Gandak, the Kosi and the Mahananda join the river from left. The total length of river Ganga (measured along the Bhagirathi and the Hooghly) up to its outfall into Bay of Bengal is 2,525 km with 631 km navigable length.

Ganga has been a cradle of human civilization since time immemorial. Millions depend on this great River for physical and spiritual sustenance. It is a life-line, a symbol of purity and virtue for countless people of India. But due to rapid industrialization, increase in urban population, change in lifestyle, use of artificial fertilizer has led to deterioration in water quality of holy river Ganga. At certain stretches the river water is grossly polluted mostly due to industrial and municipal sewage discharge in the river Ganga. There are 18 water quality stations at Deoprayag, Rishikesh, Haridwar, Garhmukteshwar, Kachlabridge, Fatehgarh, Ankinghat, Kanpur, Bhitaura, Shahzadpur, Chhatnag Allahabad, Mirzapur, Varanasi, Buxar, Gandhighat (Patna), Hathidah, Azamabad and Farakka on the main stream of the river Ganga.





Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except iron from Ankighat to Azmabad stretch during monsoon. In this study area, all the Ganga River water quality stations data reported that arsenic and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic and zinc in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Ganga River are 0.002-3.936µg/L; 0.080-205.82 µg/L; 0.020-36.91 µg/L and 0.002-1.53 mg/Lrespectively during the May, 2014 and August 2017. The chromium and lead are very toxic metal originates mainly from industrial effluents. During the study period 3% and 8% samples are found above the permissible limit in respect of chromium and lead. Generally elementary iron dissolves in water under normal conditions.The iron concentration in the River Ganga was vaired 0.002-1.53 mg/L.

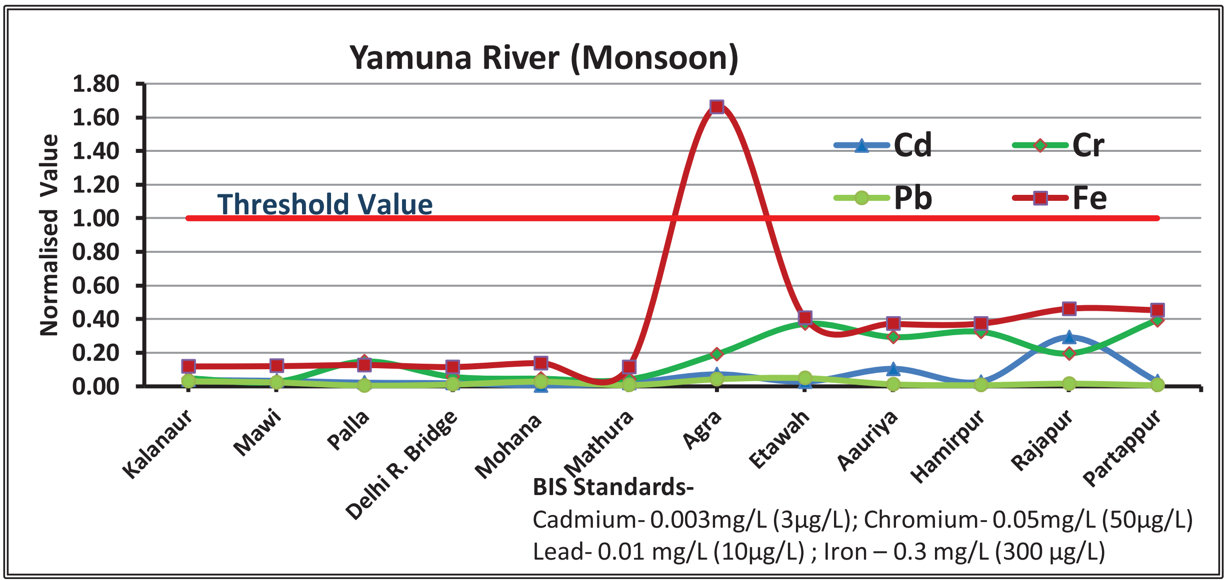
11.2 YAMUNA RIVER

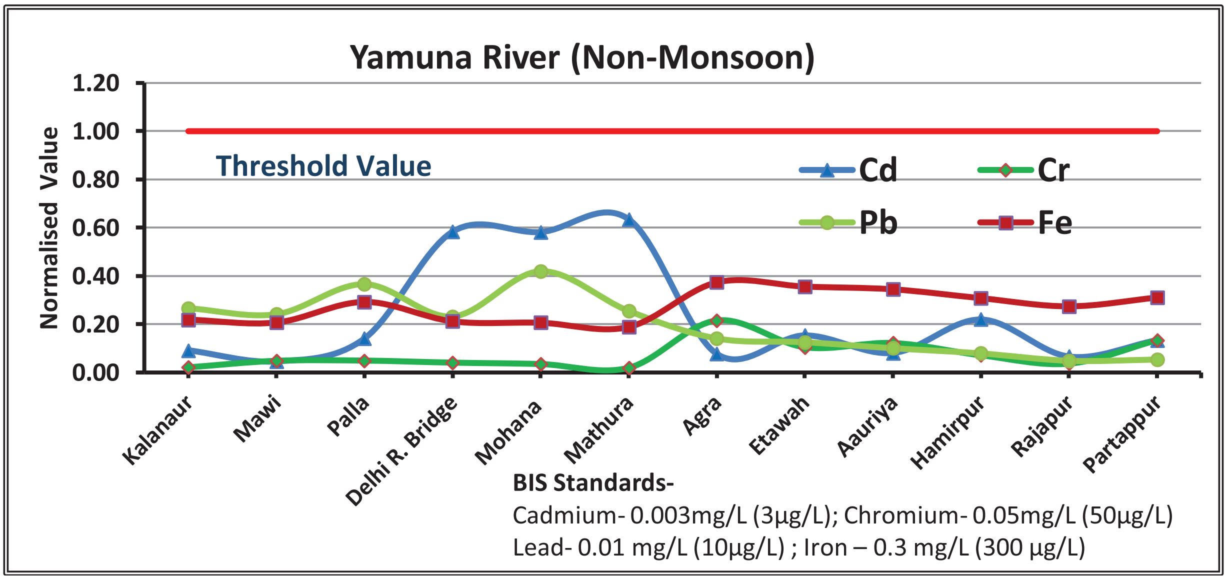
Yamunotri, which is north of Haridwar in the Himalayan Mountains, is the source of the Yamuna. The river Yamuna, a major tributary of river Ganges, originates from the Yamunotri glacier near Banderpoonch peaks (38^o 59' N 78^o 27' E) in the Mussourie range of the lower Himalayas at an elevation of about 6387 meters above mean sea level in district Uttarkashi (Uttrakhand).The track along the river bank is quite magnificently dominated by wide panorama of mountains. In its first 170 km stretch, the tributaries Rishi Ganga Kunta, Hanuman Ganga, Tons and Giri join the main river.

Arising from the source, river Yamuna flows through a series of valleys for about 200 Kms, in lower Himalayas and emerges into Indo-Gangetic plains. In the upper reaches, the main valley is overlooked by numerous hanging valleys, carved by glaciers during the last ice ages. The gradient of the river is steep here and the entire geomorphology of the valley has been influenced by the passage of the river. In the upper stretch of 200 Km, it draws water from several major streams. The combined stream flows through the Shivalik range of hills of Himachal Pradesh and Uttarakhand states of India and enters into plains at Dak Pathar in Uttrakhand where the river water is regulated through weir and diverted into canal for power generation. From Dak Pathar it flows through the famous Sikh religious place of Poanta Sahib. On the right side of the Yamuna basin is the Mussourie spur-along which, lies sprawled, the hill station of Mussourie. Flowing through Poanta Sahib it reaches Hathnikund/Tajewala in Yamuna Nagar district of Haryana state, where the river water is again diverted into Western Yamuna canal and Eastern Yamuna canal for irrigation. During dry season, no water is allowed to flow in the river downstream to Tajewala barrage and the river remains dry in some stretches between Tajewala & Delhi. The rivers regain water because of ground water accrual and contributions of feeding canal through Som nadi (seasonal stream) upstream of Kalanaur. It enters Delhi near Palla village after traversing a route of about 224 Km.

The river is again tapped at Wazirabad through a barrage for drinking water supply to Delhi. Generally, no water is allowed to flow beyond Wazirabad barrage in dry season, as the available water is not adequate to fulfill the demand of water supply of Delhi.

Whatever water flows in the downstream of Wazirabad barrage is the untreated or partially treated domestic and industrial wastewater contributed through several drains along with the water transported by Haryana Irrigation Department from Western Yamuna Canal (WYC) to Agra Canal via Nazafgarh Drain and the Yamuna. After 22 Km downstream of Wazirabad barrage there is another barrage, Okhla barrage, through which Yamuna water is diverted into Agra Canal for irrigation. No water is allowed to flow through barrage during dry season. Whatever water flows in the river beyond Okhla barrage is contributed through domestic and industrial wastewater generated from East Delhi, Noida and Sahibabad and joins the river through Shahdara drain. The Yamuna, after receiving water through other important tributaries, joins the river *Ganga* and the underground *Saraswati* at Prayag (Allahabad) after traversing **about 950 Km**. Thus, Yamuna river cannot be designated as continuous river particularly in dry seasons (almost 9 months), but can be segmented in five distinguished independent segments due to characteristic hydrological and ecological conditions. The catchments of Yamuna river system cover parts of Uttar Pradesh, Uttrakhand, Himachal Pradesh, Haryana, Rajasthan, Madhya Pradesh & Delhi states.There are thirteen (13) water quality stations at Poanta, Kalanour, Mawi, Palla, Delhi, Mathura, Mohana, Agra, Auraiya, Etawah, Hamirpur, Rajapur and Pratappur on river Yamuna.





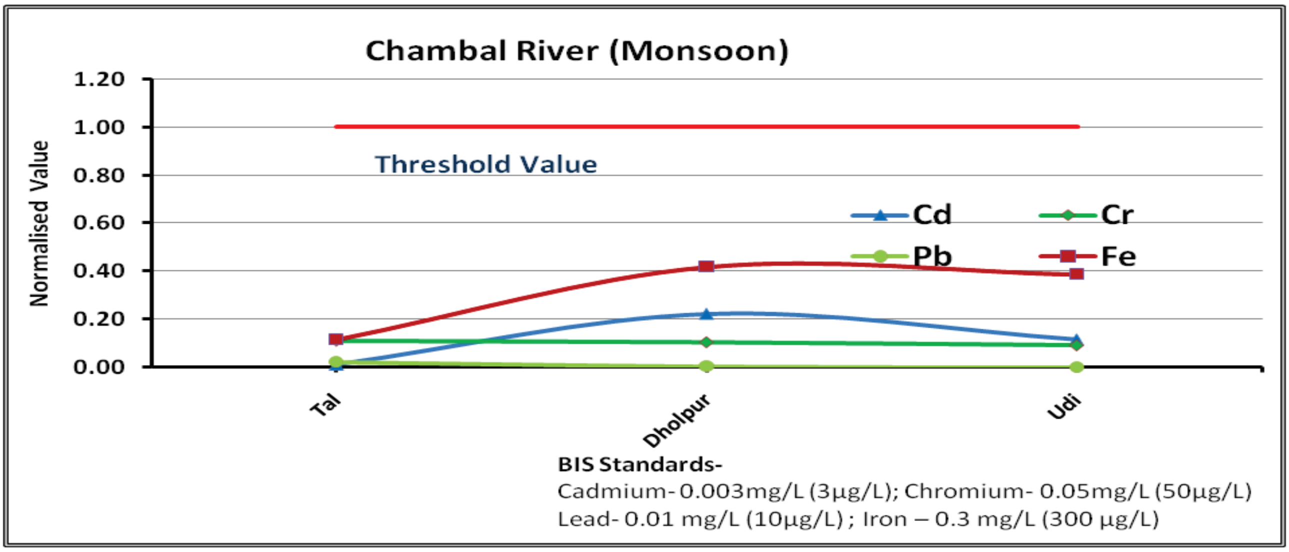
Observations/Findings:

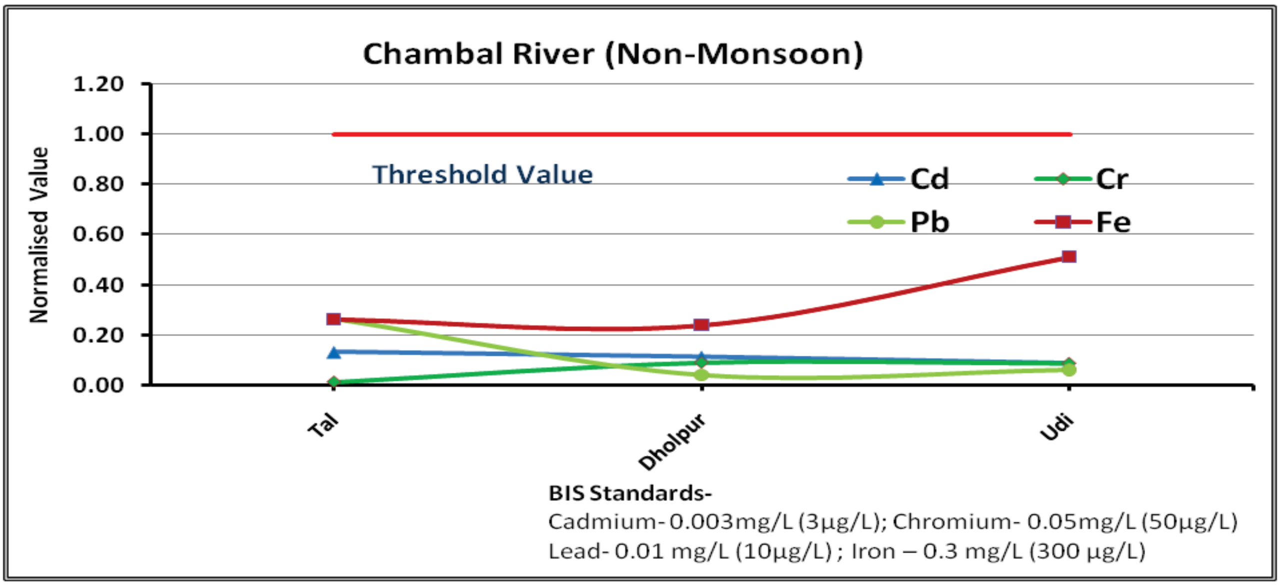
From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except iron at Agra during monsoon. In this study area, all the Yamuna River water quality stations data reported that arsenic, chromium, copper, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, chromium, copper, nickel and zinc in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Yamuna River are 0.002-9.166 µg/L; 0.020-

36.370 μg/L; 0.040-20.044 μg/L and 0.002-0.613 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 6%, 3% and 2% samples are found above the permissible limit in respect of Cadmium, lead and Iron.

11.3 RIVER CHAMBAL

The Chambal River, called Charmanvati in ancient times, is the largest of the rivers flowing through Rajasthan state. This tributary of Yamuna is 960km long. The total area drained by the Chambal up to its confluence with the Yamuna is 143,219 sq km out of which 76,854 sq km lies in M.P. state, 65,264 sq km in Rajasthan state and 1,101 sq km in Uttar Pradesh. River Chambal, the biggest tributary of Yamuna rises in Vindhyan range near Mhow in Indore District of Madhya Pradesh at an elevation of 354 m at north latitude 22° 28' and east longitude 75° 40'. Chambal basin is bound on north by the ridge separating it from Luni and Yamuna basins, on the south by Vindhyan range and on the west by Aravali range, on east lies the ridge separating it from Kunwari and Sind rivers of Yamuna basin. Chambal basin lies between north latitudes 22° 27' and 27° 20' and east longitudes 73° 20' and 79° 15'. Its total catchment area is 1,39,468 sq.km. There are three (03) water quality stations at Tal, Dholpur, and Udi on River Chambal.



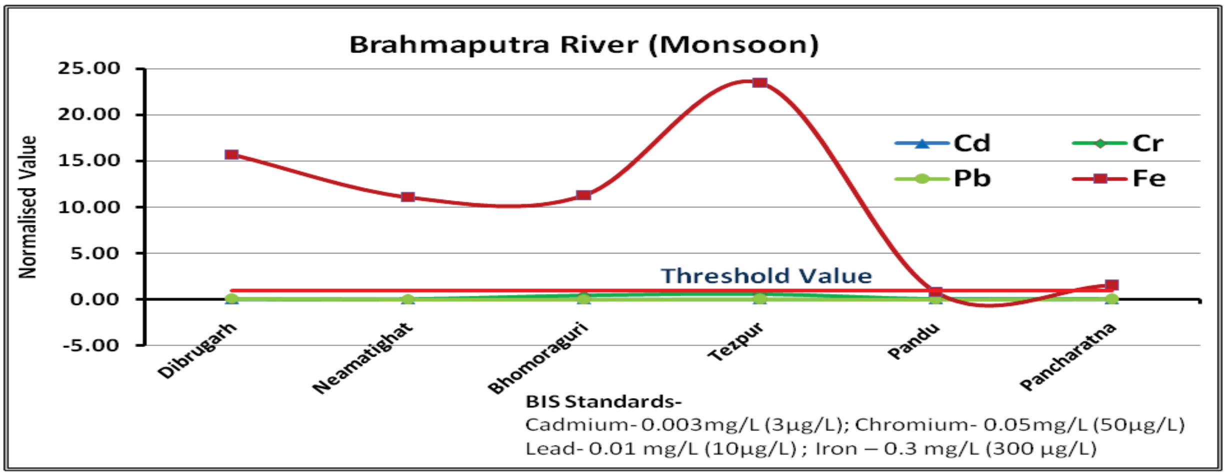


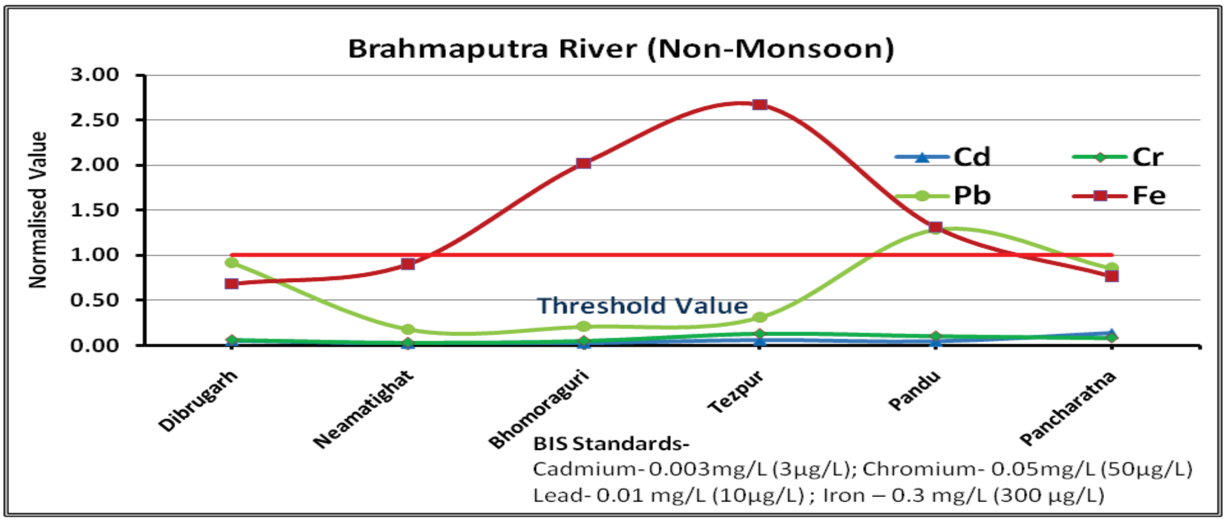
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons all the parameters observed below the threshold value. In this study area, all the Chambal River water quality stations data reported that all trace and toxic metal (arsenic, cadmium, chromium, copper, nickel, lead, zinc and iron) concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of aforesaid metals in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Chambal River are 0.002-1.251 µg/L; 0.680-12.290 µg/L; 0.010-5.070 µg/L and 0.020-0.276 mg/Lrespectively during the May, 2014 and August 2017.

11.4 BRAHMAPUTRA RIVER

The Brahmaputra River originates in the north from Kailash ranges of Himalayas at an elevation of 5,150 m just south of the lake called Konggyu Tsho and flows for about a total length of 2,900 km. In India, it flows for 916 km. The principal tributaries of the river joining from right are the Lohit, the Dibang, the Subansiri, the Jiabharali, the Dhansiri, the Manas, the Torsa, the Sankosh and the Teesta whereas the Buridehing, the Desang, the Dikhow, the Dhansiri and the Kopili joins it from left. There are 48 water quality stations in Brahmaputra basin out of which six (06) stations Bhomoraguri, Dibrugarh, Pancharatna, Pandu, Tezpur and Neamatighat are located on the main stream of Brahmaputra.



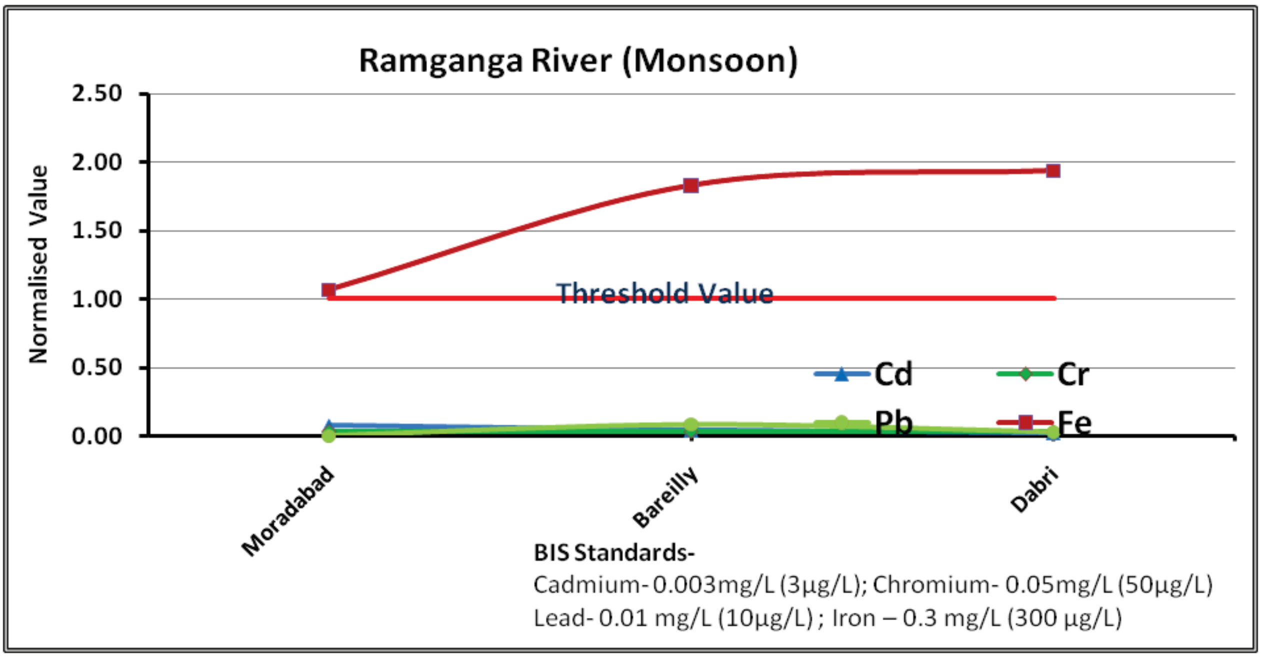


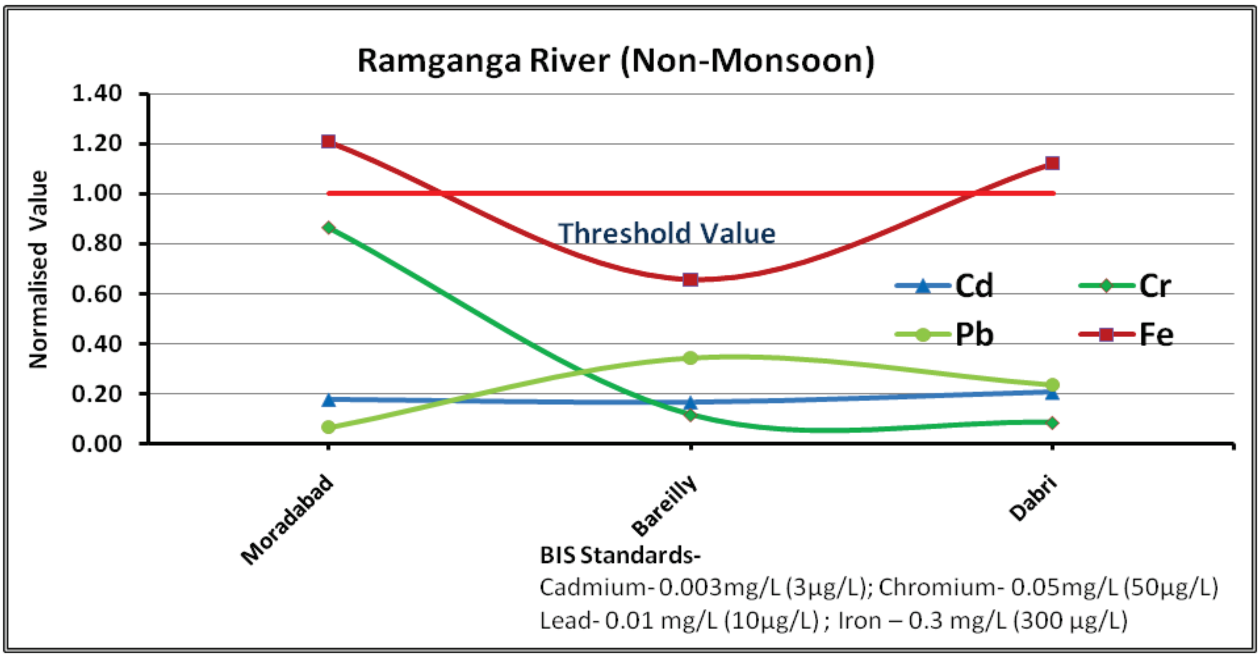
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron from dibrugarh to pandu stretch in both the seasons. In this study area, all the Brahmaputra River water quality stations data reported that arsenic, cadmium, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, cadmium, nickel and zinc in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Brahmaputra River are 0.002-1.314 µg/L; 0.070-53.100 µg/L; 0.020-21.480 µg/L and 0.008-9.872 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 2%, 2% and 46% of samples are found above the permissible limit with respect to Chromium, Copper and Iron.

11.5 RAMGANGA RIVER

Ramganga is the first major tributary joining Ganga. It rises at an altitude of about 3,110 m in the lower Himalayas near the Lohba village in the Garhwal district of Uttarakhand. The length of the Ramganga River from the source to the confluence with the Ganga is 596 km. During its course, the river flows through a mountainous terrain and has a number of falls and rapids. The river enters the plains at Kalagarh near the border of the Garhwal district, where the famous Ramganga dam has been constructed. Beyond Kalagarh, the river flows in a southeasterly direction and finally joins the Ganga on its left bank near Kanauj in the Fategarh district. The river flows entirely in the states of Uttarakhand and Uttar Pradesh. The catchment area of the basin is about 32,493 sq. km. The important tributaries that join the Ramganga River are the Kho, the Gangan, the Aril, the Kosi, and the Deoha (Gorra). There are three (03) water quality stations at Moradabad, Bareilly and Dabri on river Ramganga.



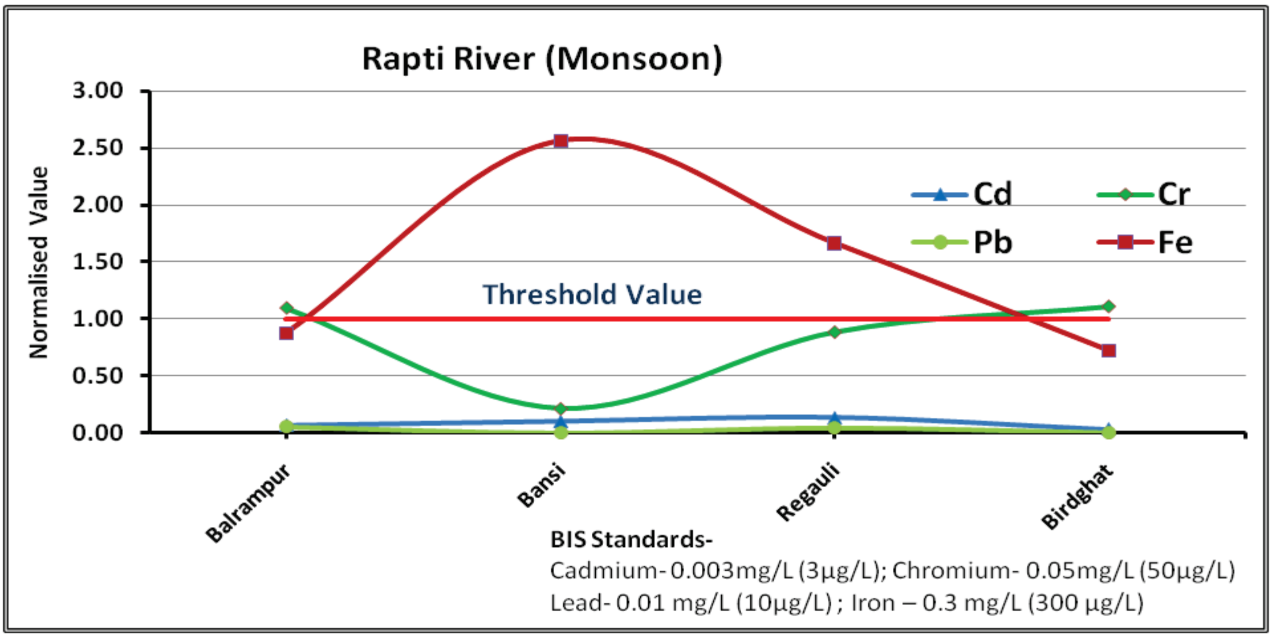


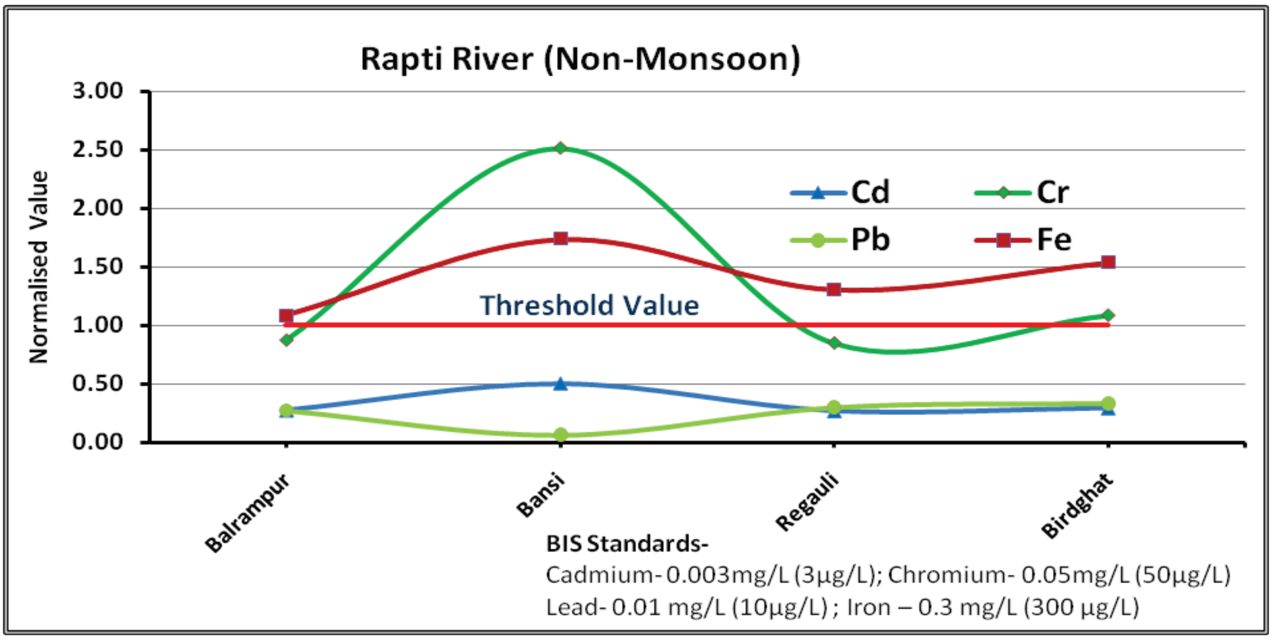
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout the ramganga river stretch in both the seasons. In this study area, all the Ramganga River water quality stations data reported that arsenic, cadmium, copper, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, cadmium, copper, nickel and zinc in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Ramganga River are 0.032-1.749 µg/L; 0.040-230.9 µg/L; 0.010-32.850 µg/L and 0.008-1.16 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 4%, 25% and 50% of samples are found above the permissible limit with respect to Chromium, Lead and Iron.

11.6 RAPTI RIVER

The Rapti is a tributary of Ghaghra river. The Rapti rises south of a prominent E-W ridgeline midway between the western Dhaulagiri Himalaya and the Mahabharat Range. A 3,500 metres summit on this ridgeline marks a triple divide. North of the triple divide the Karnali and Gandaki basins are adjacent; south of it the Rapti and similar but smaller *Babai River* separate the two larger basins. After crossing into India, the Babai and Rapti separately join the Karnali's continuation called *Ghaghara*. The Ghaghara ultimately joins the Ganges, as does the Gandaki.Four (04) water quality monitoring stations at Balrampur, Birdghat, Reguli and Bansi are being operated by CWC on the Rapti River.



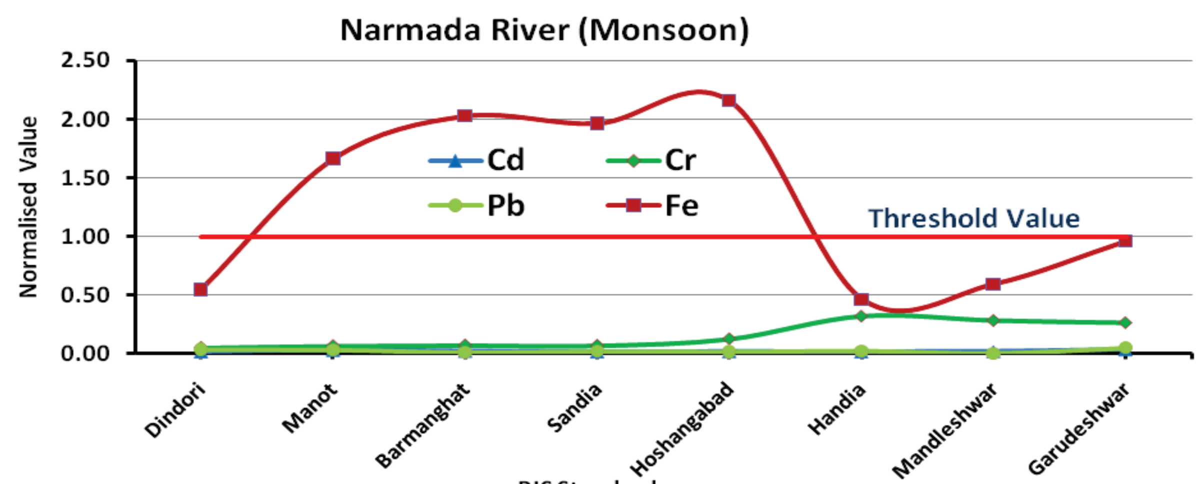


Observations/Findings:

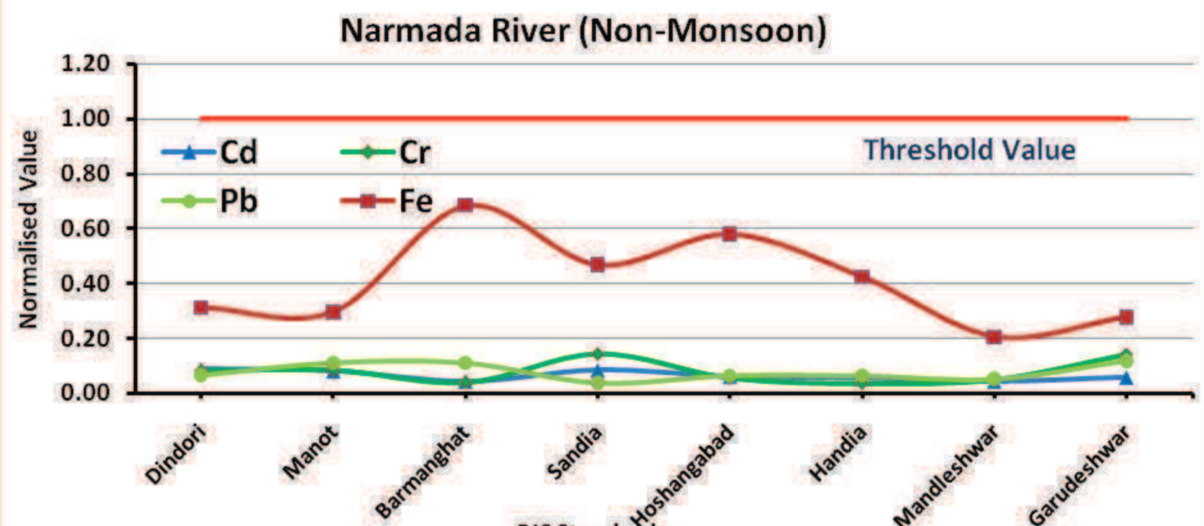
From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout the rapti river stretch in both the seasons. In this study area, all the Rapti River water quality stations data reported that arsenic, copper, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, copper, nickel and zinc in the River waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Rapti River are 0.009-3.493 µg/L; 0.043-229.73 µg/L; 0.030-18.650 µg/L and 0.006-1.362 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 10%, 39%, 26% and 45% of samples are found above the permissible limit with respect to Cadmium, Chromium, Lead and Iron.

11.7 NARMADA RIVER

Narmada is the largest west flowing river of the peninsular India. It rises from Maikala range near Amarkantak in Anuppur district of Madhya Pradesh, at an elevation of about 900 m. The total length of the river is 1,312 km and its important tributaries are the Burhner, the Banjar, the Sher, the Shakkar, the Dudhi, the Tawa , the Ganjal, the Kundi, the Goi and the Karjan which join from left whereas the Hiran, the Tendoni, the Barna, the Kolar, the Man, the Uri, the Hatni and the Orsang join from right. Narmada drains into the Arabian Sea through the Gulf of Khambhat. There are eight (08) water quality stations at Barmanghat, Dindori, Handia, Hoshangabad, Madleshwar, Manot, Garudeshwar and Sandia on the main stream of river Narmada while ten (10) water quality stations are located at its tributaries viz., Orsang, Banjar, Sakkar, Burhner, Sher, Ganjal, Uri, Kundi, Hiran and Goi. Narmada River has 41 tributaries. Of these, 22 are on the left bank and 19 are on the right.



BIS Standards-
Cadmium- 0.003mg/L (3µg/L); Chromium- 0.05mg/L (50µg/L)
Lead- 0.01 mg/L (10µg/L) ; Iron – 0.3 mg/L (300 µg/L)



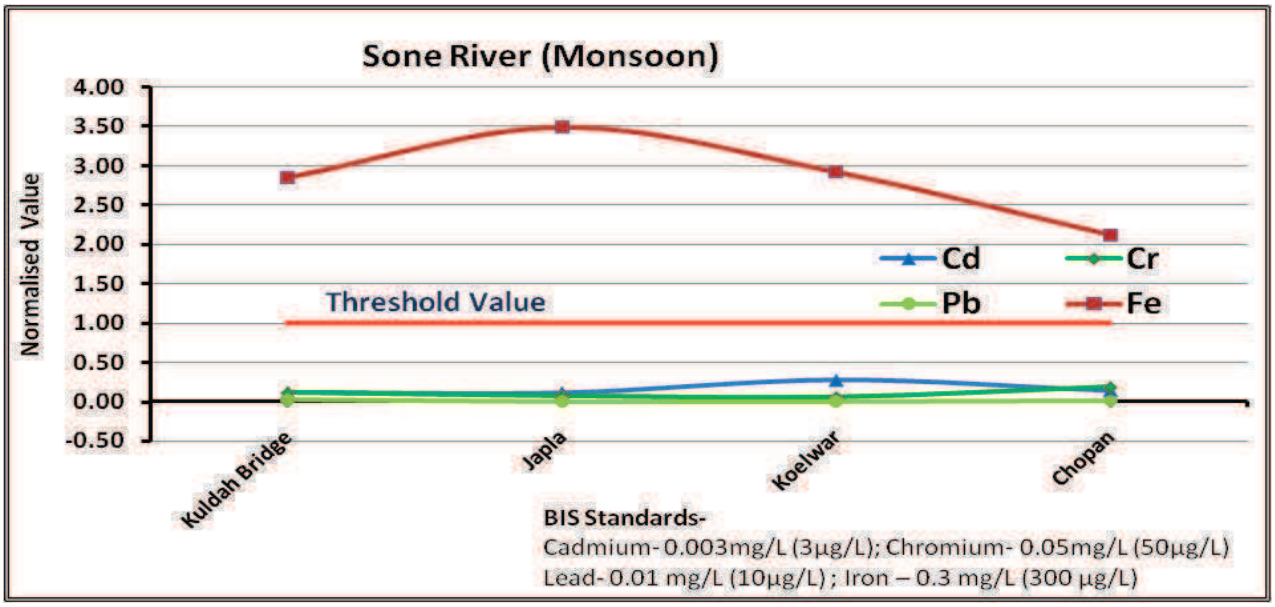
BIS Standards-
Cadmium- 0.003mg/L (3µg/L); Chromium- 0.05mg/L (50µg/L)
Lead- 0.01 mg/L (10µg/L) ; Iron – 0.3 mg/L (300 µg/L)

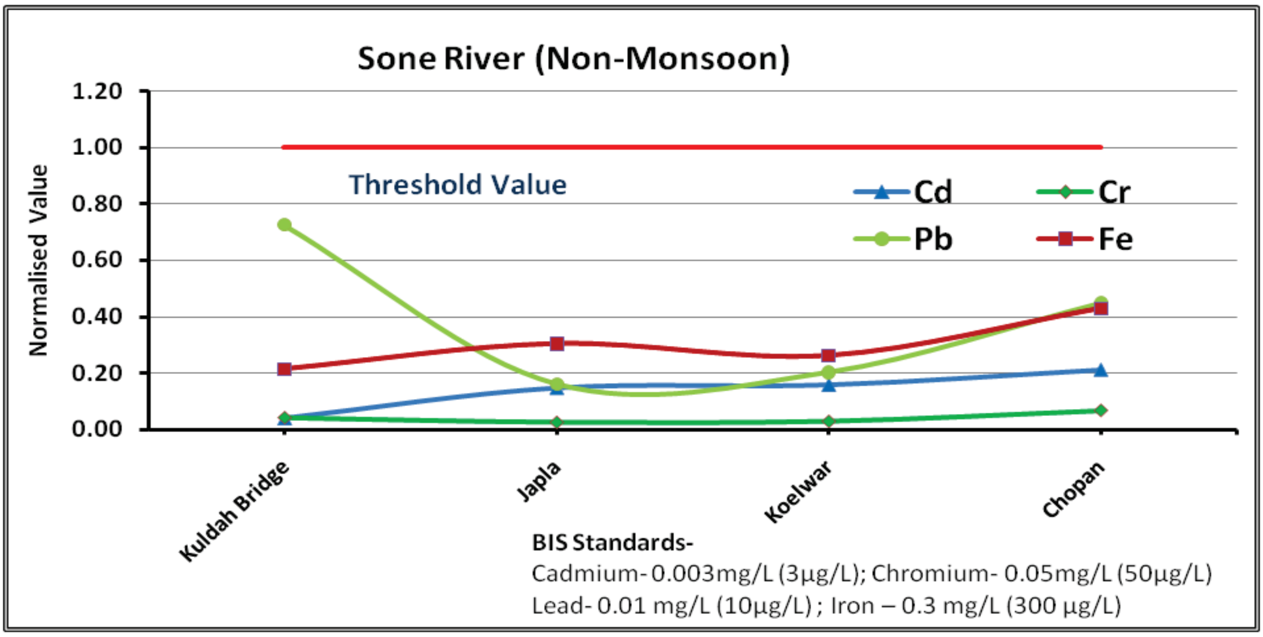
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron from manot to hoshangabad stretch during monsoon season. In this study area, all the Narmada River water quality stations data reported that arsenic, cadmium, chromium, copper and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, cadmium, chromium, copper and zinc in the river waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Narmada River are 0.002-1.201 µg/L; 0.080-26.66 µg/L; 0.080-21.930 µg/L and 0.002-1.1 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 3%, 1% and 13% of samples are found above the permissible limit with respect to Nickel, Lead and Iron.

11.8 SONE RIVER

The river Sone is an important right bank tributary of the river Ganga. It originates from Amarkantak high lands in hills of Maikala range in Bilaspur district of Chhattisgarh at an elevation of 640 m and latitude 20°44’ N and longitude 82°4’E. The river outfalls into the Ganga at about 16 km. upstream of Patna at latitude 25°14’ N and longitude 84°42’ E. The total catchment area of river system is 70,055 sq.km. The catchment of the whole river system is surrounded by the Vindhachal range in the North, the Punpun river system and the Chotanagpur plateau on the East, the Baghelkhand plateau and the Mahadeva hills on the South and the forest clad Maikal and Bhamver ranges on the West . After flowing a distance of 655 km. through the states of Chhattisgarh, Madhya Pradesh and Uttar Pradesh, the river Sone enters in Jharkhand. Its important tributaries lying in the states of Chhattisgarh, Madhya Pradesh, Uttar Pradesh and Jharkhand are Johilla, Mahanadi, Banas, Gopad, Rihand, Ghaghar, Kanhar and North Koel. The river Kanhar, a tributary of Sone, flows South to North and in the downstream reach and forms boundaries between Jharkhand and Madhya Pradesh. The total length of the river is 784 km, out of which about 500 km lies in Madhya Pradesh, 82 km in Uttar Pradesh and the remaining 202 km in Bihar. There are five (05) water quality stations at Kuldah Dridge, Chopan, Goverdhey Ghat, Japla and Koelwar on river Sone.



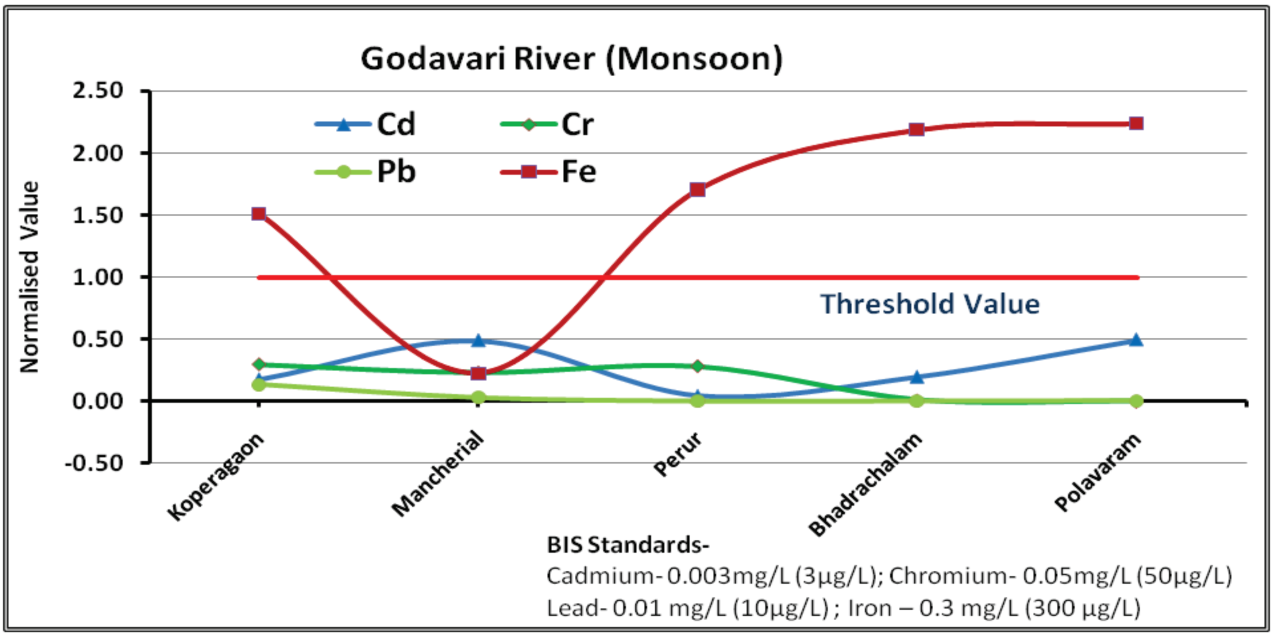


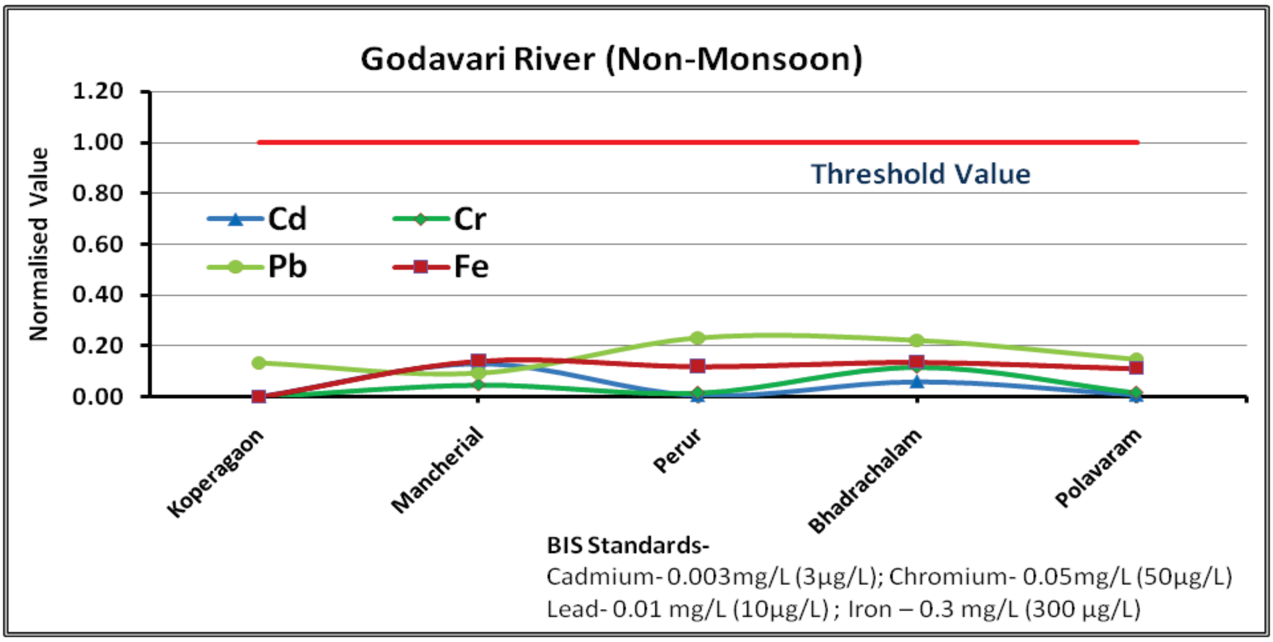
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout sone river stretch during monsoon season. In this study area, all the Sone River water quality stations data reported that arsenic, chromium, copper, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, chromium, copper, nickel and zinc in the river waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Sone River are 0.006-3.034 µg/L; 0.240-16.650 µg/L; 0.010-16.750 µg/L and 0.002-2.050 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 3%, 6% and 20% of samples are found above the permissible limit with respect to Cadmium, Lead and Iron.

11.9 GODAVARI RIVER

The Godavari River rises from Trimbakeshwar in the Nashik district of Maharashtra about 80 km from the Arabian Sea at an elevation of 1,067 m. The total length of Godavari from its origin to outfall into the Bay of Bengal is 1,465 km. Its principal tributaries joining from right are the Pravara and the Manjra whereas the Purna, the Penganga, the Wardha, the Wainganga, the Indravati and the Kolab joins from left. There are nine (09) water quality stations at Bhadrachalam, Perur, Polavaram, Mancherial, Dhaligaon, G.R. Bridge, Koperagaon, Nanded and Yelli on Godavari River.



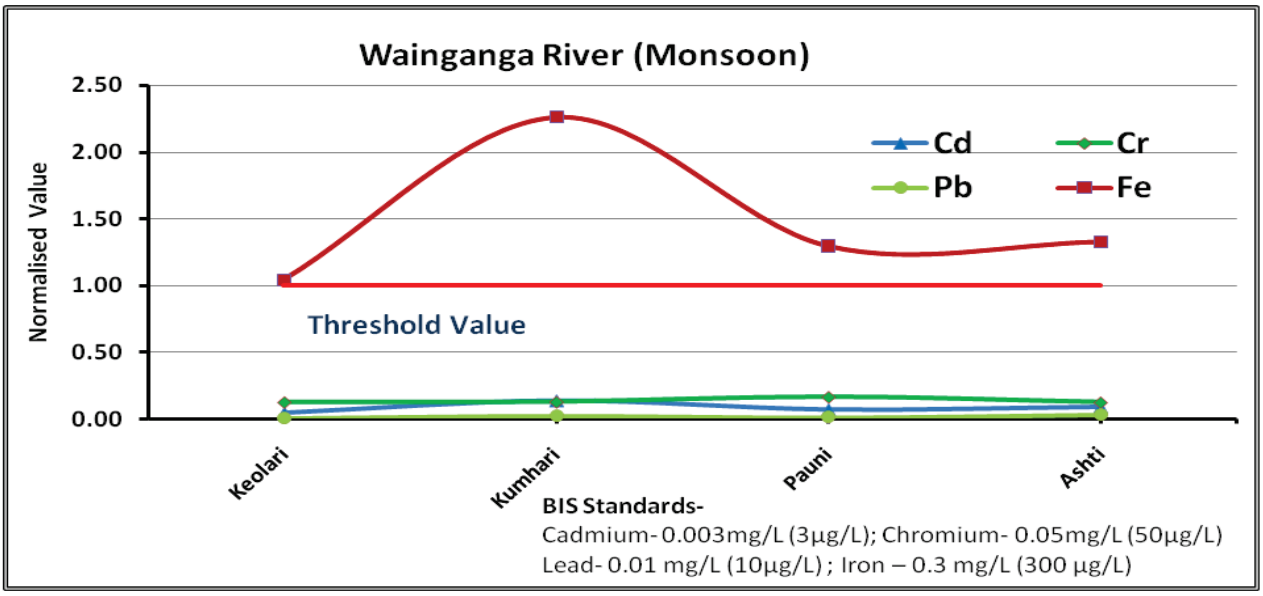


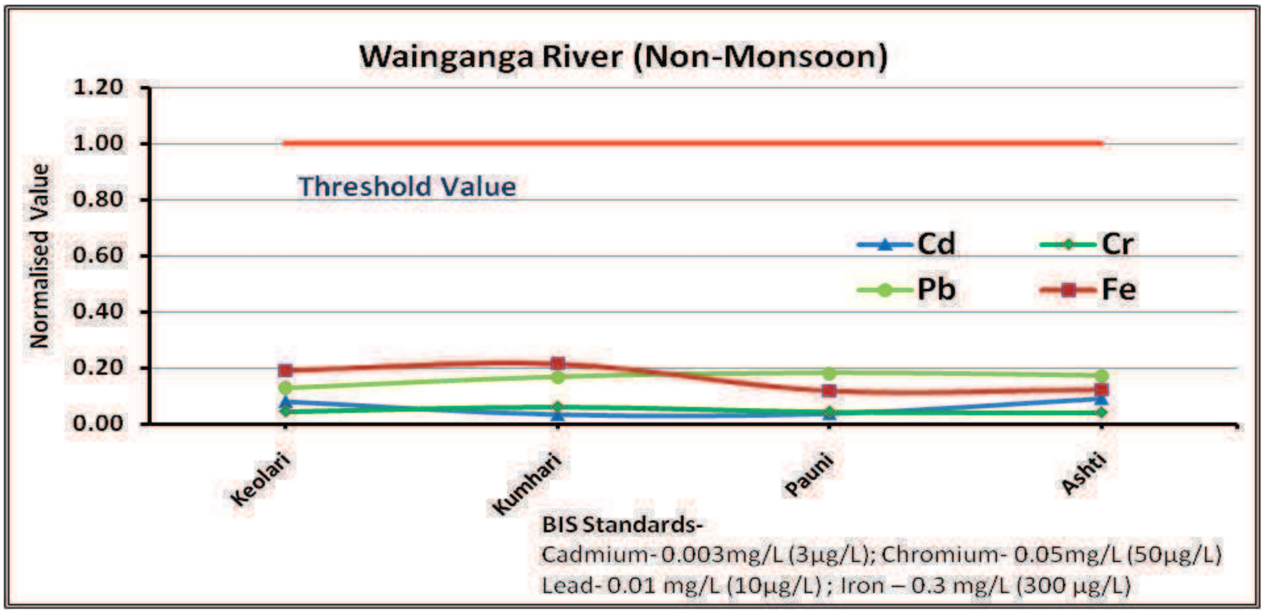
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron at mancherial in monsoon season. In this study area, all the Godavari River water quality stations data reported that arsenic, cadmium, chromium, copper, nickel and zinc concentration lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of arsenic, cadmium, chromium, copper, nickel and zinc in the river waters is observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Godavari River are 0.009-1.489 µg/L; 0.010-21.510 µg/L; 0.020-22.870 µg/L and 0.002-0.670 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 5% and 19% of samples are found above the permissible limit with respect to Lead and Iron.

11.10 WAINGANGA RIVER

The Wainganga River originates near village Partabpur or Mundara ($21^0 57'$N & $79^0 34'$E) about 20 km from the town of Satapura plateau and flows in a wide half circle, bending and winding among the spurs of the hills from the west to the east of the Seoni District. Here it is directed to the South being joined by the Thanwar river from Mandla and forms boundary of Seoni for some Kilometers until it enters Balaghat. Subsequently emerging from the hills the river flows south & south-west through rich rice lands of Balaghat, Bhandara & Pauni. The principal tributaries of the river are Bagh in Balaghat, Bawanthari, Kanhan Chulband in Bhandara & Garvhi in Chandrapur. It then flows through Chandrapur & Gadchiroli Districts and after a course of about 570 km. joins the Wardha at Seoni in Chandrapur district. The total catchment area of the river upto Its confluence with river Wardha is 51000 Sq. Km. There are four (04) water quality stations at Ashti, Keolari, Kumhari and Pauni on river Wainganga.



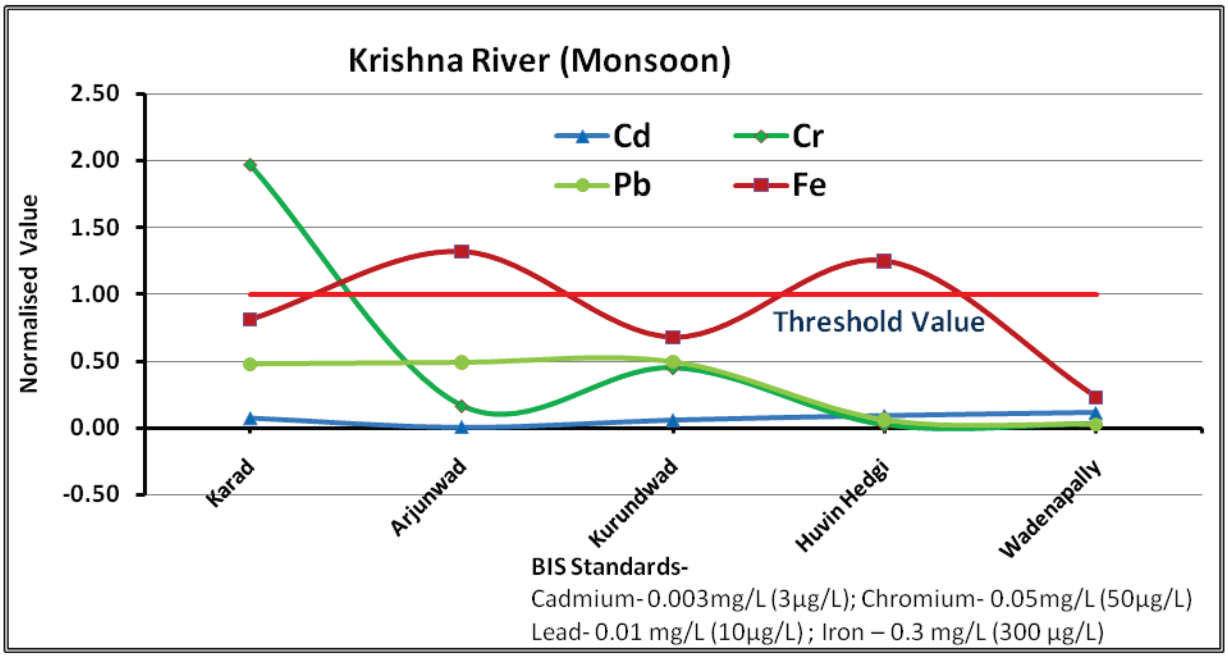


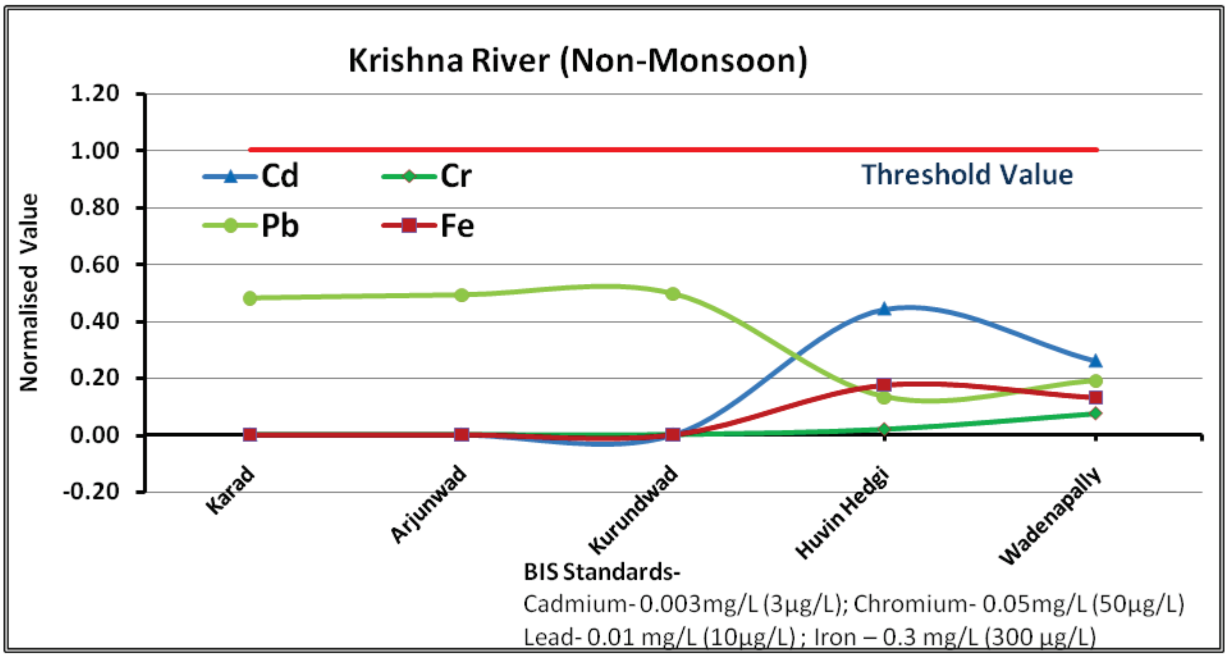
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout the complete wainganga river stretch during monsoon season. In this study area, all the Wainganga River water quality stations data reported that all trace & toxic metal (Arsenic, Cadmium, Chromium, Copper, Nickel, Lead and Zinc) concentrations excluding iron lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of above said trace & toxic metals in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Wainganga River are 0.003-0.741 µg/L; 0.110-12.710 µg/L; 0.060-5.380 µg/L and 0.012-0.740 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 19% of samples are found above the permissible limit with respect to Iron.

11.11 KRISHNA RIVER

The Krishna is the second largest eastward draining interstate river in Peninsular India. The Krishna River rises from the Western Ghats near Jor village of Satara district of Maharashtra at an altitude of 1,337 m just north of Mahabaleshwar in Maharashtra. Thirteen major tributaries join the Krishna River along its course, out of which six are right bank tributaries and seven are left bank tributaries. All the major tributaries draining the base of the triangle fall into the Krishna River in the upper two thirds of its length. Among the major tributaries, the Ghatprabha, the Malprabha and the Tungabhadra are the principal right bank tributaries which together account for 35.45% of the total catchment area, whereas the Bhima and the Musi are the principal left bank tributaries which together account 35.62% of the total catchment area. The total length of the river from origin to its outfall into the Bay of Bengal is about 1300 km. There are six (06) water quality stations at Wadenapally, Vijaywada, Kurundwad, Arjunwad, Huvenhedigi and Karad on Krishna River.



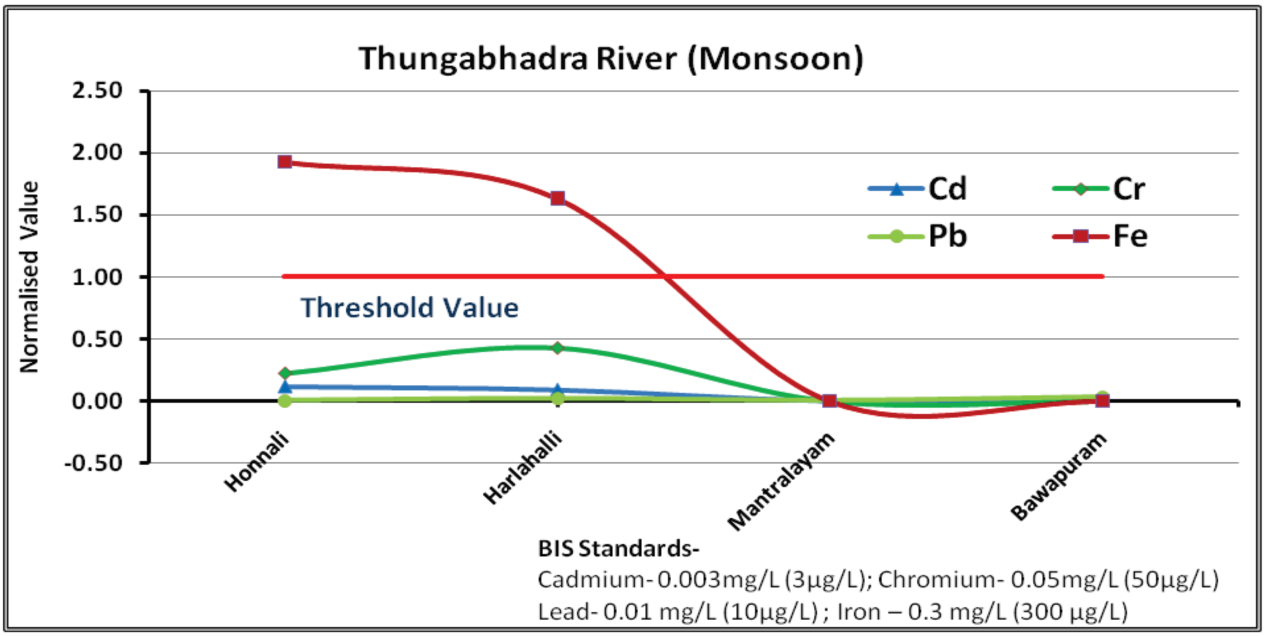


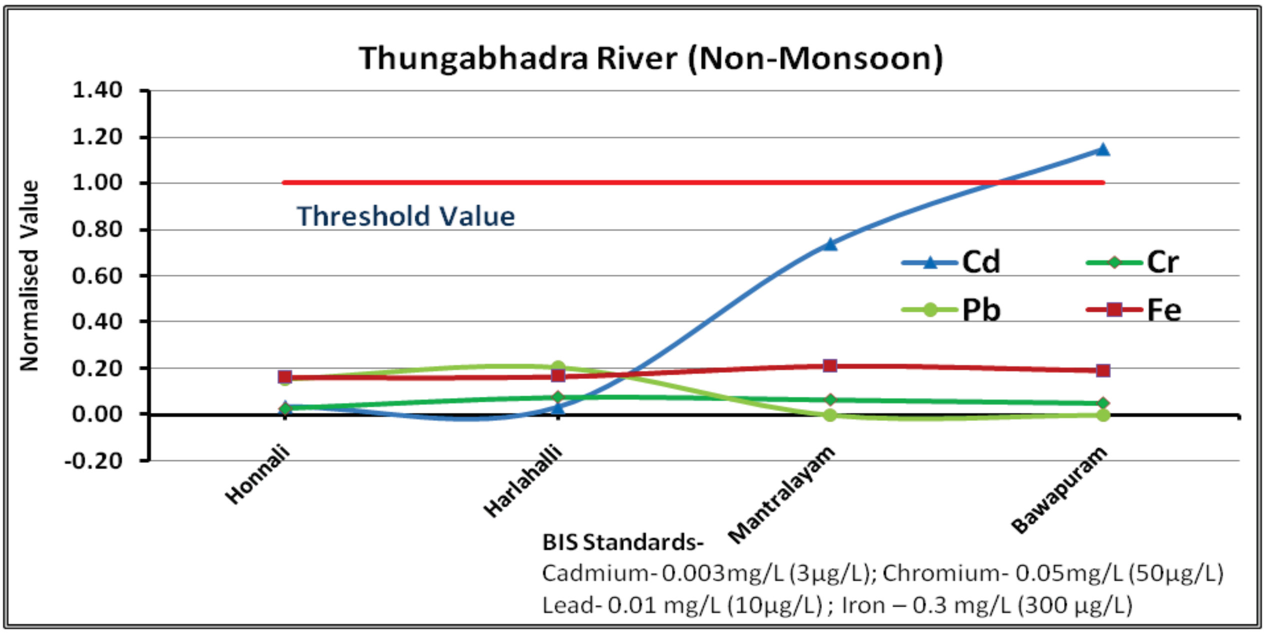
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for Iron at arjunwad and huvinhedgi during monsoon season. In this study area, all the Krishna River water quality stations data reported that Arsenic, Cadmium, Copper and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Copper and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Krishna River are 0.01-2.708 µg/L; 0.050-98.350 µg/L; 0.260-14.340 µg/L and 0.008-0.396 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 8%, 14%, 8% and 17% of samples are found above the permissible limit with respect to Chromium, Nickel, Lead and Iron.

11.12 TUNGABHADRA RIVER

Tungabhadra River is formed from the union of the two rivers, namely Tunga and Bhadra, which together rise in Varahagiri in the Western Ghats of Karnataka State at an altitude of about 1,196m. The two rivers confluence at a village called Kudali near Shimoga. The united Tungabhadra River flows for about 531 km in a generally northeasterly direction, through Mysore and Andhra Pradesh and joins the Krishna at an elevation of about 264 m beyond Karnool. The length of the river is 786 km. The important tributaries of the Tungabhadra River are the Varada, the Hagari, the Vedavati, and the Kumudvati. The total drainage area of the Tungabhadra is 71,417 km^2. There are four (04) water quality stations at Bawapuram, Harlahalli, Honnali and Holehonnur on Tungabhadra River.



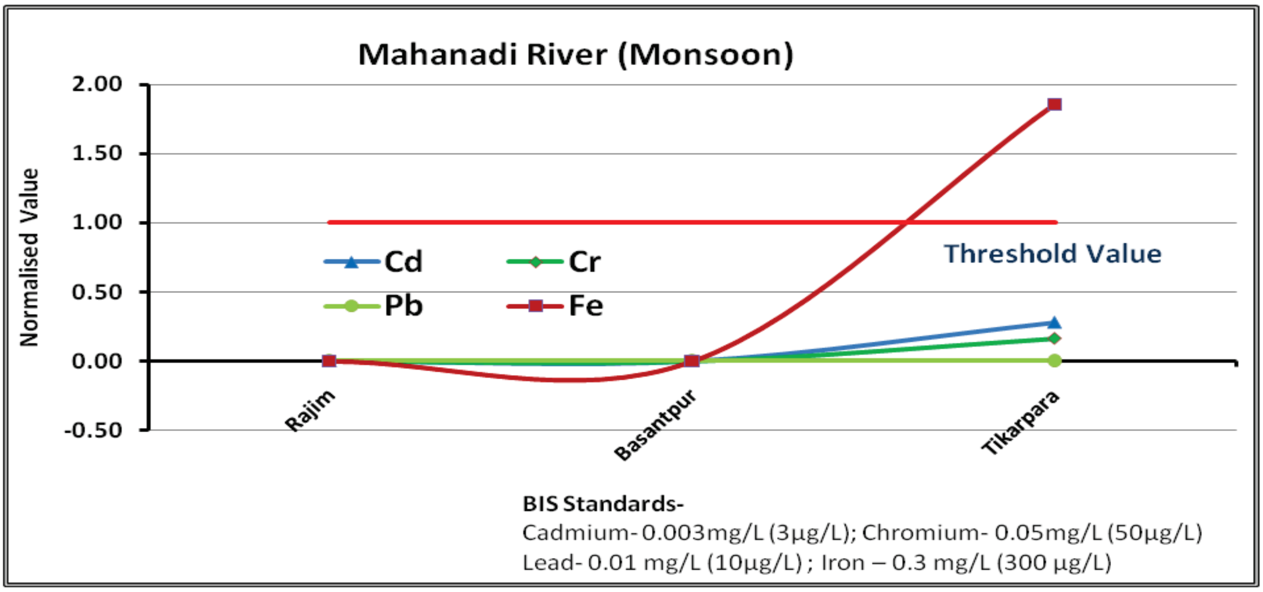


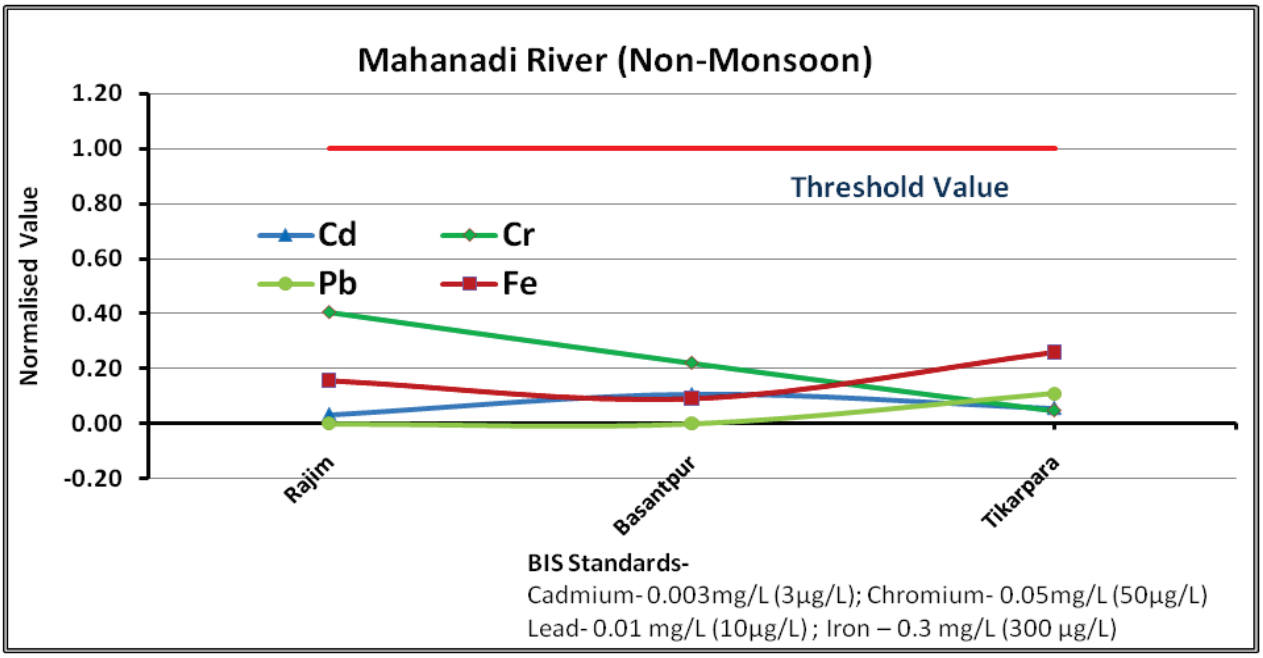
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron from honnali to harlahalli stretch during monsoon season. In this study area, all the Thungabhadra River water quality stations data reported that Arsenic, Chromium, Copper and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Chromium, Copper and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Thungabhadra River are 0.003-5.475 µg/L; 0.150-21.410 µg/L; 0.060-33.410 µg/L and 0.011-0.577 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 13%, 15%, 13% and 13% of samples are found above the permissible limit with respect to Cadmium, Nickel, Lead and Iron.

11.13 MAHANADI RIVER

The Mahanadi River is one of the major rivers which flow from west to east and finally drains into the Bay of Bengal. The Mahanadi River rises in a pool, 6km from Pharsiya village near Nagri town in Raipur district of Chhattisgarh at a height of 442m. The Mahanadi flows for a total length of about 851 km of which, 357km is in Chhattisgarh and the balance of 494 km isin Odisha. The river enters Odisha state below Baloda Bazaar and crosses the Eastern Ghats to enter the Plains of Odisha near Cuttack. It is finally debouches into the Bay of Bengal through a series of branches. The Seonath, the Jonk, the Hasdeo, the Mand, the Ib, the Ong and the Tel are the principal tributaries of Mahanadi. There are four (04) water quality stations at Tikarapara, Basantpur, Seorinarayan and Rajim on main stream of river Mahanadi.



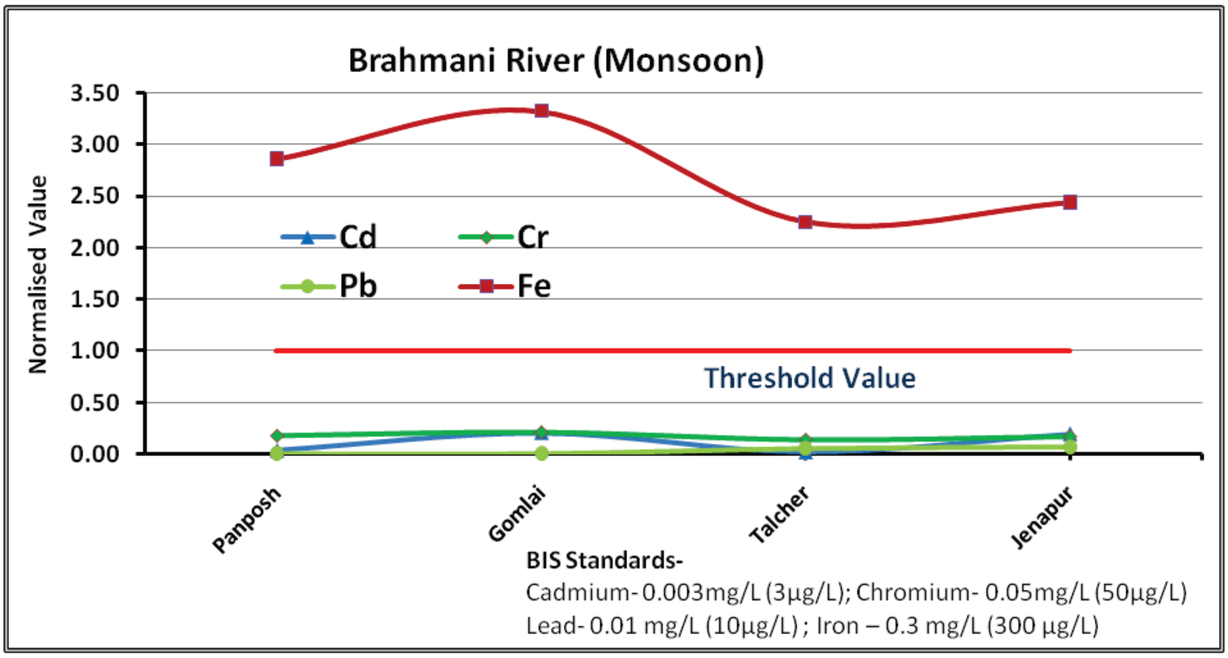


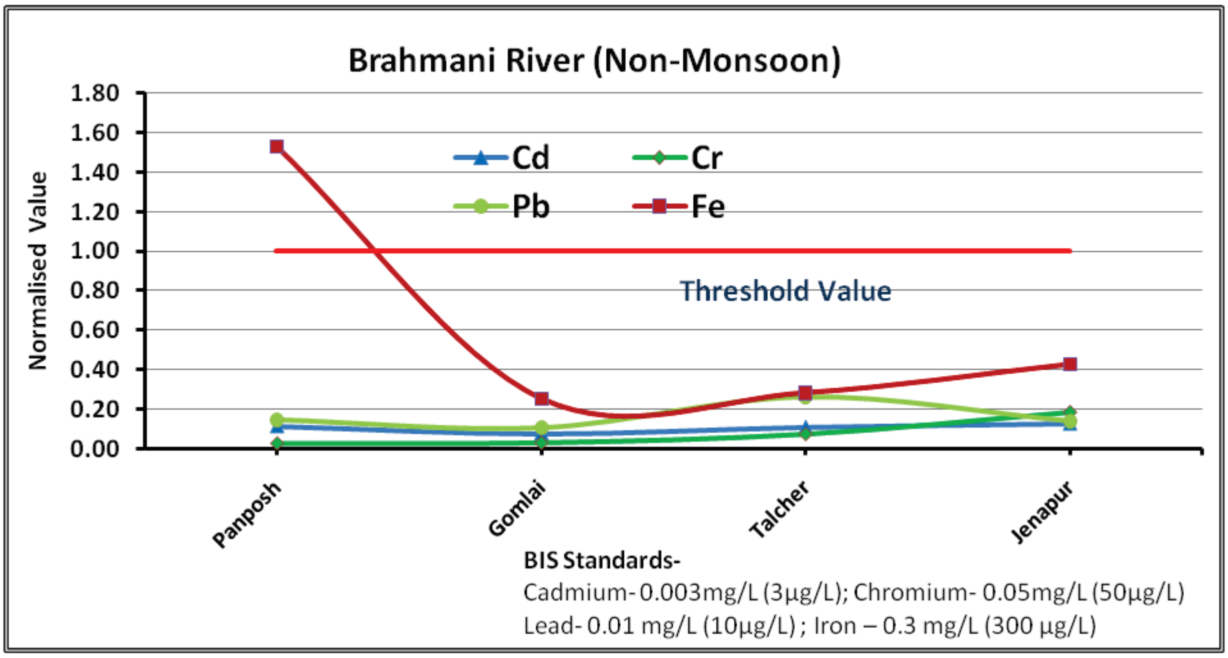
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron at Tikarpara in monsoon season. In this study area, all the Mahanadi River water quality stations data reported that Arsenic, Cadmium, Chromium, Copper, Lead and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Chromium, Copper, Lead and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Mahanadi River are 0.015-0.836 µg/L; 0.260-31.620 µg/L; 0.040-7.180 µg/L and 0.009-0.557 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 11% and 10% of samples are found above the permissible limit with respect to Nickel and Iron.

11.14 BRAHMANI RIVER

The Brahmani River is the second largest river in the state of Odisha. In fact, two headwater streams, namely Sankh River and South Koel River originate in Chhattisgarh and Jharkhand states, respectively. After the confluence of Sankh River and South Koel River at Vedvyas, the combined river is known by the name Brahmani. The Brahmani River flows through the heart of Odisha till it joins the Bay of Bengal at Dhamara mouth. After the confluence at Vedvyas, the Brahmani River heads towards the southeast direction and traverses a total length 461 km before it joins the Bey of Bengal. It drains a total catchment area 39,269km^2. There are four (04) water quality stations at Gomlai, Jenapur, Panposh and Talcher on river Brahmani.



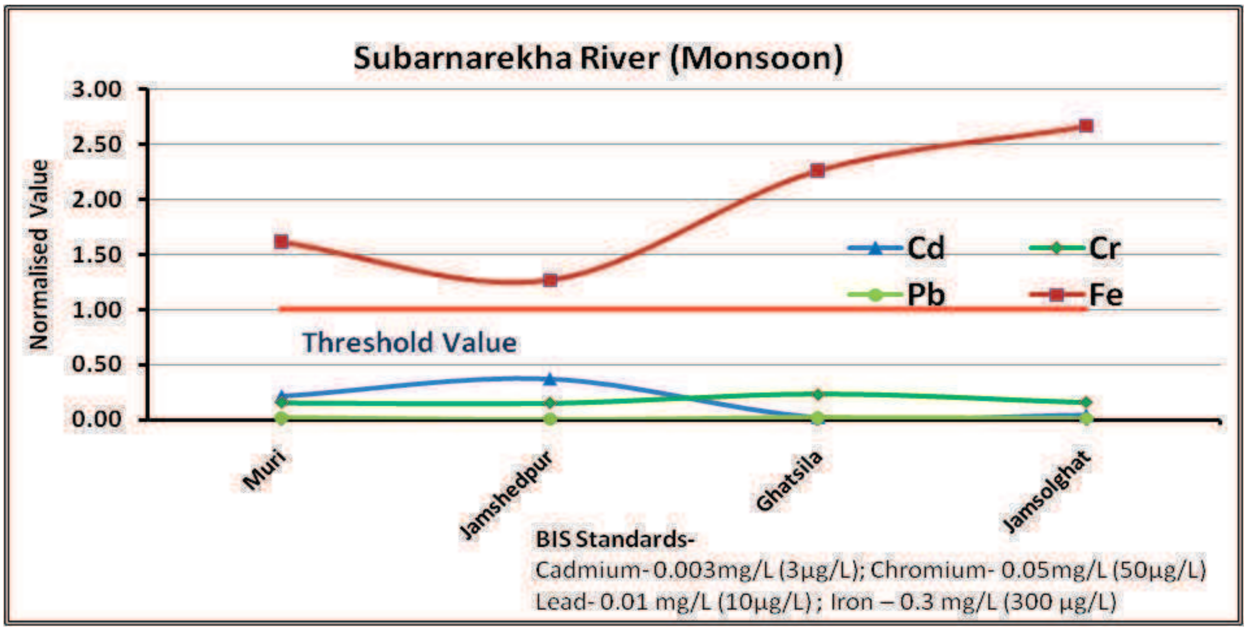


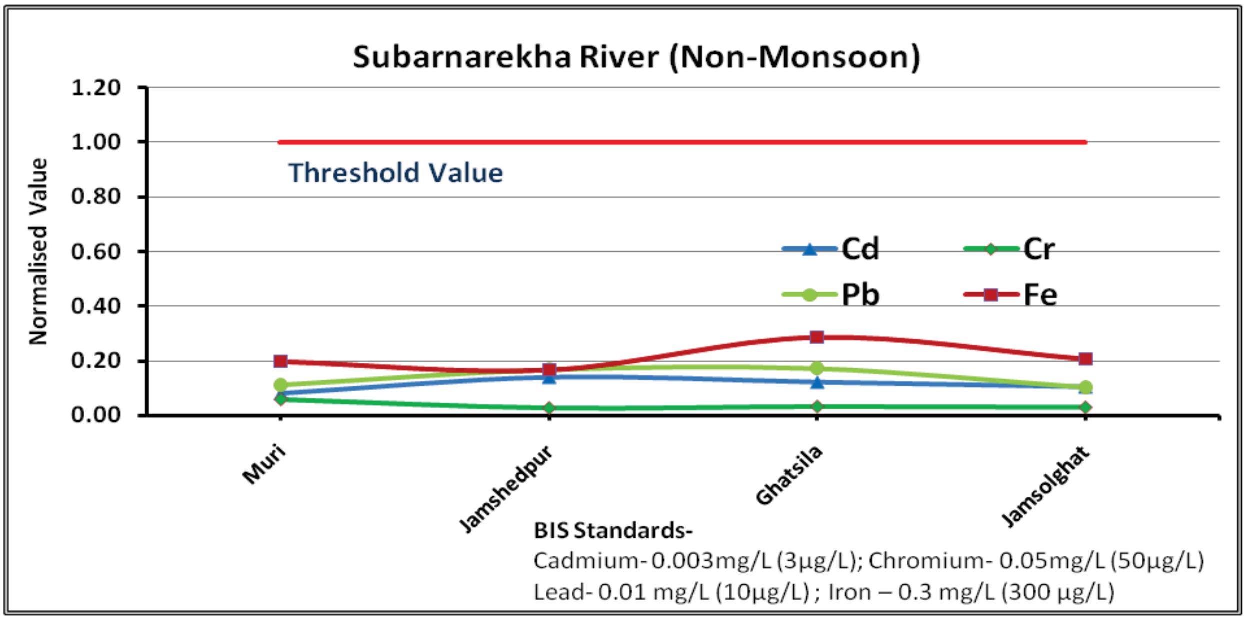
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout Brahmani river stretch in monsoon season and at Panposh during non-monsoon. In this study area, all the Brahmani River water quality stations data reported that Arsenic, Cadmium, Chromium, Copper, Lead and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Chromium, Copper and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Brahmani River are 0.006-0.688 µg/L; 0.100-36.960 µg/L; 0.030-77.420 µg/L and 0.008-1.793 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 5% and 29% of samples are found above the permissible limit with respect to Nickel and Iron.

11.15 SUBERNAREKHA RIVER

The Subernarekha River rises near Nagri village in the Ranchi District of Jharkhand at an elevation of 600 m. It flows for a length of 395 km before outfalling into the Bay of Bengal. Out of this, 269 km lies in Bihar, 64km in West Bengal and 62km in Odisha. There are three (03) water quality stations at Ghatsila, Jamshedpur, Jamsolghat and Muri on river Shernarekha. Its principal tributaries joining from right are the Kanchi, the Karkari and the Kharkai.



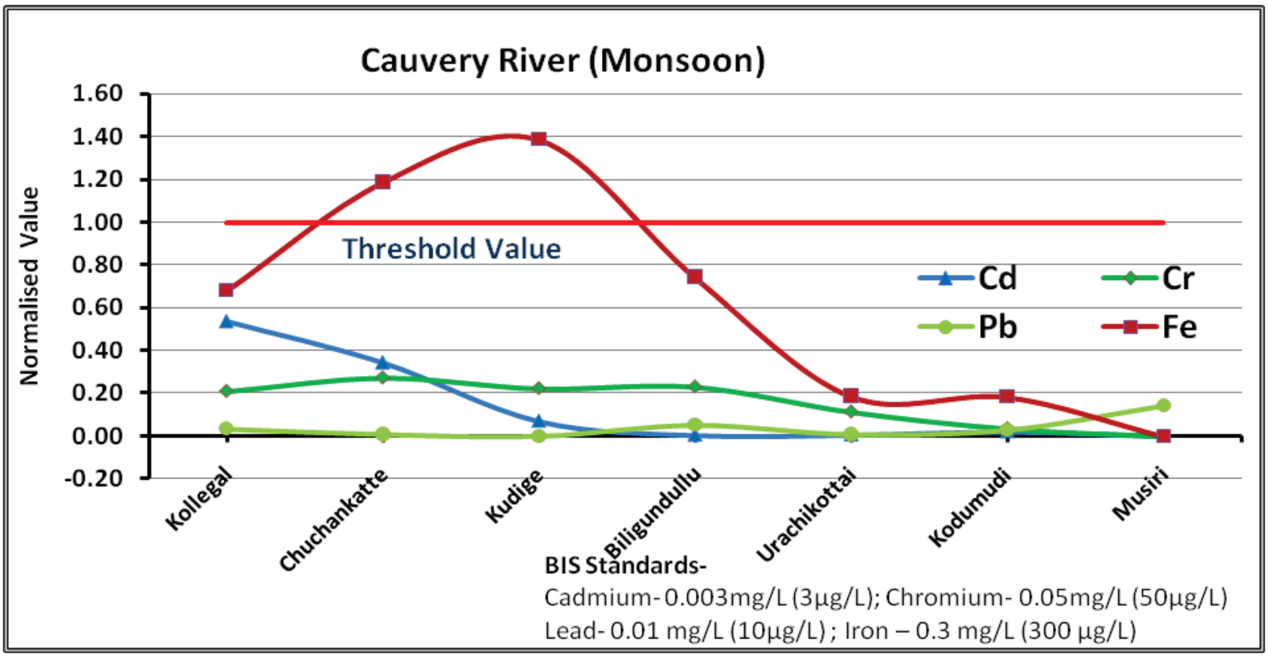


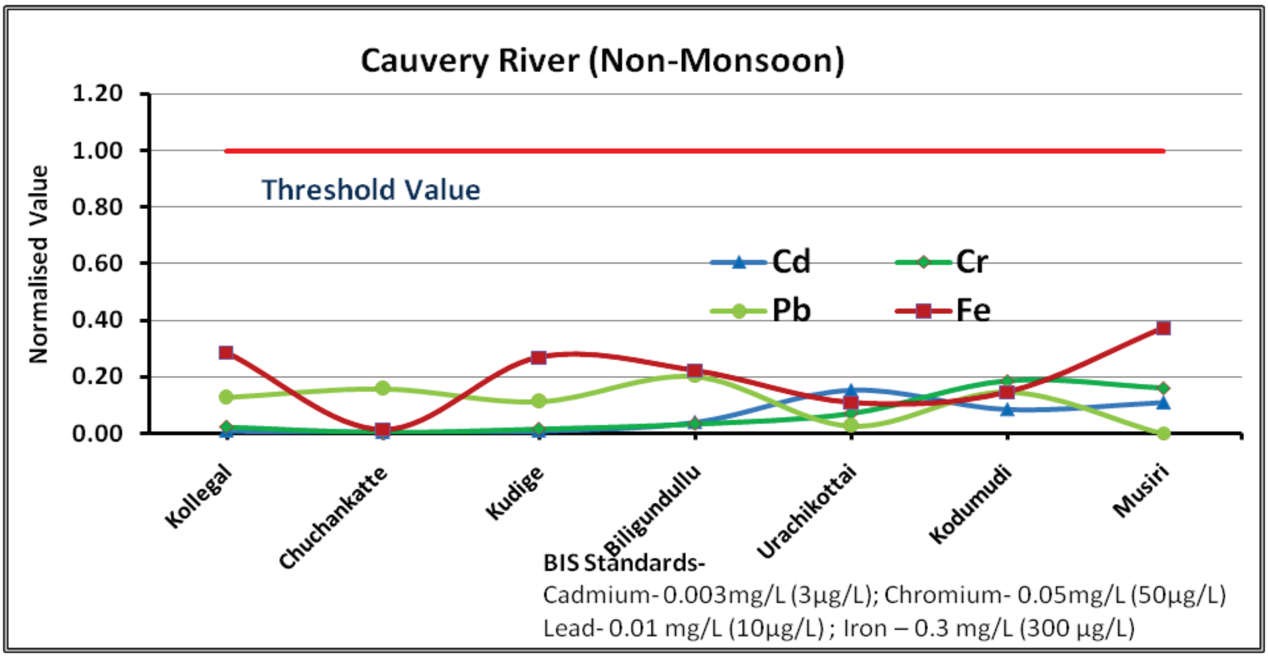
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron throughout Subernarekha river stretch in monsoon season. In this study area, all the Subernarekha River water quality stations data reported that Arsenic, Cadmium, Chromium, and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Chromium, and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Subernarekha River are 0.004-1.533 µg/L; 0.190-11.6 µg/L; 0.050-37.420 µg/L and 0.008-1.793 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 5% and 29% of samples are found above the permissible limit with respect to Nickel and Iron.

11.16 CAUVERY RIVER

The Cauvery River is one of the major rivers of the peninsula. It rises at an elevation of 1,341 m at TalaCauveryon the Brahmagiri range near Cherangala village of Kodagu district of Karnataka. The total length of the river from origin to outfall is 800 km. Its important tributaries joining from left are the Harangi, the Hemavati, the Shimsha and the Arkavati whereas the Lakshmantirtha, the Kabbani, the Suvarnavati, the Bhavani, the Noyyal and the Amaravati join from right. The river drains into the Bay of Bengal. There are seven (07) water quality stations at Biligundullu, Chuchankatte, Kollegal, Kudige, Kodumudi, Musiri and Urachikottai on the main stream of Cauvery river.



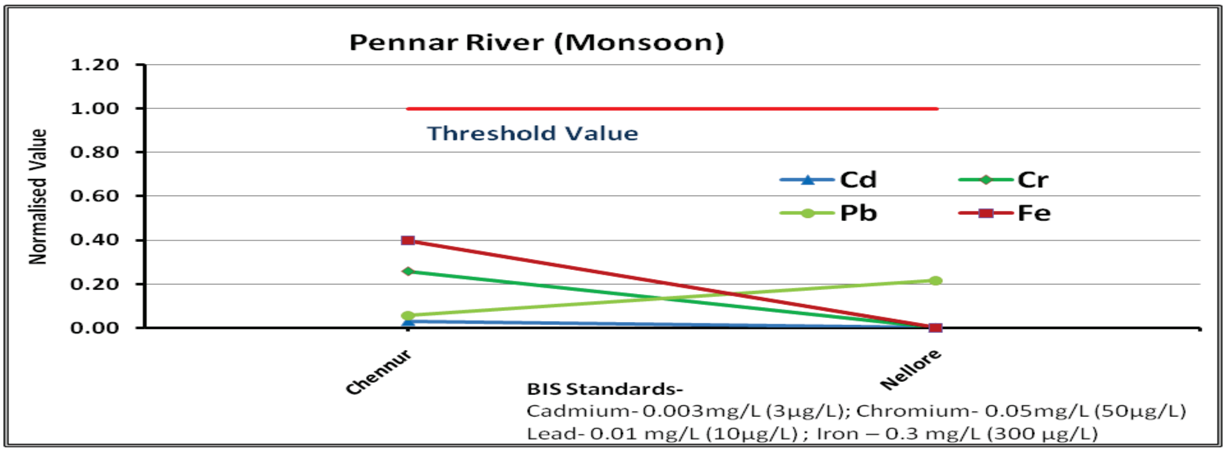


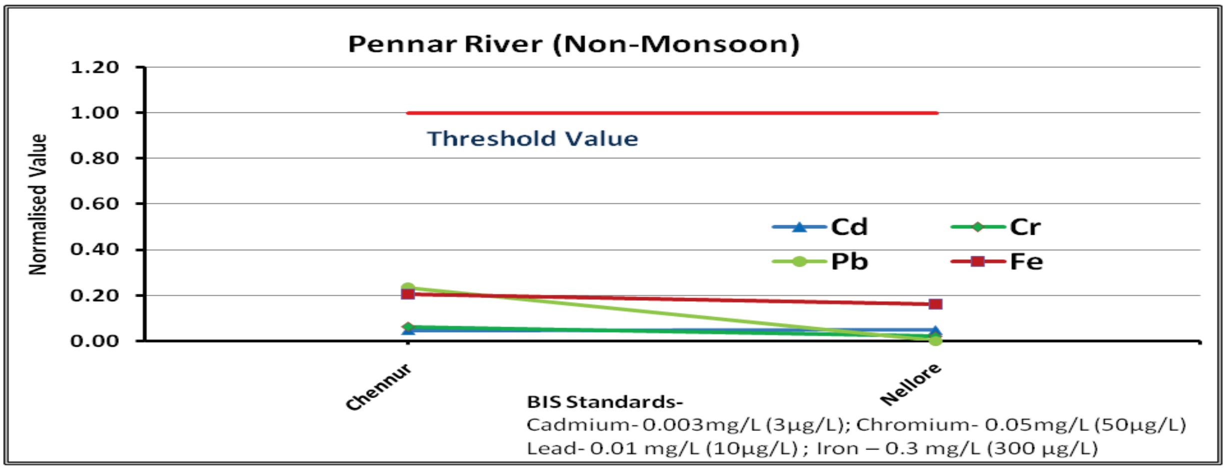
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except for iron at chuchankatte and kudige stations in monsoon season. In this study area, all the Cauvery River water quality stations data reported that Arsenic, Cadmium, Chromium, Copper Nickel and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Chromium, Copper Nickel and Zinc in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Cauvery River are 0.008-1.609 µg/L; 0.150-35.36 µg/L; 0.010-16.670 µg/L and 0.004-0.416 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 6% and 8% of samples are found above the permissible limit with respect to Lead and Iron.

11.17 PENNAR RIVER

The Pennar (also known as Uttara Pinakini) is one of the major rivers of the peninsula. The Pennar rises in the Chenna Kasava hill of the Nandidurg range, in Chikkaballapura district of Karnataka and flows towards east eventually draining into the Bay of Bengal. The total length of the river from origin to its outfall in the Bay of Bengal is 597 km. The principal tributaries of the river joining from left are the Jayamangali, the Kunderu and the Sagileru whereas the Chiravati, the Papagni and the Cheyyeru joins it from right. There are four (04) water quality stations at Chennur, Nagalamadike, Nellore and Tadipatri on river Pennar.



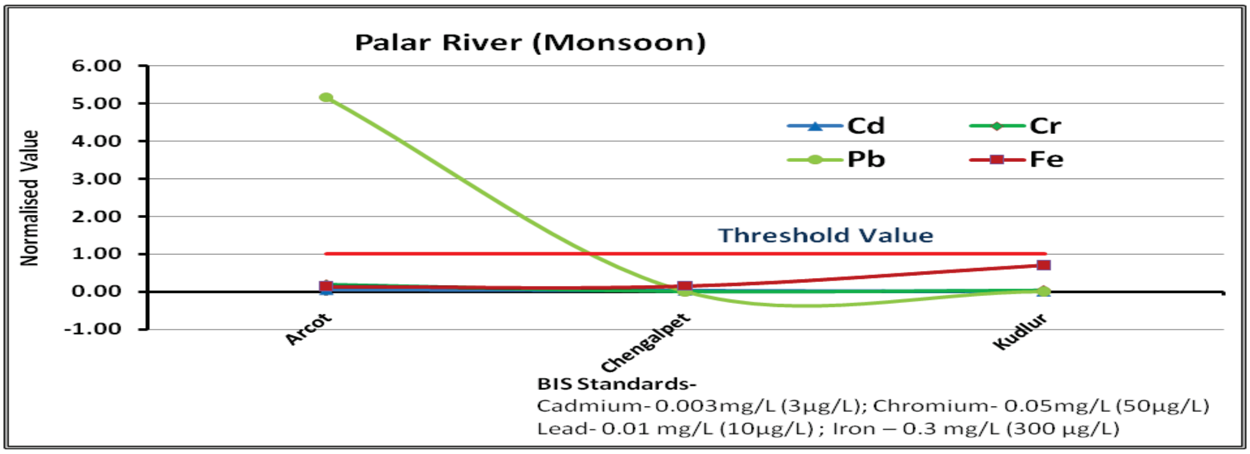


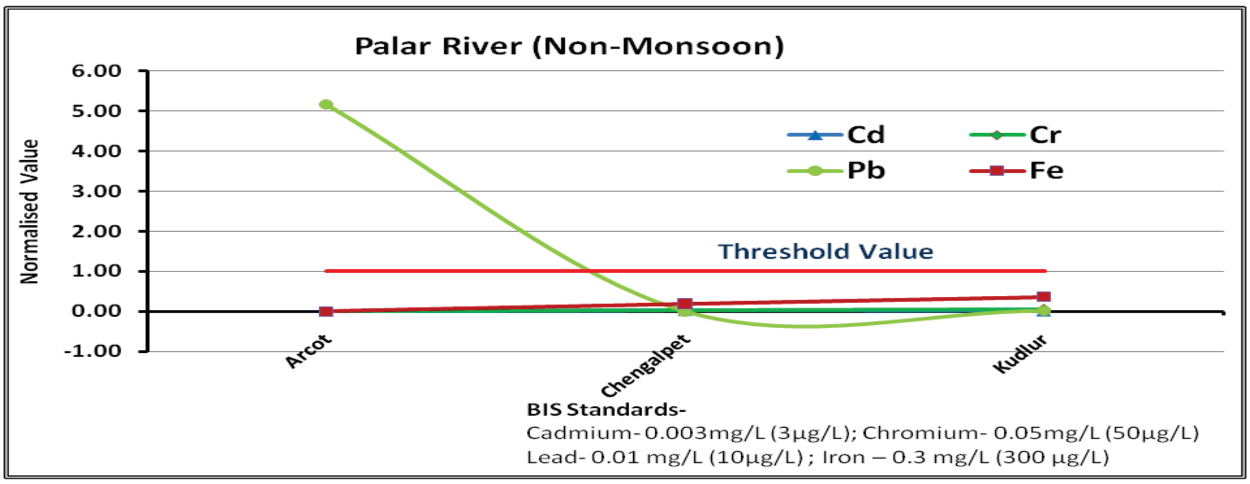
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value. In this study area, all the Pennar River water quality stations data reported that Arsenic, Cadmium, Chromium, Copper Nickel, Zinc and Iron concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity of Arsenic, Cadmium, Chromium, Copper Nickel, Zinc and Iron in the river waters are observed during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Pennar River are 0.005-0.683 µg/L; 0.180-20.24 µg/L; 0.580-38.5 µg/L and 0.014-0.199 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 11% and 10% of samples are found above the permissible limit with respect to Nickel and Lead.

11.18 PALAR RIVER

The Palar Basin is an important basin among the 12 basins lying between the Pennar and the Cauvery basins. This basin is divided into three major topographical divisions namely, i) the hill ranges of Eastern Ghats ii) the plateau region and iii) the coastal plains. Though most of the drainage area lies in Tamil Nadu, its drainage area extends to cover the South-East and South-Western parts of Karnataka and Andhra Pradesh respectively. The shape of the basin is rhombus and finds its outlet in to Bay of Bengal. Central Water Commission is operating three (03) water quality monitoring stations at Avarankuppam, Arcot and Chengalpet on this river.



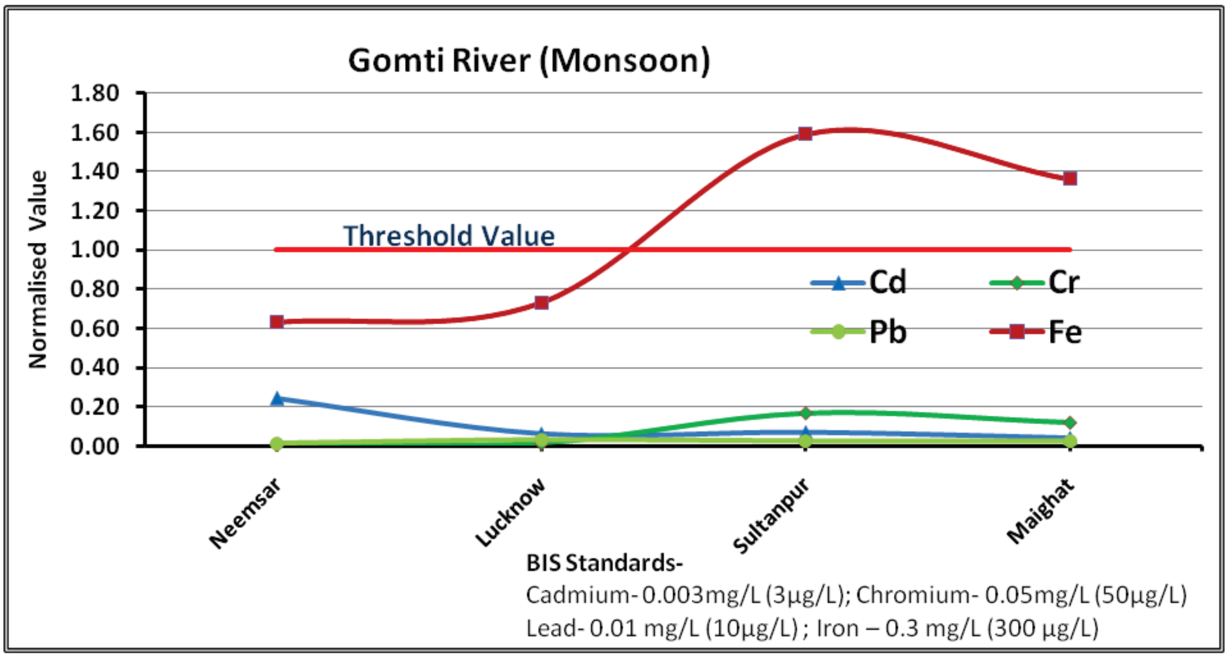


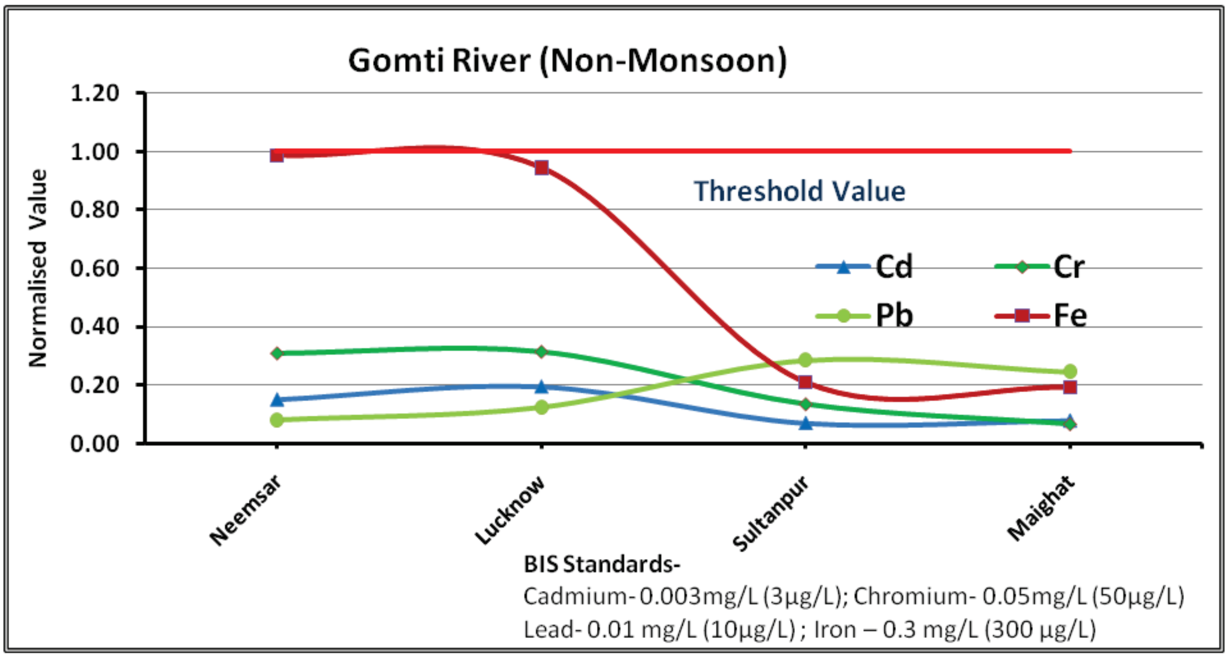
Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except Lead at Arcot in both the seasons. In this study area, all the Palar River water quality stations data reported that all the trace and toxic metal (Arsenic, Cadmium, Chromium, Copper, Nickel, Zinc and Iron) concentrations excluding Lead lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity in the river waters are observed for aforementioned trace & toxic metals excluding lead during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Palar River are 0.010-0.136 µg/L; 0.970-10.14 µg/L; 0.020-51.52 µg/L and 0.003-0.212 mg/L respectively during the May, 2014 and August 2017. During the study period approximately 14% of samples are found above the permissible limit with respect to Lead.

11.19 GOMTI RIVER

The Gomti River originates near Mainkot, about 3 km east of the Pilibhit town in Uttar Pradesh, at an elevation of 200 m. The river drains the area between Ramganga and Ghaghra systems. The total length of the river is about 940 km and it flows entirely in the State of Uttar Pradesh. The total drainage area of the river is 30,437 sq. km. The river flows through Sahajahanpur, Kheri, Lucknow, Barabanki, Sultanpur, Faizabad, Jaunpur, Varanasi and Ghazipur districts before merging into the Ganga in Audihar in Jaunpur. Lucknow, the capital city of Uttar Pradesh, is situated on the banks of the Gomti River. The main tributaries of the Gomti River are the Gachai, the Sai, the Jomkai, the Barna, the Chuha and the Sarayu. There are five (05) water quality stations at Neemsar, Lucknow, Sultanpur, Maighat and Jaunpur on river Gomti.





Observations/Findings:

From the above graphs it is observed that, during the study period in monsoon and non-monsoon seasons almost all the parameters observed below the threshold value except Iron from sultanpur to maighat river stretch in monsoon season. In this study area, all the Gomti River water quality stations data reported that Arsenic, Cadmium, Chromium, Copper, Nickel and Zinc concentrations lies within the acceptable and permissible limits of Bureau of Indian Standards (BIS) and no toxicity in the river waters are observed for Arsenic, Cadmium, Chromium, Copper, Nickel and Zinc metals during the study period. The concentration of the cadmium, chromium, lead and iron varies in the Gomti River are 0.037-1.414 µg/L; 0.190-45.340 µg/L; 0.140-23.440 µg/L and 0.009-0.782 mg/Lrespectively during the May, 2014 and August 2017. During the study period approximately 16% and 28% of samples are found above the permissible limit with respect to Lead and Iron.

12. INDEX VALUE CALCULATION:

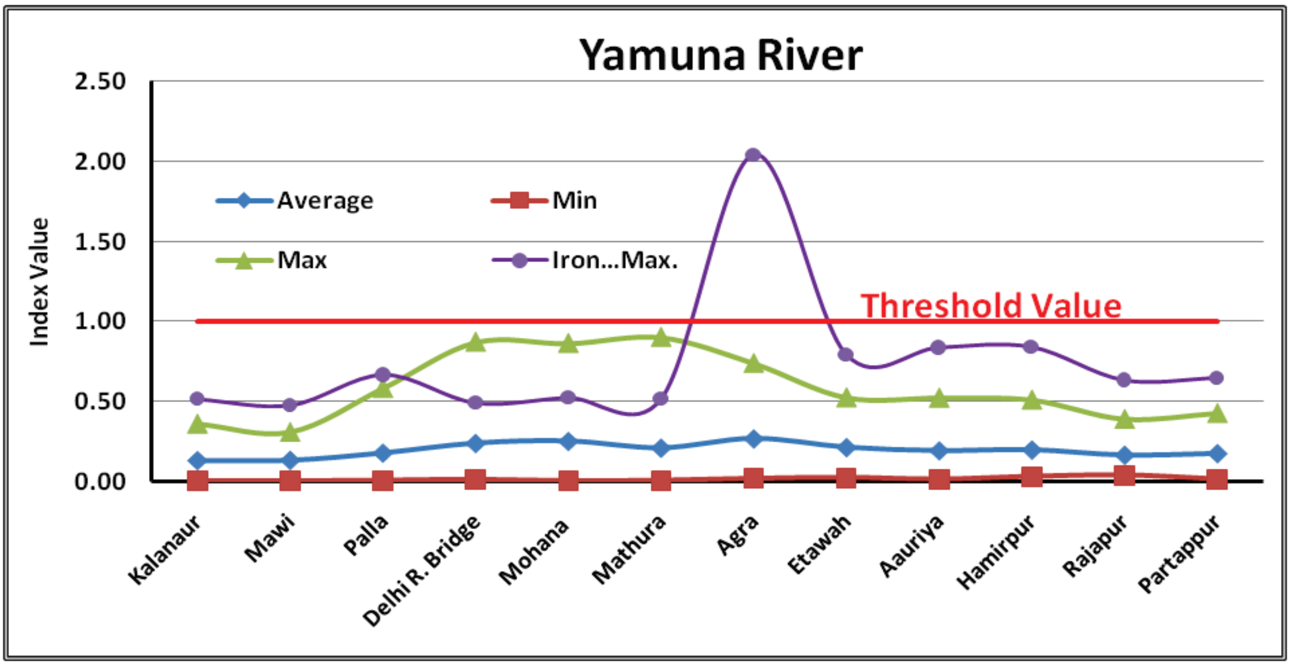
Index Value = Average of Normalised Values of all parameters.

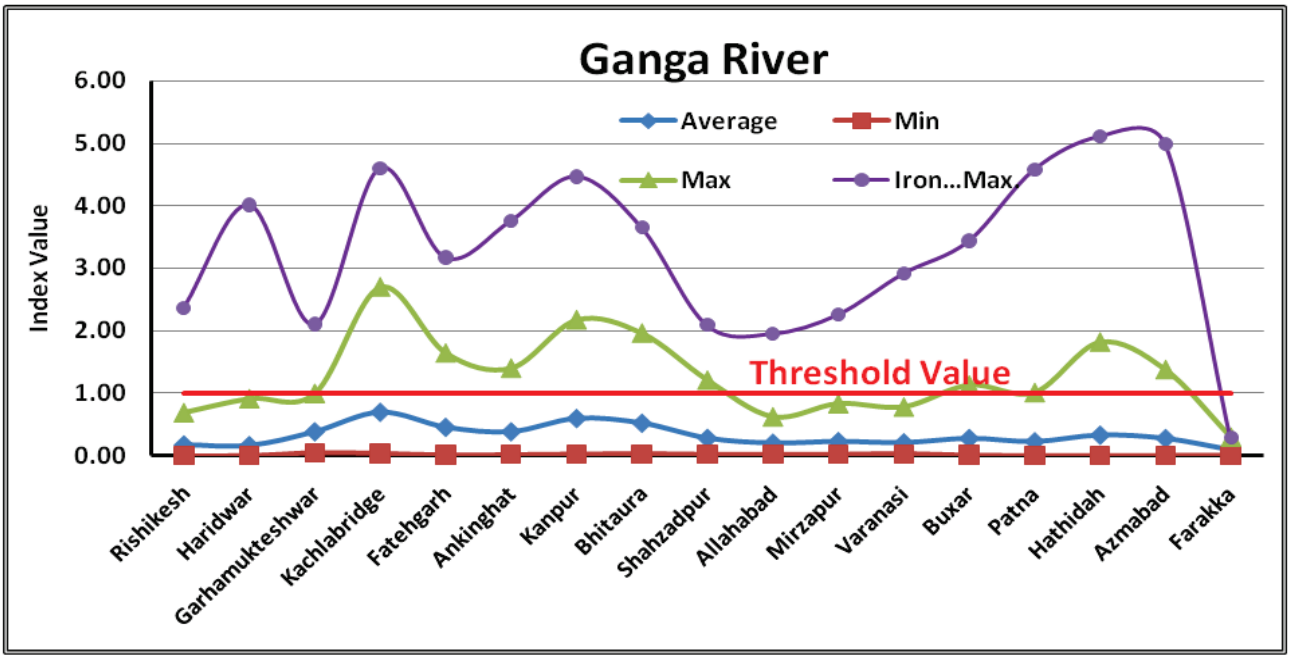
Parameters considered for Index Value calculations:

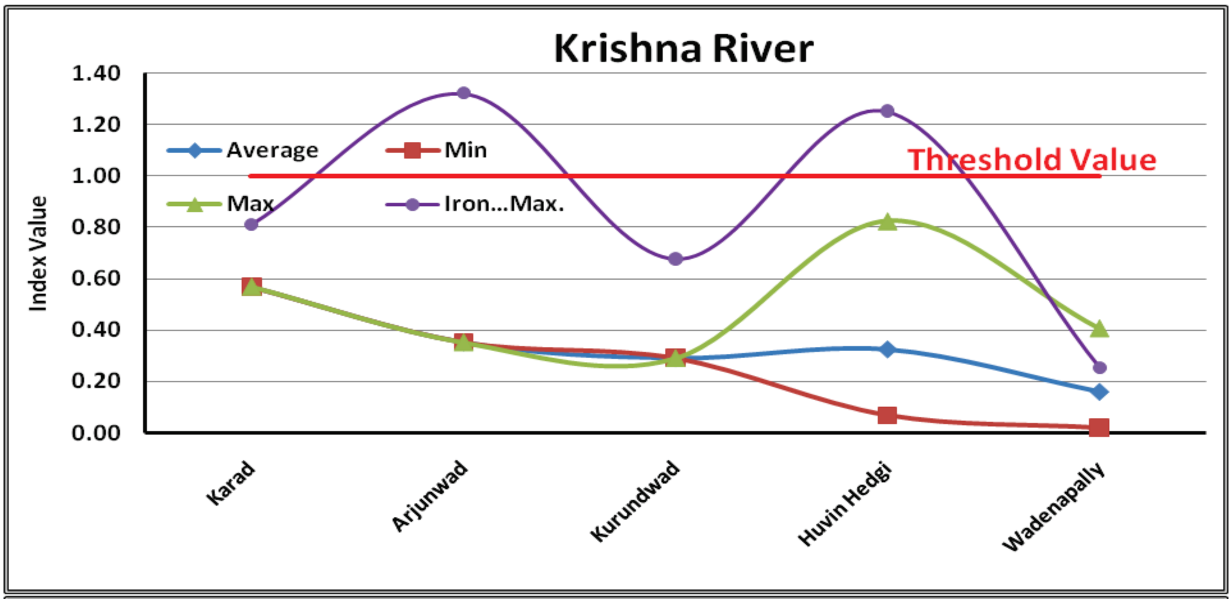
(a) Cadmium (Cd) (b) Chromium (Cr) (c) Copper (Cu)
(d) Nickel (Ni) (e) Lead (Pb) (f) Iron (Fe)

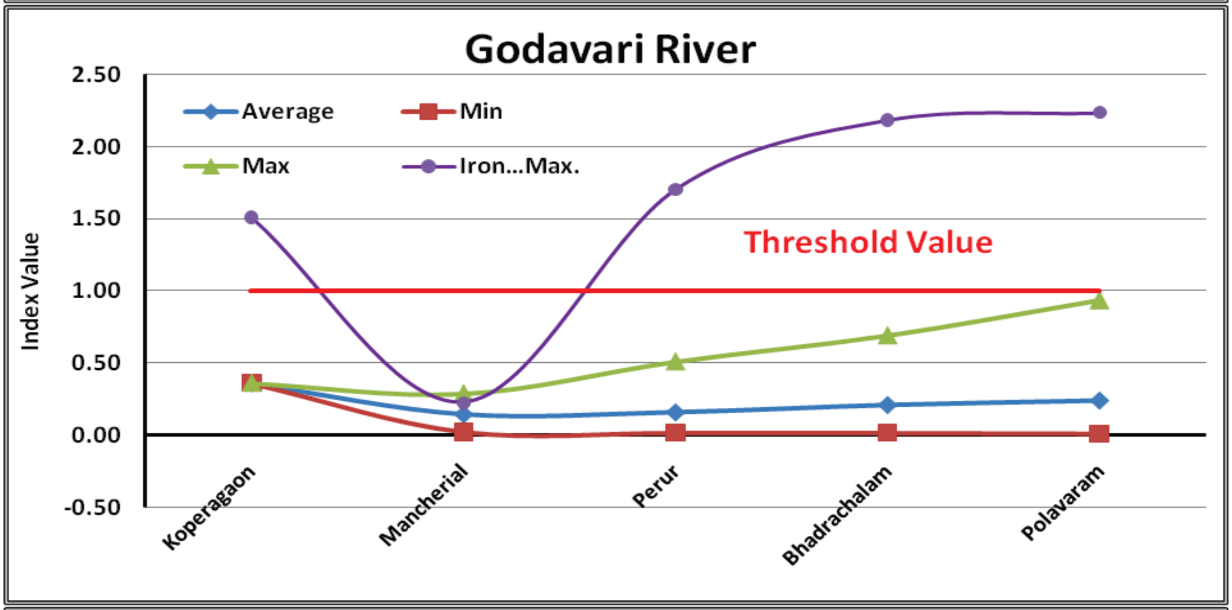
Threshold value = 1 (One)

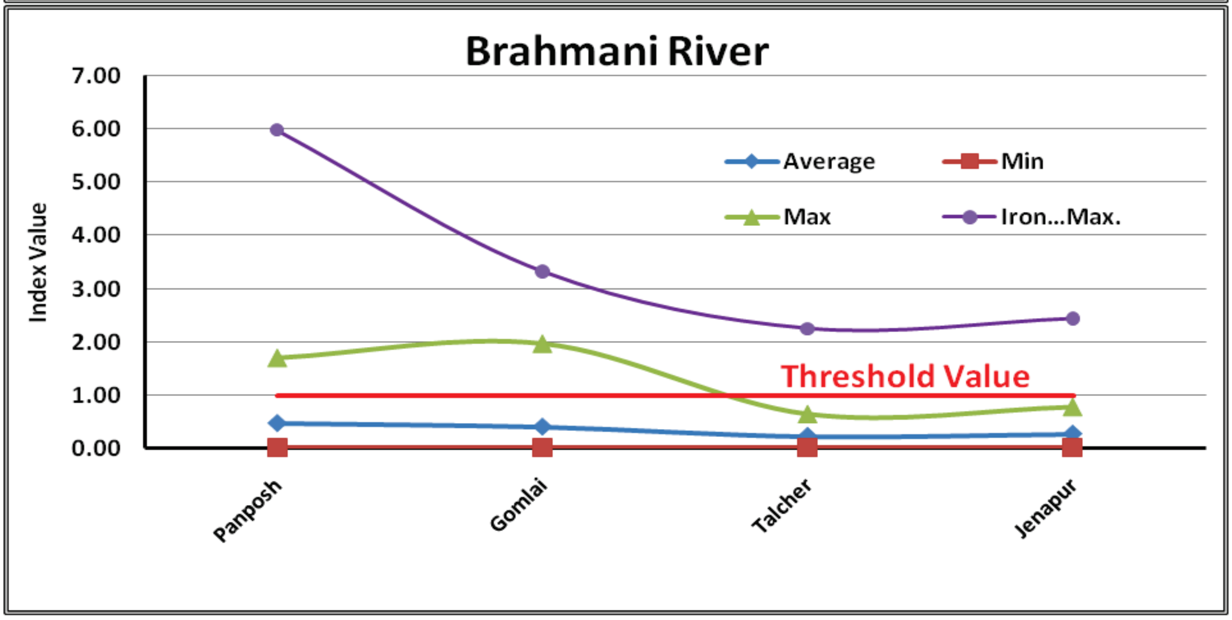
Index Value Trends along the Rivers during the study period:

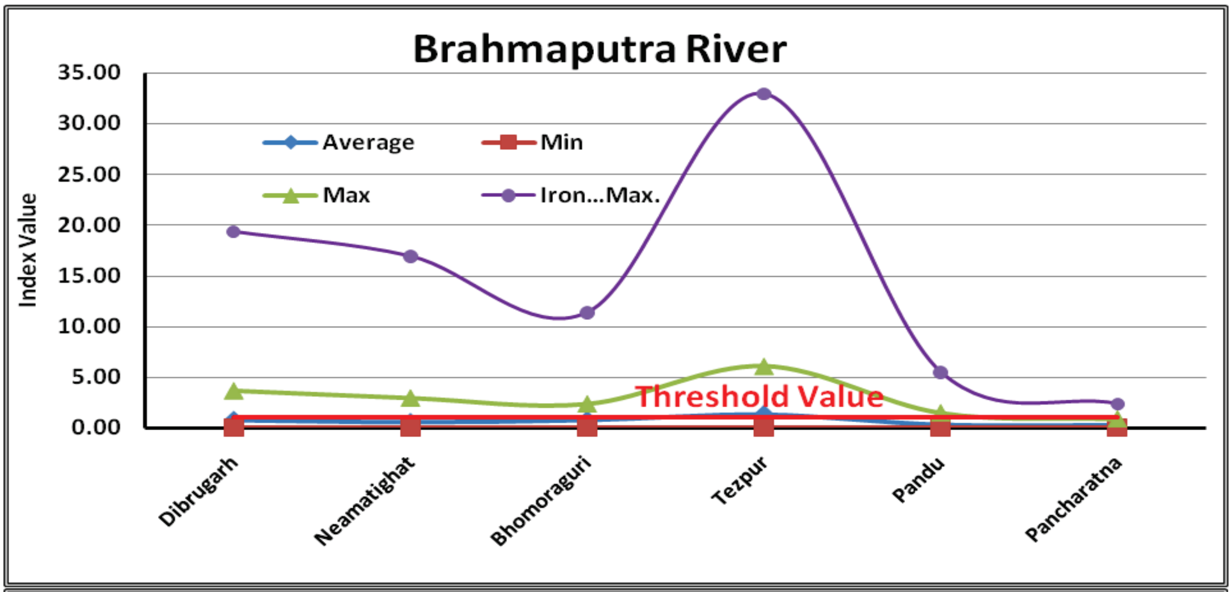




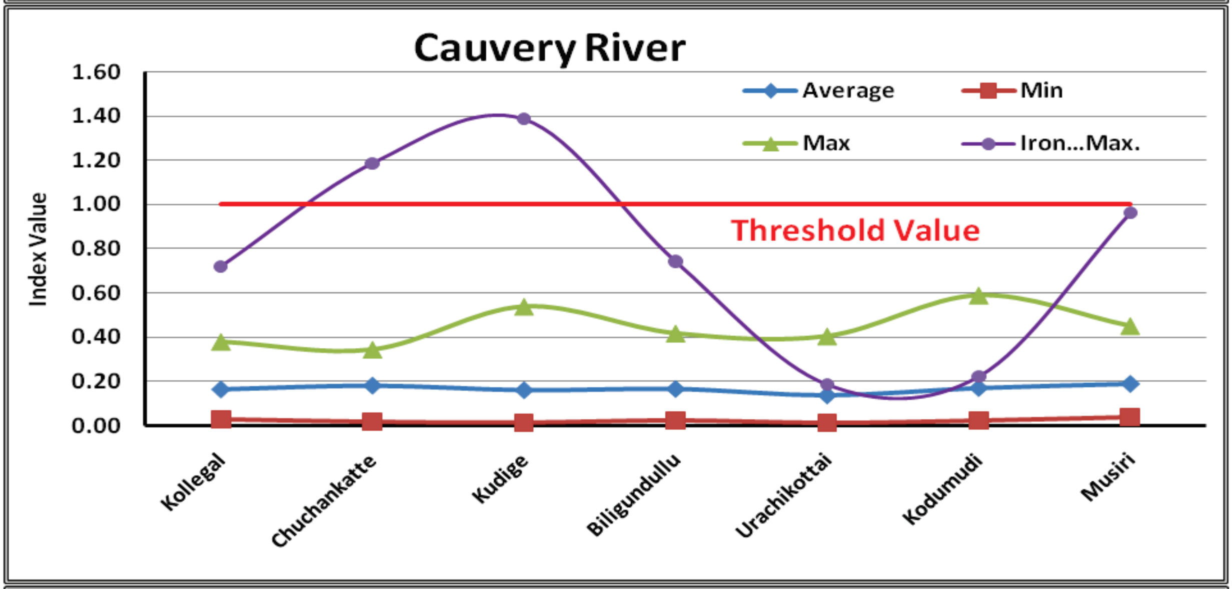

Krishna River
Index Value
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Karad
Arjunwad
Kurundwad
Huvin Hedgi
Wadenapally


Godavari River
Index Value
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
Average
Min
Max
Iron...Max.
Threshold Value
Koperagaon
Mancherial
Perur
Bhadrachalam
Polavaram

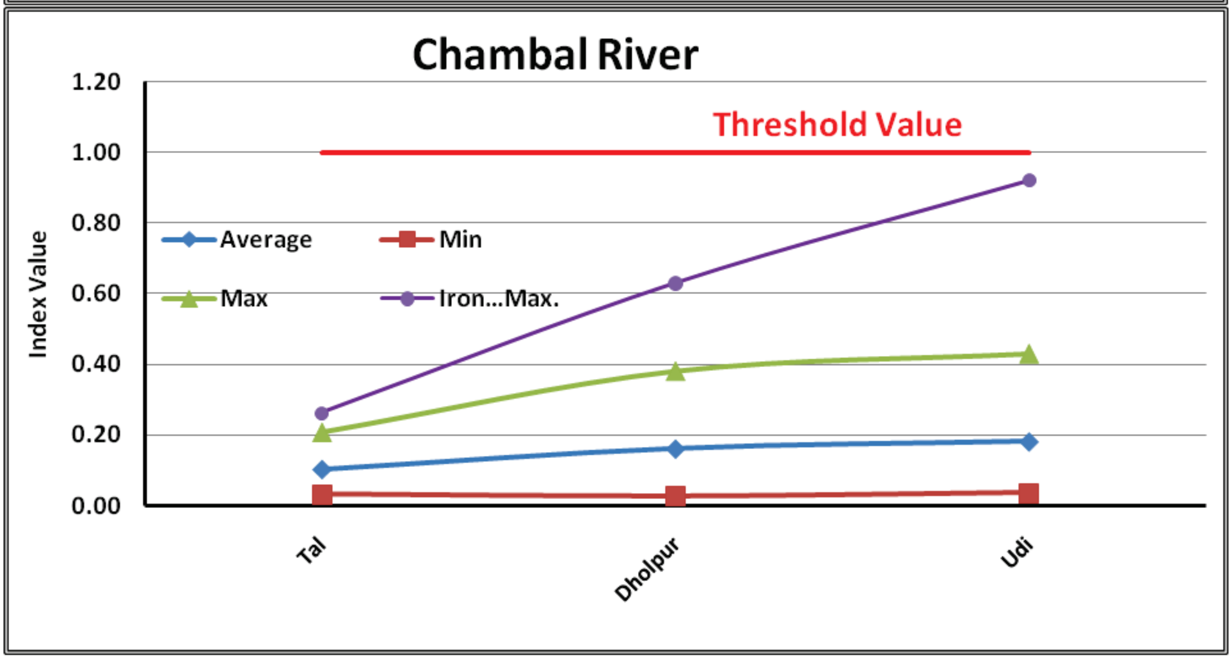

Brahmani River
Index Value
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Panposh
Gomlai
Talcher
Jenapur



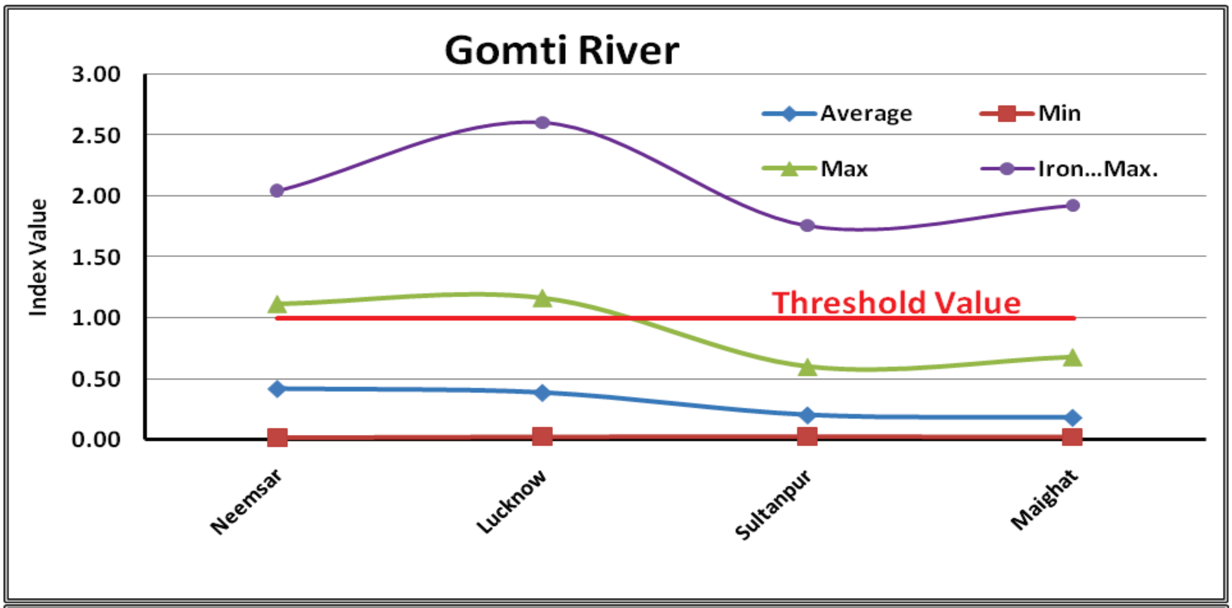
Brahmaputra River
Index Value
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Dibrugarh
Neamatighat
Bhomoraguri
Tezpur
Pandu
Pancharatna

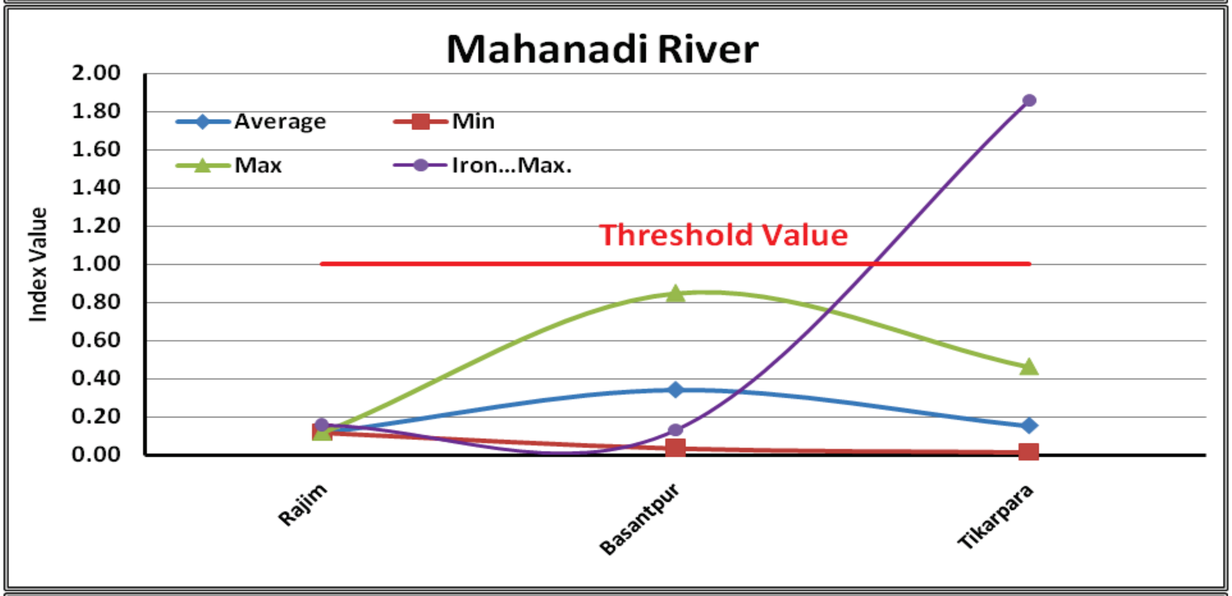


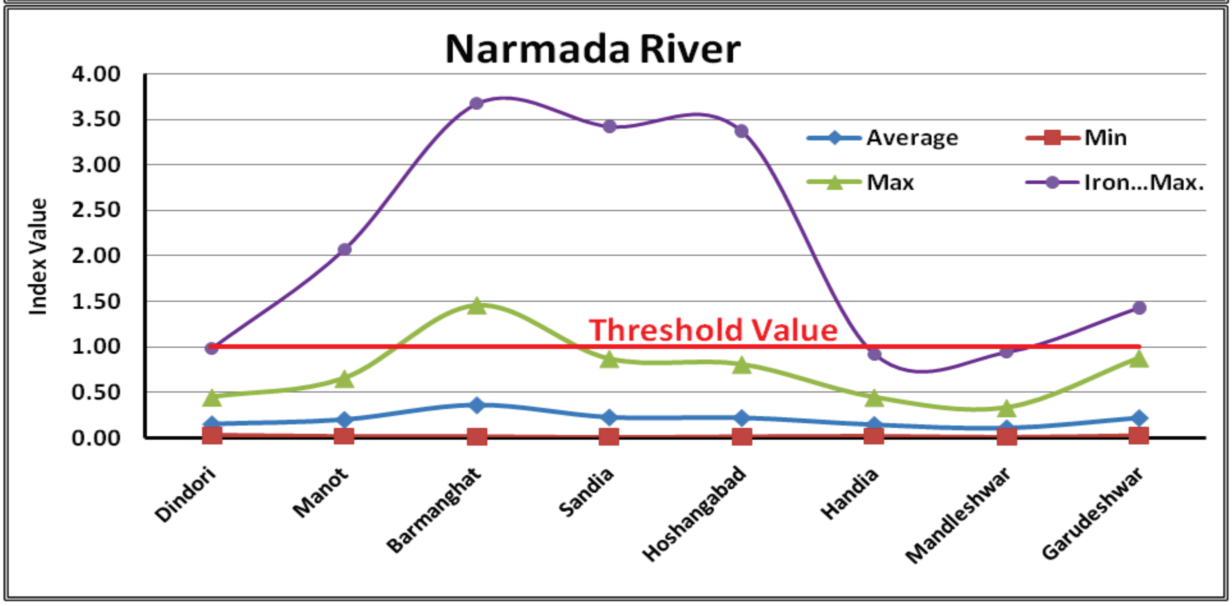
Cauvery River
Index Value
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Kollegal
Chuchankatte
Kudige
Biligundullu
Urachikottai
Kodumudi
Musiri

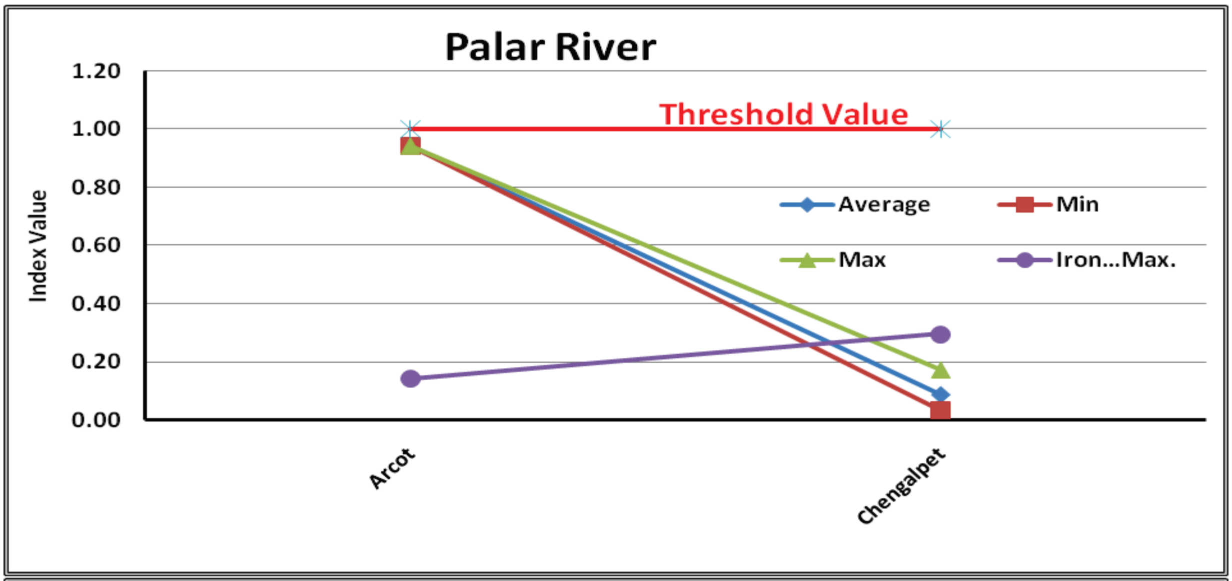


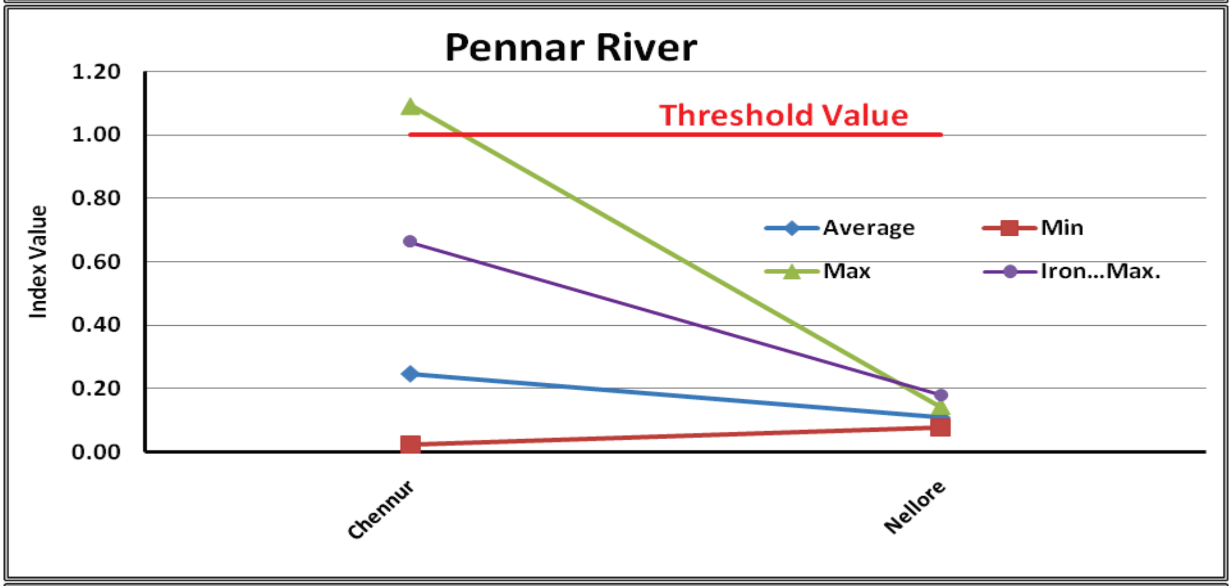
Chambal River
Index Value
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Threshold Value
Average
Min
Max
Iron...Max.
Tal
Dholpur
Udi

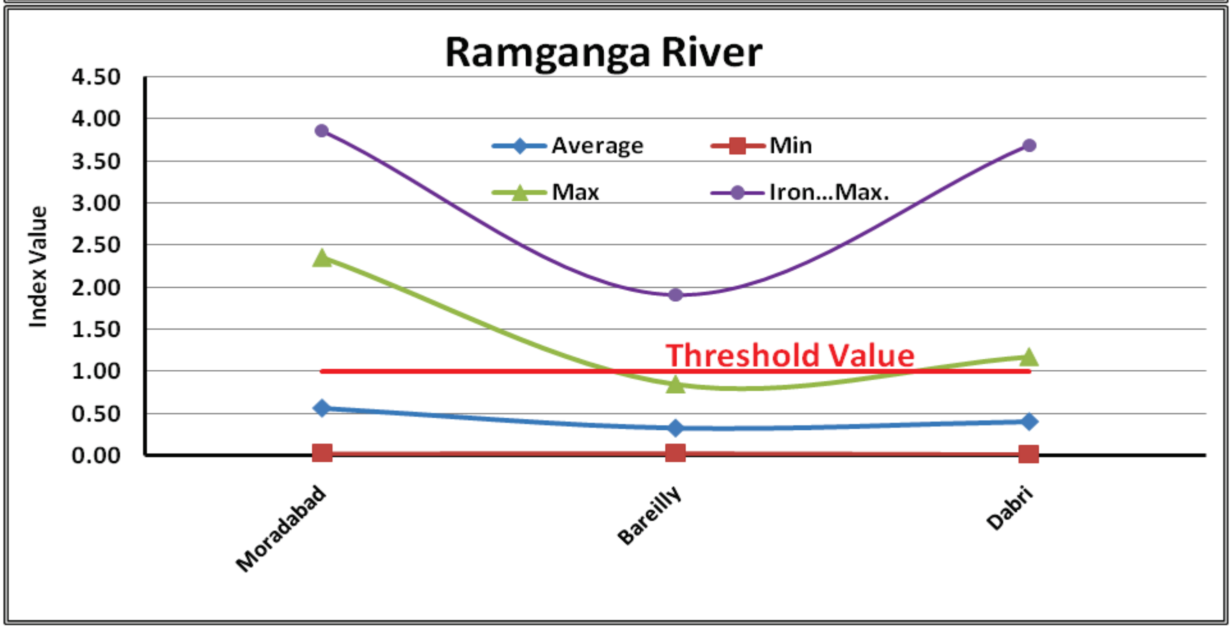

Gomti River
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Index Value
Average
Min
Max
Iron...Max.
Threshold Value
Neemsar
Lucknow
Sultanpur
Maighat

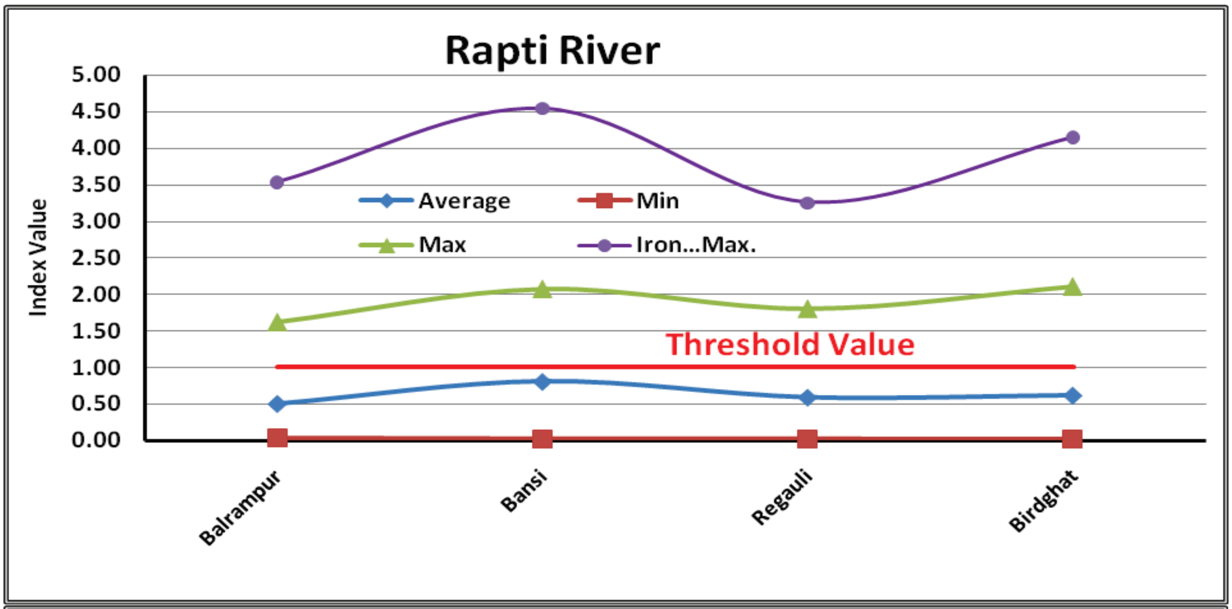

Mahanadi River
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Index Value
Average
Min
Max
Iron...Max.
Threshold Value
Rajim
Basantpur
Tikarpara

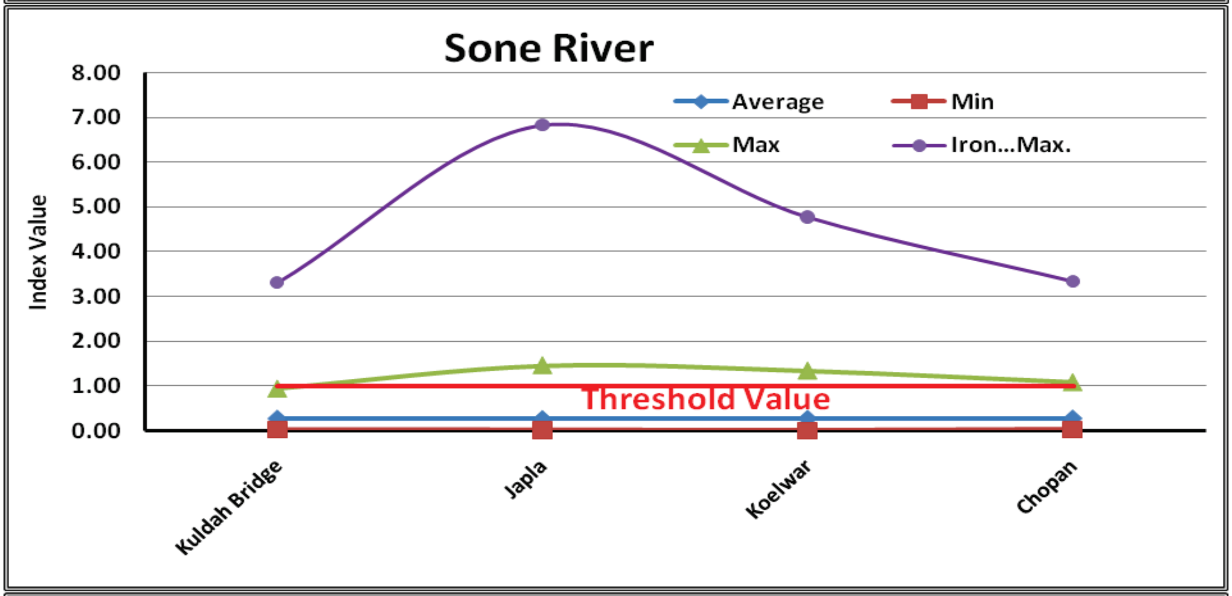

Narmada River
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Index Value
Average
Min
Max
Iron...Max.
Threshold Value
Dindori
Manot
Barmanghat
Sandia
Hoshangabad
Handia
Mandleshwar
Garudeshwar

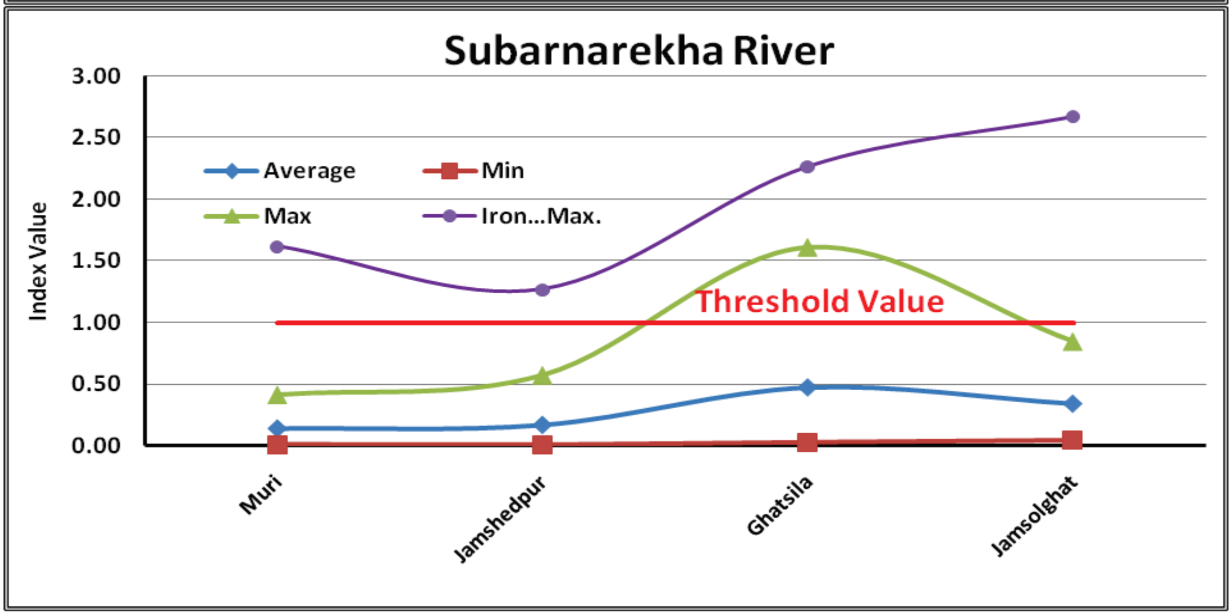

Palar River
Threshold Value
Index Value
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Average
Min
Max
Iron...Max.
Arcot
Chengalpet

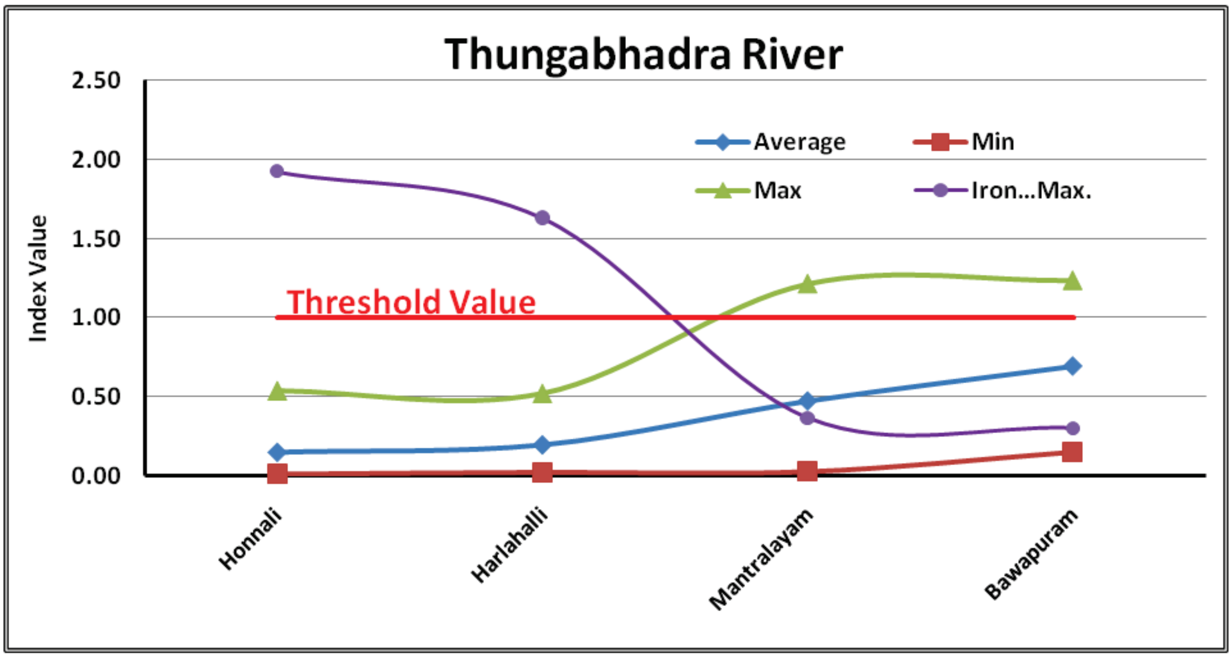

Pennar River
Threshold Value
Index Value
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Average
Min
Max
Iron...Max.
Chennur
Nellore

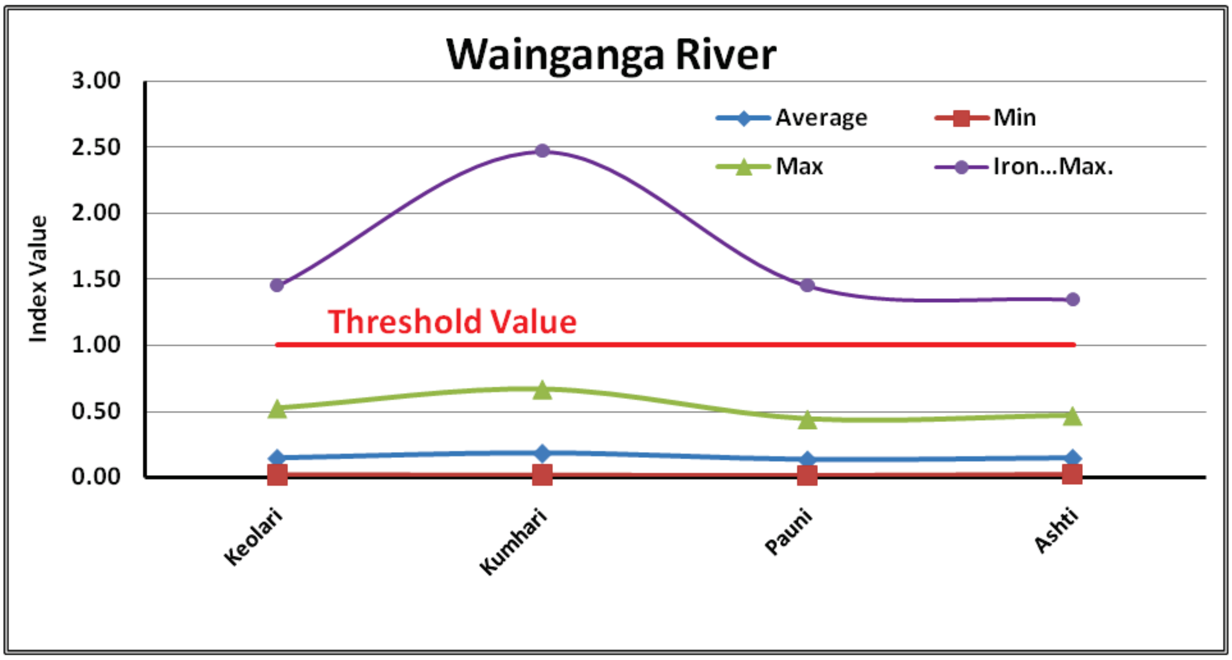

Ramganga River
Threshold Value
Index Value
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Average
Min
Max
Iron...Max.
Moradabad
Bareilly
Dabri


Rapti River
Index Value
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Balrampur
Bansi
Regauli
Birdghat


Sone River
Index Value
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Kuldah Bridge
Japla
Koelwar
Chopan


Subarnarekha River
Index Value
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Muri
Jamshedpur
Ghatsila
Jamsolghat


Thungabhadra River
Index Value
2.50
2.00
1.50
1.00
0.50
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Honnali
Harlahalli
Mantralayam
Bawapuram


Wainganga River
Index Value
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Average
Min
Max
Iron...Max.
Threshold Value
Keolari
Kumhari
Pauni
Ashti

13. CONCLUSION

A comprehensive study of the results reveals that out of 414 River water quality stations monitored, water samples collected at 136 water quality stations are found within the permissible limit for all purposes. While 57 stations were obtained beyond the permissible limit due to presence of two or more toxic metals. There are 168 numbers of stations where water was considered unfit for drinking purpose due to presence of Iron concentration beyond permissible limit. Similarly water is found unfit for drinking purpose at ninteen stations due to presence of cadmium, at four stations due to presence of copper, at seven stations due to presence of Chromium, at seventeen stations due to presence of nickel and sixty three stations due to presence of lead contamination. Nevertheless, it was concluded that Arsenic and Zinc concentrations are found within the acceptable limits as per Bureau of Indian Standards (BIS) and no toxicity of Arsenic and Zinc in the River waters is observed during the study period.

Furthemore, it is evident from the Annexure-4 that few water quality stations and stretches which are located on the major rivers were found contamination with more than two toxic metals where it is necessasary to take immediate attention to remediate the river waters as far as drinking purpose concern. The details thereof is an under,

- Dibrugarh WQ Station has contaminated with respect to Pb and Fe, Tezpur WQ Station was contaminated with respect to Cu, Cr and Fe which are located on Brahmaputra River.
- Chenimari and Margherita WQ Stations located on Buridehing River have been contaminated with respect to Pb and Fe.
- Bihubar WQ Station with respect to Cr, Cu and Fe, Sivasagar WQ Station with respect to Pb and Fe got contaminations which are located on Buridehing River.
- Locations on Ganga River like Ankinghat WQ Station has contaminated with respect to Pb and Fe, Bhitaura, Fatehgarh and Kanpur WQ stations have been contaminated with respect to Cr, Pb and Fe, WQ Station at Kachlabridge has been contaminated with Cr, Cu, Ni, Pb and Fe.
- WQ Stations located on Ghagra River such As Elginbridge and Turtipar have been contaminated with respect to Cr, Pb and Fe.
- Huvenhedgi WQ Station situated on Krishna River having pollution with respect to Ni and Pb.
- Gopalkheda WQ Station was contaminated with respect to Pb, Cu and Fe, Mahuwa WQ Station has contamined wih respect to Cr and Fe which are located on Purna River.
- WQ Stations located on Ramaganga River such as Dabri contaminated with respect to Pb and Fe, Moradabad WQ station contaminated with respect to Cr, Pb and Fe.
- Locations situated on Rapti River like Balrampur, Birdghat, Regauli WQ Stations contaminated with respect to Cr, Pb and Fe, Bansi WQ Station contamined with respect to Cd, Cr, Pb and Fe.
- Vautha WQ Station located on Sabarmathi River contaminated with respect to Cd, Ni, Pb and Fe.
- Ghatsila and Jamsolghat WQ Stations located on Subarnarekha River have been contaminated with respect to Cu and Fe.

- Bawapuram and Mantralayam WQ Stations located on Thungabhadra River have been contaminated with respect to Cd, Ni and Pb.

And it is worth noting that during the study period, Lowara WQ Station located on Shturni River was found 3 times above acceptable limit out of 9 times sampling, Mathura and Mohana WQ Stations situated on Yamuna River were found 2 times above acceptable limit out of 9 times sampling with respect to Cd, with respect to Cr concentration stations like Balrampur, Bansi and Birdghat on Rapti River were found 3 times out of 8 times sampling, 3 times out of 7 times sampling and 3 times out of 8 times sampling respectively its contamination above acceptable limit. Lead contamination was found at Birdghat on Rapti River 3 times out of 8 times sampling and at Durvesh on Vaitarna River found 4 times out of 7 times sampling, at Motinaroli on Kim River was found 3 times out of 8 times sampling, at Neemsar on Gomti River was found 3 times out of 7 times sampling, at Regauli on Rapti River found 3 times out of 8 times of sampling, at Vautha on Sabarmati River found 3 times out of 9 times of sampling.

The global metal consumption rate is increasing rapidly in accordance with the exponential population growth and the advancement of production technologies. Metal contamination owing to anthropogenic sources is a persistent global issue, having environmental, political and medical implications (Blackman and Baumol 2008; Rees and Wackernagel 2008). Heavy metals are toxic and carcinogenic and have shown to cause serious health effects on humans and the flora & fauna. As a consequence, various treatment methods have been developed for the treatment of metal contaminated waste streams and some processes can also recover the metals. Among the commonly used physico-chemical and biological technologies for heavy metal removal and recovery, cost effectiveness, technical feasibility, plant simplicity and longevity of the process are the factors that govern the selection of an appropriate technology (S.Janyasuthiwong, 2017; Rene, 2017)

The effluent of industries or other sources containing high levels of heavy metals needs to be treated before it's discharged into the receiving river water streams because heavy metals are toxic, carcinogenic and bio-accumulative in organisms (Needleman 2004). There are various wastewater treatment technologies available for treating heavy metals contaminated water prior to ultimate discharge in natural water bodies, for example chemical precipitation, evaporative recovery, oxidation/ reduction, filtration, ion exchange, membrane technologies and electrochemical treatment technologies are commonly used for practical applications (Fu and Wang 2011; Liang et al. 2010).

Adsorption is a method well known for its cost effectiveness in metal removal. It is widely used in many countries, especially in developing and transition countries, where expensive, advanced technologies cannot be afforded. Adsorption is an effective physico-chemical process for removing heavy metals from wastewater, especially for treating wastewaters with a low metal concentration. This process is very effective and relatively cheap if low cost adsorbents are used. There are many adsorbents available, varying from natural materials (clay balls) to agricultural waste and waste materials (sludges). The advantage of using agricultural waste as heavy metal adsorbent is the reduction of the solid waste problems and an increase in economic value and incentive of several by-products from agricultural materials. Rice husk, coconut shell, banana peel, sawdust, orange peel and groundnut shell are some examples of adsorbents from agricultural materials which have been studied over the past years (Demirbas 2008; Janyasuthiwong et al. 2015; Mohan and Singh 2002; Sud et al. 2008; S. Janyasuthiwong, 2017).

Phytoremediation is one of the biological technologies used for the treatment of pollutants present in wastewater, including heavy metals. This technology not only offers advantages during wastewater treatment, but also provides other advantages in terms of ecology, green area, reduced carbon footprint and aesthetics. Phytoremediation is the method in which selected plant species that are used to mitigate the environmental problems or pollutants (metals, pesticides, solvents, crude oils and theirs derivatives) from soil, air, or water. There are many plant species that are commonly used in this field: Vetiveria sp., Typha sp. and Cyperus sp. are examples of those plants. Maine et al. (2006) reported that the constructed wetlands which were planted with several plant species for example Pistia stratiotes, Cyperus alternifolius and Typha domingensis, showed a high percentage of Cr and Ni removals and the Zn concentration was below 50 µg/L. (S.Janyasuthiwong, 2017).

Iron is an essential element in human nutrition. In this regard, it may be mentioned that the presence of higher concentration of iron in drinking water makes its taste unpleasant; however, living organism can tolerate higher concentration of iron without any serious damage to their system. Estimates of the minimum daily requirement for iron depend on age, sex, physiological status, and iron bioavailability and range from about 10 to 50 mg/day (FAO/WHO, 1988). Although iron is essential element to humans and are relatively non-toxic, ions of these elements in water often cause mild to severe aesthetic problems, such as discoloured water, precipitation, scaling, staining and metallic water taste. Metallic taste and staining in laundry and toilet staining occur at iron concentration above 0.3 mg/L. The BIS has set the drinking water maximum contaminant levels (MCL) of 0.3mg/L for iron. Iron is not considered mutagenic or carcinogenic in the forms typically found in the aquatic environment and drinking water. Because of their ubiquitous presence in conventional drinking water sources, removal of iron is one of the most common water treatment practices. A two-step process with chemical oxidation followed by filtration is often employed for the removal of dissolved iron from water. The oxidants used include oxygen in air, chlorine, permanganate and ozone. Sand, anthracite, greensand and other synthetic manganese dioxide media are used as granular filter media to remove oxidized iron. Ion-exchange softening may also be used, but only on smaller scales. Other treatment methods that may be used for iron and manganese removal include water reverse osmosis and nanofiltration (Sharma, 2014; Ikehata, et al., 2014)

14. RECOMMENDATIONS

Based on the evaluation of the results obtained from the analysis of River water samples of 414 water quality station spanning all over India, it is recommended that the trace and toxic metals in the river water samples may be monitored at least four times during the water year. It was concluded that water quality of the Indian rivers particularly in some identified polluted stretches have been affected adversely by manmade activities by overcrowding accompanied by inadequate treatment or non-existent sanitation and also by unregulated enormous discharge of untreated industrial waste waters into riverine system. This might be caused by the population growth and also due to the compulsory growth in agricultural & industrial activities. The effluent discharge from the industry in localized areas due to this water pollution is creating situations which are dangerous to health of human and aquatic life.

1. All the toxic metallic elements like chromium and its other associated heavy metals coming from the tanneries, mining & other industries should be treated chemically and biologically before such wastes are founds its way to River.
2. Promotion of effective and efficient implementation of water pollution control laws and regulations.
3. There is an urgent need for stringent Government policy and monitoring for effluents discharged from agriculture and industries into the several Indian rivers such as Ganga, Ghagra, Rapti, Ramganga, Subernarekha, and Thungabhadra etc.
4. Speciation of the toxic metals e.g. Chromium (Cr^{+3} & Cr^{+6}) and Arsenic (As^{+3} & As^{+5}) in Indian rivers need to study.
5. The metal fractionation study should be carried out in the river sediments to identify the inorganic load (Metal Load).

Special studies for particular stretches of the rivers may also be undertaken suitably by the concerned basin organization. The number of parameters and frequencies of sampling can be increased for better observations, interpretation & modeling purposes, for other important parameters also such as biological parameters.

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Annexure-1

Details of Water Quality Monitoring Stations under Central Water Commission

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
1	A.B.Road Crossing	Ganga/Yamuna/Chambal/Parwati	24°22'00"	77°05'56"	Guna	Madhya Pradesh
2	A.P. Puram	Tambraparani/Chittar	08°54’05”	77°38’55”	Tirunelveli	Tamilnadu
3	A.P.Ghat	Barak	24°49’58”	92°47’30”	Cachar	Assam
4	Abu Road	Banas	24°29’38”	72°47’30’’	Sirohi	Rajasthan
5	Addoor	Gurupur	12°55’49”	74°49’47”	South Kanara	Karnataka
6	Adityapur	Subarnarekha/Kharkai	22°47’29”	86°10’25”	Purba Singhbhum	Jharkhand
7	Agra (P.G.)	Ganga/Yamuna	27°15'15''	78°01'23''	Agra	Uttar Pradesh
8	Aie NH Crossing	Brahmaputra / Aie	26°29’52”	90°39’18”	Barpeta	Assam
9	Akabarpur	Ganga/Chhoti Sarju	26°25'49"	82°33'43"	Ambedkar Nagar	Uttar Pradesh
10	Akhnoor	Chenab	32°53’00”	74°49’00”	Jammu	Jammu and Kashmir
11	Akkihebbal	Cauvery/ Hemavathi	12°36’10”	76°24’03”	Mandya	Karnataka
12	Aklera	Ganga/Yamuna/Chambal/Kalisindh/Parwan	24°25'47"	76°36'14"	Jhalawar	Rajasthan
13	Alladupalli	Pennar/Kunderu	14°43’12”	78°40’08”	Kadapa	Andhra Pradesh
14	Allahabad	Ganga	25°23'35"	81°54'40"	Allahabad	Uttar Pradesh
15	Altuma	Brahmani/Ramyala	20°55’47”	85°31’08”	Dhenkanal	Odisha
16	Ambarampalayam	Bharathapuzha/Kannadipuzha/Aliyar	10°37’49”	76°56’46”	Coimbatore	Tamilnadu
17	Ambasamudram	Vaigai	09°55’32”	77°30’42”	Theni	Tamilnadu

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
18	Anandpur	Baitarni	21°12’40”	86°07’14”	Keonjhar	Odisha
19	Andhiyar Kore	Mahanadi/Seonath/Hamp	21°49’53”	81°36’21”	Durg	Chhatisgarh
20	Ankinghat	Ganga	26°56'05"	80°02'10''	Kanpur Dehat	Uttar Pradesh
21	Annavasal	Cauvery/Nattar	10°58’21”	79°45’20”	Karaikal	Pondicherry
22	Arangaly	Periyar	10°16’53”	76°18’55”	Trichur	Kerala
23	Arcot	Palar	16.44'21"	79.40'11"	Nalgonda	Andhra Pradesh
24	Arjunwad	Krishna	16.56'56"	80.02'52"	Krishna	Andhra Pradesh
25	Ashramam	Pazhayar	08°09’30”	77°27’40”	Knayakumari	Tamilnadu
26	Ashti	Godavari/Pranhita/Wainganga	19°41’05”	79°47’08”	Gadchiroli	Maharastra
27	Auraiya	Ganga/Yamuna	26°25'34''	79°25'00''	Auraiya	Uttar Pradesh
28	Avershe	Sita	13°31’17”	74°52’48”	Udupi	Karnataka
29	Ayilam	Vamanapuram	08°42°55”	76°51’01”	Thiruvananth	Kerala
30	Ayodhya	Ganga/Ghaghra/Saryu	26°48'49"	82°12'28''	Faizabad	Uttar Pradesh
31	Azmabad	Ganga	25°22’00’’	87°17’00’’	Bhagalpur	Bihar
32	B.P.Ghat	Barak	24°52’32”	92°35’00”	Karimganj	Assam
33	Badatighat	Brahmaputra/Subansiri	26°56’05”	93°57’44”	Lakhimpur	Assam
34	Badlapur	Ulhas	19°09’50”	73°15’17”	Thane	Maharastra
35	Balrampur	Ganga/Ghaghra/Rapti	27°27'00"	82°12'29''	Balrampur	Uttar Pradesh
36	Baltara	Ganga/Kosi	25°30’’02’’	86°45’00’’	Khagaria	Bihar
37	Bamni	Narmada/Banjar	22°29’03”	80°22’41’’	Mandla	Madhya Pradesh
38	Bamni	Godavari/Pranhita/Wardha	19°48”48”	79°22”58’	Chandrapur	Maharastra

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
39	Bamnidhi	Mahanadi/Hasdeo	21°53’55”	82°42’53”	Janjgir-champa	Chhatisgarh
40	Banda	Ganga/Yamuna/Ken	25°29'00''	80°18'48''	Banda	Uttar Pradesh
41	Bansi	Ganga/Ghaghra/Rapti	27°11'00''	82°55'57''	Siddarthnagar	
42	Bantwal	Nethravathi	12°52’49”	75°02’28”	South Kanara	Karnataka
43	Baranwada	Ganga/Yamuna/ Chambal/Banas	26°00'00''	76°40'00''	Sawai-madhopur	Rajasthan
44	Bareilly	Ganga/Ramganga	28°17'57''	79°22'00''	Bareilly	Uttar Pradesh
45	Barmanghat	Narmada	23°01’49”	79°00’35’’	Narsinghpur	Madhya Pradesh
46	Barobisha	Brahmaputra / Sankosh / Raidak-II	26°28’28”	89°47’07	Jalpaiguri	West Bengal
47	Barod	Ganga/Yamuna/Chambal/Kalisindh	25°23'00''	76°20'02''	Kota	Rajasthan
48	Baronda	Mahanadi/Pairi	20°54’22”	81°53’10”	Raipur	Chhatisgarh
49	Basantpur	Mahanadi	21°43’33”	82°47’17”	Janjgir-champa	Chhatisgarh
50	Basti	Ganga/Ghaghra/Kwano	26°47'02''	82°42'47''	Basti	Uttar Pradesh
51	Bawapuram	Krishna/Tungabhadra	15°53’00”	77°57’26”	Kurnool	Andhra Pradesh
52	Behalpur	Brahmaputra / Champamati	26°19’10”	90°28’08”	Barpeta	Assam
53	Beki Mathanguri	Brahmaputra/Beki	26°46’55”	90°57’22”	Barpeta	Assam
54	Beki Road bridge	Brahmaputra/Beki	26°29’40”	90°54’59”E	Barpeta	Assam
55	Belkhedi	Narmada/Sher	22°55’01”	79°20’32’’	Narsinghpur	Madhya Pradesh
56	Belne Bridge	Gad	16°13’16”	73°35’42”	Sindudurg	Maharastra
57	Bendrahalli	Cauvery/Suvarnavathi	12°09’13”	77°04’48”	Chamarajanagar	Karnataka
58	Berhampore	Bhagirathi	24°05’21’’	88°14’33’’	Murshidabad	West Bengal
59	Bhadrachalam	Godavari	17°40’34’’	80°52’58’’	Khammam	Andhra Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
60	Bhalukpong	Brahmaputra/Jiabharali	27°01’03”	92°38’59”	West Kameng	Mizoram
61	Bhatpalli	Godavari/Pranhita/Peddavagu	19°19’49”	79°30’15”	Adilabad	Andhra Pradesh
62	Bhitaura	Ganga	26°02'35"	80°51'15''	Fatehpur	Uttar Pradesh
63	Bhomoraguri	Brahmaputra	26°36’37”	92°51’52”	Sonitpur	Assam
64	Bihubar	Brahmaputra/Dikhow	26°49’17”	94°48’18”	Sivasagar	Assam
65	Biligundulu	Cauvery	12°10’48”	77°43’48”	Dharmapuri	Tamilnadu
66	Birdghat	Ganga/Ghaghra/Rapti	26°44'40"	83°20'24''	Gorakhpur	Uttar Pradesh
67	Bokajan	Brahmaputra/Dhansari(South)	26°01’03”	93°47’32”	Karbi Anglong	Assam
68	Burhanpur	Tapi	21°17’58”	76°14’06’’	Khandwa	Madhya Pradesh
69	Buxar	Ganga	25°34’00”	83°57’15’’	Bhojpur	Bihar
70	Byaladahalli	Krishna/Tungabhadra/Haridra	14°26’02”	75°46’45”	Davangere	Karnataka
71	Champasari (Silliguri)	Ganga/Mahananda	26°44’21”	88°25’21”	Darjeeling	West Bengal
72	Champua	Baitarni	22°04’00”	85°40’20”	Keonjhar	Odisha
73	Chanwada	Narmada/Orsang	22°03’00”	73°27’58’’	Vadodara	Gujarat
74	Chapra	Bhagirathi/Jalangi	23°30’15’’	88°33’05’’	Nadia	West Bengal
75	Chel	Brahmaputra / Teesta / Chel	26°51’49”	88°38’06”	Jalpaiguri	Sikkim
76	Chengalpet	Palar	12°39’00”	79°56’50”	Kancheepuram	Tamilnadu
77	Chenimari	Brahmaputra/Buridehing	27°18’56”	94°53’08”	Dibrugarh	Assam
78	Chennur	Pennar	14°34’20”	78°48’00”	Kadapa	Andhra Pradesh
79	Chepan	Brahmaputra/ Torsa/Raidak-I	26°29’32”	89°42’02”	Jalpaiguri	West Bengal
80	Chhidgaon	Narmada/Ganjal	22°24’16”	77°18’35’’	Harda	Madhya Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
81	Chitrasani	Banas/Balaram	24°17’20”	72°29’54’’	Banaskantha	Gujarat
82	Chittorgarh	Ganga/Yamuna/Chambal/Banas/Gambhiri	26.02'00"	85.54'00"	Darbhanga	Bihar
83	Cholachguda	Krishna/Malaprabha	15°52’33”	75°43’19”	Bijapur	Karnataka
84	Chopan	Ganga/Sone	24°32'00"	83°01'26"	Sonbhadra	Madhya Pradesh
85	Chouldhowaghat	Brahmaputra/Subansiri	27°26’51”	94°15’10”	Lakhimpur	Assam
86	Chunchankatte	Cauvery	12°30’30”	76°18’03”	Mysore	Karnataka
87	Coronation	Brahmaputra / Teesta	26°29’32”	89°42’02”	Darjeeling	West Bengal
88	Dabri	Ganga/Ramganga	27°29'40"	79°41'50''	Sahajahanpur	Uttar Pradesh
89	Damarcherla	Krishna/Musi	16°44’14”	79°40’08”	Nalgonda	Andhra Pradesh
90	Dawki	Meghna/Umngot	25°11’23”	92°01’07”	Jaintia Hills	Meghalaya
91	Delhi Rly Bridge	Ganga/Yamuna	28°39'45''	77°14'48''	North Delhi	Delhi
92	Deoprayag	Ganga	30°08'00"	78°35'44"	Pauri	Uttarakhand
93	Derol Bridge	Sabarmati	23°34’24”	72°48’25’’	Sabarkantha	Gujarat
94	Desangpani	Brahmaputra/Desang	27°02’47”	94 °54’56”	Sivasagar	Assam
95	Dhamkund	Chenab	30°14’00”	75°09’00”	Ramban	Jammu and Kashmir
96	Dharamtul	Brahmaputra/Kopili	26°09’51”	92 °21’00”	Morigaon	Assam
97	Dheng Bridge	Ganga/Kosi/Bagmati	26°43’22’’	85°19’23’’	Sitamarhi	Bihar
98	Dholabazar	Brahmaputra/Lohit	27°45’39”	95 °35’51”	Tinsukia	Assam
99	Dholai	Barak/Rukni	24°35’10”	92°50’32”	Cachar	Assam
100	Dholpur	Ganga/Yamuna/Chambal	26°39'24''	77°54'00''	Dholpur	Rajasthan

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
101	Dhubri	Brahmaputra	26°00’36”	89°59’43”	Barpeta	Assam
102	Dhulsar	Narmada/Uri	22°12’30”	74°52’09’’	Dhar	Madhya Pradesh
103	Diana	Brahmaputra / Teesta / Diana	26°51’41”	89°00’04”	Jalpaiguri	West Bengal
104	Dibrugarh	Brahmaputra	27°29’56”	94 °54’21”	Dibrugarh	Assam
105	Dillighat	Brahmaputra/Desang	27°08’24”	95 °22’00”	Dibrugarh	Assam
106	Dimapara	Meghna/Bugi	25°13’51”	90°15’00”	South Garo Hills	Meghalaya
107	Dindori	Narmada	22°56’51”	81°04’40’’	Dindori	Madhya Pradesh
108	Domohani	Brahmaputra/ Teesta	26°33’46”	88°45’28”	Jalpaiguri	West Bengal
109	Duddhi	Ganga/Sone/Kanhar	24°13'38"	83°16'14"	Sonbhadra	Uttar Pradesh
110	Dudhnai	Brahmaputra/Dudhnai	25°58’45”	90°47’27”	Goalpara	Assam
111	Durvesh	Vaitarna	19°42’47”	72°55’48’’	Maharashtra	Thane
112	Ekmighat	Ganga/Kosi/Bagmati/Adhwara	26°07’03’’	85°52’35’’	Darbhanga	Bihar
113	Elginbridge	Ganga/Ghaghra	27°05'44"	81°29'02''	Barabanki	Uttar Pradesh
114	Elunuthimangalam	Cauvery/Noyyal	11°01’54”	77°53’15”	Erode	Tamilnadu
115	Englishbazar	Padma/Mahananda	24°59’51’’	88°09’08’’	Malda	West Bengal
116	Erinjipuzha	Payaswani	12°29’00”	75°09’14”	Kasargod	Kerala
117	Etawah	Ganga/Yamuna	26°45'00''	78°59'00''	Etawah	Uttar Pradesh
118	Fakirabazar	Kushiyara/Longai	24°51’06”	92°20’43”	Karimganj	Assam
119	Farakka	Ganga	24°48’14’’	87’55’52’’	West bengal	Murshidabad
120	Farakka/(HR)	Bhagirathi/Feeder Canal	24°48’08’’	87°55’18’’	Murshidabad	West Bengal
121	Fatehgarh	Ganga	27°24'15"	79°37'30''	Farukhabad	Uttar Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
122	Fulertal	Barak	24°47’19”	93°01’08”	Cachar	Assam
123	Gadarwara	Narmada/Sakkar	22°55’25”	78°47’27’’	Narsinghpur	Madhya Pradesh
124	Gadat	Ambika	20°51’29”	72°59’06’’	Navsari	Gujarat
125	Gajaldoba	Brahmaputra / Teesta	26°45’09”	88°35’14”	Jalpaiguri	West Bengal
126	Galeta	Ganga/Yamuna/Hindon	29°04'32''	77°27'45''	Meerut	Uttar Pradesh
127	Ganod	Bhadar	21°39’52”	70°10’52’’	Rajkot	Gujarat
128	Garhamukteshwar	Ganga	28°48'00"	78°08'30''	Gaziabad	Uttar Pradesh
129	Garrauli	Ganga/Yamuna/Betwa/Dhasan	25°04'00''	79°20'00''	Chhatarpur	Madhya Pradesh
130	Garudeshwar	Narmada	21°53’06”	73°39’16’’	Narmada	Gujarat
131	Gaya	Ganga/Kiul/Harohar/Phalgu	24°42’18’’	85°00’48’’	Gaya	Bihar
132	Gelabil	Brahmaputra/Dhansiri(South)/Doyang	26°14’26”	93°58’39”	Golaghat	Assam
133	Ghat	Ganga/Ghaghra/Sharda/Sarju	29°30'00"	80°07'40''	Pithoragarh	Uttarakhand
134	Ghatora	Mahanadi/Seonath	22°03’25”	82°13’11”	Bilaspur	Chhatisgarh
135	Ghatsila	Subarnarekha	22°34’50”	86°28’06”	Purba Singhbhum	Jharkhand
136	Ghish	Brahmaputra / Teesta / Ghish	26°52’29”	88°36’34”	Jalpaiguri	West Bengal
137	Ghugumari	Brahmaputra/ Torsa	26°17’14”	89°27’39”	Cooch Behar	West Bengal
138	Gokak	Krishna/Ghataprabha	34.03'47"	74.50'04"	Sirnagar	Jammu & Kashmir
139	Golaghat	Brahmaputra/Dhansari(South)	26°30’10”	93°57’07”	Golaghat	Assam
140	Golokganj	Brahmaputra/Sonkosh	26°06’26”	89°49’10”	Dhubri	Assam
141	Gomlai	Brahmani	21°50’16”	84°56’33”	Sundergarh	Odisha
142	Gopalkheda	Tapi/Purna	20°52’27”	76°59’23’’	Akola	Maharashtra

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
143	Govindapur	Burhabalang	21°32’44”	86°55’05”	Balasore	Odisha
144	Gummanur	Ponnaiyar	12°33’18”	78°08’18”	Krishnagiri	Tamilnadu
145	Gumrabazar	Meghna/Surma/Gumra	25°00’41”	92°30’35”	Cachar	Assam
146	Gunupur	Vamsadhara	22.20'00"	84.30'15"	Simdega	Jharkhand
147	Haladi	Haladi	13°34’52”	74°51’26”	Udupi	Karnataka
148	Halia	Krishna/Halla	16°47’24”	79°20’19”	Nalgonda	Andhra Pradesh
149	Hamirpur	Ganga/Yamuna	25°57'39''	80°09'16''	Hamirpur	Uttar Pradesh
150	Handia	Narmada	22°29’26”	76°58’33’’	Harda	Madhya Pradesh
151	Hanskhali	Bhagirathi/Churni	23°21’28’’	88’36’31’’	Nadia	West Bengal
152	Haridwar	Ganga	13.58'34'	75.41'07"	Shimoga	Karnataka
153	Harlahalli	Krishna/Tungabhadra	14°49’50”	75°40’28”	Haveri	Karnataka
154	Hassimara	Brahmaputra/ Torsa	26°43’52”	89°21’28”	Jalpaiguri	West Bengal
155	Hathidah	Ganga	25°23’06’’	85°59’35’’	Patna	Bihar
156	Hayaghat	Ganga/Kosi/Bagmati	26°01’30’’	85°51’57’’	Darbhanga	Bihar
157	Hivra	Godavari/Pranhita/Wardha	20°32’50”	78°19’29”	Wardha	Maharastra
158	Holehonnur	Krishna/Tungabhadra/Bhadra	13°58’34”	75°41’07”	Shimoga	Karnataka
159	Honnali	Krishna/Tungabhadra	14°14’18”	75°39’27”	Davangere	Karnataka
160	Hoshangabad	Narmada	22°45’22”	77°43’58’’	Hoshangabad	Madhya Pradesh
161	Huvenhedigi	Krishna	12.20'46"	76.17'16"	Mysore	Karnataka
162	Jagdalpur	Godavari/Indravati	19°05’53’’	82°02’26’’	Bastar	Chhattisgarh
163	Jagibhakatgaon	Brahmaputra/ Kopili	26°09’54”	92°21’07”	Morigaon	Assam

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
164	Jai Nagar	Ganga/Kosi/Kamla-Balan	26°35'00''	86°08'53''	Madhubani	Bihar
165	Jaldhaka NH-31	Brahmaputra/Jaldhaka	26°34'11"	88°56'18"	Jalpaiguri	West Bengal
166	Jammu Tawi	Chenab/Tawi	32°44'00"	74°52'53"	Jammu	Jammu and Kashmir
167	Jamshedpur	Subarnarekha	22°48'56"	86°12'58"	Purba Singhbhum	Jharkhand
168	Jamsolghat	Subarnarekha	14.56'20"	75.37'05"	Haveri	Karnataka
169	Japla	Ganga/Sone	24°34'05''	83°58'30''	Palamu	Jharkhand
170	Jaraikela	Brahmani/Koel	22°19'18"	85°06'17"	Sundergarh	Odisha
171	Jenapur	Brahmani	20°53'10"	86°00'50"	Jajpur	Odisha
172	Jhanjharpur	Ganga/Kosi/Kamla-Balan	26°14'00''	86°15'34''	Madhubani	Bihar
173	Jiabharali NT Road X-ing	Brahmaputra/ Jiabharali	26°48'35"	92 °52'44"	Sonitpur	Assam
174	Jondhra	Mahanadi/Seonath	21°42'57"	82°20'50"	Bilaspur	Chhatisgarh
175	K.M. Vadi	Cauvery/Lakshmantirtha	12°20'46"	76°17'16"	Mysore	Karnataka
176	Kachlabridge	Ganga	27°55'52"	78°51'20''	Badaun	Uttar Pradesh
177	Kalampur	Muvattupuzha	09°59'25"	76°37'56"	Emakulam	Kerala
178	Kalanaur	Ganga/Yamuna	30°04'10''	77°21'52''	Saharanpur	Uttar Pradesh
179	Kallooppara	Pamba	09°24'10"	76°39'00"	pathanamthitt	Kerala
180	Kalna (EBB)*	Bhagirathi	23°13'31''	88°22'21''	Burdwan	West Bengal
181	Kalna (Flow)	Bhagirathi	11.50'00"	76.07'21"	Wynad	Kerala
182	Kamalapuram	Pennar/Papagani	14°34'50"	78°40'40"	Kadapa	Andhra Pradesh
183	Kamalpur	Banas	23°48'50"	71°45'00''	Banaskantha	Gujarat

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
184	Kampur	Brahmaputra/ Kopili	26°09'13"	92 °39'23"	Nagaon	Assam
185	Kanpur	Ganga	26°28'10"	80°22'35''	Kanpur Nagar	Uttar Pradesh
186	Kantamal	Mahanadi/Tel	20°39'00"	83°43'20"	Boudh	Odisha
187	Karad	Krishna	17°17'40"	74°11'25"	Satara	Maharashtra
188	Karathodu	Kadalundi	11°03'25"	76°02'22"	Malappuram	Kerala
189	Kashinagar	Vamsadhara	18°50'54"	83°52'23"	Gajapati	Odisha
190	Katwa (Purbasthali)	Bhagirathi	23°38'37''	88°08'52''	Burdwan	West Bengal
191	Keesara	Krishna/Munneru	16°43'05"	80°19'05"	Krishna	Andhra Pradesh
192	Kellodu	Krishna/Tungabhadra/Vedavathi	13°45'00"	76°20'44"	Chitradurga	Karnataka
193	Keolari	Godavari/Pranhita/Wainganga	09.34'24"	77.05'27"	Idukki	Kerala
194	Kesinga	Mahanadi/Tel	20°12'14"	83°13'23"	Kalahandi	Odisha
195	Khanitar	Brahmaputra / Teesta	27°08'02"	88°30'10''	East Sikkim	Sikkim
196	Khanpur	Mahi	22°31'55"	73°08'27''	Anand	Gujarat
197	Kharkhana	Meghna/Myntdu	25°09'30"	92°13'30"	Jaintia Hills	Meghalaya
198	Khatoli	Ganga/Yamuna/Chambal/Parwati	25°40'57"	76°28'58"	Kota	Rajasthan
199	Kheronighat	Brahmaputra/ Kopili	25°50'54"	92 °53'12"	Karbi Anglong	Assam
200	Kidangoor	Meenachil	09°40'30"	76°36'10"	kottayam	Kerala
201	Kodumudi	Cauvery	11°04'52"	77°53'25"	Erode	Tamilnadu
202	Koelwar	Ganga/Sone	25°34'15''	84°47'59''	Arrah	Bihar
203	Kogaon	Narmada/Kundi	22°06'18"	75°40'42''	Khargone	Madhya Pradesh
204	Kokrajhar	Brahmaputra/Gaurang	26°23'49"	90°15'18"	Kokrajhar	Assam

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
205	Kollegal	Cauvery	12°11’21”	77°06’00”	Chamarajanagar	Karnataka
206	Konta	Godavari/Sabari	17°48’00”	81°23’34”	Dantewara	Chhattisgarh
207	Koperagaon	Godavari	23.18'40"	79.39'43"	Jabalpur	Madhya Pradesh
208	Kora	Ganga/Yamuna/Rind	26°07'58''	80°27'15''	Fatehpur	Uttar Pradesh
209	Koteshwar	Ganga/Bhagirath	23.01'51"	79.00'56"	Narsinghpur	Madhya Pradesh
210	Kudalaiyathur	Vellar	22.29'30"	76.59'37"	Harda	Madhya Pradesh
211	Kudige	Cauvery	12°30’09”	75°57’40”	Coorg	Karnataka
212	Kudlur	Cauvery/Palar	11°50’26”	77°27’46”	Chamarajan-agara	Karnataka
213	Kuldah Bridge	Ganga/Sone	24°24'45"	81°42'01"	Sidhi	Madhya Pradesh
214	Kulsi	Brahmaputra/Kulsi	25°58’45”	91°23’09”	Kamrup	Assam
215	Kumbidi	Bharathapuzha	10°51’00”	76°01’18”	Palakkad	Kerala
216	Kumhari	Godavari / Pranhita / Wainganga	21°53’03”	80°10’30”	Balaghat	Madhya Pradesh
217	Kuniyil	Chaliyar	11°14’26”	76°01’26”	Malappuram	Kerala
218	Kuppelur	Krishna/Tungabhadra/Kumudavathi	14°30’00”	75°38’02”	Haveri	Karnataka
219	Kurubhata	Mahanadi/Mand	21°59’11”	83°12’15”	Raigarh	Chhatisgarh
220	Kurundwad	Krishna	16°41’01”	74°36’11”	Kolhapur	Maharastra
221	Kuttyadi	Kuttyadi	11°37’30”	75°47’04”	Kozhikode	Kerala
222	Kuzhithurai	Thambraparni	08°18’08”	77°10’51”	Knayakumari	Tamilnadu
223	Labha	Ganga/Mahananda	25°26’10’’	87°45’57’’	Katihar	Bihar
224	Lakhisarai	Ganga/Kiul	25°10’33’’	86°05’58’’	Lakhisarai	Bihar
225	Lalganj	Ganga/Gandak	25°50’05’’	85’09’47’’	Vaishali	Bihar

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
226	Lowara	shetruni	21°26’36”	71°33’42’’	Bhavnagar	Gujarat
227	Lucknow	Ganga/Gomti	26°51'40"	80°56'47''	Lucknow	Uttar Pradesh
228	M.H. Halli	Cauvery/Hemavathi	12°49’08”	76°08’00”	Hassan	Karnataka
229	Madhira	Krishna/Munneru/Wyra	25.10'44"	77.41'13"	Shivpuri	Madhya Pradesh
230	Madla	Ganga/Yamuna/Ken	26.25'03"	78.55'48"	Datia	Madhya Pradesh
231	Mahidpur	Ganga/Yamuna/ Chambal/Shipra	23°28'50"	75°38'11"	Ujjain	Madhya Pradesh
232	Mahuwa	Purna	21°00’57”	73°08’08’’	Gujarat	Surat
233	Maighat	Ganga/Gomti	25°38'37"	82°50'48"	Jaunpur	Uttar Pradesh
234	Majhitar	Brahmaputra / Teesta / Rangit	27°06’28”	88°19’18”	South Sikkim	Sikkim
235	Malakkara	Pamba	09°19’57”	76°39’47”	pathanamthitt	Kerala
236	Malkhed	Krishna/Bhima/Kagna	17°12’12”	77°09’25”	Gulbarga	Karnataka
237	Manas NH Crossing	Brahmaputra/Manas	26°27’51”	90°44’59”	Barpeta	Assam
238	Mancherial	Godavari	18°50’09’’	79°26’42’’	Adilabad	Andhra Pradesh
239	Mandleshwar	Narmada	22°10’06”	75°39’36’’	Khargone	Madhya Pradesh
240	Manendragarh	Mahanadi/Hasdeo	23°12’13”	82°13’02”	Koria	Chhatisgarh
241	Mangaon (Seasonal)	Savitri/kal	18°13’58”	73°17’05”	Raigarh	Maharastra
242	Mankara	Bharathapuzha	10°45’40”	76°29’10”	Palakkad	Kerala
243	Manot	Narmada	22°44’08”	80°30’47’’	Mandla	Madhya Pradesh
244	Mantralayam	Krishna/Thungabhadra	16.46'51"	74.38'00"	Kolhapur	Maharashtra
245	Marella	Gundlakamma	15°52’58”	79°54’37”	Praksam	Andhra Pradesh
246	Margherita	Brahmaputra/ Buridehing	27°17’01”	95 °39’46”	Tinsukia	Assam

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
247	Marol	Krishna/Tungabhadra/Varada	14°56’20”	75°37’05”	Haveri	Karnataka
248	Mataji	Mahi	23°20’38”	74°43’29’’	Ratlam	Madhya Pradesh
249	Mathabhanga	Brahmaputra/Jaldhaka	26°19’31”	89°14’08”	Cooch Behar	West Bengal
250	Mathanguri	Brahmaputra / Beki	26°46’55”	90°57’22”	Barpeta	Assam
251	Mathura	Ganga/Yamuna	27°26'30''	77°42'54''	Mathura	Uttar Pradesh
252	Matigara	Ganga/Mahananda/Balson	26°43’13”	88°22’37”	Darjeeling	West Bengal
253	Matijuri	Barak/Katakhal	24°38’53”	92°36’29”	Hailakandi	Assam
254	Matunga	Brahmaputra / Pagladiya / Kalanadi	26°47’30”	91°32’07”	Baksa (BTAD)	Assam
255	Mawi	Ganga/Yamuna	29°23'07''	77°09'16''	Muzaffar Nagar	Uttar Pradesh
256	Meja Road	Ganga/Tons	25°14'00"	82°02'16"	Allahabad	Uttar Pradesh
257	Mekhliganj	Brahmaputra / Teesta	-	-	-	-
258	Miao	Brahmaputra/Noa-dehing	27°29’57”	96°12’35”	Changlang	Mizoram
259	Mirzapur	Ganga	25°09'22"	82°31'49"	Mirzapur	Uttar Pradesh
260	Mohana	Ganga/Yamuna	28°14'58''	77°28'12''	Faridabad	Haryana
261	Mohana	Ganga/Yamuna/Betwa	13.33'41"	79.36'56"	Chandrapur	Maharashtra
262	Mohgaoan	Narmada/Burhner	22°45’42”	80°37’26’’	Mandla	Madhya Pradesh
263	Moradabad	Ganga/Ramganga	28°49'32"	78°47'54"	Moradabad	Uttar Pradesh
264	Motinaroli	Kim (Indepent River)	21°24’16”	72°57’45’’	Surat	Gujarat
265	Murappanadu	Tambraparni	08°42’52”	77°50’06”	Tuticorin	Tamilnadu
266	Muri	Subarnarekha	23°22’50”	85°52’40”	Ranchi	Jharkhand
267	Murti	Brahmaputra / Jaldhaka / Murti	26°50’26”	88°49’42”	Jalpaiguri	Assam

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
268	Musiri	Cauvery	10°56’36”	78°26’06”	Thiruchira Palli	Tamilnadu
269	Muthankera	Cauvery/ Kabini	11°50’00”	76°05’20”	Wynad	Kerala
270	Nagrakata	Brahmaputra / Jaldhaka	26°52’22”	88°53’43”	Jalpaiguri	Assam
271	Naharkatia	Brahmaputra/ Buridehing	27°19’15”	95 °18’38”	Dibrugarah	Assam
272	Naidupet	Swarnamukhi	13°56’54”	79°53’50”	Nellore	Andhra Pradesh
273	Nallamaranpatty	Cauvery/Amaravathi	10°52’51”	77°59’05”	Karur	Tamilnadu
274	Nallathur	Cauvery/Nandalar	22.03'57"	85.40'24"	Keonjhar	Odisha
275	Namsai	Brahmaputra/Noa-dehing	27°37’28”	95°53’44”	Lohit	Mizoram
276	Nandgaon	Godavari/Pranhita/Wunna	20°32’04”	78°48’04”	Wardha	Maharastra
277	Nandipalli	Pennar/Sagaileru	14°42’51”	79°01’21”	Kadapa	Andhra Pradesh
278	Nanglamoraghat	Brahmaputra/Desang	27°00’00”	94 °49’05”	Sivasagar	Assam
279	Neamatighat	Brahmaputra	26°52’12”	94 °15’08”	Jorhat	Assam
280	Neeleswaram	Periyar	10°11’00”	76°29’46”	Emakulam	Kerala
281	Neemsar	Ganga/Gomti	27°20'46"	80°28'40''	Sitapur	Uttar Pradesh
282	Nellithurai	Cauvery/Bhavani	11°17’16”	76°53’28”	Coimbatore	Tamilnadu
283	Nellore	Pennar	14°28’13”	79°59’20”	Nellore	Andhra Pradesh
284	Neora	Brahmaputra / Teesta / Neora	26°52’43”	88°46’18”	Jalpaiguri	West Bengal
285	Nowrangpur	Godavari/Indravati	19°11’51’’	82°30’43’’	Nowrangpur	Odisha
286	Numaligarh	Brahmaputra/Dhansiri(South)	26°38’02”	93°43’48”	Golaghat	Assam
287	P.G.Bridge	Godavari/Pranhita/Penganga	19°49’02”	78°34’39”	Yeotmal	Maharastra
288	Pachauli	Ganga/Yamuna/Sind	25°10'44''	77°41'13''	Shivpuri	Madhya Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
289	Pachegaon	Godavari/Pravara	19°32’04’’	74°50’02’’	Ahmednagar	Maharashtra
290	Paderdibadi	Mahi	23°46’02”	74°08’12’’	Dungarpur	Rajasthan
291	Pagladiya N.T. Road X-ING	Brahmaputra / PagladiYa	26°26’58”	91°27’36”	Nalbari	Assam
292	Paleru Bridge	Krishna/Paleru	16°57’08”	80°02’56”	Krishna	Andhra Pradesh
293	Paliakalan	Ganga/Ghaghra/Sharda	28°23'00"	80°33'09''	Lakhimpur Khiri	Uttar Pradesh
294	Palla	Ganga/Yamuna	28°49'46''	77°13'27''	North West Delhi	Delhi
295	Panbari	Brahmaputra / Burisuti	26°35’30”	90°49’44”	Barpeta	Assam
296	Pancharatna	Brahmaputra	26°12’00”	90°34’38”	Goalpara	Assam
297	Pandu	Brahmaputra	26°10’15”	91°40’18”	Kamrup	Assam
298	Panposh	Brahmani	22°13’33”	84°48’01”	Sundergarh	Odisha
299	Passighat	Brahmaputra/Siang	28°04’23”	95°20’25”	East Siang	Mizoram
300	Patan	Narmada/Hiran	23°18’42”	79°39’46’’	Jabalpur	Madhya Pradesh
301	Pathagudem	Godavari/Indravati	18°49’39’’	80°20’21’’	Bijapur	Chhattisgarh
302	Pathardihi	Mahanadi/Seonath/Kharun	21°20’28”	81°35’38”	Raipur	Chhatisgarh
303	Pati	Narmada/Goi	21°56’36”	74°44’41’’	Barwani	Madhya Pradesh
304	Patna	Ganga	25°37’25’’	85°10’21’’	Patna	Bihar
305	Pattazhy	Kallada	09°04’22”	76°45’40”	Quilon	Kerala
306	Pauni	Godavari/Pranhita/Wainganga	20°47’41”	79°38’46”	Bhandara	Maharastra
307	Peralam	Cauvery/Vanjiyar	10°58’00”	79°39’50”	Thiruvarur	Tamilnadu
308	Perumannu	Valapatnam	11°58’53”	75°35’15”	Cannanore	Kerala

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
309	Perur	Godavari	18°33’00’’	80°23’05’’	Khammam	Andhra Pradesh
310	Phulgaon (Seasonal)	Krishna/Bhima	18°40’00”	74°00’07”	Pune	Maharastra
311	Pingalwada	Dhadher	22°06’39”	73°04’43’’	Vadodara	Gujarat
312	Polavaram	Godavari	17°14’45”	81°39’35’’	West Godavari	Andhra Pradesh
313	Pratapgarh	Ganga/Gomti/Sai	25°56'05"	82°00'07"	Pratapgarh	
314	Pratappur	Ganga/Yamuna	25°21'17''	81°40'02''	Allahabad	Uttar Pradesh
315	Prem Nagar	Chenab	33°08’00”	75°39’04”	Doda	Jammu and Kashmir
316	Pudur	Bharathapuzha	10°46’48”	76°34’30”	Palakkad	Kerala
317	Pulamanthole	Bharathapuzha	10°53’56”	76°11’50”	Palakkad	Kerala
318	Purna	Godavari/Purna	10.37'49"	76.56'46"	Coimbatore	Tamilnadu
319	Purushottampur	Rushikulya	19°30’53”	84°53’00”	Ganjam	Odisha
320	Puthimari D.R.F.	Brahmaputra / Puthimari	26°48’01”	91°42’01”	Baksa (BTAD)	Assam
321	Puthimari NH X-ING	Brahmaputra / Puthimari	26°20’48”	91°38’45”	Kamrup	Assam
322	Raibareli	Ganga/Gomti/Sai	26°11'55"	81°15'04''	Raibareli	Uttar Pradesh
323	Rajapur	Ganga/Yamuna	25°23'23''	81°09'15''	Chitrakoot	Uttar Pradesh
324	Rajegaon	Godavari / Pranhita / Bagh	21°37’32”	80°15’14”	Balaghat	Andhra Pradesh
325	Rajghat	Ganga/Yamuna/Betwa	26°49'23''	78°12'00''	Lalitpur	Uttar Pradesh
326	Rajim	Mahanadi	20°58’25”	81°52’42”	Raipur	Chhatisgarh
327	Ramakona	Godavari/Pranhita/Kanhan	11.33'18"	77.42'52"	Erode	Tamilnadu
328	Ramamangala	Muvattupuzha	09°50’41”	76°28’00”	Emakulam	Kerala

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
329	Rammunshi Bagh	Jhelum	34°03’47”	74°50’04”	Sirnagar	Jammu and Kashmir
330	Rampur	Mahanadi/Jonk	21°39’06”	82°31’02”	Raipur	Chhatisgarh
331	Ranganadi NT-Road Crossing	Brahmaputra/	27°12’00”	94°03’46”	Lakhimpur	Assam
332	Rangeli	Mahi/som	23°52’22”	74°13’25’’	Dungarpur	Rajasthan
333	Rangpo	Brahmaputra / Teesta / Rangpochu	27°10’20”	88°31’47”	Gangtok	Sikkim
334	Reguali	Ganga/Ghaghra/Rapti	26°45'33"	83°17'26''	Gorakhpur	Uttar Pradesh
335	Rishikesh	Ganga	30°04'57"	78°17'30"	Dehradun	Uttarakhand
336	Rudraprayag	Ganga/ Alaknanda	30°17'03"	78°58'29"	Rudraprayag	Uttarakhand
337	Safapora	Jhelum	34°17’44”	74°37’29”	Baramulla	Jammu and Kashmir
338	Sakleshpur	Cauvery/Hemavathi	12°57’10”	75°47’04”	Hassan	Karnataka
339	Sakmur(Sirpur)	Godavari/Pranhita/Wardha	27.05'44"	81.29'02"	Barabanki	Uttar Pradesh
340	Salebhata	Mahanadi/Ong	20°59’00”	83°32’09”	Balangir	Odisha
341	Samdoli (Seasonal)	Krishna/Varna	16°51’18”	74°29’48”	Sangli	Maharastra
342	Sandia	Narmada	22°54’57”	78°20’51’’	Hoshangabad	Madhya Pradesh
343	Sangam	Jhelum	33°49’59”	75°03’58”	Anantnag	Jammu and Kashmir
344	Sangod	Ganga/Yamuna/ Chambal/Parwan	24°58'09"	76°17'32"	Kota	Rajasthan
345	Sankalan	Brahmaputra / Teesta	27°30’30”	88°31’30”	North Sikkim	Sikkim
346	Sankosh LRP	Brahmaputra/Sankosh	26°27’28”	89°51’29”	Cooch Behar	West Bengal
347	Santeguli	Aghanashini	14°26’04”	74°35’10”	North Kanara	Karnataka

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
348	Sarangkheda	Tapi	21°25’42”	74°31’38”	Nandurbar	Maharashtra
349	Satrapur	Godavari/Pranhita/Kanhan	21°13’05”	79°13’56”	Nagpur	Maharastra
350	Savandapur	Cauvery/Bhavani	11°31’17”	77°30’36”	Erode	Tamilnadu
351	Seondha	Ganga/Yamuna/Sind	26°09'49''	78°47'00''	Datia	Madhya Pradesh
352	Seppa	Brahmaputra/Kameng	27°21’21”	93°02’24”	East Kameng	Mizoram
353	Sevanur	Cauvery/Chittar	11°33’07”	77°43’55”	Erode	Tamilnadu
354	Sevoke	Brahmaputra / Teesta	26°52’54”	88°28’37”	Darjeeling	West Bengal
355	Shahjina	Ganga/Yamuna	25°57'00''	80°08'52''	Hamirpur	Uttar Pradesh
356	Shahzadpur	Ganga	25°40'00"	81°25'48"	Kaushambi	Uttar Pradesh
357	Shimoga	Krishna/Tungabhadra/Tunga	13°56’06”	75°34’37”	Shimoga	Karnataka
358	Sibbari	Meghna/Dareng	25°10’50”	90°30’22”	South Garo Hills	Meghalaya
359	Sikandarpur	Ganga/Burhi Gandak	26°08’22’’	85°24’05’’	Muzaffarpur	Bihar
360	Simga	Mahanadi/Seonath	21°37’51”	81°41’16”	Raipur	Chhatisgarh
361	SinglaBazar	Brahmaputra / Teesta / Rangit	27°07’51”	88°16’45”	Darjeeling	West Bengal
362	Sivasagar	Brahmaputra/ Dikhow	26°58’21”	94°36’35”	Sivasagar	Assam
363	Sonapur	Brahmaputra/Digaru	26°06’55”	91°58’27”	Kamrup	Assam
364	Srikakulam	Nagavali	18°18’52	85°53’06”	Srikakulam	Andhra Pradesh
365	Srinagar	Ganga/Alakananda	26.16'33"	82.04'04"	Sultanpur	Uttar Pradesh
366	Sripalpur	Ganga/Punpun	25°30’16’’	85’07’23’’	Patna	Bihar
367	Suklai	Brahmaputra / Puthimari / Suklai	26°38’16”	91°42’39”	Baksa (BTAD)	Assam
368	Sultanpur	Ganga/Gomti	26°17'00"	82°07'21"	Sultanpur	Uttar Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
369	Sulurpet	Kalingi	13°42'41"	80°00'30"	Nellore	Andhra Pradesh
370	Sundergarh	Mahanadi/Ib	22°06'55"	84°00'40"	Sundergarh	Odisha
371	T. Narasipur	Cauvery/Kabini	12°13'02"	76°53'13"	Mysore	Karnataka
372	T. Ramapuram (Sea-sonal)	Krishna/Tungabhadra/Hagari	15°39'45"	76°57'50"	Bellary	Karnataka
373	T.Bekuppe	Cauvery/Arkavathi	12°31'00"	77°26'00"	Bangalore Rural	Karnataka
374	T.K. Halli	Cauvery/Shimsha	12°25'00"	77°11'33"	Mandya	Karnataka
375	Tal	Ganga/Yamuna/ Chambal	23°43'03"	75°21'14"	Ratlam	Madhya Pradesh
376	Talcher	Brahmani	20°57'07"	85°14'32"	Angual	Odisha
377	Tandi	Chenab/Bhaga	32°33'00"	76°58'33"	Lahaul Spiti	Himachal Pradesh
378	TeestaBazar	Brahmaputra / Teesta	27°03'20"	88°25'35"	Darjeeling	West Bengal
379	Tehri	Ganga/Bhagirath	30°21'24"	78°28'58"	Tehri	Uttarakhand
380	Tekra	Godavari/Pranhita/Pranhita	18°58'42"	79°56'49"	Gadchiroli	Maharastra
381	Tezpur	Brahmaputra	26°36'56"	92 °47'48"	Sonitpur	Assam
382	Tezu	Brahmaputra/Lohit	27°54'38"	96°10'15"	Lohit	Mizoram
383	Thengudi	Cauvery/Thirumalairajanar	10°55'00"	79°38'19"	Thiruvarur	Tamilnadu
384	Thengumarahada	Cauvery/Bhavani/Moyar	11°34'22"	76°55'09"	Nilgiris	Tamilnadu
385	Theni	Vaigai/Suruliar	10°00'04"	77°29'06"	Theni	Tamilnadu
386	Therriaghat	Meghna/Umsohrynkiew	25°10'48"	91°45'41"	East Khasi Hills	Meghalaya
387	Thevur	Cauvery/Sarabenga	11°31'38"	77°45'03"	Salem	Tamilnadu
388	Thimmanahalli	Cauvery/Yagachi	12°59'00"	76°02'18"	Hassan	Karnataka

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
389	Thoppur	Cauvery/Thoppaiyar	11°56’18”	78°03’26”	Salem	Tamilnadu
390	Thumpamon	Pamba	09’13’37	76°42’00”	pathanamthitt	Kerala
391	Tikarpara	Mahanadi	20°35’22”	84°47’00”	Angul	Odisha
392	Tilga	Brahmani/Sankh	22°37’07”	84°24’23”	Simdega	Jharkhand
393	Tonk	Ganga/Yamuna/ Chambal/Banas	26°12'32"	75°47'00"	Tonk	Rajasthan
394	Tribeni	Ganga/Gandak	27°26’30’’	83°55’00’’	West Champaran	Bihar
395	Tufanganj	Brahmaputra/Torsa/Raidak-I	26°18’31”	89°40’28”	Cooch Behar	West Bengal
396	Tuini (Tons)	Ganga/Yamuna/Tons	30°56'23''	77°50'48'	Dehradun	UttaraKhand
397	Turtipar	Ganga/Ghaghra	26°08'37"	83°52'49''	Ballia	Uttar Pradesh
398	Udaipur	Chenab/Chandra	32°43’00”	76°40’03”	Lahaul Spiti	Himachal Pradesh
399	Udaipur	Brahmaputra/Buridehing/Tirap	27°20’00”	95°51’18”	Tinsukia	Assam
400	Udi	Ganga/Yamuna/Chambal	26°42'16''	80°10'23''	Etawah	Uttar Pradesh
401	Ujjain	Ganga/Yamuna/Chambal/Shipra	26.28'28'	89.47'07"	Jalpaiguri	West Bengal
402	Urachikottai	Cauvery	11°28’40”	77°42’00”	Erode	Tamilnadu
403	Uttarkashi	Ganga/Bhagirath	30°44'20"	78°21'23"	Uttarkashi	Uttarakhand
404	Vandiperiyar	Periyar	09°34’30”	77°05’16”	Idukki	Kerala
405	Vapi	Damanganga	20°20’20”	72°54’42’’	Valsad	Gujarat
406	Varanasi	Ganga	25°19'25"	83°02'15"	Varanasi	Uttar Pradesh
407	Vautha	Sabarmati	22°38’50”	72°32’08’’	Kheda	Gujarat
408	Vazhavachanur	Ponnaiyar	12°03’55”	78°58’15”	Thiruvannam-alai	Tamilnadu
409	Wadenapally	Krishna	16°47’39”	80°04’10”	Nalgonda	Andhra Pradesh

S. No.	Site Name	River Name/Tributory/ SubTributory	Latitude	Longitude	District	State
410	Wairagarh	Godavari/Pranhita/Khobragarhi	24.09'17"	88.27'44"	Murshidabad	West Bengal
411	Warunji	Krishna/Koyna	23.21'19"	88.36'22"	Nadia	West Bengal
412	Yadgir	Krishna/Bhima	16°44'15"	77°07'20"	Gulbarga	Karnataka
413	Yashwant nagar	Ganga/Yamuna/	30°53'12''	77°12'22''	Simaur	Himachal Pradesh
414	Yennehole	Swarna	13°17'39"	74°58'51"	Udupi	Karnataka

Annexure-2

Details of Indian rivers and their sites where the water was found fit for use in terms of toxic metal contamination during the study period.

S.No.	River	Name of the Water Quality Sites	No. of Stations
1	Amaravathi	Nallammaranpatty	1
2	Balaram	Chitrasani	1
3	Banas	Abu Road	1
4	Banas	Baranwada; Tonk	2
5	Barak	A.P.Ghat	1
6	Betwa	Mohana; Rajghat; Shahijina	3
7	Bhagirathi	Berhampore; Kalna (EBB), Kalna (Flow)	3
8	Bharathapuzha	Kumbidi; Mankara	2
9	Bhavani	Savandapur	1
10	Bhima	Yadgir	1
11	Cauvery	Musiri; Biligundullu; Kollegal	3
12	Chalakudy	Arangaly	1
13	Chaliyar	Kuniyil	1
14	Chambal	Dholpur; Tal; Udi	3
15	Chenab	Akhnoor; Dhamkund; Prem Nagar	3
16	Chenab/Bhaga	Tandi	1
17	Chenab/Chandra	Udaipur (Chandra)	1
18	Chenab/Tawi	Jammu Tawi	1
19	Chittar	A.P. Puram; Sevanur	2
20	Dhaleshwari	Matijuri	1
21	Dhasan	Garrauli	1
22	Diana	Diana	1
23	Feeder Canal	Farakka/(HR)	1
24	Gambhiri	Chittorgarh	1
25	Ganga	Farakka	1
26	Ghataprabha	Gokak	1
27	Giri	Yashwant nagar	1
28	Godavari	Mancherial	1
29	Goi	Pati	1
30	Gumra	Gumrabazar	1
31	Gundlakamma	Marella	1
32	Halia	Halia	1
33	Haridra	Byaladahalli	1
34	Hasdeo	Manendragarh	1
35	Hemavathi	Akkihebbal	1
36	Jalangi	Chapra	1
37	Jhelum	Ram Munshi Bagh; Safapora; Sangam	2
38	Kabini	T. Narasipur; Muthankera	2
39	Kadalundi	Karathodu	1

S.No.	River	Name of the Water Quality Sites	No. of Stations
40	Kagna	Malkhed	1
41	Kalanadi	Matunga	1
42	Kali Sindh	Barod	1
43	Kalingi	Sulurpet	1
44	Kaliyar	Kalampur	1
45	Kanhan	Satrapur	1
46	Kannadipuzha	Pudur	1
47	Ken	Madla	1
48	Kharun	Pathardhi	1
49	Kinnerasani	Sangam	1
50	Koyna	Warunji	1
51	Krishna	Wadenapally; Kurundwad	2
52	Kumudavathi	Kuppelur	1
53	Kundi	Kogaon	1
54	Kuttyadi	Kuttyadi	1
55	Mahanadi	Rajim	1
56	Mahi	Paderdibadi	1
57	Malaprabha	Cholachguda	1
58	Manimala	Kallooppara	1
59	Moyar	Thengumarahada	1
60	Musi	Damarcherla	1
61	Muvvattupuzha	Ramamangalam	1
62	Narmada	Dindori; Handia; Mandleshwar	3
63	Nattar	Annavasal	1
64	Padma/Mahananda	English Bazar	1
65	Pairi	Baronda	1
66	Palar	Kudlur; Chengalpet	2
67	Paleru	Paleru Bridge	1
68	Pampa	Malakkara	1
69	Parwan	Aklera; Sangod	2
70	Parwati	A B Road Xing; Khatoli	2
71	Payaswani	Erinjipuzha	1
72	Peddavagu	Bhatpalli	1
73	Pennar	Nellore	1
74	Periyar	Neeleswaram	1
75	Pulanthodu	Pulamanthole	1
76	Purna	Purna	1
77	Rind	Kora	1
78	Rukni	Dholai	1
79	Rushikulya	Purushottampur	1
80	Sakkar	Gadarwara	1
81	Sarabenga	Thevur	1
82	Seonath	Jondhra	1
83	Shimsha	T.K.Halli	1
84	Sind	Pachauli; Seondha	2

S.No.	River	Name of the Water Quality Sites	No. of Stations
85	Sipra	Mahidpur; Ujjain	2
86	Suvarnavathi	Bendrahalli	1
87	Tambrapani	Murappanadu, Kuzhiturai	2
88	Tel	Kesinga	1
89	Thirumalairajanar	Thengudi	1
90	Thoppaiyar	Thoppur	1
91	Tuini	Tuini	1
92	Uri	Dhulsar	1
93	Vaigai	Ambasamudram	1
94	Vamanapuram	Ayilam	1
95	Vamsadhara	Kashinagar	1
96	Vanjiyar	Peralam	1
97	Varna	Phulgaon (Seasonal), Samdoli	2
98	Vedavathi	Kellodu	1
99	Vellar	Kudalaithur	1
100	Wardha	Bamni; Sakmur	2
101	Wunna	Nandgaon	1
102	Wyra	Madhira	1
103	Yamuna	Aauriya; Etawah; Hamirpur; Kalanaur; Mawi; Palla; Pratapur; Rajapur	8
		Total Water Quality Station Fit	136

Annexure-3

Details of WQ Monitoring stations where the water was found unfit for use due to the presence of only one parameter (Iron or Copper or Cadmium or Nickel or Lead) above the acceptable limits during the study period

IRON

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Aghanashini	Santeguli	21	Burhi Gandak	Sikandarpur
2	Aie	Aie NH Crossing	22	Burhner	Mohgaoan
3	Alakananda	Srinagar	23	Buridehing	Chenimari; Margherita; Naharkatia
4	Alaknanda	Rudraprayag	24	Burisuti	Panbari
5	Ambika	Gadat	25	Cauvery	Chuchankatte; Kudige
6	Bagh	Rajegaon	26	Champamati	Bahalpur
7	Bagmathi	Dheng Bridge; Ekmighat; Hayaghat	27	Chel	Chel
8	Baitarni	Anandpur; Champua	28	Chhoti Sarju	Akarbarpur
9	Balason	Matigara	29	Damanganga	Vapi
10	Banas	Kamalpur	30	Desang	Desangpani; Dillighat; Nanglamoraghat
11	Banjar	Bamni	31	Dhadher	Pingalwada
12	Barak	B.P. Ghat	32	Dhansiri	Bokajan; Golaghat; Numaligarh
13	Beki	Beki Road Bridge; Mathanguri; Beki Mathanguri	33	Digaru	Sonapur
14	Bhadar	Ganod; Holehonnur	34	Dikhow	Bihubar; Sivasagar
15	Bhagirath	Deoprayag; Katwa ; Koteshwar; Koteshwar; Uttarkashi	35	Doyang	Gelabil
16	Bhavani	Nellithurai	36	Dudhnai	Dudhnai
17	Brahmani	Gomlai; Jenapur; Panposh; Talcher	37	Gandak	Lalganj; Tribeni
18	Brahmaputra	Bhomoraguri; Dhubari; Dibrugarh; Neamatighat; Pancharatna; Pandu; Tezpur	38	Ganga	Allahabad; Ankinghat; Azmabad; Bhitaura; Buxar; Fatehgarh; Garhamukteshwar; Haridwar; Hathidah; Kachlabridge; Kanpur; Mirzapur; Patna; Rishikesh; Shahzadpur; Varanasi
19	Bugi	Dimapara	39	Ganjal	Chhidgaon
20	Burhabalang	Govindapur	40	Gaurang	Kokrajhar

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
41	Ghagra	Elginbridge; Turtipar	76	Neora	Neora
42	Ghish	Ghish	77	Nethravathi	Bantwal
43	Godavari	Bhadrachalam; Koperagaon; Perur; Polavaram	78	Orsang	Chanwada
44	Gomti	Lucknow; Maighat; Neemsar; Sultanpur	79	Pagladiya	Pagladiya N.T.Road Crossing
45	Gurupur	Addoor	80	Papagni	Kamalapuram
46	Haladi	Haladi	81	Pazhayar	Ashramam
47	Hemavathi	M.H. Halli; Sakleshpur	82	Penganga	P.G.Bridge
48	Hiran	Patan	83	Phalgu	Gaya
49	Indravathi	Jagdalpur; Nowrangpur; Pathagudem	84	Pranhitha	Tekra
50	Jaldhaka	Jaldhaka NH-31; Mathabhanga; Nagrakata; Bhalukpong; Jiabharali NT Road Xing	85	Pravara	Pachegaon
51	Kamala-Balan	Jai Nagar; Jhanjharpur	86	Punpun	Sripalpur
52	Kamang	Seppa	87	Purna	Gopalkheda; Mahuwa
53	Kanhan	Ramakona; Satrapur	88	Puthimari	Puthimari D.R.F.; Puthimari NH Road crossing
54	Kanhar	Duddhi	89	Raidak-I	Chepan; Tufanganj
55	Kharkai	Adityapur	90	Raidak-II	Barobisha
56	Khobragarhi	Wairagarh	91	Ramganga	Bareilly; Dabri; Moradabad
57	Kim	Motinaroli	92	Ramyala	Alutuma
58	Kiul	Lakhisarai	93	Ranganadi	Ranganadi NT-Road Xing
59	Koel	Jaraikela	94	Rangit	Majhitar; SinglaBazar
60	Kopili	Dharamtul; Jagibhakatgaon; Kampur; Kheronighat	95	Rangpochu	Rangpo
61	Kosi	Baltara	96	Rapti	Bansi; Regauli
62	Krishna	Arjunwad; Huvin Hedgi	97	Sabari	Konta
63	Kulsi	Kulsi	98	Sabarmati	Derol Bridge; Vautha;
64	Kwano	Basti	99	Sagaileru	Nandipalli
65	Lakshmantirtha	K.M. Vadi	100	Sai	Partapgarh; Raibareli
66	Lohit	Dholabazar; Tezu	101	Sankh	Tilga
67	Mahanadi	Tikarpara	102	Sankosh	Sankosh LRP
68	Mahananda	Champasari ; Sonapur	103	Sarju	Ghat
69	Mahi	Khanpur ; Mataji	104	Saryu	Ayodhya
70	Manas	Manas NH Crossing	105	Sharda	Paliakalan
71	Meenachi	Kidangoor	106	Sher	Belkhedi
72	Murti	Murti	107	Sheturni	Lowara
73	Nagavali	Srikakulam	108	Sita	Avershe
74	Narmada	Barmanghat; Garudeshwar; Hoshangabad; Manot; Sandia	109	Som	Rangeli
75	Neo dihing	Miao; Namsai;	110	Sone	Chopan; Japla; Koelwar; Kuldah Bridge

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
111	Sonkosh	Golagang	123	Umngot	Dawki
112	Subansiri	Badatighat; Chouldhowaghat	124	Vaitarna	Durvesh
113	Subarnarekha	Jamshedpur; Muri	125	Valapatnam	Perumannu
114	Suklai	Suklai	126	Vamsadhara	Gunupur
115	Suruliar	Theni	127	Varada	Marol
116	Tapi	Burhanpur; Sarangkheda	128	Wainganga	Ashti; Keolari; Kumhari; Pauni;
117	Teesta	Coronation; Domohani; Gajaldoba; Khanitar ; Mekhliganj; Sankalan; Sevok; TeestaBazar	129	Wardha	Hivra
118	Thunga	Shimoga	130	Yamuna	Agra
119	Thungabhadra	Harlahalli; Honnali	131	Yennehole	Yennehole
120	Tirap	Udaipur			
121	Tons	Meja Road			
122	Torsa	Ghugumari; Hasimara			

COPPER

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Buridehing	Margherita	3	Sabarmati	Vautha
2	Pranhitha	Tekra	4	Subarnarekha	Ghatsila

CHROMIUM

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Gad	Belne Bridge	5	Mahananda	Labha
2	Hamp	Andhiyar Kore	6	Rapti	Balrampur; Bansi; Birdghat
3	Kal	Mangaon (Seasonal)	7	Surma/Myntdu	Kharkhana
4	Krishna	Karad			

CADMIUM

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Buridehing	Chenimari	8	Kopili	Dharamtul; Kampur
2	Dareng	Sibbari	9	Ponnaiyar	Vazhavachanur
3	Dikhow	Sivasagar	10	Rapti	Balrampur; Regauli
4	Ganga	Mirzapur; Shahzadpur	11	Sharda	Paliakalan
5	Ghagra	Elginbridge	12	Sheturni	Lowara
6	Hindon	Galeta	13	Sone	Chopan
7	Kamang	Seppa	14	Yamuna	Delhi Rly Bridge; Mathura; Mohana

NICKEL

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Brahmani	Panposh	10	Narmada	Barmanghat
2	Hasdeo	Bamnidih	11	Ong	Salebhata
3	Ib	Sundergarh	12	Periyar	Vandiperiyar
4	Jiabharali	Bhalukpong	13	Seonath	Ghatora
5	Jonk	Rampur	14	Seonath	Simga
6	Ken	Banda	15	Siang	Passighat
7	Mahanadi	Basantpur	16	Subarnarekha	Ghatsila
8	Mand	Kurubhata	17	Subarnarekha	Jamshedpur
9	Narmada	Barmanghat			

LEAD

S. No.	River	Name of the Water Quality Sites	S. No.	River	Name of the Water Quality Sites
1	Achankovil	Thumpamon	28	Munneru	Keesara
2	Aliyar	Ambarampalayam	29	Musi	Damarcherla
3	Barak	B.P. Ghat; Fulertal	30	Narmada	Garudeshwar
4	Brahmani	Gomlai	31	Neo dihing	Miao
5	Brahmaputra	Pancharatna; Pandu	32	PagladiYa	Pagladiya N.T.Road Crossing
6	Bugi	Dimapara	33	Palar	Arcot
7	Cauvery	Kodumudi; Urachikottai	34	Ponnaiyar	Gummanur
8	Chhoti Sarju	Akarbarpur	35	Puthimari	Puthimari D.R.F.
9	Dhadher	Pingalwada	36	Raidak-I	Tufanganj
10	Digaru	Sonapur	37	Ramganga	Bareilly; Dabri; Moradabad
11	Dudhnai	Dudhnai	38	Rapti	Birdghat
12	Ganga	Azmabad; Bhitaura; Buxar; Hathidah; Kachlabridge; Kanpur; Shahzadpur	39	Sabarmati	Vautha
13	Ghagra	Turtipar	40	Sankosh	Sankosh LRP
14	Godavari	Polavaram	41	Seonath	Simga
15	Gomti	Lucknow; Neemsar	42	Sheturni	Lowara
16	Haladi	Haladi	43	Sone	Koelwar
17	Hemavathi	Sakleshpur	44	Subansiri	Badatighat
18	Hindon	Galeta	45	Subarnarekha	Ghatsila
19	Indravathi	Nowrangpur	46	Swarnamukhi	Naidupet
20	Jiabharali	Jiabharali NT Road Xing	47	Tapi	Sarangkheda
21	Kallada	Pattazhy	48	Umsohrynkiew	Therriaghat
22	Kanhan	Ramakona	49	Vaitarna	Durvesh
23	Kharkai	Adityapur	50	Yagachi	Thimmanahalli
24	Kopili	Kheronighat	51	Yamuna	Delhi Rly Bridge; Mohana
25	Kunderu	Alladupalli			
26	Longai	Fakirabazar			
27	Mahananda	Champasari			

Annexure-4

Details of WQ Monitoring stations where the water was found unfit for use due to presence of more than two toxic metals above acceptable limits during the study period.

S. No.	River	Name of the Water Quality Sites	Toxic metals due to which Unfit
1	Arkavathi	T. Bekuppe	Cd, Ni, Pb, Fe
2	Brahmaputra	Dibrugarh	Pb, Fe
3	Brahmaputra	Tezpur	Cu, Cr, Fe
4	Buridehing	Chenimari	Pb, Fe
5	Buridehing	Margherita	Pb, Fe
6	Chel	Chel	Pb, Fe
7	Churni	Hanskhali	Cr, Fe
8	Damanganga	Vapi	Cu, Pb, Fe
9	Desang	Desangpani	Cr, Fe
10	Dhadher	Pingalwada	Cu,Fe
11	Dikhow	Bihubar	Cr, Cu, Fe
12	Dikhow	Sivasagar	Pb, Fe
13	Ganga	Ankinghat	Pb, Fe
14	Ganga	Bhitaura	Cr, Pb, Fe
15	Ganga	Fatehgarh	Cr, Pb, Fe
16	Ganga	Kachlabridge	Cr, Cu, Ni, Pb, Fe
17	Ganga	Kanpur	Cr, Pb, Fe
18	Ghagra	Elginbridge	Cr, Pb, Fe
19	Ghagra	Turtipar	Cr, Pb, Fe
20	Ghish	Ghish	Pb, Fe
21	Gomti	Neemsar	Pb, Fe
22	Hagari	T. Ramapuram	Cd, Ni, Pb
23	Jaldhaka	Jaldhaka NH-31	Pb, Fe
24	Jiabharali	Jiabharali NT Road Xing	Cr, Fe
25	Kamang	Seppa	Pb, Fe
26	Krishna	Huvin Hedgi	Ni, Pb
27	Kunderu	Alladupalli	Ni, Pb
28	Kwano	Basti	Pb, Fe
29	Lohit	Dholabazar	Pb, Fe
30	Mahi	Khanpur	Cr, Pb, Fe
31	Neo dihing	Miao	Pb, Fe
32	Noyyal	Elunuthimanagalam	Cd, Ni, Pb
33	Orsang	Chanwada	Cd, Ni, Pb, Fe
34	Pennar	Chennur	Ni, Pb
35	Purna	Gopalkheda	Pb, Cu, Fe
36	Purna	Mahuwa	Cr, Fe
37	Ramganga	Dabri	Pb, Fe

S. No.	River	Name of the Water Quality Sites	Toxic metals due to which Unfit
38	Ramganga	Moradabad	Cr, Pb, Fe
39	Rapti	Balrampur	Cr, Pb, Fe
40	Rapti	Bansi	Cd, Cr, Pb, Fe
41	Rapti	Birdghat	Cr, Pb, Fe
42	Rapti	Regauli	Cr, Pb, Fe
43	Sabarmati	Vautha	Cd, Ni, Pb, Fe
44	Sai	Raibareli	Cr, Pb, Fe
45	Sarju	Ghat	Cr, Fe
46	Saryu	Ayodhya	Pb, Fe, Cd, Ni
47	Sharda	Paliakalan	Cr, Ni, Fe
48	Sheturni	Lowara	Cd, Ni, Pb
49	Sone	Kuldah Bridge	Pb, Fe
50	Subarnarekha	Ghatsila	Cu, Fe
51	Subarnarekha	Jamsolghat	Cu, Fe
52	Tel	Kantamal	Cr, Cu
53	Thungabhadra	Bawapuram	Cd, Ni, Pb
54	Thungabhadra	Mantralayam	Cd, Ni, Pb
55	Tirap	Udaipur	Cd, Fe
56	Ulhas	Badlapur	Cd, Pb
57	Vaitarna	Durvesh	Cd, Ni, Pb, Fe

Annexure-5

Details of water quality sites, Rivers and the level of toxic metal concentration found above the acceptable limist as prescribed by BIS during the study period.

1. CADMIUM (Cd in µg/L)

S. No.	River	WQ Site	Period	Cd Conc.	S. No.	River	WQ Site	Period	Cd Conc.
1	Arkavathi	T. Bekuppe	Febuary, 2015	3.977	20	Sabarmati	Vautha	November, 2014	11.770
2	Buridehing	Chenimari	May, 2014	5.149	21	Sabarmati	Vautha	Febuary, 2015	70.518
3	Dareng	Sibbari	December, 2016	3.253	22	Saryu	Ayodhya	Febuary, 2015	4.138
4	Dikhow	Sivasagar	May, 2014	3.490	23	Sharda	Paliakalan	Febuary, 2015	3.708
5	Ganga	Mirzapur	April, 2017	3.650	24	Sheturni	Lowara	May, 2014	10.386
6	Ganga	Shahzadpur	April, 2017	3.936	25	Sheturni	Lowara	Febuary, 2015	24.065
7	Ghagra	Elginbridge	Febuary, 2015	4.558	26	Sheturni	Lowara	April, 2016	28.047
8	Hagari	T. Ramapuram	Febuary, 2015	7.888	27	Sone	Chopan	April, 2017	3.034
9	Hindon	Galeta	December, 2015	4.398	28	Thungabhadra	Bawapuram	Febuary, 2015	5.475
10	Hindon	Galeta	April, 2016	4.959	29	Thungabhadra	Mantralayam	Febuary, 2015	5.170
11	Kamang	Seppa	May, 2014	5.158	30	Tirap	Udaipur	April, 2017	3.428
12	Kopili	Dharamtul	May, 2014	5.074	31	Ulhas	Badlapur	Febuary, 2015	5.017
13	Kopili	Kampur	May, 2014	5.086	32	Vaitarna	Durvesh	Febuary, 2015	33.809
14	Noyyal	Elunuthimanagalam	Febuary, 2015	15.946	33	Yamuna	Delhi Rly Bridge	December, 2015	4.400
15	Orsang	Chanwada	Febuary, 2015	11.938	34	Yamuna	Delhi Rly Bridge	April, 2016	7.248
16	Ponnaiyar	Vazhavachanur	Febuary, 2015	3.826	35	Yamuna	Mathura	December, 2015	9.166
17	Rapti	Balrampur	Febuary, 2015	3.493	36	Yamuna	Mathura	April, 2016	3.768
18	Rapti	Bansi	April, 2017	3.311	37	Yamuna	Mohana	December, 2015	6.159
19	Rapti	Regauli	Febuary, 2015	3.130	38	Yamuna	Mohana	April, 2016	5.419

2. CHROMIUM (Cr in µg/L)

S. No.	River	WQ Site	Period	Chromium Conc.	S. No.	WQ Site	River	WQ Site	Chromium Conc.
1	Brahmaputra	Tezpur	August, 2016	53.100	22	Rapti	Balrampur	November, 2014	141.110
2	Churni	Hanskhali	November, 2014	147.770	23	Rapti	Balrampur	August, 2016	107.180
3	Desang	Desangpani	August, 2016	65.590	24	Rapti	Balrampur	December, 2016	53.740
4	Dikhow	Bihubar	April, 2017	90.830	25	Rapti	Bansi	November, 2014	199.270
5	Gad	Belne Bridge	August, 2017	66.190	26	Rapti	Bansi	April, 2016	224.330
6	Ganga	Bhitaura	November, 2014	164.250	27	Rapti	Bansi	April, 2017	202.710
7	Ganga	Fatehgarh	November, 2014	175.240	28	Rapti	Birdghat	November, 2014	229.730
8	Ganga	Kachlabridge	November, 2014	198.300	29	Rapti	Birdghat	August, 2016	109.150
9	Ganga	Kachlabridge	August, 2016	155.040	30	Rapti	Birdghat	December, 2016	68.560
10	Ganga	Kanpur	November, 2014	205.820	31	Rapti	Regauli	November, 2014	172.710
11	Ghagra	Elginbridge	November, 2014	144.480	32	Rapti	Regauli	August, 2016	88.330
12	Ghagra	Elginbridge	August, 2016	183.010	33	Rapti	Regauli	December, 2016	50.390
13	Ghagra	Turtipar	August, 2016	316.840	34	Sai	Raibareli	December, 2016	54.770
14	Hamp	Andhiyar Kore	Febuary, 2015	61.260	35	Sarju	Ghat	November, 2014	193.260
15	Jiabharali	Jiabharali NT Road Xing	August, 2016	111.430	36	Sarju	Ghat	April, 2017	83.740
16	Kal	Mangaon	August, 2017	133.490	37	Sharda	Paliakalan	November, 2014	140.220
17	Krishna	Karad	August, 2017	98.350	38	Sharda	Paliakalan	August, 2016	450.260
18	Mahananda	Labha	November, 2014	50.770	39	Sharda	Paliakalan	December, 2016	54.290
19	Mahi	Khanpur	December, 2015	81.700	40	Surma/Myntdu	Kharkhana	August, 2016	62.240
20	Purna	Mahuwa	August, 2016	135.570	41	Tel	Kantamal	Febuary, 2015	55.000
21	Ramganga	Moradabad	November, 2014	230.900					

3. COPPER (Cu in µg/L)

S. No.	River	WQ Site	Period	Copper Conc.	S. No.	River	WQ Site	Period	Copper Conc.
1	Brahmaputra	Tezpur	April, 2017	54.000	7	Pranhitha	Tekra	April, 2017	76.230
2	Buridehing	Margherita	November, 2014	269.630	8	Sabarmati	Vautha	May, 2014	58.340
3	Damanganga	Vapi	April, 2017	61.550	9	Subarnarekha	Ghatsila	Febuary, 2015	53.660
4	Dhadher	Pingalwada	April, 2017	314.930	10	Subarnarekha	Ghatsila	August, 2017	61.920
5	Dikhow	Bihubar	April, 2017	54.720	11	Subarnarekha	Jamsolghat	August, 2017	75.580
6	Ganga	Kachlabridge	November, 2014	107.990	12	Tel	Kantamal	Febuary, 2015	72.870

3. IRON (Fe in µg/L)

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
1	Addoor	Gurupur	August, 2017	0.681	35	Baltara	Kosi	December, 2016	0.550
2	Adityapur	Kharkai	August, 2017	0.595	36	Baltara	Kosi	August, 2017	4.352
3	Agra	Yamuna	August, 2016	0.384	37	Bamni	Banjar	August, 2016	0.339
4	Agra	Yamuna	August, 2017	0.613	38	Bamni	Banjar	August, 2017	1.322
5	Aie NH Crossing	Aie	November, 2014	0.794	39	Bansi	Rapti	November, 2014	1.362
6	Akarbarpur	Chhoti Sarju	August, 2016	0.492	40	Bansi	Rapti	August, 2016	1.328
7	Allahabad	Ganga	August, 2017	0.585	41	Bansi	Rapti	December, 2016	0.475
8	Alutuma	Ramyala	August, 2017	0.808	42	Bansi	Rapti	April, 2017	0.684
9	Anandpur	Baitarni	August, 2017	0.689	43	Bantwal	Nethravathi	August, 2017	0.673
10	Ankinghat	Ganga	May, 2014	0.495	44	Bareilly	Ramganga	August, 2016	0.573
11	Ankinghat	Ganga	November, 2014	1.126	45	Bareilly	Ramganga	December, 2016	0.406
12	Ankinghat	Ganga	December, 2016	0.335	46	Bareilly	Ramganga	August, 2017	0.524
13	Arjunwad	Krishna	August, 2017	0.396	47	Baridhi		August, 2017	0.4
14	Ashramam	Pazhayar	November, 2014	0.436	48	Barmanghat	Narmada	November, 2014	1.1
15	Ashti	Wainganga	August, 2016	0.393	49	Barmanghat	Narmada	August, 2017	0.994
16	Ashti	Wainganga	August, 2017	0.404	50	Barobisha	Raidak-II	November, 2014	1.361
17	Avershe	Sita	August, 2017	0.373	51	Basti	Kwano	May, 2014	0.362
18	Ayodhya	Saryu	May, 2014	0.325	52	Basti	Kwano	November, 2014	1.674
19	Ayodhya	Saryu	November, 2014	1.457	53	Basti	Kwano	August, 2016	0.61
20	Ayodhya	Saryu	August, 2016	0.343	54	Basti	Kwano	December, 2016	1.371
21	Ayodhya	Saryu	December, 2016	0.399	55	Basti	Kwano	August, 2017	0.4
22	Azmabad	Ganga	August, 2016	0.301	56	Beki Mathanguri		November, 2014	0.499
23	Azmabad	Ganga	December, 2016	0.505	57	Beki Road Bridge	Beki	November, 2014	1.37
24	Azmabad	Ganga	August, 2017	1.496	58	Belkhedi	Sher	August, 2016	0.489
25	B.P. Ghat	Barak	August, 2017	0.626	59	Bhadrachalam	Godavari	August, 2017	0.655

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
26	Badatighat	Subansiri	December, 2015	0.586	60	Bhalukpong	Jiabharali	August, 2016	4.076
27	Badatighat	Subansiri	August, 2016	0.529	61	Bhalukpong	Jiabharali	December, 2016	0.336
28	Badatighat	Subansiri	December, 2016	0.52	62	Bhalukpong	Jiabharali	April, 2017	0.410
29	Bahalpur	Champamati	November, 2014	0.626	63	Bhalukpong	Jiabharali	August, 2017	8.518
30	Balrampur	Rapti	November, 2014	1.061	64	Bhitaura	Ganga	May, 2014	0.334
31	Balrampur	Rapti	December, 2016	0.316	65	Bhitaura	Ganga	November, 2014	1.094
32	Baltara	Kosi	May, 2014	0.357	66	Bhitaura	Ganga	August, 2016	0.499
33	Baltara	Kosi	December, 2015	0.753	67	Bhitaura	Ganga	August, 2017	0.421
34	Baltara	Kosi	August, 2016	0.857	68	Bhomoraguri	Brahmaputra	December, 2015	1.007
69	Bhomoraguri	Brahmaputra	April, 2016	0.362	103	Chenimari	Buridehing	April, 2017	0.602
70	Bhomoraguri	Brahmaputra	August, 2016	3.412	104	Chenimari	Buridehing	August, 2017	14.555
71	Bhomoraguri	Brahmaputra	December, 2016	1.443	105	Chepan	Raidak-I	November, 2014	3.672
72	Bhomoraguri	Brahmaputra	April, 2017	1.362	106	Chhidgaon	Ganjal	August, 2017	0.791
73	Bhomoraguri	Brahmaputra	August, 2017	3.340	107	Chopan	Sone	August, 2016	1.000
74	Bihubar	Dikhow	December, 2015	1.264	108	Chopan	Sone	December, 2016	0.564
75	Bihubar	Dikhow	August, 2016	2.162	109	Chouldhowaghat	Subansiri	December, 2015	0.488
76	Bihubar	Dikhow	December, 2016	0.475	110	Chouldhowaghat	Subansiri	August, 2016	3.858
77	Bihubar	Dikhow	April, 2017	5.874	111	Chouldhowaghat	Subansiri	December, 2016	1.067
78	Bihubar	Dikhow	August, 2017	8.980	112	Chouldhowaghat	Subansiri	August, 2017	8.937
79	Birdghat	Rapti	May, 2014	0.853	113	Chuchankatte	Cauvery	August, 2017	0.356
80	Birdghat	Rapti	November, 2014	1.244	114	Coronation	Teesta	May, 2014	1.614
81	Birdghat	Rapti	December, 2016	0.346	115	Coronation	Teesta	November, 2014	8.246
82	Bokajan	Dhansiri	December, 2015	0.677	116	Dabri	Ramganga	May, 2014	0.338
83	Bokajan	Dhansiri	August, 2016	4.291	117	Dabri	Ramganga	November, 2014	1.109
84	Bokajan	Dhansiri	December, 2016	1.075	118	Dabri	Ramganga	August, 2016	0.73
85	Bokajan	Dhansiri	April, 2017	2.271	119	Dabri	Ramganga	December, 2016	0.343
86	Bokajan	Dhansiri	August, 2017	13.608	120	Dabri	Ramganga	August, 2017	0.431
87	Burhanpur	Tapi	August, 2016	0.503	121	Darina		November, 2014	1.634

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
88	Burhanpur	Tapi	April, 2017	0.780	122	Dawki	Umngot	August, 2017	0.64
89	Burhanpur	Tapi	August, 2017	0.704	123	Deoprayag	Bhagirath	May, 2014	1.219
90	Buxar	Ganga	August, 2016	0.476	124	Deoprayag	Bhagirath	November, 2014	2.568
91	Buxar	Ganga	April, 2017	0.349	125	Derol Bridge	Sabarmati	August, 2017	1.677
92	Buxar	Ganga	August, 2017	1.029	126	Desangpani	Desang	August, 2016	3.74
93	Champasari	Mahananda	May, 2014	0.921	127	Desangpani	Desang	December, 2016	0.512
94	Champasari	Mahananda	November, 2014	0.523	128	Desangpani	Desang	April, 2017	2.825
95	Champua	Baitarni	August, 2017	0.611	129	Desangpani	Desang	August, 2017	10.279
96	Chanwada	Orsang	August, 2016	0.463	130	Dharamtul	Kopili	December, 2015	0.863
97	Chanwada	Orsang	August, 2017	1.736	131	Dharamtul	Kopili	August, 2016	1.205
98	Chel	Chel	May, 2014	1.119	132	Dharamtul	Kopili	December, 2016	1.779
99	Chel	Chel	November, 2014	0.726	133	Dharamtul	Kopili	April, 2017	2.868
100	Chenimari	Buridehing	April, 2016	0.336	134	Dharamtul	Kopili	August, 2017	1.016
101	Chenimari	Buridehing	August, 2016	3.118	135	Dheng Bridge	Bagmathi	August, 2017	0.564
102	Chenimari	Buridehing	December, 2016	1.093	136	Dholabazar	Lohit	December, 2015	0.329
137	Dholabazar	Lohit	August, 2016	0.43	171	Fatehgarh	Ganga	May, 2014	0.435
138	Dholabazar	Lohit	April, 2017	0.374	172	Fatehgarh	Ganga	November, 2014	0.95
139	Dholabazar	Lohit	August, 2017	0.779	173	Fatehgarh	Ganga	August, 2016	0.365
140	Dhubari	Brahmaputra	November, 2014	3.467	174	Fatehgarh	Ganga	December, 2016	0.441
141	Dibrugarh	Brahmaputra	April, 2016	0.336	175	Fatehgarh	Ganga	August, 2017	0.575
142	Dibrugarh	Brahmaputra	August, 2016	3.602	176	Gadat	Ambika	August, 2016	0.964
143	Dibrugarh	Brahmaputra	April, 2017	0.715	177	Gadat	Ambika	August, 2017	1.023
144	Dibrugarh	Brahmaputra	August, 2017	5.801	178	Gajaldoba	Teesta	May, 2014	1.273
145	Digaru		November, 2014	0.583	179	Gajaldoba	Teesta	November, 2014	1.268
146	Digaru		August, 2017	9.312	180	Ganod	Bhadar	December, 2015	0.592
147	Dillighat	Desang	August, 2016	3.510	181	Ganod	Bhadar	August, 2017	0.488
148	Dillighat	Desang	April, 2017	1.227	182	Garhamukteshwar	Ganga	May, 2014	0.387
149	Dillighat	Desang	August, 2017	8.684	183	Garhamukteshwar	Ganga	November, 2014	1.63

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
150	Dimapara	Bugi	December, 2016	0.303	184	Garhamukteshwar	Ganga	August, 2016	0.406
151	Domohani	Teesta	May, 2014	1.261	185	Garhamukteshwar	Ganga	December, 2016	0.42
152	Domohani	Teesta	November, 2014	0.569	186	Garhamukteshwar	Ganga	April, 2017	1.538
153	Duddhi	Kanhar	August, 2016	0.832	187	Garudeshwar	Narmada	August, 2016	0.429
154	Duddhi	Kanhar	August, 2017	1.395	188	Gaya	Phalgu	August, 2017	1.145
155	Dudhnai	Dudhnai	May, 2014	0.987	189	Gelabil		December, 2015	0.903
156	Dudhnai	Dudhnai	November, 2014	0.591	190	Gelabil		August, 2016	3.707
157	Dudhnai	Dudhnai	December, 2015	0.405	191	Gelabil		April, 2017	6.125
158	Dudhnai	Dudhnai	April, 2017	1.155	192	Gelabil		August, 2017	7.894
159	Dudhnai	Dudhnai	August, 2017	0.645	193	Ghat	Sarju	May, 2014	0.327
160	Durvesh	Vaitarna	August, 2016	0.749	194	Ghat	Sarju	November, 2014	1.294
161	Durvesh	Vaitarna	August, 2017	0.97	195	Ghat	Sarju	December, 2016	0.778
162	Ekmighat	Bagmathi	December, 2015	0.474	196	Ghat	Sarju	April, 2017	0.368
163	Ekmighat	Bagmathi	August, 2016	0.69	197	Ghatsila	Subarnarekha	August, 2017	0.679
164	Ekmighat	Bagmathi	December, 2016	0.909	198	Ghish	Ghish	May, 2014	0.466
165	Ekmighat	Bagmathi	August, 2017	4.414	199	Ghish	Ghish	November, 2014	0.991
166	Elginbridge	Ghagra	May, 2014	0.35	200	Ghugumari	Torsa	November, 2014	6.462
167	Elginbridge	Ghagra	November, 2014	0.943	201	Golagang	Sonkosh	November, 2014	0.518
168	Elginbridge	Ghagra	August, 2016	0.412	202	Golaghat	Dhansiri	August, 2016	4.103
169	Elginbridge	Ghagra	December, 2016	0.401	203	Golaghat	Dhansiri	December, 2016	0.524
170	Elginbridge	Ghagra	August, 2017	0.462	204	Golaghat	Dhansiri	April, 2017	5.089
205	Golaghat	Dhansiri	August, 2017	3.139	239	Jaldhaka NH-31	Jaldhaka	November, 2014	0.557
206	Gomlai	Brahmani	August, 2017	0.997	240	Jamshedpur	Subarnarekha	August, 2017	0.381
207	Gopalkheda	Purna	November, 2014	0.375	241	Jamsolghat	Subarnarekha	August, 2017	0.800
208	Gopalkheda	Purna	August, 2016	2.319	242	Japla	Sone	August, 2017	2.050
209	Gopalkheda	Purna	August, 2017	1.256	243	Jaraikela	Koel	August, 2017	0.980
210	Govindapur	Burhabalang	August, 2017	0.630	244	Jenapur	Brahmani	November, 2014	0.452
211	Gunupur	Vamsadhara	May, 2014	0.796	245	Jenapur	Brahmani	August, 2017	0.732

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
212	Gunupur	Vamsadhara	November, 2014	0.338	246	Jhanjharpur	Kamala-Balan	December, 2016	0.406
213	Gunupur	Vamsadhara	August, 2017	0.347	247	Jhanjharpur	Kamala-Balan	August, 2017	1.877
214	Haladi	Haladi	August, 2017	0.436	248	Jiabharali NT Road Xing	Jiabharali	December, 2015	1.552
215	Hanskhali	Churni	November, 2014	9.058	249	Jiabharali NT Road Xing	Jiabharali	August, 2016	6.118
216	Haridwar	Ganga	November, 2014	1.203	250	Jiabharali NT Road Xing	Jiabharali	December, 2016	0.591
217	Harlahalli	Thungabhadra	August, 2017	0.489	251	Jiabharali NT Road Xing	Jiabharali	April, 2017	0.509
218	Hasimara	Torsa	November, 2014	6.097	252	Jiabharali NT Road Xing	Jiabharali	August, 2017	4.318
219	Hathidah	Ganga	April, 2017	0.543	253	K.M. Vadi	Lakshman-tirtha	August, 2017	0.32
220	Hathidah	Ganga	August, 2017	1.530	254	Kachlabridge	Ganga	May, 2014	0.308
221	Hayaghat	Bagmathi	December, 2016	0.332	255	Kachlabridge	Ganga	November, 2014	1.379
222	Hayaghat	Bagmathi	August, 2017	2.150	256	Kachlabridge	Ganga	August, 2016	0.332
223	Hivra	Wardha	August, 2017	0.312	257	Kachlabridge	Ganga	December, 2016	0.341
224	Holehonnur	Bhadra	August, 2017	0.515	258	Kachlabridge	Ganga	August, 2017	0.576
225	Honnali	Thungabhadra	August, 2017	0.577	259	Kamalapuram	Papagni	August, 2017	1.565
226	Hoshangabad	Narmada	November, 2014	0.903	260	Kamalpur	Banas	August, 2017	1.322
227	Hoshangabad	Narmada	August, 2017	1.009	261	Kamlanga		November, 2014	0.323
228	Huvin Hedgi	Krishna	August, 2017	0.375	262	Kamlanga		August, 2017	0.468
229	Jagdalpur	Indravathi	August, 2017	1.181	263	Kampur	Kopili	August, 2016	2.446
230	Jagibhakatgaon	Kopili	December, 2015	0.754	264	Kampur	Kopili	December, 2016	0.521
231	Jagibhakatgaon	Kopili	April, 2016	0.427	265	Kampur	Kopili	April, 2017	1.687
232	Jagibhakatgaon	Kopili	August, 2016	1.528	266	Kampur	Kopili	August, 2017	3.163
233	Jagibhakatgaon	Kopili	December, 2016	1.36	267	Kanpur	Ganga	May, 2014	1.226
234	Jagibhakatgaon	Kopili	April, 2017	0.903	268	Kanpur	Ganga	November, 2014	1.339
235	Jagibhakatgaon	Kopili	August, 2017	2.554	269	Kanpur	Ganga	August, 2016	0.5
236	Jai Nagar	Kamala-Balan	April, 2016	0.359	270	Kanpur	Ganga	December, 2016	0.329
237	Jai Nagar	Kamala-Balan	August, 2017	1.58	271	Kanpur	Ganga	August, 2017	0.396
238	Jaldhaka NH-31	Jaldhaka	May, 2014	0.360	272	Katwa	Bhagirathi	November, 2014	2.221

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
273	Keolari	Wainganga	August, 2016	0.436	307	Lowara	Sheturni	August, 2016	0.388
274	Khanitar	Teesta	November, 2014	1.174	308	Lowara	Sheturni	August, 2017	0.789
275	Khanpur	Mahi	December, 2015	0.978	309	Lucknow	Gomti	May, 2014	0.782
276	Khanpur	Mahi	August, 2017	0.544	310	Lucknow	Gomti	August, 2016	0.311
277	Kheronighat	Kopili	August, 2016	3.588	311	M.H. Halli	Hemavathi	December, 2015	0.318
278	Kheronighat	Kopili	December, 2016	0.301	312	Mahuwa	Purna	December, 2015	0.849
279	Kheronighat	Kopili	April, 2017	0.636	313	Mahuwa	Purna	August, 2016	1.966
280	Kheronighat	Kopili	August, 2017	1.835	314	Mahuwa	Purna	August, 2017	0.958
281	Kidangoor	Meenachi	April, 2016	0.301	315	Maighat	Gomti	August, 2017	0.578
282	Koelwar	Sone	August, 2016	0.319	316	Majhitar	Rangit	May, 2014	3.298
283	Koelwar	Sone	August, 2017	1.431	317	Manas NH Crossing	Manas	November, 2014	5.757
284	Kokrajhar	Gaurang	May, 2014	1.745	318	Manot	Narmada	August, 2016	0.378
285	Kokrajhar	Gaurang	November, 2014	2.442	319	Manot	Narmada	August, 2017	0.62
286	Konta	Sabari	August, 2017	0.881	320	Margherita	Buridehing	April, 2016	0.62
287	Koperagaon	Godavari	August, 2017	0.453	321	Margherita	Buridehing	August, 2016	1.722
288	Koteshwar	Bhagirath	November, 2014	1.087	322	Margherita	Buridehing	December, 2016	2.641
289	Kudige	Cauvery	December, 2015	0.321	323	Margherita	Buridehing	April, 2017	0.405
290	Kudige	Cauvery	August, 2017	0.416	324	Margherita	Buridehing	August, 2017	7.684
291	Kuldah Bridge	Sone	August, 2016	0.993	325	Marol	Varada	August, 2017	0.473
292	Kuldah Bridge	Sone	August, 2017	0.714	326	Mataji	Mahi	August, 2016	0.809
293	Kulpatnga		August, 2017	0.752	327	Mataji	Mahi	August, 2017	0.41
294	Kulsi	Kulsi	May, 2014	0.613	328	Mathabhanga	Jaldhaka	November, 2014	1.183
295	Kulsi	Kulsi	December, 2015	0.412	329	Mathanguri	Beki	May, 2014	0.697
296	Kulsi	Kulsi	April, 2017	0.662	330	Matigara	Balason	May, 2014	5.34
297	Kulsi	Kulsi	August, 2017	0.763	331	Matigara	Balason	November, 2014	0.726
298	Kumhari	Wainganga	August, 2016	0.74	332	Meja Road	Tons	August, 2017	0.667
299	Kumhari	Wainganga	August, 2017	0.617	333	Mekhliganj	Teesta	November, 2014	1.379
300	Lakhisarai	Kiul	August, 2016	0.418	334	Miao	Neo dihing	August, 2016	3.524

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
301	Lakhisarai	Kiul	December, 2016	0.396	335	Miao	Neo dihing	December, 2016	2.553
302	Lakhisarai	Kiul	April, 2017	0.593	336	Miao	Neo dihing	April, 2017	3.655
303	Lakhisarai	Kiul	August, 2017	1.241	337	Miao	Neo dihing	August, 2017	1.504
304	Lalganj	Gandak	August, 2016	0.949	338	Mirzapur	Ganga	August, 2017	0.676
305	Lalganj	Gandak	April, 2017	0.360	339	Mohgaoan	Burhner	August, 2016	0.545
306	Lalganj	Gandak	August, 2017	0.467	340	Mohgaoan	Burhner	August, 2017	0.655
341	Moradabad	Ramganga	May, 2014	0.329	375	Nellithurai	Bhavani	November, 2014	0.434
342	Moradabad	Ramganga	November, 2014	1.160	376	Neora	Neora	November, 2014	1.457
343	Moradabad	Ramganga	August, 2016	0.494	377	Nowrangpur	Indravathi	Febuary, 2015	1.923
344	Moradabad	Ramganga	December, 2016	0.397	378	Nowrangpur	Indravathi	August, 2017	1.767
345	Motinaroli	Kim	August, 2016	0.348	379	Numaligarh	Dhansiri	April, 2016	0.401
346	Motinaroli	Kim	August, 2017	0.759	380	Numaligarh	Dhansiri	August, 2016	3.296
347	Muri	Subarnarekha	August, 2017	0.485	381	Numaligarh	Dhansiri	December, 2016	0.809
348	Murti	Murti	November, 2014	5.197	382	Numaligarh	Dhansiri	April, 2017	2.808
349	Nagrakata	Jaldhaka	November, 2014	1.607	383	Numaligarh	Dhansiri	August, 2017	7.894
350	Naharkatia	Buridehing	December, 2015	0.817	384	P.G.Bridge	Penganga	August, 2016	0.329
351	Naharkatia	Buridehing	April, 2016	0.371	385	Pachegaon	Pravara	August, 2017	0.339
352	Naharkatia	Buridehing	August, 2016	3.146	386	Pagladiya N.T.Road	Pagladiya	May, 2014	0.948
353	Naharkatia	Buridehing	December, 2016	1.443	387	Paliakalan	Sharda	May, 2014	0.348
354	Naharkatia	Buridehing	April, 2017	1.289	388	Paliakalan	Sharda	November, 2014	0.908
355	Naharkatia	Buridehing	August, 2017	11.270	389	Paliakalan	Sharda	August, 2016	0.37
356	Namsai	Neo dihing	April, 2016	0.336	390	Paliakalan	Sharda	December, 2016	0.344
357	Namsai	Neo dihing	August, 2016	0.938	391	Panbari	Burisuti	November, 2014	1.408
358	Namsai	Neo dihing	December, 2016	0.480	392	Pancharatna	Brahmaputra	May, 2014	0.49
359	Namsai	Neo dihing	April, 2017	1.678	393	Pancharatna	Brahmaputra	November, 2014	0.498
360	Namsai	Neo dihing	August, 2017	4.289	394	Pancharatna	Brahmaputra	August, 2017	0.72
361	Nandipalli	Sagaileru	August, 2017	0.391	395	Pandu	Brahmaputra	May, 2014	1.649
362	Nandira		August, 2017	0.393	396	Pandu	Brahmaputra	April, 2017	0.39

S. No.	WQ Site	River	Period	Iron Conc.	S. No.	WQ Site	River	Period	Iron Conc.
363	Nanglamoraghat	Desang	August, 2016	4.086	397	Pandu	Brahmaputra	August, 2017	0.421
364	Nanglamoraghat	Desang	December, 2016	0.431	398	Panposh	Brahmani	November, 2014	0.306
365	Nanglamoraghat	Desang	April, 2017	0.844	399	Panposh	Brahmani	April, 2016	1.793
366	Nanglamoraghat	Desang	August, 2017	3.168	400	Panposh	Brahmani	August, 2017	0.858
367	Neamatighat	Brahmaputra	April, 2016	0.570	401	Partapgarh	Sai	August, 2016	0.461
368	Neamatighat	Brahmaputra	August, 2016	1.555	402	Partapgarh	Sai	August, 2017	1.007
369	Neamatighat	Brahmaputra	April, 2017	0.867	403	Partapur		August, 2017	0.452
370	Neamatighat	Brahmaputra	August, 2017	5.075	404	Patan	Hiran	August, 2017	0.988
371	Neemsar	Gomti	May, 2014	0.375	405	Pathagudem	Indravathi	August, 2017	0.969
372	Neemsar	Gomti	November, 2014	0.614	406	Patna	Ganga	August, 2016	0.464
373	Neemsar	Gomti	August, 2016	0.306	407	Patna	Ganga	April, 2017	0.346
374	Neemsar	Gomti	December, 2016	0.31	408	Patna	Ganga	August, 2017	1.371
409	Pauni	Wainganga	August, 2016	0.343	443	Rudraprayag	Alaknanda	April, 2016	0.395
410	Pauni	Wainganga	August, 2017	0.435	444	Sakleshpur	Hemavathi	August, 2017	0.635
411	Perumannu	Valapatnam	April, 2016	1.025	445	Sandia	Narmada	November, 2014	0.677
412	Perur	Godavari	August, 2017	0.511	446	Sandia	Narmada	August, 2017	1.025
413	Pingalwada	Dhadher	August, 2016	0.718	447	Sankalan	Teesta	May, 2014	0.686
414	Pingalwada	Dhadher	April, 2017	3.5	448	Sankalan	Teesta	November, 2014	1.052
415	Pingalwada	Dhadher	August, 2017	1.348	449	Sankosh LRP	Sankosh	November, 2014	1.242
416	Polavaram	Godavari	August, 2017	0.67	450	Santeguli	Aghanashini	November, 2014	0.358
417	Puthimari D.R.F.	Puthimari	May, 2014	0.687	451	Santeguli	Aghanashini	August, 2017	0.353
418	Puthimari NH Road	Puthimari	May, 2014	0.677	452	Sarangkheda	Tapi	November, 2014	0.385
419	Raibareli	Sai	November, 2014	2.724	453	Sarangkheda	Tapi	August, 2016	1.468
420	Raibareli	Sai	August, 2016	0.784	454	Sarangkheda	Tapi	August, 2017	6.257
421	Raibareli	Sai	December, 2016	0.377	455	Satrapur	Kanhan	August, 2016	0.574
422	Rajegaon	Bagh	August, 2016	0.646	456	Seppa	Kamang	December, 2015	3.814
423	Rajegaon	Bagh	August, 2017	0.570	457	Seppa	Kamang	August, 2016	1.779
424	Ramakona	Kanhan	August, 2016	0.385	458	Seppa	Kamang	December, 2016	4.321

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425	Ramakona	Kanhan	August, 2017	0.407	459	Seppa	Kamang	April, 2017	2.105
426	Ranganadi NT-Road Xing	Ranganadi	December, 2015	0.477	460	Seppa	Kamang	August, 2017	9.174
427	Ranganadi NT-Road Xing	Ranganadi	August, 2016	0.552	461	Sevok	Teesta	May, 2014	0.312
428	Ranganadi NT-Road Xing	Ranganadi	December, 2016	0.978	462	Sevok	Teesta	November, 2014	2.299
429	Ranganadi NT-Road Xing	Ranganadi	August, 2017	0.573	463	Shahzadpur	Ganga	August, 2017	0.626
430	Rangeli	Som	August, 2016	0.307	464	Shimoga	Thunga	August, 2017	0.66
431	Rangeli	Som	April, 2017	0.507	465	Sikandarpur	Burhi Gandak	August, 2017	0.568
432	Rangpo	Rangpochu	May, 2014	0.819	466	SinglaBazar	Rangit	May, 2014	3.282
433	Rangpo	Rangpochu	November, 2014	0.596	467	SinglaBazar	Rangit	November, 2014	0.474
434	Regauli	Rapti	May, 2014	0.762	468	Sivasagar	Dikhow	August, 2016	3.434
435	Regauli	Rapti	November, 2014	0.977	469	Sivasagar	Dikhow	December, 2016	0.687
436	Regauli	Rapti	August, 2016	0.626	470	Sivasagar	Dikhow	April, 2017	2.969
437	Regauli	Rapti	December, 2016	0.326	471	Sivasagar	Dikhow	August, 2017	2.158
438	Regauli	Rapti	August, 2017	0.374	472	Sonapur	Digaru	May, 2014	0.962
439	Rishikesh	Ganga	May, 2014	0.709	473	Sonapur	Digaru	December, 2015	0.431
440	Rishikesh	Ganga	November, 2014	0.3698	474	Sonapur	Digaru	April, 2017	1.171
441	Rudraprayag	Alaknanda	May, 2014	0.892	475	Sonapur	Digaru	May, 2014	0.359
442	Rudraprayag	Alaknanda	November, 2014	0.598	476	Sonapur	Digaru	November, 2014	0.763
477	Srikakulam	Nagavali	November, 2014	0.371	506	Tilga	Sankh	August, 2017	0.765
478	Srinagar	Alakananda	November, 2014	0.744	507	Tribeni	Gandak	April, 2017	1.114
479	Sripalpur	Punpun	December, 2015	0.394	508	Tribeni	Gandak	August, 2017	2.688
480	Sripalpur	Punpun	August, 2016	0.366	509	Tufanganj	Raidak-I	November, 2014	2.271
481	Sripalpur	Punpun	April, 2017	0.907	510	Turtipar	Ghagra	May, 2014	2.231
482	Sripalpur	Punpun	August, 2017	2.258	511	Turtipar	Ghagra	November, 2014	1.909
483	Suklai	Suklai	May, 2014	0.638	512	Turtipar	Ghagra	August, 2016	0.481
484	Suklai	Suklai	November, 2014	0.398	513	Turtipar	Ghagra	December, 2016	0.512
485	Suklai	Suklai	December, 2015	0.321	514	Udaipur	Tirap	December, 2015	0.329
486	Suklai	Suklai	December, 2016	0.315	515	Udaipur	Tirap	April, 2016	0.556

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487	Suklai	Suklai	April, 2017	0.333	516	Udaipur	Tirap	August, 2016	4.132
488	Sultanpur	Gomti	August, 2016	0.427	517	Udaipur	Tirap	December, 2016	0.627
489	Sultanpur	Gomti	August, 2017	0.528	518	Udaipur	Tirap	April, 2017	3.944
490	T. Bekuppe	Arkavathi	December, 2016	0.379	519	Udaipur	Tirap	August, 2017	3.018
491	Talcher	Brahmani	August, 2017	0.676	520	Uttarkashi	Bhagirath	May, 2014	1.107
492	TeestaBazar	Teesta	May, 2014	1.204	521	Uttarkashi	Bhagirath	November, 2014	0.424
493	TeestaBazar	Teesta	November, 2014	0.69	522	Vapi	Damanganga	November, 2014	0.362
494	Tehri	Bhagirath	May, 2014	1.412	523	Vapi	Damanganga	August, 2016	0.378
495	Tekra	Pranhitha	August, 2016	0.427	524	Vapi	Damanganga	April, 2017	0.869
496	Tezpur	Brahmaputra	December, 2015	0.848	525	Vapi	Damanganga	August, 2017	1.311
497	Tezpur	Brahmaputra	August, 2016	4.189	526	Varanasi	Ganga	August, 2017	0.873
498	Tezpur	Brahmaputra	December, 2016	2.382	527	Vautha	Sabarmati	November, 2014	0.307
499	Tezpur	Brahmaputra	April, 2017	2.199	528	Vautha	Sabarmati	December, 2015	0.631
500	Tezpur	Brahmaputra	August, 2017	9.872	529	Vautha	Sabarmati	August, 2016	0.344
501	Tezu	Lohit	August, 2016	0.992	530	Vautha	Sabarmati	April, 2017	0.309
502	Tezu	Lohit	April, 2017	0.483	531	Vautha	Sabarmati	August, 2017	0.78
503	Tezu	Lohit	August, 2017	3.052	532	Wairagarh	Khobragarhi	August, 2016	0.559
504	Theni	Suruliar	December, 2016	0.340	533	Yennehole	Yennehole	August, 2017	0.905
505	Tikarpara	Mahanadi	August, 2017	0.557					

3. LEAD (Pb in µg/L)

S. No.	WQ Site	River	Period	Lead Conc.	S. No.	WQ Site	River	Period	Lead Conc.
1	Adityapur	Kharkai	April, 2016	13.80	35	Dabri	Ramganga	Febuary, 2015	11.38
2	Akarbarpur	Chhoti Sarju	Febuary, 2015	40.84	36	Damarcherla	Musi	Febuary, 2015	10.63
3	Akarbarpur	Chhoti Sarju	December, 2015	16.90	37	Delhi Rly Bridge	Yamuna	November, 2014	12.65
4	Alladupalli	Kunderu	Febuary, 2015	22.63	38	Dholabazar	Lohit	August, 2016	13.13
5	Alladupalli	Kunderu	April, 2017	11.77	39	Dibrugarh	Brahmaputra	August, 2016	14.25
6	Ambarampalayam	Aliyar	Febuary, 2015	13.31	40	Dimapara	Bugi	August, 2016	13.09
7	Anandpur	Baitarni	May, 2014	11.86	41	Dimapara	Bugi	April, 2017	12.52
8	Ankinghat	Ganga	November, 2014	19.94	42	Dudhnai	Dudhnai	August, 2016	10.92
9	Arcot	Palar	August, 2016	51.52	43	Durvesh	Vaitarna	Febuary, 2015	116.29
10	Ayodhya	Saryu	November, 2014	15.81	44	Durvesh	Vaitarna	August, 2016	13.16
11	Azmabad	Ganga	Febuary, 2015	22.86	45	Durvesh	Vaitarna	December, 2016	19.84
12	B.P. Ghat	Barak	December, 2016	10.52	46	Durvesh	Vaitarna	April, 2017	227.93
13	Badatighat	Subansiri	Febuary, 2015	13.78	47	Elginbridge	Ghagra	November, 2014	10.85
14	Badlapur	Ulhas	Febuary, 2015	13.60	48	Elunuthimanagalam	Noyyal	Febuary, 2015	76.49
15	Balrampur	Rapti	November, 2014	13.00	49	Erinjipuzha	Payaswani	August, 2017	15.58
16	Bansi	Rapti	November, 2014	17.43	50	Fakirabazar	Longai	May, 2014	19.76
17	Bareilly	Ramganga	November, 2014	12.88	51	Fatehgarh	Ganga	November, 2014	14.61
18	Basti	Kwano	November, 2014	28.41	52	Fulertal	Barak	December, 2016	32.68
19	Bawapuram	Thungabhadra	Febuary, 2015	33.41	53	Gadat	Ambika	August, 2016	15.43
20	Bhitaura	Ganga	November, 2014	14.85	54	Galeta	Hindon	November, 2014	18.52
21	Bhitaura	Ganga	Febuary, 2015	34.04	55	Garhamukteshwar	Ganga	May, 2014	14.29
22	Birdghat	Rapti	May, 2014	13.13	56	Garhamukteshwar	Ganga	November, 2014	25.02
23	Birdghat	Rapti	November, 2014	18.65	57	Garudeshwar	Narmada	Febuary, 2015	21.93
24	Birdghat	Rapti	Febuary, 2015	13.64	58	Ghat	Sarju	November, 2014	17.82
25	Buxar	Ganga	Febuary, 2015	16.38	59	Ghatsila	Subarnarekha	April, 2016	37.66
26	Buxar	Ganga	December, 2015	10.48	60	Ghish	Ghish	May, 2014	11.12

S. No.	WQ Site	River	Period	Lead Conc.	S. No.	WQ Site	River	Period	Lead Conc.
27	Champasari	Mahananda	Febuary, 2015	13.60	61	Gomlai	Brahmani	April, 2017	77.42
28	Chanwada	Orsang	Febuary, 2015	39.80	62	Gopalkheda	Purna	Febuary, 2015	34.77
29	Chanwada	Orsang	August, 2016	19.65	63	Gopalkheda	Purna	August, 2016	37.62
30	Chel	Chel	May, 2014	14.40	64	Gummanur	Ponnaiyar	Febuary, 2015	13.98
31	Chenimari	Buridehing	August, 2016	20.55	65	Haladi	Haladi	Febuary, 2015	12.18
32	Chennur	Pennar	Febuary, 2015	38.50	66	Hanskhali	Churni	November, 2014	10.08
33	Chopan	Sone	December, 2015	10.90	67	Hathidah	Ganga	Febuary, 2015	36.91
34	Dabri	Ramganga	November, 2014	16.54	68	Huvin Hedgi	Krishna	Febuary, 2015	14.34
69	Jaldhaka NH-31	Jaldhaka	November, 2014	21.96	103	Nowrangpur	Indravathi	Febuary, 2015	10.46
70	Jiabharali NT Road Xing	Jiabharali	Febuary, 2015	29.26	104	Nowrangpur	Indravathi	April, 2016	16.48
71	Kachlabridge	Ganga	November, 2014	25.37	105	Pagladiya N.T.Road	PagladiYa	August, 2016	18.70
72	Kachlabridge	Ganga	Febuary, 2015	33.78	106	Pancharatna	Brahmaputra	August, 2016	15.81
73	Kamlanga		May, 2014	10.83	107	Pandu	Brahmaputra	August, 2016	21.48
74	Kanpur	Ganga	November, 2014	15.75	108	Pattazhy	Kallada	Febuary, 2015	13.66
75	Kanpur	Ganga	Febuary, 2015	25.16	109	Pattazhy	Kallada	April, 2016	13.58
76	Katwa	Bhagirathi	December, 2016	11.59	110	Pingalwada	Dhadher	Febuary, 2015	17.65
77	Keesara	Munneru	Febuary, 2015	12.08	111	Polavaram	Godavari	Febuary, 2015	22.87
78	Khanpur	Mahi	December, 2015	19.83	112	Puthimari D.R.F.	Puthimari	Febuary, 2015	10.12
79	Kheronighat	Kopili	Febuary, 2015	13.88	113	Raibareli	Sai	November, 2014	26.24
80	Kodumudi	Cauvery	Febuary, 2015	16.67	114	Raibareli	Sai	December, 2016	23.34
81	Koelwar	Sone	April, 2016	16.75	115	Ramakona	Kanhan	Febuary, 2015	17.51
82	Kuldah Bridge	Sone	August, 2016	11.74	116	Regauli	Rapti	May, 2014	10.39
83	Kulpatnga		August, 2017	14.86	117	Regauli	Rapti	November, 2014	14.21
84	Lowara	Sheturni	April, 2016	374.58	118	Regauli	Rapti	Febuary, 2015	14.11
85	Lowara	Sheturni	December, 2016	39.11	119	Sakleshpur	Hemavathi	Febuary, 2015	23.00
86	Lucknow	Gomti	November, 2014	15.14	120	Sankosh LRP	Sankosh	Febuary, 2015	14.73
87	Lucknow	Gomti	December, 2016	21.67	121	Sarangkheda	Tapi	April, 2017	62.12
88	Mahuwa	Purna	Febuary, 2015	16.89	122	Seppa	Kamang	December, 2016	46.82

S. No.	WQ Site	River	Period	Lead Conc.	S. No.	WQ Site	River	Period	Lead Conc.
89	Mantralayam	Thungabhadra	Febuary, 2015	32.29	123	Seppa	Kamang	August, 2017	15.13
90	Margherita	Buridehing	December, 2016	156.07	124	Shahzadpur	Ganga	Febuary, 2015	24.59
91	Miao	Neo dihing	Febuary, 2015	17.48	125	Simga	Seonath	Febuary, 2015	11.91
92	Miao	Neo dihing	December, 2016	19.30	126	Sivasagar	Dikhow	August, 2016	20.63
93	Mohana (Yamuna)	Yamuna	November, 2014	18.34	127	Sonapur	Digaru	August, 2016	32.74
94	Mohana (Yamuna)	Yamuna	Febuary, 2015	20.04	128	T. Bekuppe	Arkavathi	Febuary, 2015	26.29
95	Moradabad	Ramganga	May, 2014	11.63	129	T. Bekuppe	Arkavathi	December, 2016	16.17
96	Moradabad	Ramganga	November, 2014	18.94	130	T. Ramapuram	Hagari	Febuary, 2015	41.82
97	Moradabad	Ramganga	Febuary, 2015	32.85	131	Thengudi	Thirumalairajanar	Febuary, 2015	11.39
98	Naidupet	Swarnamukhi	Febuary, 2015	38.86	132	Therriaghat	Umsohrynkiew	August, 2017	16.81
99	Neeleswaram	Periyar	November, 2014	12.83	133	Thimmanahalli	Yagachi	Febuary, 2015	13.84
100	Neemsar	Gomti	November, 2014	23.44	134	Thumpamon	Achankovil	April, 2016	38.58
101	Neemsar	Gomti	Febuary, 2015	11.91	135	Tufanganj	Raidak-I	Febuary, 2015	16.59
102	Neemsar	Gomti	December, 2016	19.95	136	Turtipar	Ghagra	November, 2014	18.20
137	Turtipar	Ghagra	Febuary, 2015	29.26	140	Vautha	Sabarmati	November, 2014	17.57
138	Urachikottai	Cauvery	Febuary, 2015	10.61	141	Vautha	Sabarmati	December, 2015	12.76
139	Vapi	Damanganga	August, 2016	16.99	142	Vautha	Sabarmati	December, 2016	12.88

5. NICKEL (Ni in µg/L)

S. No.	WQ Site	River	Period	Nickel Conc.	S. No.	WQ Site	River	Period	Nickel Conc.
1	Alladupalli	Kunderu	Febuary, 2015	28.030	19	Kachlabridge	Ganga	November, 2014	26.840
2	Ayodhya	Saryu	Febuary, 2015	21.690	20	Kurubhata	Mand	May, 2014	27.570
3	Bamnidih	Hasdeo	May, 2014	24.120	21	Lowara	Sheturni	Febuary, 2015	304.640
4	Banda	Ken	Febuary, 2015	27.870	22	Lowara	Sheturni	April, 2016	68.480
5	Barmanghat	Narmada	Febuary, 2015	56.840	23	Mantralayam	Thungabhadra	Febuary, 2015	31.390
6	Barmanghat	Narmada	December, 2016	85.940	24	Paliakalan	Sharda	August, 2016	32.720
7	Basantpur	Mahanadi	May, 2014	59.210	25	Panposh	Brahmani	Febuary, 2015	56.740
8	Bawapuram	Thungabhadra	Febuary, 2015	30.300	26	Passighat	Siang	November, 2014	21.180
9	Bhalukpong	Jiabharali	May, 2014	83.830	27	Rampur	Jonk	May, 2014	57.790
10	Chanwada	Orsang	Febuary, 2015	67.730	28	Salebhata	Ong	May, 2014	50.070
11	Chennur	Pennar	Febuary, 2015	24.600	29	Simga	Seonath	May, 2014	25.630
12	Durvesh	Vaitarna	Febuary, 2015	179.340	30	Sundergarh	Ib	November, 2014	37.320
13	Elunuthimanagalam	Noyyal	Febuary, 2015	21.400	31	T. Bekuppe	Arkavathi	Febuary, 2015	44.460
14	Ghatora	Seonath	May, 2014	28.990	32	T. Ramapuram	Hagari	Febuary, 2015	43.570
15	Ghatsila	Subarnarekha	May, 2014	36.960	33	Vandiperiyar	Periyar	Febuary, 2015	21.880
16	Gopalkheda	Purna	Febuary, 2015	39.850	34	Vautha	Sabarmati	November, 2014	25.880
17	Huvin Hedgi	Krishna	Febuary, 2015	23.720	35	Vautha	Sabarmati	Febuary, 2015	49.180
18	Jamshedpur	Subarnarekha	May, 2014	20.270					

Annexure-6

Seasonal average values of Trace and Toxic metals with total no of water quality samples found above / below the acceptable limist as prescribed by BIS 10500: 2012

ARSENIC

S. No.	Water Quality Site	Arsenic (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
1	A B Road Xing	0.896	0.728	0.980	0.090	1.870	0	3
2	A.P. Puram	0.320	0.320	-	0.020	0.620	0	2
3	A.P.Ghat	3.424	3.740	2.950	1.430	7.420	0	5
4	Aauriya	4.964	6.017	3.385	3.330	8.560	0	5
5	Abu Road	1.637	1.815	1.280	1.280	2.000	0	3
6	Addoor	2.860	-	2.860	2.860	2.860	0	1
7	Adityapur	3.228	3.940	1.090	1.090	5.490	0	4
8	Agra	3.632	1.630	6.635	1.380	8.160	0	5
9	Aie NH Crossing	1.730	1.730	-	1.730	1.730	0	1
10	Akabarpur	3.038	3.483	2.370	0.220	7.500	0	5
11	Akhnoor	2.030	1.910	2.390	0.550	3.310	0	4
12	Akkihebbal	1.740	1.830	1.380	0.110	3.580	0	5
13	Aklera	2.120	1.929	2.310	0.548	3.960	0	4
14	Alladupalli	3.172	3.963	1.590	0.350	8.960	0	6
15	Allahabad	3.140	3.342	2.635	1.190	5.540	0	7
16	Alutuma	1.270	1.297	1.190	0.270	2.120	0	4
17	Ambarampalayam	3.277	2.218	5.395	0.100	7.960	0	6
18	Ambasamudram	-	-	-	0.000	0.000	0	0
19	Anandpur	1.200	1.110	1.470	0.620	2.070	0	4
20	Andhiyar Kore	5.210	5.210	-	5.210	5.210	0	1
21	Ankinghat	4.618	5.910	2.035	0.120	8.400	0	6
22	Annavasal	-	-	-	0.000	0.000	0	0
23	Arangaly	5.577	4.895	6.940	2.040	7.750	0	3
24	Arcot	0.660	-	0.660	0.660	0.660	0	1
25	Arjunwad	2.540	-	2.540	2.540	2.540	0	1
26	Ashramam	3.663	4.130	2.730	2.730	4.490	0	3
27	Ashti	2.044	2.448	1.035	0.580	6.070	0	7
28	Avershe	0.715	1.070	0.360	0.360	1.070	0	2
29	Ayilam	5.517	3.840	8.870	0.080	8.870	0	3
30	Ayodhya	1.415	1.390	1.465	0.030	3.660	0	6
31	Azmabad	3.521	4.716	0.535	0.170	6.470	0	7
32	B.P. Ghat	2.808	2.923	2.580	0.710	7.410	0	6
33	Badatighat	3.631	4.592	1.230	0.260	8.550	0	7
34	Badlapur	3.177	3.240	3.050	3.040	3.440	0	3
35	Balrampur	1.977	2.420	1.090	0.290	4.830	0	6
36	Baltara	2.474	3.026	1.095	0.260	6.130	0	7
37	Bamni (Banjar)	1.143	1.143	1.145	0.100	2.190	0	6

S. No.	Water Quality Site	Arsenic (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
38	Bamni (Wardha)	1.897	2.238	1.045	0.770	3.390	0	7
39	Bamnidih	8.670	8.670	-	8.670	8.670	0	1
40	Banda	3.454	3.173	3.875	0.190	5.970	0	5
41	Bansi	2.466	3.043	1.600	0.380	4.240	0	5
42	Bantwal	2.445	1.550	3.340	1.550	3.340	0	2
43	Baranwada	1.502	1.755	0.740	0.740	2.668	0	4
44	Bareilly	2.330	3.250	0.490	0.300	7.920	0	6
45	Barmanghat	2.377	2.474	2.135	0.310	8.350	0	7
46	Barobisha	4.595	7.220	1.970	1.970	7.220	0	2
47	Barod	1.749	2.312	0.625	0.270	4.680	0	6
48	Baronda	-	-	-	0.000	0.000	0	0
49	Basantpur	5.220	5.220	-	5.220	5.220	0	1
50	Basti	3.800	4.805	1.790	1.480	8.260	0	6
51	Bawapuram	-	-	-	0.000	0.000	0	0
52	Behalpur	6.240	6.240	-	6.240	6.240	0	1
53	Beki Mathanguri	-	-	-	0.000	0.000	0	0
54	Beki Road Bridge	5.520	7.980	3.060	3.060	7.980	0	2
55	Belkhedi	3.284	2.890	4.270	0.310	8.230	0	7
56	Belne Bridge	2.530	-	2.530	2.530	2.530	0	1
57	Bendrahalli	-	-	-	0.000	0.000	0	0
58	Berhampore	1.993	1.652	2.845	0.920	4.030	0	7
59	Bhadrachalam	3.810	5.405	0.620	0.620	7.390	0	3
60	Bhalukpong	2.734	2.940	2.220	0.310	6.620	0	7
61	Bhatpalli	2.760	2.686	2.945	1.330	6.090	0	7
62	Bhitaura	5.397	7.675	0.840	0.440	9.020	0	6
63	Bhomoraguri	2.151	2.280	1.830	0.340	4.430	0	7
64	Bihubar	2.526	3.032	1.260	0.040	6.850	0	7
65	Biligundullu	2.298	2.465	1.630	0.470	5.820	0	5
66	Birdghat	3.142	4.048	1.330	1.120	6.270	0	6
67	Bokajan	2.121	2.322	1.620	0.140	4.410	0	7
68	Burhanpur	1.122	0.917	1.430	0.270	2.590	0	5
69	Buxar	3.936	5.240	0.675	0.530	9.530	0	7
70	Byaladahalli	0.930	0.930	-	0.930	0.930	0	1
71	Champasari	3.410	3.410	-	3.410	3.410	0	1
72	Champua	0.878	0.727	1.330	0.030	1.710	0	4
73	Chanwada	2.417	2.945	1.360	0.270	4.900	0	6
74	Chapra	3.831	4.690	1.685	0.260	7.880	0	7
75	Chel	4.700	4.700	-	4.700	4.700	0	1
76	Chengalpet	1.240	1.890	0.590	0.590	1.890	0	2
77	Chenimari	1.760	2.044	1.050	0.380	5.490	0	7
78	Chennur	3.032	3.918	1.260	0.170	7.280	0	6
79	Chepan	3.110	3.680	2.540	2.540	3.680	0	2
80	Chhidgaon	2.266	3.004	0.420	0.030	8.560	0	7
81	Chitrasani	1.068	0.943	1.255	0.180	2.140	0	5

S. No.	Water Quality Site	Arsenic (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
82	Chittorgarh	0.648	0.648	-	0.648	0.648	0	1
83	Cholachguda	-	-	-	0.000	0.000	0	0
84	Chopan	3.313	3.238	3.500	0.430	7.000	0	7
85	Chouldhowaghat	2.586	2.844	1.940	0.120	8.180	0	7
86	Chuchankatte	1.790	-	1.790	1.790	1.790	0	1
87	Coronation	1.530	1.530	-	1.530	1.530	0	1
88	Dabri	4.442	5.425	2.475	0.120	8.530	0	6
89	Damarcherla	2.050	2.050	-	2.050	2.050	0	1
90	Dawki	2.154	1.190	3.600	0.100	3.730	0	5
91	Delhi Rly Bridge	3.061	3.662	0.955	0.280	9.450	0	9
92	Deoprayag	1.707	1.556	2.085	0.170	3.950	0	7
93	Derol Bridge	1.906	2.428	0.600	0.140	5.800	0	7
94	Desangpani	2.639	2.778	2.290	0.130	6.360	0	7
95	Dhamkund	2.138	2.030	2.460	0.850	3.980	0	4
96	Dharamtul	2.499	2.766	1.830	0.140	6.200	0	7
97	Dheng Bridge	2.713	2.782	2.540	0.560	4.300	0	7
98	Dholabazar	2.670	3.224	1.285	0.430	6.390	0	7
99	Dholai	2.287	2.495	1.870	0.100	7.220	0	6
100	Dholpur	1.976	2.053	1.860	0.100	4.020	0	5
101	Dhubri	7.660	7.660	-	7.660	7.660	0	1
102	Dhulsar	0.260	-	0.260	0.260	0.260	0	1
103	Diana	4.680	4.680	-	4.680	4.680	0	1
104	Dibrugarh	2.430	2.600	2.005	0.370	5.660	0	7
105	Dillighat	2.404	2.480	2.215	0.360	6.150	0	7
106	Dimapara	1.602	1.500	1.755	0.630	2.880	0	5
107	Dindori	2.271	2.472	1.770	0.870	7.730	0	7
108	Domohani	2.725	2.990	2.460	2.460	2.990	0	2
109	Duddhi	1.659	1.900	1.055	0.690	4.960	0	7
110	Dudhnai	2.869	3.344	1.680	1.070	7.540	0	7
111	Durvesh	2.570	2.920	2.045	0.070	7.420	0	5
112	Ekmighat	2.639	3.224	1.175	0.090	7.180	0	7
113	Elginbridge	1.015	1.348	0.350	0.130	3.140	0	6
114	Elunuthimanagalam	0.940	0.940	-	0.940	0.940	0	1
115	English Bazar	1.554	1.410	1.915	0.130	3.440	0	7
116	Erinjipuzha	5.210	3.165	9.300	1.620	9.300	0	3
117	Etawah	4.458	4.723	4.060	1.090	7.030	0	5
118	Fakirabazar	3.114	3.503	2.530	1.340	7.540	0	5
119	Farakka	1.820	1.636	2.280	0.690	3.720	0	7
120	Farakka/(HR)	1.273	1.288	1.235	0.390	2.430	0	7
121	Fatehgarh	2.232	2.755	1.185	0.640	3.370	0	6
122	Fulertal	1.423	0.740	2.105	0.100	2.170	0	4
123	Gadarwara	2.543	3.015	1.600	0.250	8.750	0	6
124	Gadat	1.980	2.197	1.655	1.060	4.320	0	5
125	Gajaldoba	1.100	1.100	-	1.100	1.100	0	1

S. No.	Water Quality Site	Arsenic (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
126	Galeta	2.196	2.672	0.530	0.510	5.380	0	9
127	Ganod	2.352	2.663	1.110	1.110	4.900	0	5
128	Garhamukteshwar	2.950	2.475	3.900	1.510	5.050	0	6
129	Garrauli	3.310	4.900	2.515	1.760	4.900	0	3
130	Garudeshwar	2.175	2.273	1.980	0.030	7.290	0	6
131	Gaya	1.327	1.960	1.010	0.600	1.960	0	3
132	Gelabil	2.213	2.120	2.305	1.210	3.350	0	4
133	Ghat	2.403	2.805	1.600	0.820	3.860	0	6
134	Ghatora	5.800	5.800	-	5.800	5.800	0	1
135	Ghatsila	2.738	3.313	1.010	1.010	6.830	0	4
136	Ghish	3.620	3.620	-	3.620	3.620	0	1
137	Ghugumari	4.030	5.320	2.740	2.740	5.320	0	2
138	Gokak	2.150	-	2.150	2.150	2.150	0	1
139	Golagang	-	-	-	0.000	0.000	0	0
140	Golaghat	2.673	2.872	2.175	0.430	6.760	0	7
141	Gomlai	2.020	2.283	1.230	0.520	3.220	0	4
142	Gopalkheda	2.235	-	2.235	0.740	3.730	0	2
143	Govindapur	1.635	1.680	1.500	1.200	2.420	0	4
144	Gummanur	4.363	3.915	5.260	0.310	8.190	0	6
145	Gumrabazar	3.125	3.583	2.210	1.550	8.340	0	6
146	Gunupur	2.750	3.153	1.540	0.070	8.160	0	4
147	Haladi	1.896	2.115	1.020	0.320	5.400	0	5
148	Halia	4.670	4.670	-	3.270	6.070	0	2
149	Hamirpur	6.404	8.083	3.885	3.770	8.410	0	5
150	Handia	1.627	2.046	0.580	0.180	2.780	0	7
151	Hanskhali	2.694	3.064	1.770	0.820	8.910	0	7
152	Haridwar	2.580	3.318	1.105	0.510	7.370	0	6
153	Harlahalli	1.430	1.490	1.310	0.610	2.370	0	3
154	Hasimara	4.170	6.430	1.910	1.910	6.430	0	2
155	Hathidah	3.020	3.690	1.345	1.070	8.310	0	7
156	Hayaghat	2.804	3.440	1.215	0.030	6.450	0	7
157	Hivra	2.160	2.876	0.370	0.170	8.010	0	7
158	Holehonnur	1.386	1.308	1.700	0.150	3.670	0	5
159	Honnali	2.556	2.563	2.530	0.550	5.670	0	5
160	Hoshangabad	2.321	2.880	0.925	0.670	7.430	0	7
161	Huvin Hedgi	1.470	2.760	0.180	0.180	2.760	0	2
162	Jagdalpur	0.350	-	0.350	0.350	0.350	0	1
163	Jagibhakatgaon	2.256	2.650	1.270	0.330	5.850	0	7
164	Jai Nagar	2.813	2.794	2.860	0.430	8.860	0	7
165	Jaldhaka NH-31	3.065	3.610	2.520	2.520	3.610	0	2
166	Jammu Tawi	2.160	2.040	2.520	0.530	3.640	0	4
167	Jamshedpur	1.538	1.680	1.110	0.740	3.140	0	4
168	Jamsolghat	1.540	1.780	1.060	1.060	2.140	0	3
169	Japla	1.809	2.162	0.925	0.240	6.260	0	7

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170	Jaraikela	1.743	1.153	3.510	0.630	3.510	0	4
171	Jenapur	1.473	1.160	2.410	0.540	2.410	0	4
172	Jhanjharpur	2.387	2.682	1.650	0.060	7.110	0	7
173	Jiabharali NT Road Xing	3.227	3.204	3.285	0.080	6.600	0	7
174	Jondhra	-	-	-	0.000	0.000	0	0
175	K.M. Vadi	3.030	-	3.030	3.030	3.030	0	1
176	Kachlabridge	3.622	4.533	1.800	0.440	9.150	0	6
177	Kalampur	1.960	0.935	4.010	0.870	4.010	0	3
178	Kalanaur	2.559	3.092	0.695	0.520	7.370	0	9
179	Kallooppara	4.213	5.120	2.400	2.400	5.320	0	3
180	Kalna (EBB)	2.890	2.330	3.450	0.910	5.990	0	4
181	Kalna (Flow)*	4.517	4.517	-	0.160	7.390	0	3
182	Kamalapuram	1.645	-	1.645	0.630	2.660	0	2
183	Kamalpur	0.935	0.820	1.050	0.820	1.050	0	2
184	Kampur	2.971	3.418	1.855	0.460	7.380	0	7
185	Kanpur	4.173	5.485	1.550	0.390	8.670	0	6
186	Kantamal	2.310	2.310	-	2.310	2.310	0	1
187	Karad	2.720	-	2.720	2.720	2.720	0	1
188	Karathodu	3.053	2.985	3.190	1.160	4.810	0	3
189	Kashinagar	1.133	0.990	1.560	0.290	1.560	0	4
190	Katwa	2.379	1.376	4.885	0.110	9.140	0	7
191	Keesara	1.280	-	1.280	1.280	1.280	0	1
192	Kellodu	-	-	-	0.000	0.000	0	0
193	Keolari	2.161	2.326	1.750	0.470	7.750	0	7
194	Kesinga	2.190	2.190	-	2.190	2.190	0	1
195	Khanitar	7.390	7.390	-	7.390	7.390	0	1
196	Khanpur	1.611	2.082	0.435	0.340	4.660	0	7
197	Kharkhana	1.398	1.083	1.870	0.250	1.940	0	5
198	Khatoli	2.761	3.599	0.665	0.420	6.270	0	7
199	Kheronighat	1.637	1.610	1.705	0.410	2.590	0	7
200	Kidangoor	3.300	3.560	2.780	1.480	5.640	0	3
201	Kodumudi	2.453	2.427	2.530	1.190	4.670	0	4
202	Koelwar	1.693	2.030	0.850	0.360	4.920	0	7
203	Kogaon	1.137	2.040	0.685	0.020	2.040	0	3
204	Kokrajhar	3.155	3.860	2.450	2.450	3.860	0	2
205	Kollegal	0.895	0.650	1.140	0.650	1.140	0	2
206	Konta	3.697	5.090	0.910	0.910	6.830	0	3
207	Koperagaon	1.430	-	1.430	1.430	1.430	0	1
208	Kora	5.154	3.320	7.905	0.190	9.390	0	5
209	Koteshwar	3.532	3.957	2.895	0.500	9.270	0	5
210	Kudalaiyathur	3.610	3.610	-	3.610	3.610	0	1
211	Kudige	1.608	1.383	2.510	0.050	4.080	0	5
212	Kudlur	3.260	3.260	3.260	3.260	3.260	0	2
213	Kuldah Bridge	2.492	2.113	3.250	0.280	6.220	0	6

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214	Kulsi	1.286	1.472	0.820	0.090	2.680	0	7
215	Kumbidi	3.507	3.650	3.220	2.140	5.160	0	3
216	Kumhari	1.964	2.370	0.950	0.440	7.920	0	7
217	Kuniyil	5.097	5.755	3.780	3.540	7.970	0	3
218	Kuppelur	-	-	-	0.000	0.000	0	0
219	Kurubhata	2.120	2.120	-	2.120	2.120	0	1
220	Kurundwad	1.430	-	1.430	1.430	1.430	0	1
221	Kuttyadi	3.273	3.430	2.960	2.960	3.900	0	3
222	Kuzhithurai	3.717	4.285	2.580	2.580	5.840	0	3
223	Labha	1.327	1.008	2.125	0.390	3.540	0	7
224	Lakhisarai	1.705	2.350	0.415	0.020	6.260	0	6
225	Lalganj	2.491	2.956	1.330	0.350	6.470	0	7
226	Lowara	2.110	2.658	0.740	0.120	6.250	0	7
227	Lucknow	4.660	5.513	2.955	2.570	7.930	0	6
228	M.H. Halli	1.140	1.140	-	1.140	1.140	0	1
229	Madhira	-	-	-	0.000	0.000	0	0
230	Madla	2.008	2.123	1.835	0.890	3.620	0	5
231	Mahidpur	1.016	1.078	0.985	0.340	1.630	0	3
232	Mahuwa	1.238	0.937	1.690	0.240	3.020	0	5
233	Maighat	3.509	3.760	2.880	1.080	7.630	0	7
234	Majhitar	3.780	3.780	-	3.780	3.780	0	1
235	Malakkara	2.583	2.825	2.100	1.410	4.240	0	3
236	Malkhed	1.760	3.340	0.180	0.180	3.340	0	2
237	Manas NH Crossing	2.980	-	2.980	2.980	2.980	0	1
238	Mancherial	3.263	4.380	1.030	1.030	5.570	0	3
239	Mandleshwar	1.497	1.912	0.460	0.370	3.170	0	7
240	Manendragarh	-	-	-	0.000	0.000	0	0
241	Mangaon (Seasonal)	1.770	-	1.770	1.770	1.770	0	1
242	Mankara	3.220	4.005	1.650	1.650	4.720	0	3
243	Manot	2.327	2.740	1.295	0.220	8.680	0	7
244	Mantralayam	3.810	3.810	-	3.810	3.810	0	1
245	Marella	3.270	3.270	-	3.270	3.270	0	1
246	Margherita	1.850	1.990	1.500	0.060	4.590	0	7
247	Marol	2.500	-	2.500	2.500	2.500	0	1
248	Mataji	1.800	2.380	0.350	0.250	6.680	0	7
249	Mathabhanga	2.510	2.650	2.370	2.370	2.650	0	2
250	Mathanguri	1.040	1.040	-	1.040	1.040	0	1
251	Mathura	3.593	3.904	2.505	1.130	8.340	0	9
252	Matigara	4.420	4.420	-	4.420	4.420	0	1
253	Matijuri	3.560	4.420	2.700	0.290	6.990	0	4
254	Matunga	1.584	1.768	1.125	0.400	3.050	0	7
255	Mawi	3.382	4.051	1.040	0.730	8.160	0	9
256	Meja Road	1.493	2.123	0.235	0.190	5.880	0	6
257	Mekhliganj	3.310	3.490	3.130	3.130	3.490	0	2

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258	Miao	1.784	1.728	1.925	0.240	3.690	0	7
259	Mirzapur	2.706	3.150	1.595	0.770	6.080	0	7
260	Mohana (Betwa)	1.930	2.347	1.305	0.540	4.090	0	5
261	Mohana (Yamuna)	2.721	3.302	0.685	0.120	7.040	0	9
262	Mohgaoan	1.623	1.742	1.325	0.370	4.720	0	7
263	Moradabad	2.963	3.285	2.320	1.300	4.370	0	6
264	Motinaroli	1.980	2.090	1.760	0.040	5.620	0	6
265	Murappanadu	3.388	1.977	7.620	0.580	7.620	0	4
266	Muri	3.830	4.553	1.660	1.660	6.740	0	4
267	Murti	3.810	3.810	-	3.810	3.810	0	1
268	Musiri	2.137	2.137	-	0.850	3.340	0	3
269	Muthankera	4.697	2.870	8.350	1.670	8.350	0	3
270	Nagrakata	3.400	3.400	-	3.400	3.400	0	1
271	Naharkatia	1.801	2.084	1.095	1.090	3.730	0	7
272	Naidupet	-	-	-	0.000	0.000	0	0
273	Nallammaranpatty	2.100	-	2.100	2.100	2.100	0	1
274	Nallathur	2.910	2.910	-	2.780	3.040	0	2
275	Namsai	1.466	1.250	2.005	0.280	3.300	0	7
276	Nandgaon	2.856	2.167	3.890	0.100	7.680	0	5
277	Nandipalli	3.667	6.500	2.250	1.580	6.500	0	3
278	Nanglamoraghat	3.211	3.862	1.585	0.360	7.100	0	7
279	Neamatighat	2.949	3.132	2.490	0.590	5.550	0	7
280	Neeleswaram	4.040	4.390	3.340	1.350	7.430	0	3
281	Neemsar	3.852	5.557	1.295	0.170	8.100	0	5
282	Nellithurai	3.615	3.615	-	0.660	6.570	0	2
283	Nellore	2.075	2.075	-	1.700	2.450	0	2
284	Neora	5.710	5.710	-	5.710	5.710	0	1
285	Nowrangpur	1.727	2.455	0.270	0.270	3.150	0	3
286	Numaligarh	2.909	3.440	1.580	0.300	8.430	0	7
287	P.G.Bridge	2.773	2.260	3.800	0.640	6.940	0	6
288	Pachauli	0.710	-	0.710	0.710	0.710	0	1
289	Pachegaon	0.950	-	0.950	0.950	0.950	0	1
290	Paderdibadi	2.001	2.586	0.540	0.270	5.780	0	7
291	Pagladiya N.T.Road	1.476	1.588	1.195	0.070	4.090	0	7
292	Paleru Bridge	0.645	1.210	0.080	0.080	1.210	0	2
293	Paliakalan	2.858	2.813	2.950	0.630	7.400	0	6
294	Palla	2.044	2.484	0.505	0.400	6.810	0	9
295	Panbari	4.380	4.380	-	4.380	4.380	0	1
296	Pancharatna	1.113	1.224	0.835	0.090	3.190	0	7
297	Pandu	1.689	1.890	1.185	0.400	5.170	0	7
298	Panposh	2.130	2.213	1.880	1.170	3.100	0	4
299	Passighat	3.203	3.203	-	0.670	5.950	0	3
300	Patan	3.253	3.092	3.655	0.290	8.710	0	7
301	Pathagudem	2.013	2.875	0.290	0.290	3.740	0	3

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302	Pathardhi	-	-	-	0.000	0.000	0	0
303	Pati	1.255	1.420	0.760	0.340	2.250	0	4
304	Patna	4.094	5.402	0.825	0.690	8.690	0	7
305	Pattazhy	2.857	3.305	1.960	1.960	4.540	0	3
306	Pauni	2.003	2.074	1.825	0.700	4.170	0	7
307	Peralam	-	-	-	0.000	0.000	0	0
308	Perumannu	3.620	3.370	4.120	1.010	5.730	0	3
309	Perur	2.943	4.170	0.490	0.490	4.750	0	3
310	Phulgaon (Seasonal)	2.390	-	2.390	2.390	2.390	0	1
311	Pingalwada	1.907	1.928	1.865	0.450	4.510	0	6
312	Polavaram	1.673	1.715	1.590	0.060	3.370	0	3
313	Pratapgarh	3.328	3.358	3.270	0.100	7.020	0	6
314	Pratapur	3.364	4.343	1.895	0.200	9.010	0	5
315	Prem Nagar	2.535	2.330	3.150	0.770	3.980	0	4
316	Pudur	2.613	2.910	2.020	1.570	4.250	0	3
317	Pulamanthole	3.870	4.545	2.520	1.000	8.090	0	3
318	Purna	1.610	1.610	-	1.610	1.610	0	1
319	Purushottampur	1.503	1.343	1.980	1.070	1.980	0	4
320	Puthimari D.R.F.	1.364	1.634	0.690	0.070	3.900	0	7
321	Puthimari NH Road crossing	1.618	1.858	1.140	0.140	4.190	0	6
322	Raibareli	3.200	3.277	3.085	0.550	5.620	0	5
323	Rajapur	4.584	5.023	3.925	1.090	8.610	0	5
324	Rajegaon	1.905	2.328	1.060	0.640	6.940	0	6
325	Rajghat	2.423	3.805	1.040	0.930	4.160	0	4
326	Rajim	-	-	-	0.000	0.000	0	0
327	Ram Munshi Bagh	1.920	1.530	3.090	0.010	3.450	0	4
328	Ramakona	2.558	2.968	1.740	1.260	7.650	0	6
329	Ramamangalam	3.890	4.630	2.410	2.100	7.160	0	3
330	Rampur	3.130	3.130	-	3.130	3.130	0	1
331	Ranganadi NT-Road Xing	3.620	3.772	3.240	0.300	7.030	0	7
332	Rangeli	1.731	2.299	0.310	0.180	5.800	0	7
333	Rangpo	8.950	8.950	-	8.950	8.950	0	1
334	Regauli	2.570	3.425	0.860	0.500	5.850	0	6
335	Rishikesh	3.743	3.678	3.905	1.850	7.360	0	7
336	Rudraprayag	3.122	3.878	1.610	0.830	9.100	0	6
337	Safapora	2.610	2.490	2.970	0.230	3.790	0	4
338	Sakleshpur	1.854	2.075	0.970	0.030	5.980	0	5
339	Sakmur	1.694	1.648	1.810	0.880	2.540	0	7
340	Salebhata	3.100	3.100	-	3.100	3.100	0	1
341	Samdoli	2.230	-	2.230	2.230	2.230	0	1
342	Sandia	1.970	1.942	2.040	0.170	4.870	0	7
343	Sangam	2.941	3.428	1.725	0.250	6.540	0	7
344	Sangod	0.446	0.388	0.475	0.050	0.900	0	3
345	Sankalan	8.290	8.290	-	8.290	8.290	0	1

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346	Sankosh LRP	5.640	8.270	3.010	3.010	8.270	0	2
347	Santeguli	2.042	2.338	0.860	0.650	6.640	0	5
348	Sarangkheda	1.250	1.447	0.955	0.040	2.100	0	5
349	Satrapur	1.921	2.306	0.960	0.150	5.840	0	7
350	Savandapur	2.550	2.403	2.845	0.190	4.270	0	6
351	Seondha	2.563	2.553	2.590	0.440	4.530	0	4
352	Seppa	1.819	2.118	1.070	0.020	6.160	0	7
353	Sevanur	-	-	-	0.000	0.000	0	0
354	Sevoke	7.950	7.950	-	7.950	7.950	0	1
355	Shahijina	2.540	2.383	2.775	0.880	3.550	0	5
356	Shahzadpur	4.505	4.363	4.790	1.270	9.010	0	6
357	Shimoga	1.514	1.543	1.400	0.490	3.060	0	5
358	Sibbari	1.878	1.240	2.835	0.210	3.930	0	5
359	Sikandarpur	3.250	3.540	2.525	0.580	5.530	0	7
360	Simga	3.250	3.250	-	3.250	3.250	0	1
361	Singla-Bazar	4.590	4.590	-	4.590	4.590	0	1
362	Sivasagar	2.474	2.582	2.205	0.030	7.740	0	7
363	Sonapur	1.965	2.172	0.930	0.030	3.850	0	6
364	Srikakulam	1.820	1.730	2.090	1.150	2.410	0	4
365	Srinagar	4.270	5.540	1.730	1.560	9.520	0	3
366	Sripalpur	1.921	2.484	0.515	0.120	4.750	0	7
367	Suklai	1.327	1.512	0.865	0.080	4.590	0	7
368	Sultanpur	4.705	6.130	1.855	1.580	8.730	0	6
369	Sulurpet	2.530	2.530	-	2.530	2.530	0	1
370	Sundergarh	0.920	0.920	-	0.920	0.920	0	1
371	T. Bekuppe	2.102	2.433	0.780	0.380	7.020	0	5
372	T. Narasipur	0.870	0.750	0.990	0.750	0.990	0	2
373	T. Ramapuram	-	-	-	0.000	0.000	0	0
374	T.K.Halli	0.510	0.510	-	0.510	0.510	0	1
375	Tal	1.496	1.708	1.390	0.980	1.800	0	3
376	Talcher	1.188	0.410	3.520	0.130	3.520	0	4
377	Tandi	2.680	-	2.680	2.680	2.680	0	1
378	Teesta-Bazar	2.015	1.510	2.520	1.510	2.520	0	2
379	Tehri	3.495	3.495	-	1.140	5.850	0	2
380	Tekra	2.313	2.772	1.165	0.200	7.960	0	7
381	Tezpur	2.196	2.110	2.410	0.100	3.580	0	7
382	Tezu	1.585	1.030	2.695	0.180	2.720	0	6
383	Thengudi	-	-	-	0.000	0.000	0	0
384	Thengumarahada	3.775	3.038	5.250	1.230	8.170	0	6
385	Theni	3.205	2.453	4.710	0.410	6.970	0	6
386	Therriaghat	1.314	1.710	0.720	0.530	2.040	0	5
387	Thevur	-	-	-	0.000	0.000	0	0
388	Thimmanahalli	1.260	1.260	-	0.380	2.480	0	3
389	Thoppur	2.900	-	2.900	2.900	2.900	0	1

S. No.	Water Quality Site	Arsenic (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
390	Thumpamon	3.253	3.625	2.510	1.770	5.480	0	3
391	Tikarpara	1.918	1.917	1.920	1.080	3.200	0	4
392	Tilga	1.498	1.430	1.700	0.300	2.290	0	4
393	Tonk	2.189	4.168	0.210	0.210	4.168	0	2
394	Tribeni	2.831	2.774	2.975	0.460	5.490	0	7
395	Tufanganj	5.000	6.840	3.160	3.160	6.840	0	2
396	Tuini	2.359	2.863	0.595	0.450	7.080	0	9
397	Turtipar	4.152	4.958	2.540	0.330	8.800	0	6
398	Udaipur (Chandra)	2.690	-	2.690	2.690	2.690	0	1
399	Udaipur (Tirap)	1.346	1.588	0.740	0.050	4.410	0	7
400	Udi	2.546	2.367	2.815	0.740	4.520	0	5
401	Ujjain	1.179	2.338	0.020	0.020	2.338	0	2
402	Urachikottai	2.640	1.585	4.750	0.130	4.750	0	3
403	Uttarkashi	4.820	5.720	2.570	0.020	8.880	0	7
404	Vandiperiyar	2.227	1.665	3.350	1.430	3.350	0	3
405	Vapi	2.192	2.498	1.580	0.020	8.810	0	6
406	Varanasi	3.366	3.928	1.960	1.040	6.220	0	7
407	Vautha	1.546	1.622	1.355	0.020	2.960	0	7
408	Vazhavachanur	-	-	-	0.000	0.000	0	0
409	Wadenapally	2.273	3.335	0.150	0.150	4.070	0	3
410	Wairagarh	1.573	1.920	1.225	0.320	3.220	0	4
411	Warunji	2.160	-	2.160	2.160	2.160	0	1
412	Yadgir	0.600	-	0.600	0.600	0.600	0	1
413	Yashwant nagar	1.889	2.206	0.780	0.620	3.600	0	9
414	Yennehole	1.385	0.020	2.750	0.020	2.750	0	2

CADMIUM

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
1	A B Road Xing	0.083	0.161	0.044	0.002	0.161	0	3
2	A.P. Puram	0.591	0.591	-	0.035	1.507	0	4
3	A.P.Ghat	0.121	0.097	0.157	0.030	0.230	0	5
4	Aauriya	0.263	0.243	0.313	0.101	0.525	0	7
5	Abu Road	0.195	0.077	0.548	0.004	0.548	0	4
6	Addoor	0.184	0.150	0.218	0.150	0.218	0	2
7	Adityapur	0.531	0.590	0.239	0.003	2.675	0	6
8	Agra	0.227	0.232	0.214	0.002	0.495	0	7
9	Aie NH Crossing	0.119	0.119	-	0.068	0.145	0	3
10	Akabarpur	0.173	0.188	0.137	0.064	0.290	0	7
11	Akhnoor	0.082	0.073	0.120	0.020	0.129	0	5
12	Akkihebbal	0.049	0.045	0.070	0.006	0.074	0	6
13	Aklera	0.214	0.357	0.071	0.025	0.389	0	4
14	Alladupalli	0.212	0.261	0.066	0.010	0.901	0	8
15	Allahabad	0.201	0.196	0.218	0.039	0.593	0	9
16	Alutuma	0.463	0.446	0.549	0.002	2.007	0	6
17	Ambarampalayam	0.312	0.408	0.027	0.002	1.118	0	8
18	Ambasamudram	0.529	0.529	-	0.529	0.529	0	1
19	Anandpur	0.409	0.322	0.846	0.032	0.860	0	6
20	Andhiyar Kore	0.118	0.118	-	0.038	0.257	0	3
21	Ankinghat	0.601	0.694	0.325	0.016	2.047	0	8
22	Annavasal	0.248	0.248	-	0.248	0.248	0	1
23	Arangaly	0.064	0.079	0.019	0.019	0.123	0	4
24	Arcot	0.136	-	0.136	0.136	0.136	0	1
25	Arjunwad	0.020	-	0.020	0.020	0.020	0	1
26	Ashramam	0.044	0.053	0.016	0.016	0.070	0	4
27	Ashti	0.271	0.271	0.275	0.017	0.741	0	9
28	Avershe	0.110	0.049	0.294	0.018	0.294	0	4
29	Ayilam	0.029	0.035	0.009	0.009	0.071	0	4
30	Ayodhya	0.768	0.967	0.170	0.010	4.138	1	7
31	Azmabad	0.191	0.125	0.422	0.012	0.687	0	9
32	B.P. Ghat	0.131	0.035	0.322	0.011	0.569	0	6
33	Badatighat	0.167	0.194	0.073	0.008	0.879	0	9
34	Badlapur	1.149	1.369	0.268	0.038	5.017	1	4
35	Balrampur	0.671	0.824	0.212	0.027	3.493	1	7
36	Baltara	0.200	0.074	0.641	0.019	1.186	0	9
37	Bamni (Banjar)	0.160	0.198	0.045	0.026	0.835	0	8
38	Bamni (Wardha)	0.523	0.579	0.326	0.057	1.487	0	9
39	Bamnidih	0.100	0.100	-	0.097	0.103	0	3
40	Banda	0.771	0.558	1.303	0.095	2.510	0	7
41	Bansi	1.169	1.511	0.314	0.097	3.311	1	6
42	Bantwal	0.076	0.041	0.148	0.011	0.148	0	3
43	Baranwada	0.160	0.130	0.251	0.041	0.251	0	4

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
44	Bareilly	0.407	0.500	0.128	0.090	1.749	0	8
45	Barmanghat	0.117	0.132	0.068	0.002	0.705	0	9
46	Barobisha	0.084	0.071	0.122	0.055	0.122	0	4
47	Barod	0.161	0.206	0.073	0.045	0.484	0	6
48	Baronda	0.582	0.582	-	0.582	0.582	0	1
49	Basantpur	0.319	0.319	-	0.072	0.752	0	3
50	Basti	0.516	0.663	0.077	0.051	2.609	0	8
51	Bawapuram	3.441	3.441	-	1.407	5.475	1	1
52	Behalpur	0.189	0.189	-	0.015	0.363	0	2
53	Beki Mathanguri	0.090	0.090	-	0.053	0.127	0	2
54	Beki Road Bridge	0.134	0.119	0.177	0.090	0.177	0	4
55	Belkhedi	0.200	0.237	0.072	0.002	0.825	0	9
56	Belne Bridge	0.233	-	0.233	0.233	0.233	0	1
57	Bendrahalli	0.058	0.058	-	0.058	0.058	0	1
58	Berhampore	0.150	0.178	0.053	0.002	0.427	0	9
59	Bhadrachalam	0.281	0.178	0.590	0.035	0.590	0	4
60	Bhalukpong	0.069	0.078	0.038	0.002	0.208	0	9
61	Bhatpalli	0.215	0.192	0.295	0.023	0.439	0	9
62	Bhitaura	0.559	0.669	0.230	0.154	1.713	0	8
63	Bhomoraguri	0.073	0.076	0.063	0.002	0.252	0	9
64	Bihubar	0.118	0.115	0.130	0.015	0.423	0	9
65	Biligundullu	0.104	0.122	0.015	0.009	0.321	0	6
66	Birdghat	0.689	0.883	0.109	0.051	2.834	0	8
67	Bokajan	0.071	0.067	0.086	0.012	0.223	0	9
68	Burhanpur	0.447	0.578	0.119	0.010	2.333	0	7
69	Buxar	0.145	0.162	0.085	0.002	0.644	0	9
70	Byaladahalli	0.141	0.141	-	0.066	0.215	0	2
71	Champasari	0.110	0.110	-	0.067	0.166	0	3
72	Champua	0.223	0.234	0.165	0.089	0.426	0	6
73	Chanwada	1.580	2.048	0.177	0.007	11.938	1	7
74	Chapra	0.080	0.088	0.051	0.002	0.189	0	9
75	Chel	0.088	0.088	-	0.012	0.185	0	3
76	Chengalpet	0.065	0.057	0.083	0.022	0.091	0	3
77	Chenimari	0.687	0.833	0.175	0.011	5.149	1	8
78	Chennur	0.130	0.143	0.091	0.005	0.683	0	8
79	Chepan	0.174	0.200	0.094	0.094	0.297	0	4
80	Chhidgaon	0.159	0.180	0.083	0.023	0.702	0	9
81	Chitrasani	0.201	0.201	0.203	0.008	0.875	0	7
82	Chittorgarh	0.800	0.800	-	0.800	0.800	0	1
83	Cholachguda	0.259	0.259	-	0.259	0.259	0	1
84	Chopan	0.584	0.631	0.418	0.030	3.034	1	8
85	Chouldhowaghat	0.127	0.140	0.083	0.006	0.410	0	9
86	Chuchankatte	0.524	0.015	1.032	0.015	1.032	0	2
87	Coronation	0.086	0.086	-	0.051	0.118	0	3

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
88	Dabri	0.479	0.617	0.065	0.032	1.455	0	8
89	Damarcherla	1.312	1.312	-	0.020	2.392	0	3
90	Dawki	0.113	0.064	0.187	0.030	0.286	0	5
91	Delhi Rly Bridge	1.374	1.750	0.055	0.005	7.248	2	7
92	Deoprayag	0.209	0.238	0.107	0.017	0.625	0	9
93	Derol Bridge	0.081	0.072	0.114	0.010	0.187	0	9
94	Desangpani	0.159	0.191	0.049	0.030	0.773	0	9
95	Dhamkund	0.238	0.270	0.107	0.020	0.767	0	5
96	Dharamtul	0.640	0.793	0.104	0.007	5.074	1	8
97	Dheng Bridge	0.128	0.108	0.199	0.010	0.348	0	9
98	Dholabazar	0.203	0.244	0.058	0.003	1.314	0	9
99	Dholai	0.213	0.186	0.267	0.027	0.638	0	6
100	Dholpur	0.437	0.343	0.674	0.029	1.251	0	7
101	Dhubri	0.056	0.056	-	0.049	0.062	0	2
102	Dhulsar	0.044	0.002	0.086	0.002	0.086	0	2
103	Diana	0.044	0.044	-	0.044	0.044	0	1
104	Dibrugarh	0.143	0.157	0.093	0.005	0.846	0	9
105	Dillighat	0.148	0.085	0.368	0.020	0.629	0	9
106	Dimapara	0.087	0.065	0.121	0.003	0.170	0	5
107	Dindori	0.217	0.265	0.052	0.016	1.201	0	9
108	Domohani	0.112	0.118	0.094	0.062	0.221	0	4
109	Duddhi	0.122	0.115	0.147	0.021	0.289	0	9
110	Dudhnai	0.145	0.169	0.060	0.013	0.645	0	9
111	Durvesh	4.986	6.948	0.082	0.011	33.809	1	6
112	Ekmighat	0.181	0.189	0.153	0.003	0.504	0	9
113	Elginbridge	0.733	0.936	0.124	0.015	4.558	1	7
114	Elunuthimanagalam	5.920	5.920	-	0.397	15.946	1	2
115	English Bazar	0.120	0.137	0.059	0.008	0.549	0	9
116	Erinjipuzha	0.037	0.042	0.021	0.005	0.072	0	4
117	Etawah	0.353	0.461	0.084	0.079	0.926	0	7
118	Fakirabazar	0.075	0.043	0.124	0.028	0.175	0	5
119	Farakka	0.208	0.248	0.067	0.014	0.723	0	9
120	Farakka/(HR)	0.182	0.226	0.050	0.004	0.794	0	8
121	Fatehgarh	0.575	0.721	0.139	0.016	2.222	0	8
122	Fulertal	0.605	1.148	0.062	0.036	1.458	0	4
123	Gadarwara	0.135	0.163	0.050	0.008	0.726	0	8
124	Gadat	0.158	0.200	0.052	0.002	0.663	0	7
125	Gajaldoba	0.155	0.155	-	0.034	0.307	0	3
126	Galeta	1.147	1.450	0.084	0.023	4.959	2	7
127	Ganod	0.128	0.120	0.175	0.023	0.207	0	7
128	Garhamukteshwar	0.544	0.601	0.374	0.021	2.415	0	8
129	Garrauli	0.197	0.243	0.128	0.038	0.487	0	5
130	Garudeshwar	0.159	0.176	0.106	0.004	0.635	0	8
131	Gaya	0.162	0.177	0.147	0.124	0.229	0	4

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
132	Gelabil	0.072	0.053	0.090	0.010	0.116	0	4
133	Ghat	0.495	0.614	0.141	0.094	2.533	0	8
134	Ghatora	0.083	0.083	-	0.062	0.099	0	3
135	Ghatsila	0.314	0.365	0.061	0.009	1.017	0	6
136	Ghish	0.081	0.081	-	0.031	0.167	0	3
137	Ghugumari	0.098	0.083	0.143	0.049	0.143	0	4
138	Gokak	0.653	1.294	0.011	0.011	1.294	0	2
139	Golagang	0.102	0.102	-	0.084	0.119	0	2
140	Golaghat	0.246	0.287	0.104	0.003	0.913	0	9
141	Gomlai	0.299	0.234	0.626	0.006	0.688	0	6
142	Gopalkheda	0.134	0.200	0.067	0.038	0.236	0	4
143	Govindapur	0.251	0.153	0.736	0.010	0.736	0	6
144	Gummanur	0.185	0.234	0.038	0.015	1.157	0	8
145	Gumrabazar	0.208	0.239	0.146	0.035	0.510	0	6
146	Gunupur	0.137	0.083	0.404	0.015	0.404	0	6
147	Haladi	0.160	0.051	0.703	0.002	0.703	0	6
148	Halia	1.164	1.164	-	0.030	2.130	0	3
149	Hamirpur	0.494	0.659	0.084	0.035	2.534	0	7
150	Handia	0.142	0.167	0.053	0.015	0.659	0	9
151	Hanskhali	0.115	0.133	0.055	0.004	0.317	0	9
152	Haridwar	0.041	0.037	0.053	0.013	0.102	0	8
153	Harlahalli	0.143	0.099	0.274	0.074	0.274	0	4
154	Hasimara	0.137	0.116	0.198	0.060	0.198	0	4
155	Hathidah	0.105	0.116	0.066	0.004	0.480	0	9
156	Hayaghat	0.265	0.223	0.411	0.002	1.147	0	9
157	Hivra	0.251	0.248	0.262	0.021	0.482	0	9
158	Holehonnur	0.109	0.043	0.439	0.010	0.439	0	6
159	Honnali	0.150	0.109	0.354	0.003	0.457	0	6
160	Hoshangabad	0.156	0.184	0.058	0.009	0.629	0	9
161	Huvin Hedgi	1.066	1.330	0.272	0.010	2.708	0	4
162	Jagdalpur	0.257	0.039	0.475	0.039	0.475	0	2
163	Jagibhakatgaon	0.101	0.090	0.140	0.003	0.248	0	9
164	Jai Nagar	0.163	0.141	0.242	0.009	0.589	0	9
165	Jaldhaka NH-31	0.223	0.248	0.146	0.065	0.612	0	4
166	Jammu Tawi	0.088	0.060	0.200	0.001	0.200	0	5
167	Jamshedpur	0.534	0.419	1.107	0.004	1.533	0	6
168	Jamsolghat	0.248	0.313	0.119	0.119	0.404	0	3
169	Japla	0.418	0.442	0.335	0.012	1.440	0	9
170	Jaraikela	0.373	0.437	0.051	0.002	1.536	0	6
171	Jenapur	0.415	0.380	0.592	0.026	0.658	0	6
172	Jhanjharpur	0.085	0.069	0.142	0.010	0.176	0	9
173	Jiabharali NT Road Xing	0.287	0.093	0.966	0.010	1.846	0	9
174	Jondhra	0.008	0.008	-	0.008	0.008	0	1
175	K.M. Vadi	0.295	0.252	0.380	0.079	0.425	0	3

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
176	Kachlabridge	0.492	0.584	0.216	0.089	2.304	0	8
177	Kalampur	0.059	0.077	0.007	0.007	0.112	0	4
178	Kalanaur	0.239	0.276	0.112	0.020	1.126	0	9
179	Kallooppara	0.033	0.039	0.014	0.014	0.074	0	4
180	Kalna (EBB)	0.083	0.096	0.056	0.022	0.200	0	6
181	Kalna (Flow)*	0.073	0.073	-	0.003	0.188	0	3
182	Kamalapuram	0.103	-	0.103	0.083	0.123	0	2
183	Kamalpur	0.133	0.037	0.325	0.012	0.325	0	3
184	Kampur	0.713	0.899	0.060	0.006	5.086	1	8
185	Kanpur	0.515	0.637	0.151	0.102	1.901	0	8
186	Kantamal	0.213	0.213		0.067	0.457	0	3
187	Karad	0.219		0.219	0.219	0.219	0	1
188	Karathodu	0.051	0.057	0.032	0.029	0.078	0	4
189	Kashinagar	0.113	0.112	0.117	0.044	0.143	0	6
190	Katwa	0.098	0.111	0.053	0.014	0.233	0	9
191	Keesara	1.609	2.904	0.314	0.314	2.904	0	2
192	Kellodu	0.059	0.059	-	0.059	0.059	0	1
193	Keolari	0.217	0.240	0.140	0.049	0.541	0	9
194	Kesinga	0.355	0.355	-	0.035	0.972	0	3
195	Khanitar	0.104	0.104	-	0.025	0.183	0	2
196	Khanpur	0.200	0.213	0.154	0.006	1.047	0	9
197	Kharkhana	0.147	0.208	0.055	0.010	0.389	0	5
198	Khatoli	0.143	0.190	0.028	0.026	0.544	0	7
199	Kheronighat	0.164	0.169	0.145	0.007	0.633	0	9
200	Kidangoor	0.017	0.016	0.020	0.013	0.021	0	4
201	Kodumudi	0.227	0.259	0.064	0.011	1.108	0	6
202	Koelwar	0.552	0.474	0.825	0.026	2.522	0	9
203	Kogaon	0.053	0.060	0.047	0.013	0.102	0	4
204	Kokrajhar	0.142	0.105	0.252	0.058	0.252	0	4
205	Kollegal	0.426	0.032	1.609	0.012	1.609	0	4
206	Konta	0.189	0.041	0.634	0.015	0.634	0	4
207	Koperagaon	0.526	-	0.526	0.526	0.526	0	1
208	Kora	0.277	0.305	0.206	0.053	0.877	0	7
209	Koteshwar	0.097	0.070	0.164	0.015	0.241	0	7
210	Kudalaiyathur	0.055	0.055	-	0.055	0.055	0	1
211	Kudige	0.060	0.030	0.212	0.008	0.212	0	6
212	Kudlur	0.024	0.032	0.010	0.010	0.053	0	3
213	Kuldah Bridge	0.182	0.122	0.362	0.006	0.605	0	8
214	Kulsi	0.158	0.188	0.053	0.010	0.321	0	9
215	Kumbidi	0.053	0.066	0.012	0.012	0.096	0	4
216	Kumhari	0.168	0.097	0.416	0.028	0.549	0	9
217	Kuniyil	0.057	0.064	0.036	0.002	0.116	0	4
218	Kuppelur	0.081	0.081	-	0.081	0.081	0	1
219	Kurubhata	0.066	0.066	-	0.023	0.136	0	3

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
220	Kurundwad	0.176	-	0.176	0.176	0.176	0	1
221	Kuttyadi	0.052	0.065	0.012	0.012	0.111	0	4
222	Kuzhithurai	0.055	0.064	0.028	0.026	0.101	0	4
223	Labha	0.202	0.224	0.122	0.017	0.750	0	9
224	Lakhisarai	0.121	0.136	0.075	0.002	0.525	0	8
225	Lalganj	0.257	0.229	0.353	0.009	0.806	0	9
226	Lowara	7.246	9.065	0.878	0.019	28.047	3	6
227	Lucknow	0.485	0.582	0.191	0.037	1.414	0	8
228	M.H. Halli	0.038	0.038	-	0.009	0.053	0	3
229	Madhira	1.419	1.419	-	1.172	1.666	0	2
230	Madla	0.166	0.123	0.274	0.061	0.462	0	7
231	Mahidpur	0.154	0.397	0.033	0.010	0.397	0	3
232	Mahuwa	0.533	0.725	0.053	0.013	2.941	0	7
233	Maighat	0.210	0.234	0.125	0.063	0.547	0	9
234	Majhitar	0.028	0.028		0.028	0.028	0	1
235	Malakkara	0.028	0.033	0.010	0.010	0.037	0	4
236	Malkhed	0.610	0.566	0.654	0.566	0.654	0	2
237	Manas NH Crossing	0.155	0.088	0.290	0.068	0.290	0	3
238	Mancherial	0.662	0.393	1.471	0.030	1.471	0	4
239	Mandleshwar	0.116	0.132	0.062	0.002	0.666	0	9
240	Manendragarh	0.084	0.084	-	0.063	0.105	0	2
241	Mangaon (Seasonal)	0.134	-	0.134	0.134	0.134	0	1
242	Mankara	0.063	0.069	0.044	0.021	0.147	0	4
243	Manot	0.210	0.243	0.094	0.033	0.901	0	9
244	Mantralayam	2.215	2.215	-	0.096	5.170	1	2
245	Marella	1.242	1.242	-	0.025	2.464	0	3
246	Margherita	0.316	0.370	0.128	0.012	1.461	0	9
247	Marol	0.030	0.047	0.012	0.012	0.047	0	2
248	Mataji	0.187	0.180	0.211	0.012	0.522	0	9
249	Mathabhanga	0.642	0.908	0.112	0.077	1.738	0	3
250	Mathanguri	0.051	0.051	-	0.051	0.051	0	1
251	Mathura	1.495	1.905	0.058	0.004	9.166	2	7
252	Matigara	0.142	0.142	-	0.103	0.176	0	3
253	Matijuri	0.108	0.038	0.178	0.023	0.329	0	4
254	Matunga	0.235	0.279	0.080	0.008	1.575	0	9
255	Mawi	0.129	0.138	0.098	0.033	0.287	0	9
256	Meja Road	0.323	0.159	0.814	0.020	1.520	0	8
257	Mekhliganj	0.150	0.148	0.157	0.070	0.257	0	4
258	Miao	0.147	0.089	0.349	0.010	0.573	0	9
259	Mirzapur	0.628	0.748	0.209	0.078	3.650	1	8
260	Mohana (Betwa)	0.192	0.172	0.231	0.030	0.368	0	6
261	Mohana (Yamuna)	1.362	1.746	0.015	0.006	6.159	2	7
262	Mohgaoan	0.179	0.211	0.065	0.003	0.910	0	9
263	Moradabad	0.456	0.532	0.227	0.125	1.726	0	8

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
264	Motinaroli	0.349	0.447	0.054	0.012	1.732	0	8
265	Murappanadu	0.231	0.270	0.038	0.023	1.209	0	6
266	Muri	0.304	0.237	0.635	0.018	0.635	0	6
267	Murti	0.087	0.087	-	0.065	0.115	0	3
268	Musiri	0.334	0.334	-	0.011	1.287	0	5
269	Muthankera	0.063	0.077	0.023	0.019	0.113	0	4
270	Nagrakata	0.139	0.139	-	0.090	0.223	0	3
271	Naharkatia	0.127	0.067	0.337	0.008	0.569	0	9
272	Naidupet	2.235	2.235		2.235	2.235	0	1
273	Nallammaranpatty	0.381	0.563	0.017	0.017	0.890	0	3
274	Nallathur	0.465	0.465	-	0.009	1.367	0	3
275	Namsai	0.067	0.067	0.067	0.003	0.210	0	9
276	Nandgaon	0.429	0.424	0.442	0.127	0.947	0	7
277	Nandipalli	0.149	0.241	0.058	0.026	0.407	0	4
278	Nanglamoraghat	0.141	0.145	0.125	0.009	0.556	0	9
279	Neamatighat	0.054	0.059	0.036	0.006	0.159	0	9
280	Neeleswaram	0.069	0.091	0.003	0.003	0.172	0	4
281	Neemsar	0.531	0.450	0.734	0.068	1.378	0	7
282	Nellithurai	0.260	0.260	-	0.006	0.994	0	4
283	Nellore	0.144	0.144	-	0.007	0.280	0	2
284	Neora	0.133	0.133	-	0.076	0.200	0	3
285	Nowrangpur	0.124	0.146	0.058	0.020	0.393	0	4
286	Numaligarh	0.125	0.133	0.094	0.010	0.505	0	9
287	P.G.Bridge	0.299	0.358	0.119	0.093	1.199	0	8
288	Pachauli	0.181	0.187	0.174	0.174	0.187	0	2
289	Pachegaon	0.613	-	0.613	0.613	0.613	0	1
290	Paderdibadi	0.147	0.135	0.190	0.020	0.312	0	9
291	Pagladiya N.T.Road Crossing	0.360	0.387	0.265	0.013	1.253	0	9
292	Paleru Bridge	0.711	0.901	0.140	0.032	1.768	0	4
293	Paliakalan	0.656	0.770	0.314	0.018	3.708	1	7
294	Palla	0.344	0.423	0.066	0.010	2.154	0	9
295	Panbari	0.082	0.082	-	0.010	0.153	0	2
296	Pancharatna	0.331	0.404	0.076	0.008	1.314	0	9
297	Pandu	0.129	0.134	0.109	0.004	0.528	0	9
298	Panposh	0.303	0.342	0.112	0.016	0.533	0	6
299	Passighat	0.084	0.084	-	0.009	0.289	0	5
300	Patan	0.144	0.173	0.041	0.006	0.864	0	9
301	Pathagudem	0.074	0.022	0.228	0.003	0.228	0	4
302	Pathardhi	0.663	0.663	-	0.663	0.663	0	1
303	Pati	0.055	0.042	0.106	0.005	0.106	0	5
304	Patna	0.110	0.123	0.066	0.002	0.334	0	9
305	Pattazhy	0.144	0.180	0.034	0.026	0.476	0	4
306	Pauni	0.131	0.107	0.215	0.003	0.268	0	9
307	Peralam	0.332	0.332	-	0.332	0.332	0	1

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
308	Perumannu	0.043	0.055	0.008	0.008	0.058	0	4
309	Perur	0.043	0.015	0.128	0.009	0.128	0	4
310	Phulgaon (Seasonal)	0.147		0.147	0.147	0.147	0	1
311	Pingalwada	0.397	0.472	0.172	0.009	2.311	0	8
312	Polavaram	0.389	0.022	1.489	0.009	1.489	0	4
313	Pratapgarh	0.344	0.176	0.850	0.030	1.470	0	8
314	Pratapur	0.313	0.402	0.091	0.086	0.826	0	7
315	Prem Nagar	0.098	0.094	0.116	0.044	0.223	0	5
316	Pudur	0.059	0.077	0.006	0.006	0.185	0	4
317	Pulamanthole	0.016	0.020	0.004	0.004	0.036	0	4
318	Purna	0.040	0.040	-	0.040	0.040	0	1
319	Purushottampur	0.115	0.126	0.060	0.023	0.203	0	6
320	Puthimari D.R.F.	0.493	0.557	0.271	0.022	2.980	0	9
321	Puthimari NH Road cross-ing	0.141	0.174	0.045	0.005	0.300	0	8
322	Raibareli	0.394	0.466	0.214	0.062	1.247	0	7
323	Rajapur	0.423	0.198	0.875	0.052	1.687	0	6
324	Rajegaon	0.216	0.171	0.349	0.050	0.427	0	8
325	Rajghat	0.156	0.195	0.078	0.046	0.332	0	6
326	Rajim	0.101	0.101	-	0.101	0.101	0	1
327	Ram Munshi Bagh	0.071	0.061	0.099	0.029	0.117	0	4
328	Ramakona	0.125	0.124	0.128	0.022	0.241	0	8
329	Ramamangalam	0.160	0.205	0.024	0.024	0.551	0	4
330	Rampur	0.125	0.125	-	0.075	0.192	0	3
331	Ranganadi NT-Road Xing	0.058	0.046	0.100	0.003	0.189	0	9
332	Rangeli	0.167	0.115	0.350	0.006	0.590	0	9
333	Rangpo	0.196	0.196	-	0.041	0.433	0	3
334	Regauli	0.707	0.806	0.409	0.009	3.130	1	7
335	Rishikesh	0.132	0.143	0.092	0.007	0.386	0	9
336	Rudraprayag	0.051	0.049	0.056	0.002	0.124	0	8
337	Safapora	0.150	0.153	0.139	0.024	0.412	0	5
338	Sakleshpur	0.050	0.041	0.093	0.008	0.093	0	6
339	Sakmur	0.199	0.204	0.183	0.017	0.533	0	9
340	Salebhata	0.105	0.105	-	0.034	0.203	0	3
341	Samdoli	0.023	-	0.023	0.023	0.023	0	1
342	Sandia	0.208	0.253	0.050	0.012	0.721	0	9
343	Sangam	0.195	0.181	0.248	0.018	0.592	0	9
344	Sangod	0.193	0.387	0.096	0.019	0.387	0	3
345	Sankalan	0.111	0.111	-	0.014	0.193	0	3
346	Sankosh LRP	0.105	0.095	0.135	0.030	0.208	0	4
347	Santeguli	0.077	0.074	0.091	0.015	0.184	0	6
348	Sarangkheda	0.216	0.261	0.104	0.007	1.018	0	7
349	Satrapur	0.279	0.231	0.449	0.011	0.720	0	9
350	Savandapur	0.173	0.224	0.019	0.008	1.005	0	8
351	Seondha	0.227	0.255	0.087	0.033	0.633	0	6

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
352	Seppa	0.745	0.911	0.165	0.003	5.158	1	8
353	Sevanur	0.164	0.164	-	0.164	0.164	0	1
354	Sevoke	0.067	0.067	-	0.011	0.113	0	3
355	Shahijina	0.257	0.320	0.098	0.027	0.910	0	7
356	Shahzadpur	0.676	0.862	0.118	0.022	3.936	1	7
357	Shimoga	0.074	0.043	0.231	0.018	0.231	0	6
358	Sibbari	0.801	1.090	0.368	0.003	3.253	1	4
359	Sikandarpur	0.193	0.114	0.471	0.016	0.776	0	9
360	Simga	0.164	0.164	-	0.035	0.367	0	3
361	Singla-Bazar	0.109	0.109	-	0.050	0.181	0	3
362	Sivasagar	0.499	0.615	0.096	0.006	3.490	1	8
363	Sonapur	0.196	0.208	0.128	0.008	0.659	0	7
364	Srikakulam	0.180	0.204	0.057	0.057	0.536	0	6
365	Srinagar	0.138	0.180	0.009	0.009	0.356	0	4
366	Sripalpur	0.099	0.095	0.113	0.008	0.208	0	9
367	Suklai	0.333	0.358	0.249	0.008	2.075	0	9
368	Sultanpur	0.209	0.208	0.214	0.080	0.331	0	8
369	Sulurpet	0.013	0.013	-	0.013	0.013	0	1
370	Sundergarh	0.092	0.092	-	0.044	0.148	0	3
371	T. Bekuppe	0.885	0.985	0.386	0.004	3.977	1	5
372	T. Narasipur	0.065	0.024	0.147	0.008	0.147	0	3
373	T. Ramapuram	5.059	5.059	-	2.229	7.888	1	1
374	T.K.Halli	0.110	0.110	-	0.031	0.219	0	3
375	Tal	0.160	0.399	0.041	0.002	0.399	0	3
376	Talcher	0.284	0.328	0.065	0.065	0.476	0	6
377	Tandi	0.118	-	0.118	0.118	0.118	0	1
378	Teesta-Bazar	0.094	0.084	0.135	0.039	0.141	0	5
379	Tehri	0.186	0.186	-	0.100	0.272	0	2
380	Tekra	0.233	0.158	0.494	0.039	0.798	0	9
381	Tezpur	0.149	0.176	0.053	0.002	0.759	0	9
382	Tezu	0.152	0.151	0.156	0.005	0.727	0	8
383	Thengudi	0.433	0.433	-	0.024	0.841	0	2
384	Thengumarahada	0.165	0.216	0.013	0.006	1.101	0	8
385	Theni	0.206	0.267	0.024	0.018	1.280	0	8
386	Therriaghat	0.208	0.317	0.045	0.003	0.611	0	5
387	Thevur	0.807	0.807	-	0.807	0.807	0	1
388	Thimmanahalli	0.162	0.162	-	0.017	0.674	0	5
389	Thoppur	0.081	-	0.081	0.081	0.081	0	1
390	Thumpamon	0.107	0.063	0.239	0.041	0.239	0	4
391	Tikarpara	0.280	0.169	0.836	0.015	0.836	0	6
392	Tilga	0.254	0.165	0.694	0.035	0.694	0	6
393	Tonk	0.088	0.163	0.012	0.012	0.163	0	2
394	Tribeni	0.081	0.065	0.140	0.015	0.176	0	9
395	Tufanganj	0.078	0.058	0.137	0.030	0.137	0	4

S. No.	Water Quality Site	Cadmium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 3 µg/L	Below 3 µg/L
396	Tuini	0.132	0.147	0.076	0.016	0.218	0	9
397	Turtipar	0.258	0.294	0.149	0.023	0.853	0	8
398	Udaipur (Chandra)	0.156	-	0.156	0.156	0.156	0	1
399	Udaipur (Tirap)	0.452	0.554	0.095	0.010	3.428	1	8
400	Udi	0.293	0.269	0.354	0.086	0.612	0	7
401	Ujjain	0.085	0.153	0.017	0.017	0.153	0	2
402	Urachikottai	0.375	0.463	0.021	0.021	1.047	0	5
403	Uttarkashi	0.127	0.150	0.048	0.004	0.613	0	9
404	Vandiperiyar	0.058	0.069	0.024	0.024	0.094	0	4
405	Vapi	0.125	0.144	0.067	0.002	0.551	0	8
406	Varanasi	0.245	0.242	0.256	0.068	0.491	0	9
407	Vautha	9.494	12.094	0.397	0.144	70.518	2	7
408	Vazhavachanur	2.570	2.570	-	1.314	3.826	1	1
409	Wadenapally	0.669	0.779	0.339	0.016	1.774	0	4
410	Wairagarh	0.107	0.042	0.235	0.021	0.353	0	6
411	Warunji	0.013	-	0.013	0.013	0.013	0	1
412	Yadgir	1.094	-	1.094	1.094	1.094	0	1
413	Yashwant nagar	0.194	0.235	0.052	0.019	0.429	0	9
414	Yennehole	0.110	0.063	0.250	0.016	0.250	0	4

CHROMIUM

S. No.	Water Quality Site	Chromium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
1	A B Road Xing	2.892	0.575	4.050	0.380	7.720	0	3
2	A.P. Puram	5.130	5.130	-	1.030	14.330	0	4
3	A.P.Ghat	0.702	0.320	1.275	0.020	1.580	0	5
4	Aauriya	8.549	6.106	14.655	2.160	21.350	0	7
5	Abu Road	5.578	6.470	2.900	1.270	14.460	0	4
6	Addoor	21.705	22.150	21.260	21.260	22.150	0	2
7	Adityapur	2.540	1.330	8.590	0.530	8.590	0	6
8	Agra	10.433	10.780	9.565	1.410	36.370	0	7
9	Aie NH Crossing	4.007	4.007	-	0.320	8.610	0	3
10	Akabarpur	3.544	1.760	8.005	0.200	8.620	0	7
11	Akhnoor	7.433	8.558	1.810	0.540	35.540	0	6
12	Akkihebbal	2.773	1.468	10.600	0.210	10.600	0	7
13	Aklera	4.566	8.343	0.790	0.345	16.340	0	4
14	Alladupalli	6.066	4.285	11.410	0.060	22.200	0	8
15	Allahabad	5.382	4.766	7.540	0.210	14.940	0	9
16	Alutuma	3.470	2.044	10.600	0.350	10.600	0	6
17	Ambarampalayam	4.814	5.943	1.425	0.570	27.400	0	8
18	Ambasamudram	1.240	1.240	-	1.240	1.240	0	1
19	Anandpur	6.073	5.828	7.300	0.210	15.350	0	6
20	Andhiyar Kore	28.547	28.547	-	4.990	61.260	1	2
21	Ankinghat	5.230	6.625	1.045	0.510	22.480	0	8
22	Annavasal	8.180	8.180	-	8.180	8.180	0	1
23	Arangaly	1.844	1.470	3.340	0.480	3.580	0	5
24	Arcot	10.140	-	10.140	10.140	10.140	0	1
25	Arjunwad	8.200	-	8.200	8.200	8.200	0	1
26	Ashramam	1.926	1.243	4.660	0.870	4.660	0	5
27	Ashti	3.002	2.064	6.285	0.560	9.550	0	9
28	Avershe	4.418	2.333	10.670	0.280	10.670	0	4
29	Ayilam	3.722	3.998	2.620	0.280	14.870	0	5
30	Ayodhya	16.073	13.438	23.975	0.260	46.910	0	8
31	Azmabad	2.716	2.993	1.745	0.400	8.330	0	9
32	B.P. Ghat	0.878	0.915	0.805	0.040	2.790	0	6
33	Badatighat	1.528	1.193	2.700	0.280	4.330	0	9
34	Badlapur	11.462	4.200	40.510	0.150	40.510	0	5
35	Balrampur	46.474	43.653	54.935	0.850	141.110	3	5
36	Baltara	3.517	3.029	5.225	0.550	10.750	0	9
37	Bamni (Banjar)	2.554	2.473	2.795	0.170	6.310	0	8
38	Bamni (Wardha)	3.498	2.097	8.400	0.530	10.880	0	9
39	Bamnidih	7.053	7.053	-	1.480	11.670	0	3
40	Banda	2.180	1.770	3.205	0.740	5.590	0	7
41	Bansi	92.894	125.672	10.950	0.560	224.330	3	4
42	Bantwal	4.587	0.370	13.020	0.290	13.020	0	3
43	Baranwada	0.710	0.527	1.260	0.255	1.260	0	4

S. No.	Water Quality Site	Chromium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
44	Bareilly	4.764	5.798	1.660	0.040	13.110	0	8
45	Barmanghat	2.347	1.966	3.680	0.200	5.880	0	9
46	Barobisha	2.995	3.857	0.410	0.410	8.540	0	4
47	Barod	0.965	1.088	0.720	0.310	2.090	0	6
48	Baronda	3.900	3.900	-	3.900	3.900	0	1
49	Basantpur	10.963	10.963	-	0.350	31.620	0	3
50	Basti	8.349	10.563	1.705	0.730	43.010	0	8
51	Bawapuram	2.420	2.420	-	0.910	3.930	0	2
52	Behalpur	8.615	8.615	-	0.910	16.320	0	2
53	Beki Mathanguri	3.375	3.375	-	0.820	5.930	0	2
54	Beki Road Bridge	2.910	3.773	0.320	0.320	9.300	0	4
55	Belkhedi	3.688	4.039	2.460	0.400	7.810	0	9
56	Belne Bridge	66.190	-	66.190	66.190	66.190	1	0
57	Bendrahalli	2.030	2.030	-	2.030	2.030	0	1
58	Berhampore	2.150	1.416	4.720	0.090	7.140	0	9
59	Bhadrachalam	4.760	5.818	0.530	0.260	21.510	0	5
60	Bhalukpong	6.213	0.837	25.030	0.070	47.580	0	9
61	Bhatpalli	3.898	2.487	8.835	1.240	9.930	0	9
62	Bhitaura	23.716	31.107	1.545	0.470	164.250	1	7
63	Bhomoraguri	6.756	2.546	21.490	0.700	40.970	0	9
64	Bihubar	15.403	14.271	19.365	0.610	90.830	1	8
65	Biligundullu	3.136	1.730	11.570	0.350	11.570	0	7
66	Birdghat	54.626	54.307	55.585	1.370	229.730	3	5
67	Bokajan	5.528	2.017	17.815	0.040	25.870	0	9
68	Burhanpur	6.439	6.516	6.245	1.710	11.950	0	7
69	Buxar	8.627	10.869	0.780	0.540	45.990	0	9
70	Byaladahalli	0.120	0.120	-	0.010	0.230	0	2
71	Champasari	5.153	5.153	-	0.500	13.790	0	3
72	Champua	4.762	3.884	9.150	0.430	14.140	0	6
73	Chanwada	5.509	4.613	8.195	0.290	15.930	0	8
74	Chapra	6.454	6.734	5.475	0.050	25.260	0	9
75	Chel	4.017	4.017	-	0.380	9.240	0	3
76	Chengalpet	1.337	1.520	0.970	0.970	1.580	0	3
77	Chenimari	2.100	1.841	3.005	0.300	5.710	0	9
78	Chennur	5.564	3.105	12.940	0.180	20.240	0	8
79	Chepan	3.940	4.827	1.280	0.170	11.900	0	4
80	Chhidgaon	4.683	4.153	6.540	0.280	18.600	0	9
81	Chitrasani	3.527	4.598	0.850	0.410	9.560	0	7
82	Chittorgarh	2.205	2.205	-	2.205	2.205	0	1
83	Cholachguda	35.310	35.310	-	35.310	35.310	0	1
84	Chopan	4.707	3.401	9.275	0.830	16.650	0	9
85	Chouldhowaghat	5.920	0.999	23.145	0.400	42.370	0	9
86	Chuchankatte	6.975	0.270	13.680	0.270	13.680	0	2
87	Coronation	6.307	6.307	-	0.280	16.540	0	3

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88	Dabri	3.595	4.250	1.630	0.800	7.560	0	8
89	Damarcherla	1.660	1.660	-	0.150	3.850	0	3
90	Dawki	0.650	0.690	0.590	0.030	1.090	0	5
91	Delhi Rly Bridge	2.214	2.040	2.825	0.145	6.075	0	9
92	Deoprayag	5.982	4.633	10.705	0.100	20.490	0	9
93	Derol Bridge	5.584	6.763	1.460	0.050	19.500	0	9
94	Desangpani	8.790	1.389	34.695	0.480	65.590	1	8
95	Dhamkund	1.310	1.366	1.030	0.390	3.680	0	6
96	Dharamtul	3.488	3.334	4.025	0.110	13.240	0	9
97	Dheng Bridge	1.703	1.903	1.005	0.020	5.490	0	9
98	Dholabazar	1.044	1.099	0.855	0.450	1.710	0	9
99	Dholai	1.083	0.853	1.545	0.200	1.790	0	6
100	Dholpur	4.786	4.580	5.300	0.680	12.290	0	7
101	Dhubri	10.975	10.975	--	1.850	20.100	0	2
102	Dhulsar	17.765	2.320	33.210	2.320	33.210	0	2
103	Diana	2.600	2.600	-	2.600	2.600	0	1
104	Dibrugarh	2.806	3.060	1.915	0.070	15.090	0	9
105	Dillighat	3.044	1.331	9.040	0.730	13.700	0	9
106	Dimapara	2.884	4.303	0.755	0.040	9.130	0	5
107	Dindori	3.781	4.110	2.630	0.480	9.170	0	9
108	Domohani	15.353	17.100	10.110	0.070	36.240	0	4
109	Duddhi	4.628	2.816	10.970	0.490	18.960	0	9
110	Dudhnai	4.054	4.389	2.885	0.900	15.730	0	9
111	Durvesh	8.294	6.258	13.385	0.690	24.650	0	7
112	Ekmighat	1.189	1.510	0.065	0.040	3.600	0	9
113	Elginbridge	55.605	43.352	92.365	0.720	183.010	2	6
114	Elunuthimanagalam	3.063	3.063	-	2.310	4.050	0	3
115	English Bazar	5.894	6.759	2.870	0.280	42.020	0	9
116	Erinjipuzha	2.188	2.148	2.350	0.510	4.870	0	5
117	Etawah	9.039	5.228	18.565	0.630	19.110	0	7
118	Fakirabazar	4.722	0.523	11.020	0.100	21.800	0	5
119	Farakka	2.981	2.929	3.165	0.450	5.730	0	9
120	Farakka/(HR)	4.236	4.997	1.955	0.270	18.130	0	8
121	Fatehgarh	25.094	32.258	3.600	0.430	175.240	1	7
122	Fulertal	2.773	1.915	3.630	1.680	4.340	0	4
123	Gadarwara	2.105	1.958	2.545	0.190	4.370	0	8
124	Gadat	6.397	5.210	9.365	0.580	16.730	0	7
125	Gajaldoba	7.100	7.100	-	0.090	13.840	0	3
126	Galeta	2.451	1.906	4.360	0.015	5.390	0	9
127	Ganod	6.103	5.165	11.730	1.420	13.360	0	7
128	Garhamukteshwar	8.793	11.129	1.785	0.200	44.480	0	8
129	Garrauli	2.884	2.237	3.855	0.730	6.980	0	5
130	Garudeshwar	8.639	7.085	13.300	0.540	25.020	0	8
131	Gaya	2.088	1.400	2.775	1.300	3.740	0	4

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132	Gelabil	13.983	2.665	25.300	0.660	32.210	0	4
133	Ghat	40.300	50.845	8.665	0.490	193.260	2	6
134	Ghatora	9.077	9.077	-	2.130	17.870	0	3
135	Ghatsila	3.342	1.690	11.600	0.560	11.600	0	6
136	Ghish	4.640	4.640	-	0.740	10.320	0	3
137	Ghugumari	4.620	6.023	0.410	0.370	15.490	0	4
138	Gokak	15.570	7.430	23.710	7.430	23.710	0	2
139	Golagang	5.355	5.355	-	0.540	10.170	0	2
140	Golaghat	2.932	2.743	3.595	0.320	7.550	0	9
141	Gomlai	3.108	1.636	10.470	0.130	10.470	0	6
142	Gopalkheda	16.713	13.110	20.315	3.820	36.810	0	4
143	Govindapur	5.190	4.602	8.130	0.510	18.940	0	6
144	Gummanur	7.534	9.473	1.715	0.590	49.910	0	8
145	Gumrabazar	4.373	0.840	11.440	0.310	21.800	0	6
146	Gunupur	4.893	3.984	9.440	0.570	11.540	0	6
147	Haladi	4.017	2.620	12.400	0.020	12.400	0	7
148	Halia	1.273	1.273	-	0.220	3.510	0	4
149	Hamirpur	7.179	3.568	16.205	0.770	16.950	0	7
150	Handia	4.954	1.771	16.095	0.380	26.660	0	9
151	Hanskhali	18.722	22.914	4.050	0.180	147.770	1	8
152	Haridwar	4.019	1.868	10.470	0.180	18.240	0	8
153	Harlahalli	8.185	3.777	21.410	0.450	21.410	0	4
154	Hasimara	4.760	5.833	1.540	0.880	14.070	0	4
155	Hathidah	5.147	3.313	11.565	0.290	22.840	0	9
156	Hayaghat	1.500	1.854	0.260	0.040	4.900	0	9
157	Hivra	4.382	2.707	10.245	0.550	11.390	0	9
158	Holehonnur	7.030	0.638	45.380	0.030	45.380	0	7
159	Honnali	2.657	1.242	11.150	0.150	11.150	0	7
160	Hoshangabad	3.554	2.746	6.385	0.140	12.440	0	9
161	Huvin Hedgi	0.950	0.940	0.980	0.100	2.620	0	4
162	Jagdalpur	1.515	2.490	0.540	0.540	2.490	0	2
163	Jagibhakatgaon	2.522	1.356	6.605	0.040	11.350	0	9
164	Jai Nagar	1.450	1.764	0.350	0.070	6.710	0	9
165	Jaldhaka NH-31	5.673	5.293	6.810	0.850	11.710	0	4
166	Jammu Tawi	0.705	0.776	0.350	0.090	2.060	0	6
167	Jamshedpur	2.477	1.436	7.680	0.400	7.680	0	6
168	Jamsolghat	3.713	1.550	8.040	0.530	8.040	0	3
169	Japla	1.799	1.237	3.765	0.320	3.790	0	9
170	Jaraikela	3.273	2.220	8.540	0.720	8.540	0	6
171	Jenapur	9.098	9.234	8.420	0.100	36.960	0	6
172	Jhanjharpur	1.851	2.221	0.555	0.090	5.780	0	9
173	Jiabharali NT Road Xing	17.578	6.407	56.675	0.030	111.430	1	8
174	Jondhra	5.810	5.810	-	5.810	5.810	0	1
175	K.M. Vadi	4.847	1.870	10.800	0.760	10.800	0	3

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176	Kachlabridge	48.690	38.292	79.885	0.380	198.300	2	6
177	Kalampur	1.118	0.440	3.830	0.290	3.830	0	5
178	Kalanaur	1.355	1.064	2.375	0.060	3.990	0	9
179	Kallooppara	2.046	1.710	3.390	0.490	4.540	0	5
180	Kalna (EBB)	5.013	2.165	10.710	0.100	17.610	0	6
181	Kalna (Flow)*	1.607	1.607	-	0.410	2.560	0	3
182	Kamalapuram	13.860	-	13.860	3.840	23.880	0	2
183	Kamalpur	5.480	5.620	5.200	3.070	8.170	0	3
184	Kampur	4.091	2.194	10.730	0.100	16.660	0	9
185	Kanpur	28.715	37.815	1.415	0.850	205.820	1	7
186	Kantamal	23.593	23.593	-	5.640	55.000	1	2
187	Karad	98.350	-	98.350	98.350	98.350	1	0
188	Karathodu	1.886	1.393	3.860	0.550	3.860	0	5
189	Kashinagar	3.375	1.770	11.400	0.310	11.400	0	6
190	Katwa	3.781	3.654	4.225	0.080	12.220	0	9
191	Keesara	1.260	0.190	2.330	0.190	2.330	0	2
192	Kellodu	0.850	0.850	-	0.850	0.850	0	1
193	Keolari	3.167	2.253	6.365	0.380	10.010	0	9
194	Kesinga	5.867	5.867	-	3.130	7.360	0	3
195	Khanitar	16.525	16.525	-	0.670	32.380	0	2
196	Khanpur	12.100	15.417	0.490	0.120	81.700	1	8
197	Kharkhana	13.274	1.307	31.225	0.210	62.240	1	4
198	Khatoli	2.566	2.752	2.100	0.075	6.460	0	7
199	Kheronighat	5.767	0.956	22.605	0.120	42.550	0	9
200	Kidangoor	3.680	3.763	3.350	0.270	8.150	0	5
201	Kodumudi	7.992	9.234	1.780	1.780	35.360	0	6
202	Koelwar	1.767	1.417	2.990	0.310	3.840	0	9
203	Kogaon	8.560	2.030	15.090	1.160	23.130	0	4
204	Kokrajhar	4.530	5.957	0.250	0.150	12.740	0	4
205	Kollegal	3.525	1.193	10.520	0.360	10.520	0	4
206	Konta	0.818	0.860	0.650	0.130	2.230	0	5
207	Koperagaon	14.800	-	14.800	14.800	14.800	0	1
208	Kora	3.403	2.522	5.605	0.330	9.950	0	7
209	Koteshwar	10.107	8.920	13.075	0.290	35.490	0	7
210	Kudalaiyathur	0.210	0.210	-	0.210	0.210	0	1
211	Kudige	2.321	0.845	11.180	0.150	11.180	0	7
212	Kudlur	2.620	2.740	2.380	2.380	3.100	0	3
213	Kuldah Bridge	3.014	2.088	5.790	0.240	11.230	0	8
214	Kulsi	6.039	6.267	5.240	0.280	23.360	0	9
215	Kumbidi	1.040	0.625	2.700	0.400	2.700	0	5
216	Kumhari	3.816	3.064	6.445	0.580	12.710	0	9
217	Kuniyil	1.020	0.728	2.190	0.580	2.190	0	5
218	Kuppelur	0.880	0.880	-	0.880	0.880	0	1
219	Kurubhata	5.320	5.320	-	4.520	6.470	0	3

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220	Kurundwad	22.450	-	22.450	22.450	22.450	0	1
221	Kuttyadi	3.564	3.170	5.140	0.160	6.260	0	5
222	Kuzhithurai	3.162	2.130	7.290	0.100	7.290	0	5
223	Labha	7.468	8.187	4.950	0.030	50.770	1	8
224	Lakhisarai	1.420	1.775	0.355	0.020	3.180	0	8
225	Lalganj	1.134	1.343	0.405	0.100	2.280	0	9
226	Lowara	10.207	12.680	1.550	0.240	23.830	0	9
227	Lucknow	11.980	15.727	0.740	0.400	44.380	0	8
228	M.H. Halli	5.507	5.507	-	0.150	15.610	0	3
229	Madhira	11.540	11.540	-	0.830	22.250	0	2
230	Madla	2.043	1.518	3.355	0.490	5.900	0	7
231	Mahidpur	6.275	0.495	9.165	0.010	18.320	0	3
232	Mahuwa	23.983	6.034	68.855	1.680	135.570	1	6
233	Maighat	3.939	3.341	6.030	0.340	16.910	0	9
234	Majhitar	3.400	3.400	-	3.400	3.400	0	1
235	Malakkara	1.576	1.173	3.190	0.390	3.190	0	5
236	Malkhed	0.853	0.600	1.360	0.570	1.360	0	3
237	Manas NH Crossing	7.937	11.405	1.000	1.000	16.930	0	3
238	Mancherial	4.196	2.360	11.540	0.090	11.540	0	5
239	Mandleshwar	5.090	2.477	14.235	0.420	21.840	0	9
240	Manendragarh	14.280	14.280	-	3.630	24.930	0	2
241	Mangaon (Seasonal)	133.490	-	133.490	133.490	133.490	1	0
242	Mankara	9.230	10.618	3.680	0.670	25.590	0	5
243	Manot	4.024	4.196	3.425	0.100	9.350	0	9
244	Mantralayam	3.187	3.187	-	0.520	8.160	0	3
245	Marella	2.430	2.430	-	0.080	5.630	0	3
246	Margherita	6.858	6.809	7.030	0.030	35.010	0	9
247	Marol	7.150	2.640	11.660	2.640	11.660	0	2
248	Mataji	4.276	5.056	1.545	0.800	26.340	0	9
249	Mathabhanga	9.243	8.130	11.470	4.750	11.510	0	3
250	Mathanguri	2.650	2.650	-	2.650	2.650	0	1
251	Mathura	1.209	0.968	2.055	0.355	2.550	0	9
252	Matigara	7.650	7.650	-	0.240	16.760	0	3
253	Matijuri	2.858	0.140	5.575	0.130	10.370	0	4
254	Matunga	1.783	1.610	2.390	0.260	5.410	0	9
255	Mawi	2.186	2.421	1.360	0.090	4.710	0	9
256	Meja Road	4.535	3.705	7.025	0.550	13.110	0	8
257	Mekhliganj	9.155	9.473	8.200	0.060	23.810	0	4
258	Miao	5.639	6.714	1.875	0.010	29.540	0	9
259	Mirzapur	5.917	4.993	9.150	0.280	14.050	0	9
260	Mohana (Betwa)	3.395	2.843	4.500	1.040	7.700	0	6
261	Mohana (Yamuna)	1.864	1.749	2.270	0.020	7.570	0	9
262	Mohgaoan	2.582	2.666	2.290	0.370	5.330	0	9
263	Moradabad	32.821	43.178	1.750	1.230	230.900	1	7

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264	Motinaroli	10.420	5.800	24.280	0.890	42.480	0	8
265	Murappanadu	3.327	2.276	8.580	0.400	8.580	0	6
266	Muri	3.767	2.948	7.860	0.190	7.860	0	6
267	Murti	9.297	9.297	-	0.060	20.870	0	3
268	Musiri	8.004	8.004	-	0.790	19.800	0	5
269	Muthankera	2.022	1.663	3.460	0.110	4.390	0	5
270	Nagrakata	5.123	5.123	-	0.100	12.390	0	3
271	Naharkatia	2.710	1.931	5.435	0.660	6.960	0	9
272	Naidupet	0.160	0.160	-	0.160	0.160	0	1
273	Nallammaranpatty	14.580	21.120	1.500	1.500	34.260	0	3
274	Nallathur	7.167	7.167	-	0.940	18.270	0	3
275	Namsai	3.323	2.609	5.825	0.050	11.600	0	9
276	Nandgaon	4.010	2.294	8.300	0.700	10.320	0	7
277	Nandipalli	10.238	7.850	12.625	0.590	21.860	0	4
278	Nanglamoraghat	2.543	2.111	4.055	0.130	8.370	0	9
279	Neamatighat	1.548	1.549	1.545	0.770	4.670	0	9
280	Neeleswaram	2.092	1.293	5.290	0.390	5.290	0	5
281	Neemsar	11.169	15.454	0.455	0.190	45.340	0	7
282	Nellithurai	11.115	11.115	-	4.810	18.760	0	4
283	Nellore	1.010	1.010	-	1.010	1.010	0	2
284	Neora	8.297	8.297	-	0.040	14.230	0	3
285	Nowrangpur	1.194	1.160	1.330	0.270	1.900	0	5
286	Numaligarh	2.918	2.891	3.010	0.010	9.270	0	9
287	P.G.Bridge	3.658	2.133	8.230	0.590	9.530	0	8
288	Pachauli	5.700	3.290	8.110	3.290	8.110	0	2
289	Pachegaon	19.770		19.770	19.770	19.770	0	1
290	Paderdibadi	3.837	4.676	0.900	0.440	21.940	0	9
291	Pagladiya N.T.Road Crossing	2.381	2.534	1.845	0.080	10.240	0	9
292	Paleru Bridge	1.093	0.987	1.410	0.120	2.590	0	4
293	Paliakalan	82.723	35.052	225.735	1.210	450.260	3	5
294	Palla	3.560	2.464	7.395	0.210	14.580	0	9
295	Panbari	8.850	8.850	-	2.880	14.820	0	2
296	Pancharatna	4.041	4.111	3.795	0.550	10.700	0	9
297	Pandu	4.363	5.131	1.675	0.370	17.300	0	9
298	Panposh	2.723	1.502	8.830	0.160	8.830	0	6
299	Passighat	1.062	1.062	-	0.340	2.000	0	5
300	Patan	2.240	1.953	3.245	0.040	6.100	0	9
301	Pathagudem	1.060	1.275	0.200	0.200	3.360	0	5
302	Pathardhi	4.800	4.800	-	4.800	4.800	0	1
303	Pati	6.464	1.475	26.420	0.770	26.420	0	5
304	Patna	1.451	1.686	0.630	0.230	2.630	0	9
305	Pattazhy	4.374	4.615	3.410	0.460	10.670	0	5
306	Pauni	3.570	2.203	8.355	0.110	10.990	0	9
307	Peralam	5.206	5.206	-	5.206	5.206	0	1

S. No.	Water Quality Site	Chromium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
308	Perumannu	0.976	0.468	3.010	0.340	3.010	0	5
309	Perur	3.444	0.793	14.050	0.150	14.050	0	5
310	Phulgaon (Seasonal)	45.000	-	45.000	45.000	45.000	0	1
311	Pingalwada	10.228	8.303	16.000	1.230	29.860	0	8
312	Polavaram	0.646	0.805	0.010	0.010	2.120	0	5
313	Pratapgarh	4.198	3.347	6.750	0.110	12.780	0	8
314	Pratapur	10.403	6.702	19.655	2.210	20.950	0	7
315	Prem Nagar	0.858	0.840	0.950	0.090	2.000	0	6
316	Pudur	2.856	2.720	3.400	0.480	7.800	0	5
317	Pulamanthole	2.440	2.210	3.360	0.440	3.730	0	5
318	Purna	0.420	0.420	-	0.420	0.420	0	1
319	Purushottampur	2.127	1.078	7.370	0.550	7.370	0	6
320	Puthimari D.R.F.	3.617	4.300	1.225	0.210	16.370	0	9
321	Puthimari NH Road cross-ing	2.919	3.247	1.935	0.290	11.630	0	8
322	Raibareli	13.939	19.108	1.015	0.930	54.770	1	6
323	Rajapur	4.477	1.828	9.775	0.180	11.780	0	6
324	Rajegaon	3.215	1.895	7.175	0.160	10.790	0	8
325	Rajghat	2.588	1.858	4.050	0.280	5.470	0	6
326	Rajim	20.170	20.170		20.170	20.170	0	1
327	Ram Munshi Bagh	1.018	0.988	1.140	0.560	1.370	0	5
328	Ramakona	2.769	1.343	7.045	0.600	10.740	0	8
329	Ramamangalam	2.416	2.330	2.760	0.450	4.800	0	5
330	Rampur	12.773	12.773	-	1.300	29.770	0	3
331	Ranganadi NT-Road Xing	2.108	0.944	6.180	0.020	11.160	0	9
332	Rangeli	3.463	4.200	0.885	0.090	22.430	0	9
333	Rangpo	4.613	4.613	-	0.590	12.470	0	3
334	Regauli	42.939	42.458	44.380	0.430	172.710	3	5
335	Rishikesh	7.969	5.921	15.135	0.080	29.320	0	9
336	Rudraprayag	6.879	6.707	7.395	0.060	29.450	0	8
337	Safapora	0.750	0.676	1.120	0.050	1.490	0	6
338	Sakleshpur	11.940	10.715	19.290	0.350	40.610	0	7
339	Sakmur	7.643	2.821	24.520	0.300	39.100	0	9
340	Salebhata	3.137	3.137	-	0.190	5.490	0	3
341	Samdoli	10.070	-	10.070	10.070	10.070	0	1
342	Sandia	6.357	7.156	3.560	0.080	23.320	0	9
343	Sangam	2.542	2.780	1.470	0.370	17.970	0	11
344	Sangod	0.632	0.785	0.555	0.070	1.040	0	3
345	Sankalan	3.823	3.823	-	0.050	10.600	0	3
346	Sankosh LRP	2.875	3.530	0.910	0.910	7.040	0	4
347	Santeguli	3.196	1.797	11.590	0.720	11.590	0	7
348	Sarangkheda	10.749	10.102	12.365	0.640	32.150	0	7
349	Satrapur	3.530	3.207	4.660	0.580	8.710	0	9
350	Savandapur	3.203	3.608	1.985	0.750	12.300	0	8
351	Seondha	2.902	3.308	0.870	0.490	13.110	0	6

S. No.	Water Quality Site	Chromium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
352	Seppa	10.530	10.724	9.850	1.210	26.160	0	9
353	Sevanur	4.510	4.510	-	4.510	4.510	0	1
354	Sevoke	3.187	3.187	-	0.340	8.120	0	3
355	Shahijina	10.266	6.438	19.835	0.060	38.850	0	7
356	Shahzadpur	8.025	7.848	8.555	1.410	20.740	0	8
357	Shimoga	3.011	0.948	15.390	0.110	15.390	0	7
358	Sibbari	1.226	1.143	1.350	0.130	2.570	0	5
359	Sikandarpur	5.426	6.691	0.995	0.180	41.670	0	9
360	Simga	6.507	6.507	-	2.510	9.130	0	3
361	Singla-Bazar	5.153	5.153	-	3.990	6.630	0	3
362	Sivasagar	5.282	3.514	11.470	0.590	16.050	0	9
363	Sonapur	6.091	5.835	7.630	0.640	16.950	0	7
364	Srikakulam	2.330	1.218	7.890	0.480	7.890	0	6
365	Srinagar	6.643	8.030	2.480	0.890	20.820	0	4
366	Sripalpur	3.342	3.809	1.710	0.340	16.510	0	9
367	Suklai	3.456	3.817	2.190	0.480	20.050	0	9
368	Sultanpur	7.178	6.762	8.425	1.400	27.050	0	8
369	Sulurpet	1.120	1.120	-	1.120	1.120	0	1
370	Sundergarh	3.153	3.153	-	0.250	6.070	0	3
371	T. Bekuppe	3.119	1.642	11.980	0.350	11.980	0	7
372	T. Narasipur	6.187	1.575	15.410	0.320	15.410	0	3
373	T. Ramapuram	3.460	3.460	-	2.240	4.680	0	2
374	T.K.Halli	3.473	3.473	-	0.370	8.980	0	3
375	Tal	3.975	0.715	5.605	0.715	9.890	0	3
376	Talcher	4.312	3.796	6.890	0.140	14.630	0	6
377	Tandi	2.030	-	2.030	2.030	2.030	0	1
378	Teesta-Bazar	2.554	3.083	0.440	0.030	10.600	0	5
379	Tehri	4.710	4.710	-	1.930	7.490	0	2
380	Tekra	2.808	1.229	8.335	0.340	11.660	0	9
381	Tezpur	11.402	6.469	28.670	0.170	53.100	1	8
382	Tezu	3.760	1.175	11.515	0.290	17.890	0	8
383	Thengudi	1.905	1.905		0.220	3.590	0	2
384	Thengumarahada	3.584	4.310	1.405	1.360	10.630	0	8
385	Theni	3.546	3.707	3.065	0.740	8.820	0	8
386	Therriaghat	2.560	0.913	5.030	0.160	9.900	0	5
387	Thevur	1.600	1.600	-	1.600	1.600	0	1
388	Thimmanahalli	2.232	2.232	-	0.530	4.910	0	5
389	Thoppur	1.990	-	1.990	1.990	1.990	0	1
390	Thumpamon	2.390	2.238	3.000	0.270	3.830	0	5
391	Tikarpara	3.310	2.336	8.180	0.260	8.180	0	6
392	Tilga	4.618	3.904	8.190	0.420	8.190	0	6
393	Tonk	3.023	2.355	3.690	2.355	3.690	0	2
394	Tribeni	3.396	4.246	0.420	0.200	15.730	0	9
395	Tufanganj	3.048	3.900	0.490	0.280	9.840	0	4

S. No.	Water Quality Site	Chromium (in µg/L)					BIS: 10500: 2012	
		Average			Min	Max	No. of Stations	
		Total	Non Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
396	Tuini	2.160	2.590	0.655	0.002	6.390	0	9
397	Turtipar	51.706	15.968	158.920	0.770	316.840	1	7
398	Udaipur (Chandra)	4.330	-	4.330	4.330	4.330	0	1
399	Udaipur (Tirap)	6.006	4.396	11.640	0.920	16.790	0	9
400	Udi	4.510	4.456	4.645	0.930	8.540	0	7
401	Ujjain	3.518	5.515	1.520	1.520	5.515	0	2
402	Urachikottai	3.990	3.560	5.710	0.730	9.530	0	5
403	Uttarkashi	5.662	6.339	3.295	0.150	27.360	0	9
404	Vandiperiyar	3.484	3.395	3.840	0.950	7.320	0	5
405	Vapi	6.399	4.620	11.735	0.420	19.570	0	8
406	Varanasi	6.259	5.934	7.395	0.610	27.930	0	9
407	Vautha	13.071	16.367	1.535	0.370	49.840	0	9
408	Vazhavachanur	0.060	0.060	-	0.010	0.110	0	2
409	Wadenapally	3.272	3.733	1.430	0.050	7.720	0	5
410	Wairagarh	6.542	0.735	18.155	0.330	25.870	0	6
411	Warunji	9.200	-	9.200	9.200	9.200	0	1
412	Yadgir	1.240	-	1.240	1.240	1.240	0	1
413	Yashwant nagar	0.786	0.762	0.870	0.050	1.670	0	9
414	Yennehole	3.223	0.260	12.110	0.200	12.110	0	4

COPPER

S. No.	Water Quality Site	Copper					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
1	A B Road Xing	3.647	2.360	4.290	2.040	6.540	0	3
2	A.P. Puram	2.855	2.855	-	0.270	7.160	0	4
3	A.P.Ghat	2.514	2.117	3.110	0.060	6.160	0	5
4	Aauriya	5.757	4.640	8.550	0.250	13.770	0	7
5	Abu Road	8.543	9.473	5.750	0.740	22.690	0	4
6	Addoor	5.180	6.350	4.010	4.010	6.350	0	2
7	Adityapur	4.800	4.708	5.260	1.650	9.270	0	6
8	Agra	8.951	5.708	17.060	1.710	30.640	0	7
9	Aie NH Crossing	5.863	5.863	-	4.110	9.200	0	3
10	Akabarpur	4.007	2.874	6.840	0.810	11.570	0	7
11	Akhnoor	3.697	3.832	3.020	0.440	11.790	0	6
12	Akkihebbal	1.929	1.930	1.920	0.190	5.030	0	7
13	Aklera	2.023	1.385	2.660	1.250	2.820	0	4
14	Alladupalli	6.419	7.447	3.335	1.720	12.700	0	8
15	Allahabad	5.029	6.441	0.085	0.070	11.260	0	9
16	Alutuma	5.762	6.898	0.080	0.080	24.740	0	6
17	Ambarampalayam	4.058	4.037	4.120	0.760	10.240	0	8
18	Ambasamudram	2.420	2.420	-	2.420	2.420	0	1
19	Anandpur	4.503	4.498	4.530	1.270	11.250	0	6
20	Andhiyar Kore	5.520	5.520	-	3.910	6.930	0	3
21	Ankinghat	11.283	11.663	10.140	0.210	31.980	0	8
22	Annavasal	3.530	3.530	-	3.530	3.530	0	1
23	Arangaly	3.186	3.655	1.310	0.580	12.300	0	5
24	Arcot	4.460	-	4.460	4.460	4.460	0	1
25	Arjunwad	6.730	-	6.730	6.730	6.730	0	1
26	Ashramam	1.936	1.845	2.300	0.580	4.170	0	5
27	Ashti	3.443	2.881	5.410	0.580	7.370	0	9
28	Avershe	4.095	4.870	1.770	0.550	9.050	0	4
29	Ayilam	4.230	3.635	6.610	0.490	8.530	0	5
30	Ayodhya	6.201	7.262	3.020	0.980	21.060	0	8
31	Azmabad	6.360	7.057	3.920	0.740	23.570	0	9
32	B.P. Ghat	2.333	2.950	1.100	0.390	5.540	0	6
33	Badatighat	3.759	3.636	4.190	0.380	12.330	0	9
34	Badlapur	8.098	9.470	2.610	1.330	28.230	0	5
35	Balrampur	9.638	10.092	8.275	3.340	21.430	0	8
36	Baltara	6.032	4.851	10.165	0.410	14.900	0	9
37	Bamni (Banjar)	6.366	4.743	11.235	1.370	12.350	0	8
38	Bamni (Wardha)	6.016	5.286	8.570	1.800	13.170	0	9
39	Bamnidih	14.183	14.183	-	3.460	28.260	0	3
40	Banda	3.699	4.402	1.940	1.020	7.750	0	7
41	Bansi	5.027	5.824	3.035	1.950	12.320	0	7
42	Bantwal	2.310	2.235	2.460	1.370	3.100	0	3
43	Baranwada	4.063	4.667	2.250	1.670	6.690	0	4

S. No.	Water Quality Site	Copper					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
44	Bareilly	8.481	10.597	2.135	1.140	19.060	0	8
45	Barmanghat	4.140	4.414	3.180	2.020	6.930	0	9
46	Barobisha	7.475	9.513	1.360	1.360	16.910	0	4
47	Barod	3.345	4.070	1.895	1.490	6.370	0	6
48	Baronda	41.940	41.940	-	41.940	41.940	0	1
49	Basantpur	11.573	11.573	-	4.680	20.140	0	3
50	Basti	7.994	9.502	3.470	1.300	17.190	0	8
51	Bawapuram	10.025	10.025	-	1.900	18.150	0	2
52	Behalpur	7.365	7.365	-	1.140	13.590	0	2
53	Beki Mathanguri	14.265	14.265	-	3.300	25.230	0	2
54	Beki Road Bridge	5.200	6.103	2.490	2.490	9.090	0	4
55	Belkhedi	3.984	4.020	3.860	0.890	10.200	0	9
56	Belne Bridge	2.610	-	2.610	2.610	2.610	0	1
57	Bendrahalli	7.050	7.050	-	7.050	7.050	0	1
58	Berhampore	3.351	3.356	3.335	0.590	6.170	0	9
59	Bhadrachalam	2.360	2.388	2.250	1.350	3.250	0	5
60	Bhalukpong	4.997	4.986	5.035	0.040	10.540	0	9
61	Bhatpalli	4.526	3.856	6.870	0.430	11.700	0	9
62	Bhitaura	8.716	10.090	4.595	3.430	20.930	0	8
63	Bhomoraguri	9.392	10.274	6.305	1.050	45.710	0	9
64	Bihubar	11.229	10.253	14.645	1.380	54.720	1	8
65	Biligundullu	3.277	3.362	2.770	0.570	9.690	0	7
66	Birdghat	8.394	10.158	3.100	1.430	25.230	0	8
67	Bokajan	6.168	4.914	10.555	1.570	16.370	0	9
68	Burhanpur	10.173	8.168	15.185	0.030	24.900	0	7
69	Buxar	7.832	7.196	10.060	1.130	19.020	0	9
70	Byaladahalli	2.770	2.770	-	1.040	4.500	0	2
71	Champasari	2.577	2.577	-	1.370	4.080	0	3
72	Champua	5.097	6.090	0.130	0.130	21.440	0	6
73	Chanwada	3.331	3.505	2.810	0.340	5.610	0	8
74	Chapra	2.266	2.597	1.105	0.400	8.280	0	9
75	Chel	5.483	5.483	-	4.330	7.760	0	3
76	Chengalpet	3.500	3.590	3.320	3.320	3.840	0	3
77	Chenimari	4.662	3.690	8.065	0.610	8.840	0	9
78	Chennur	4.541	5.415	1.920	1.510	9.110	0	8
79	Chepan	6.625	8.390	1.330	1.330	12.410	0	4
80	Chhidgaon	4.441	5.036	2.360	0.530	18.360	0	9
81	Chitrasani	4.247	4.058	4.720	0.790	9.230	0	7
82	Chittorgarh	4.900	4.900	-	4.900	4.900	0	1
83	Cholachguda	15.980	15.980	-	15.980	15.980	0	1
84	Chopan	4.344	3.366	7.770	2.100	12.500	0	9
85	Chouldhowaghat	3.312	3.407	2.980	0.410	8.760	0	9
86	Chuchankatte	2.350	1.450	3.250	1.450	3.250	0	2
87	Coronation	4.503	4.503	-	1.150	8.010	0	3

S. No.	Water Quality Site	Copper					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
88	Dabri	9.115	7.830	12.970	1.190	22.310	0	8
89	Damarcherla	2.153	2.153	-	1.840	2.720	0	3
90	Dawki	4.554	6.313	1.915	0.170	17.460	0	5
91	Delhi Rly Bridge	2.364	2.383	2.300	0.370	5.180	0	9
92	Deoprayag	11.778	14.694	1.570	0.470	44.200	0	9
93	Derol Bridge	4.859	4.331	6.705	0.870	9.720	0	9
94	Desangpani	6.616	6.601	6.665	1.010	18.300	0	9
95	Dhamkund	4.795	5.388	1.830	0.240	15.530	0	6
96	Dharamtul	1.900	1.411	3.610	0.360	4.180	0	9
97	Dheng Bridge	2.128	1.756	3.430	1.020	4.330	0	9
98	Dholabazar	3.468	2.859	5.600	0.080	9.450	0	9
99	Dholai	1.297	1.688	0.515	0.080	2.820	0	6
100	Dholpur	4.111	3.965	4.475	0.710	8.330	0	7
101	Dhubri	3.345	3.345	-	3.100	3.590	0	2
102	Dhulsar	3.980	5.200	2.760	2.760	5.200	0	2
103	Diana	2.400	2.400	-	2.400	2.400	0	1
104	Dibrugarh	4.699	4.704	4.680	1.130	13.150	0	9
105	Dillighat	5.079	3.416	10.900	1.130	15.880	0	9
106	Dimapara	4.394	1.093	9.345	0.080	18.610	0	5
107	Dindori	4.750	4.727	4.830	2.610	6.920	0	9
108	Domohani	4.095	4.477	2.950	2.430	7.230	0	4
109	Duddhi	5.426	2.973	14.010	1.250	24.810	0	9
110	Dudhnai	2.334	2.376	2.190	0.220	6.480	0	9
111	Durvesh	13.044	14.754	8.770	0.380	33.640	0	7
112	Ekmighat	4.626	3.617	8.155	0.040	13.290	0	9
113	Elginbridge	6.813	7.660	4.270	1.260	18.860	0	8
114	Elunuthimanagalam	5.920	5.920	-	1.430	14.740	0	3
115	English Bazar	2.329	2.556	1.535	0.380	7.550	0	9
116	Erinjipuzha	3.304	2.710	5.680	0.470	6.710	0	5
117	Etawah	11.467	6.332	24.305	1.380	46.710	0	7
118	Fakirabazar	1.892	1.867	1.930	1.390	2.430	0	5
119	Farakka	1.758	1.741	1.815	0.590	4.500	0	9
120	Farakka/(HR)	3.076	3.455	1.940	0.600	10.890	0	8
121	Fatehgarh	8.071	9.433	3.985	0.820	18.300	0	8
122	Fulertal	1.200	1.510	0.890	0.130	1.680	0	4
123	Gadarwara	3.339	3.217	3.705	0.390	6.170	0	8
124	Gadat	9.493	12.100	2.975	0.630	40.820	0	7
125	Gajaldoba	4.123	4.123	-	2.560	5.000	0	3
126	Galeta	3.579	3.863	2.585	0.240	7.430	0	9
127	Ganod	8.173	7.117	14.510	0.030	15.800	0	7
128	Garhamukteshwar	15.928	16.070	15.500	3.780	27.220	0	8
129	Garrauli	5.032	3.380	7.510	1.220	13.800	0	5
130	Garudeshwar	9.684	11.180	5.195	1.170	42.870	0	8
131	Gaya	2.483	1.940	3.025	0.940	3.650	0	4

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132	Gelabil	10.348	5.910	14.785	1.140	21.620	0	4
133	Ghat	4.784	5.145	3.700	2.410	9.740	0	8
134	Ghatora	5.353	5.353	-	3.430	7.710	0	3
135	Ghatsila	34.985	29.598	61.920	3.430	61.920	2	4
136	Ghish	6.027	6.027	-	2.320	12.720	0	3
137	Ghugumari	11.720	15.143	1.450	1.450	20.950	0	4
138	Gokak	5.735	5.210	6.260	5.210	6.260	0	2
139	Golagang	2.430	2.430	-	1.830	3.030	0	2
140	Golaghat	4.613	3.676	7.895	0.920	11.420	0	9
141	Gomlai	3.798	3.690	4.340	2.230	8.440	0	6
142	Gopalkheda	8.348	12.080	4.615	2.600	14.410	0	4
143	Govindapur	7.192	8.614	0.080	0.080	27.850	0	6
144	Gummanur	3.553	3.522	3.645	2.050	4.720	0	8
145	Gumrabazar	1.890	1.110	3.450	0.050	6.850	0	6
146	Gunupur	5.185	6.210	0.060	0.060	14.880	0	6
147	Haladi	2.703	2.693	2.760	0.110	11.840	0	7
148	Halia	2.333	2.333	-	0.540	5.550	0	4
149	Hamirpur	5.306	5.392	5.090	1.630	11.050	0	7
150	Handia	3.757	3.781	3.670	1.410	10.230	0	9
151	Hanskhali	5.599	6.524	2.360	0.620	19.380	0	9
152	Haridwar	2.145	1.365	4.485	0.130	6.380	0	8
153	Harlahalli	2.283	2.347	2.090	2.030	2.520	0	4
154	Hasimara	5.745	5.667	5.980	0.690	13.720	0	4
155	Hathidah	10.397	12.303	3.725	0.090	42.360	0	9
156	Hayaghat	2.957	2.570	4.310	0.050	5.050	0	9
157	Hivra	5.518	5.327	6.185	1.120	11.540	0	9
158	Holehonnur	3.270	3.168	3.880	0.280	13.700	0	7
159	Honnali	2.603	2.647	2.340	0.490	7.480	0	7
160	Hoshangabad	3.980	4.104	3.545	1.660	7.650	0	9
161	Huvin Hedgi	2.733	2.583	3.180	0.100	6.120	0	4
162	Jagdalpur	2.290	1.540	3.040	1.540	3.040	0	2
163	Jagibhakatgaon	1.949	2.119	1.355	0.660	5.580	0	9
164	Jai Nagar	3.374	2.776	5.470	1.100	8.480	0	9
165	Jaldhaka NH-31	4.270	5.077	1.850	1.370	9.280	0	4
166	Jammu Tawi	4.692	5.200	2.150	0.020	10.510	0	6
167	Jamshedpur	5.457	4.848	8.500	1.140	16.070	0	6
168	Jamsolghat	30.773	8.370	75.580	7.510	75.580	1	2
169	Japla	6.279	5.974	7.345	0.890	20.570	0	9
170	Jaraikela	2.363	2.802	0.170	0.170	7.880	0	6
171	Jenapur	4.300	3.568	7.960	0.360	8.270	0	6
172	Jhanjharpur	3.289	2.349	6.580	1.390	9.850	0	9
173	Jiabharali NT Road Xing	7.021	5.031	13.985	0.680	21.380	0	9
174	Jondhra	5.120	5.120	-	5.120	5.120	0	1
175	K.M. Vadi	5.833	7.445	2.610	2.610	8.450	0	3

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176	Kachlabridge	22.175	28.613	2.860	2.510	107.990	1	7
177	Kalampur	2.174	2.335	1.530	0.590	4.110	0	5
178	Kalanaur	5.260	5.729	3.620	0.090	14.490	0	9
179	Kallooppara	2.158	2.340	1.430	0.370	7.060	0	5
180	Kalna (EBB)	4.388	6.238	0.690	0.090	8.180	0	6
181	Kalna (Flow)*	2.853	2.853	-	1.050	4.420	0	3
182	Kamalapuram	6.015	-	6.015	1.850	10.180	0	2
183	Kamalpur	4.143	4.040	4.350	0.970	7.110	0	3
184	Kampur	2.326	2.143	2.965	0.080	3.870	0	9
185	Kanpur	9.894	10.765	7.280	3.050	23.000	0	8
186	Kantamal	28.677	28.677	-	4.540	72.870	1	2
187	Karad	4.380	-	4.380	4.380	4.380	0	1
188	Karathodu	6.428	7.765	1.080	0.490	21.590	0	5
189	Kashinagar	3.928	4.688	0.130	0.050	10.170	0	6
190	Katwa	3.691	3.939	2.825	0.570	9.260	0	9
191	Keesara	4.200	3.290	5.110	3.290	5.110	0	2
192	Kellodu	3.640	3.640	-	3.640	3.640	0	1
193	Keolari	4.506	4.456	4.680	0.940	12.080	0	9
194	Kesinga	5.280	5.280	-	3.850	6.850	0	3
195	Khanitar	3.485	3.485	-	1.780	5.190	0	2
196	Khanpur	5.543	6.011	3.905	2.080	13.500	0	9
197	Kharkhana	2.656	1.670	4.135	0.790	4.960	0	5
198	Khatoli	4.943	6.038	2.205	1.050	14.660	0	7
199	Kheronighat	3.698	3.660	3.830	0.160	13.810	0	9
200	Kidangoor	2.740	2.655	3.080	0.650	6.680	0	5
201	Kodumudi	3.690	3.360	5.340	0.780	6.560	0	6
202	Koelwar	4.032	3.976	4.230	0.510	11.780	0	9
203	Kogaon	3.608	3.865	3.350	2.580	5.150	0	4
204	Kokrajhar	7.335	8.993	2.360	2.360	19.270	0	4
205	Kollegal	2.193	1.960	2.890	0.600	3.010	0	4
206	Konta	3.124	3.353	2.210	1.690	5.140	0	5
207	Koperagaon	3.250	-	3.250	3.250	3.250	0	1
208	Kora	4.494	4.716	3.940	0.140	9.070	0	7
209	Koteshwar	4.419	5.206	2.450	1.500	13.850	0	7
210	Kudalaiyathur	5.580	5.580	-	5.580	5.580	0	1
211	Kudige	7.164	7.968	2.340	0.420	22.140	0	7
212	Kudlur	2.767	2.480	3.340	1.620	3.340	0	3
213	Kuldah Bridge	5.724	4.335	9.890	1.950	15.290	0	8
214	Kulsi	2.054	2.347	1.030	0.070	4.410	0	9
215	Kumbidi	3.326	3.773	1.540	0.690	10.070	0	5
216	Kumhari	4.757	4.280	6.425	0.480	14.910	0	9
217	Kuniyil	5.688	6.688	1.690	0.250	21.050	0	5
218	Kuppelur	1.120	1.120	-	1.120	1.120	0	1
219	Kurubhata	5.413	5.413	-	3.120	7.030	0	3

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220	Kurundwad	3.220	-	3.220	3.220	3.220	0	1
221	Kuttyadi	4.886	5.243	3.460	1.000	12.370	0	5
222	Kuzhithurai	9.200	10.995	2.020	0.310	22.540	0	5
223	Labha	3.934	4.580	1.675	0.700	16.290	0	9
224	Lakhisarai	2.853	2.065	5.215	1.120	8.050	0	8
225	Lalganj	2.569	3.036	0.935	0.070	4.710	0	9
226	Lowara	11.854	14.764	1.670	0.230	38.570	0	9
227	Lucknow	7.321	7.045	8.150	2.660	15.320	0	8
228	M.H. Halli	3.290	3.290	-	1.690	4.300	0	3
229	Madhira	3.850	3.850	-	2.890	4.810	0	2
230	Madla	3.919	4.294	2.980	0.060	9.340	0	7
231	Mahidpur	2.977	1.520	3.705	1.510	5.900	0	3
232	Mahuwa	7.154	6.284	9.330	1.460	11.630	0	7
233	Maighat	7.090	5.503	12.645	0.030	25.260	0	9
234	Majhitar	5.050	5.050	-	5.050	5.050	0	1
235	Malakkara	2.888	3.308	1.210	0.480	8.370	0	5
236	Malkhed	4.453	4.470	4.420	0.280	8.660	0	3
237	Manas NH Crossing	5.217	6.745	2.160	2.160	10.790	0	3
238	Mancherial	2.198	1.945	3.210	0.080	3.860	0	5
239	Mandleshwar	3.929	4.036	3.555	0.680	6.990	0	9
240	Manendragarh	4.490	4.490	-	2.700	6.280	0	2
241	Mangaon (Seasonal)	2.960	-	2.960	2.960	2.960	0	1
242	Mankara	2.196	2.433	1.250	0.280	4.530	0	5
243	Manot	6.058	6.186	5.610	1.180	21.590	0	9
244	Mantralayam	5.653	5.653	-	1.550	12.350	0	3
245	Marella	3.513	3.513	-	2.110	6.240	0	3
246	Margherita	35.806	43.574	8.615	1.630	269.630	1	8
247	Marol	4.120	4.800	3.440	3.440	4.800	0	2
248	Mataji	7.737	8.620	4.645	1.740	21.960	0	9
249	Mathabhanga	8.130	4.555	15.280	4.240	15.280	0	3
250	Mathanguri	2.410	2.410	-	2.410	2.410	0	1
251	Mathura	7.246	8.549	2.685	1.000	32.420	0	9
252	Matigara	5.393	5.393	-	0.500	12.560	0	3
253	Matijuri	1.680	2.435	0.925	0.110	3.300	0	4
254	Matunga	2.113	2.409	1.080	0.010	8.810	0	9
255	Mawi	2.297	2.381	2.000	0.070	5.210	0	9
256	Meja Road	5.644	4.327	9.595	1.890	16.260	0	8
257	Mekhliganj	1.908	2.200	1.030	0.520	3.200	0	4
258	Miao	5.656	6.186	3.800	0.140	11.870	0	9
259	Mirzapur	6.520	8.023	1.260	0.080	12.850	0	9
260	Mohana (Betwa)	2.450	1.603	4.145	0.530	7.350	0	6
261	Mohana (Yamuna)	2.774	2.696	3.050	0.700	4.410	0	9
262	Mohgaoan	5.200	5.144	5.395	1.360	12.630	0	9
263	Moradabad	16.131	19.638	5.610	2.890	48.680	0	8

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264	Motinaroli	6.206	6.810	4.395	2.490	10.340	0	8
265	Murappanadu	3.533	3.618	3.110	0.090	7.760	0	6
266	Muri	3.895	3.866	4.040	1.060	7.010	0	6
267	Murti	4.290	4.290	-	1.480	5.820	0	3
268	Musiri	3.044	3.044	-	1.060	5.210	0	5
269	Muthankera	3.022	3.323	1.820	0.270	6.480	0	5
270	Nagrakata	5.100	5.100	-	4.760	5.470	0	3
271	Naharkatia	5.187	5.569	3.850	1.260	13.420	0	9
272	Naidupet	7.620	7.620	-	7.620	7.620	0	1
273	Nallammaranpatty	10.023	11.915	6.240	0.520	23.310	0	3
274	Nallathur	8.203	8.203	-	2.450	14.330	0	3
275	Namsai	7.244	6.571	9.600	1.250	11.660	0	9
276	Nandgaon	3.934	3.342	5.415	0.860	8.480	0	7
277	Nandipalli	4.918	7.220	2.615	1.960	10.650	0	4
278	Nanglamoraghat	8.063	8.321	7.160	1.180	37.580	0	9
279	Neamatighat	3.356	3.913	1.405	0.360	7.120	0	9
280	Neeleswaram	2.010	1.973	2.160	0.880	3.230	0	5
281	Neemsar	7.224	9.240	2.185	0.480	17.570	0	7
282	Nellithurai	2.591	2.591	-	0.003	6.540	0	4
283	Nellore	3.285	3.285	-	3.180	3.390	0	2
284	Neora	3.037	3.037	-	0.020	7.310	0	3
285	Nowrangpur	2.058	2.028	2.180	1.460	3.000	0	5
286	Numaligarh	4.540	4.366	5.150	1.280	8.070	0	9
287	P.G.Bridge	5.614	3.462	12.070	0.600	20.990	0	8
288	Pachauli	1.990	3.930	0.050	0.050	3.930	0	2
289	Pachegaon	5.420	-	5.420	5.420	5.420	0	1
290	Paderdibadi	3.930	3.696	4.750	0.780	8.580	0	9
291	Pagladiya N.T.Road Crossing	2.907	3.511	0.790	0.040	8.960	0	9
292	Paleru Bridge	4.243	4.080	4.730	1.560	7.770	0	4
293	Paliakalan	6.879	8.202	2.910	2.430	17.000	0	8
294	Palla	8.040	9.484	2.985	0.620	34.300	0	9
295	Panbari	2.265	2.265	-	1.680	2.850	0	2
296	Pancharatna	2.376	2.730	1.135	0.120	7.200	0	9
297	Pandu	4.808	5.771	1.435	0.020	11.740	0	9
298	Panposh	7.877	2.538	34.570	0.190	34.570	0	6
299	Passighat	4.030	4.030	-	0.370	9.390	0	5
300	Patan	6.586	6.604	6.520	2.010	17.730	0	9
301	Pathagudem	2.684	2.393	3.850	1.650	3.850	0	5
302	Pathardhi	2.940	2.940	-	2.940	2.940	0	1
303	Pati	2.302	2.638	0.960	0.780	4.540	0	5
304	Patna	3.992	4.453	2.380	1.210	9.580	0	9
305	Pattazhy	1.912	1.863	2.110	0.280	3.230	0	5
306	Pauni	4.816	3.431	9.660	0.680	15.040	0	9
307	Peralam	3.870	3.870	-	3.870	3.870	0	1

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308	Perumannu	3.970	3.853	4.440	0.670	7.430	0	5
309	Perur	2.430	1.783	5.020	0.250	5.020	0	5
310	Phulgaon (Seasonal)	5.800	-	5.800	5.800	5.800	0	1
311	Pingalwada	44.639	57.460	6.175	0.270	314.930	1	7
312	Polavaram	2.116	1.743	3.610	0.370	3.610	0	5
313	Pratapgarh	5.499	4.455	8.630	2.460	12.490	0	8
314	Pratapur	5.256	5.300	5.145	1.290	9.800	0	7
315	Prem Nagar	6.778	7.514	3.100	1.850	17.320	0	6
316	Pudur	3.498	3.905	1.870	0.540	8.510	0	5
317	Pulamanthole	2.608	3.045	0.860	0.480	5.530	0	5
318	Purna	1.610	1.610	-	1.610	1.610	0	1
319	Purushottampur	5.837	6.984	0.100	0.100	18.410	0	6
320	Puthimari D.R.F.	4.900	6.079	0.775	0.020	19.860	0	9
321	Puthimari NH Road cross-ing	2.059	2.435	0.930	0.030	7.830	0	8
322	Raibareli	7.293	9.584	1.565	0.560	19.600	0	7
323	Rajapur	5.043	4.828	5.475	1.520	8.770	0	6
324	Rajegaon	5.399	5.338	5.580	0.590	12.150	0	8
325	Rajghat	6.675	6.590	6.845	0.180	13.510	0	6
326	Rajim	3.280	3.280	-	3.280	3.280	0	1
327	Ram Munshi Bagh	2.330	2.505	1.630	0.680	6.420	0	5
328	Ramakona	11.303	5.522	28.645	0.630	49.090	0	8
329	Ramamangalam	2.366	2.470	1.950	0.400	5.530	0	5
330	Rampur	7.097	7.097	-	5.580	7.860	0	3
331	Ranganadi NT-Road Xing	7.714	9.256	2.320	0.610	24.680	0	9
332	Rangeli	6.914	7.413	5.170	0.840	15.590	0	9
333	Rangpo	5.217	5.217	-	3.190	8.020	0	3
334	Regauli	11.918	7.318	25.715	2.020	44.090	0	8
335	Rishikesh	3.617	4.036	2.150	0.150	13.290	0	9
336	Rudraprayag	4.811	3.742	8.020	0.960	11.880	0	8
337	Safapora	8.890	9.564	5.520	0.500	37.040	0	6
338	Sakleshpur	2.427	2.162	4.020	0.930	4.280	0	7
339	Sakmur	4.829	3.274	10.270	0.830	17.610	0	9
340	Salebhata	4.607	4.607	-	2.180	7.890	0	3
341	Samdoli	6.310		6.310	6.310	6.310	0	1
342	Sandia	9.146	10.464	4.530	1.200	29.950	0	9
343	Sangam	4.056	4.530	1.925	0.500	19.770	0	11
344	Sangod	2.577	0.650	3.540	0.650	5.680	0	3
345	Sankalan	4.920	4.920	-	3.280	6.560	0	3
346	Sankosh LRP	2.745	2.657	3.010	1.920	3.680	0	4
347	Santeguli	2.703	2.620	3.200	0.410	4.190	0	7
348	Sarangkheda	6.339	6.714	5.400	0.630	13.960	0	7
349	Satrapur	3.806	3.534	4.755	1.120	9.090	0	9
350	Savandapur	3.039	2.727	3.975	1.450	4.600	0	8
351	Seondha	6.912	8.000	1.470	0.880	26.440	0	6

S. No.	Water Quality Site	Copper					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
352	Seppa	8.296	8.231	8.520	0.120	33.040	0	9
353	Sevanur	1.350	1.350	-	1.350	1.350	0	1
354	Sevoke	8.263	8.263	-	3.330	15.160	0	3
355	Shahijina	5.157	6.488	1.830	0.010	12.570	0	7
356	Shahzadpur	7.038	7.678	5.115	0.060	22.550	0	8
357	Shimoga	2.176	2.057	2.890	0.270	4.750	0	7
358	Sibbari	0.476	0.450	0.515	0.020	1.290	0	5
359	Sikandarpur	2.414	2.549	1.945	0.240	8.590	0	9
360	Simga	4.550	4.550	-	4.310	4.870	0	3
361	Singla-Bazar	5.007	5.007	-	3.440	7.020	0	3
362	Sivasagar	7.300	7.011	8.310	0.080	31.650	0	9
363	Sonapur	2.589	3.013	0.040	0.040	6.680	0	7
364	Srikakulam	5.232	6.266	0.060	0.060	20.560	0	6
365	Srinagar	2.955	2.403	4.610	0.570	5.850	0	4
366	Sripalpur	4.170	4.643	2.515	0.320	9.710	0	9
367	Suklai	3.818	4.670	0.835	0.140	11.470	0	9
368	Sultanpur	5.274	4.878	6.460	0.040	12.880	0	8
369	Sulurpet	2.150	2.150	-	2.150	2.150	0	1
370	Sundergarh	5.653	5.653	-	4.010	7.440	0	3
371	T. Bekuppe	2.811	2.932	2.090	0.110	7.270	0	7
372	T. Narasipur	2.727	3.260	1.660	1.520	5.000	0	3
373	T. Ramapuram	8.285	8.285	-	1.700	14.870	0	2
374	T.K.Halli	4.253	4.253	-	2.880	5.040	0	3
375	Tal	1.897	0.960	2.365	0.960	2.650	0	3
376	Talcher	3.803	3.426	5.690	0.860	9.950	0	6
377	Tandi	2.800	-	2.800	2.800	2.800	0	1
378	Teesta-Bazar	3.510	3.700	2.750	2.750	4.080	0	5
379	Tehri	4.735	4.735	-	0.800	8.670	0	2
380	Tekra	10.867	13.304	2.335	0.690	76.230	1	8
381	Tezpur	9.419	9.806	8.065	0.230	54.000	1	8
382	Tezu	3.211	3.500	2.345	1.070	8.270	0	8
383	Thengudi	5.285	5.285	-	3.840	6.730	0	2
384	Thengumarahada	5.226	6.165	2.410	2.150	22.270	0	8
385	Theni	3.741	3.645	4.030	1.070	6.850	0	8
386	Therriaghat	2.992	0.903	6.125	0.430	6.480	0	5
387	Thevur	0.950	0.950	-	0.950	0.950	0	1
388	Thimmanahalli	2.110	2.110	-	0.280	4.480	0	5
389	Thoppur	4.380	-	4.380	4.380	4.380	0	1
390	Thumpamon	5.710	6.755	1.530	0.390	20.390	0	5
391	Tikarpara	3.227	2.760	5.560	1.330	7.150	0	6
392	Tilga	6.728	3.606	22.340	0.410	22.340	0	6
393	Tonk	4.150	7.230	1.070	1.070	7.230	0	2
394	Tribeni	3.630	4.316	1.230	0.060	10.660	0	9
395	Tufanganj	6.858	8.510	1.900	1.900	13.840	0	4

S. No.	Water Quality Site	Copper					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 50 µg/L	Below 50 µg/L
396	Tuini	4.096	4.816	1.575	0.950	9.240	0	9
397	Turtipar	8.638	10.647	2.610	1.710	26.650	0	8
398	Udaipur (Chandra)	2.930	-	2.930	2.930	2.930	0	1
399	Udaipur (Tirap)	3.858	3.349	5.640	0.010	10.260	0	9
400	Udi	4.859	6.028	1.935	0.200	10.680	0	7
401	Ujjain	4.530	6.830	2.230	2.230	6.830	0	2
402	Urachikottai	4.234	3.380	7.650	0.440	10.020	0	5
403	Uttarkashi	5.034	5.790	2.390	0.140	15.270	0	9
404	Vandiperiyar	3.746	4.313	1.480	1.360	7.500	0	5
405	Vapi	12.065	15.302	2.355	0.320	61.550	1	7
406	Varanasi	5.362	5.259	5.725	2.360	9.880	0	9
407	Vautha	15.401	19.253	1.920	0.400	58.340	1	8
408	Vazhavachanur	4.440	4.440	-	3.210	5.670	0	2
409	Wadenapally	4.146	4.190	3.970	0.780	11.780	0	5
410	Wairagarh	4.467	5.890	1.620	1.200	13.660	0	6
411	Warunji	3.130	-	3.130	3.130	3.130	0	1
412	Yadgir	2.820	-	2.820	2.820	2.820	0	1
413	Yashwant nagar	5.630	3.826	11.945	0.960	17.570	0	9
414	Yennehole	3.550	2.730	6.010	1.080	6.010	0	4

NICKEL

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
1	A B Road Xing	2.070	2.660	1.480	1.480	2.660	0	2
2	A.P. Puram	5.973	5.973	-	1.870	10.480	0	4
3	A.P.Ghat	0.605	0.670	0.410	0.210	1.240	0	4
4	Aauriya	4.675	5.044	2.830	0.330	12.370	0	6
5	Abu Road	1.323	1.323	-	0.680	1.700	0	3
6	Addoor	3.410	3.410	-	3.410	3.410	0	1
7	Adityapur	2.776	2.776	-	0.130	5.220	0	5
8	Agra	4.633	4.950	3.050	0.470	9.900	0	6
9	Aie NH Crossing	1.847	1.847	-	0.910	2.870	0	3
10	Akabarpur	1.569	1.771	0.560	0.146	4.780	0	6
11	Akhnoor	1.596	1.596	-	0.158	5.560	0	5
12	Akkihebbal	2.454	2.454	-	0.170	9.290	0	5
13	Aklera	1.717	2.530	0.090	0.090	3.920	0	3
14	Alladupalli	4.664	5.399	0.260	0.010	28.030	1	6
15	Allahabad	2.035	2.248	0.540	0.237	9.950	0	8
16	Alutuma	1.158	1.158	-	0.131	2.410	0	5
17	Ambarampalayam	3.000	3.000	-	0.200	9.240	0	5
18	Ambasamudram	1.010	1.010	-	1.010	1.010	0	1
19	Anandpur	2.035	2.035	-	0.116	4.100	0	5
20	Andhiyar Kore	4.247	4.247	-	1.530	8.690	0	3
21	Ankinghat	3.783	4.295	0.710	0.199	17.490	0	7
22	Annavasal	0.360	0.360	-	0.360	0.360	0	1
23	Arangaly	1.867	1.867	-	1.020	3.230	0	3
24	Arcot	0.460	-	0.460	0.460	0.460	0	1
25	Arjunwad		-	-	0.000	0.000	0	0
26	Ashramam	6.217	6.217	-	1.180	15.280	0	3
27	Ashti	2.284	2.501	0.770	0.064	8.230	0	8
28	Avershe	0.443	0.443	-	0.120	0.990	0	3
29	Ayilam	1.950	1.950	-	0.450	4.420	0	3
30	Ayodhya	5.431	6.300	0.220	0.220	21.690	1	6
31	Azmabad	0.903	0.959	0.510	0.150	2.250	0	8
32	B.P. Ghat	1.198	1.388	0.440	0.190	1.890	0	5
33	Badatighat	1.566	1.775	0.100	0.010	8.480	0	8
34	Badlapur	2.650	2.650	-	1.690	3.590	0	4
35	Balrampur	3.749	4.060	1.880	0.240	9.220	0	7
36	Baltara	2.005	2.121	1.190	0.150	6.530	0	8
37	Bamni (Banjar)	0.907	1.057	0.010	0.010	3.780	0	7
38	Bamni (Wardha)	3.439	3.875	0.390	0.102	10.300	0	8
39	Bamnidih	9.363	9.363	-	0.980	24.120	1	2
40	Banda	6.290	6.966	2.910	0.320	27.870	1	5
41	Bansi	2.209	2.541	0.550	0.550	5.710	0	6

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
42	Bantwal	4.455	4.455	-	1.520	7.390	0	2
43	Baranwada	4.787	4.787	-	2.100	9.490	0	3
44	Bareilly	3.391	3.932	0.150	0.150	14.190	0	7
45	Barmanghat	18.108	20.665	0.210	0.010	85.940	2	6
46	Barobisha	0.967	0.967	-	0.560	1.740	0	3
47	Barod	2.986	3.675	0.230	0.230	9.440	0	5
48	Baronda	1.050	1.050	-	1.050	1.050	0	1
49	Basantpur	20.850	20.850	-	1.020	59.210	1	2
50	Basti	3.523	4.073	0.220	0.220	11.720	0	7
51	Bawapuram	17.980	17.980	-	5.660	30.300	1	1
52	Behalpur	1.305	1.305	-	0.800	1.810	0	2
53	Beki Mathanguri	1.055	1.055	-	0.720	1.390	0	2
54	Beki Road Bridge	0.687	0.687	-	0.430	0.950	0	3
55	Belkhedi	1.406	1.531	0.530	0.095	4.600	0	8
56	Belne Bridge	-	-	-	0.000	0.000	0	0
57	Bendrahalli	1.830	1.830	-	1.830	1.830	0	1
58	Berhampore	1.335	1.510	0.110	0.022	6.130	0	8
59	Bhadrachalam	6.710	6.710	-	0.170	16.720	0	4
60	Bhalukpong	13.473	15.060	2.360	0.310	83.830	1	7
61	Bhatpalli	4.635	5.211	0.600	0.086	14.090	0	8
62	Bhitaura	2.502	2.756	0.980	0.265	8.770	0	7
63	Bhomoraguri	1.964	1.810	3.040	0.410	6.900	0	8
64	Bihubar	5.531	6.287	0.240	0.170	16.540	0	8
65	Biligundullu	4.838	4.838		0.040	11.220	0	5
66	Birdghat	3.074	3.481	0.630	0.288	11.150	0	7
67	Bokajan	2.139	2.144	2.100	0.320	6.680	0	8
68	Burhanpur	3.350	3.834	0.930	0.300	11.670	0	6
69	Buxar	1.154	1.220	0.690	0.349	3.690	0	8
70	Byaladahalli	0.640	0.640	-	0.010	1.270	0	2
71	Champasari	1.223	1.223	-	1.130	1.380	0	3
72	Champua	0.790	0.790	-	0.122	1.500	0	5
73	Chanwada	10.429	12.024	0.860	0.083	67.730	1	6
74	Chapra	0.809	0.904	0.150	0.005	1.500	0	8
75	Chel	3.173	3.173	-	0.470	5.490	0	3
76	Chengalpet	0.723	0.690	0.790	0.470	0.910	0	3
77	Chenimari	2.134	2.347	0.640	0.140	10.910	0	8
78	Chennur	4.588	5.277	0.460	0.099	24.600	1	6
79	Chepan	1.560	1.560	-	0.150	4.170	0	3
80	Chhidgaon	1.860	2.095	0.210	0.116	11.110	0	8
81	Chitrasani	3.658	4.220	0.850	0.390	15.460	0	6
82	Chittorgarh	6.950	6.950	-	6.950	6.950	0	1
83	Cholachguda	1.590	1.590	-	1.590	1.590	0	1
84	Chopan	2.656	2.854	1.270	0.135	11.070	0	8
85	Chouldhowaghat	1.591	1.592	1.580	0.214	7.200	0	8

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
86	Chuchankatte	0.870	0.870	-	0.870	0.870	0	1
87	Coronation	2.673	2.673	-	1.120	3.880	0	3
88	Dabri	2.994	3.485	0.050	0.050	13.060	0	7
89	Damarcherla	7.827	7.827	-	2.670	14.300	0	3
90	Dawki	0.923	1.137	0.280	0.040	2.810	0	4
91	Delhi Rly Bridge	7.793	8.546	2.520	1.640	16.820	0	8
92	Deoprayag	2.227	2.529	0.110	0.110	7.930	0	8
93	Derol Bridge	2.044	2.054	1.970	0.080	10.370	0	8
94	Desangpani	4.968	5.455	1.560	0.900	14.900	0	8
95	Dhamkund	1.349	1.349	-	0.030	5.350	0	5
96	Dharamtul	2.037	2.300	0.200	0.200	7.830	0	8
97	Dheng Bridge	1.954	2.153	0.560	0.142	6.030	0	8
98	Dholabazar	1.821	1.703	2.640	0.050	9.030	0	8
99	Dholai	0.633	0.749	0.170	0.037	2.440	0	5
100	Dholpur	5.178	5.524	3.450	0.750	12.680	0	6
101	Dhubri	3.125	3.125	-	1.530	4.720	0	2
102	Dhulsar	0.890	1.570	0.210	0.210	1.570	0	2
103	Diana	1.320	1.320	-	1.320	1.320	0	1
104	Dibrugarh	1.628	1.729	0.920	0.010	8.920	0	8
105	Dillighat	1.783	1.921	0.820	0.020	10.370	0	8
106	Dimapara	0.909	1.022	0.570	0.075	2.090	0	4
107	Dindori	1.568	1.762	0.210	0.090	4.130	0	8
108	Domohani	1.290	1.290	-	0.320	2.240	0	3
109	Duddhi	1.781	1.938	0.680	0.149	7.890	0	8
110	Dudhnai	1.647	1.881	0.010	0.010	8.250	0	8
111	Durvesh	31.620	37.822	0.610	0.088	179.340	1	5
112	Ekmighat	0.890	0.909	0.760	0.130	1.630	0	8
113	Elginbridge	2.909	3.359	0.210	0.210	10.390	0	7
114	Elunuthimanagalam	13.177	13.177	-	3.350	21.400	1	2
115	English Bazar	0.493	0.542	0.150	0.017	1.310	0	8
116	Erinjipuzha	1.837	1.837	-	0.250	4.240	0	3
117	Etawah	4.577	4.854	3.190	1.050	7.550	0	6
118	Fakirabazar	0.378	0.317	0.560	0.080	0.690	0	4
119	Farakka	1.328	1.502	0.110	0.015	5.250	0	8
120	Farakka/(HR)	1.297	1.488	0.150	0.136	5.090	0	7
121	Fatehgarh	2.896	3.363	0.090	0.090	12.220	0	7
122	Fulertal	0.671	0.746	0.520	0.032	1.460	0	3
123	Gadarwara	1.282	1.488	0.050	0.050	4.040	0	7
124	Gadat	0.720	0.834	0.150	0.150	2.620	0	6
125	Gajaldoba	0.707	0.707	-	0.150	1.670	0	3
126	Galeta	6.281	5.463	12.000	0.234	16.700	0	8
127	Ganod	2.660	2.660	-	0.220	6.820	0	6
128	Garhamukteshwar	3.424	3.973	0.130	0.130	13.780	0	7
129	Garrauli	2.158	2.020	2.570	1.020	3.520	0	4

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
130	Garudeshwar	0.608	0.575	0.810	0.087	1.480	0	7
131	Gaya	0.687	0.950	0.160	0.160	1.570	0	3
132	Gelabil	4.427	6.030	1.220	1.220	10.800	0	3
133	Ghat	3.700	4.161	0.930	0.368	12.300	0	7
134	Ghatora	10.317	10.317	-	0.970	28.990	1	2
135	Ghatsila	8.742	8.742	-	0.119	36.960	1	4
136	Ghish	1.780	1.780	-	1.540	2.160	0	3
137	Ghugumari	1.617	1.617	-	0.090	4.020	0	3
138	Gokak	1.520	1.520	-	1.520	1.520	0	1
139	Golagang	1.025	1.025	-	0.490	1.560	0	2
140	Golaghat	3.443	3.796	0.970	0.220	10.360	0	8
141	Gomlai	1.685	1.685	-	0.116	3.250	0	5
142	Gopalkheda	14.227	20.845	0.990	0.990	39.850	1	2
143	Govindapur	0.972	0.972	-	0.121	2.900	0	5
144	Gummanur	3.268	3.268	-	0.790	10.050	0	5
145	Gumrabazar	0.808	0.875	0.540	0.049	2.290	0	5
146	Gunupur	1.435	1.435	-	0.133	4.510	0	5
147	Haladi	2.782	2.782	-	0.010	8.110	0	5
148	Halia	5.358	5.358	-	2.350	10.810	0	4
149	Hamirpur	7.172	8.030	2.880	2.710	12.580	0	6
150	Handia	1.306	1.466	0.190	0.130	7.080	0	8
151	Hanskhali	1.170	1.311	0.180	0.019	4.580	0	8
152	Haridwar	1.843	1.920	1.380	0.030	10.310	0	7
153	Harlahalli	4.777	4.777	-	0.700	11.920	0	3
154	Hasimara	2.053	2.053	-	0.670	4.250	0	3
155	Hathidah	2.279	2.545	0.420	0.360	12.870	0	8
156	Hayaghat	1.544	1.741	0.170	0.170	5.430	0	8
157	Hivra	1.624	1.797	0.410	0.100	7.120	0	8
158	Holehonnur	2.302	2.302	-	0.080	9.140	0	5
159	Honnali	2.172	2.172	-	0.090	7.900	0	5
160	Hoshangabad	0.991	1.124	0.060	0.060	4.600	0	8
161	Huvin Hedgi	13.047	13.047	-	5.300	23.720	1	2
162	Jagdalpur	19.390	19.390	-	19.390	19.390	0	1
163	Jagibhakatgaon	1.700	1.905	0.270	0.070	5.560	0	8
164	Jai Nagar	1.046	1.158	0.260	0.157	3.720	0	8
165	Jaldhaka NH-31	1.397	1.397	-	0.290	2.720	0	3
166	Jammu Tawi	2.017	2.017	-	0.153	6.530	0	5
167	Jamshedpur	5.201	5.201	-	0.106	20.270	1	4
168	Jamsolghat	0.475	0.475	-	0.109	0.840	0	2
169	Japla	1.101	1.238	0.140	0.140	3.660	0	8
170	Jaraikela	4.217	4.217	-	0.137	16.530	0	5
171	Jenapur	2.404	2.404	-	0.108	6.260	0	5
172	Jhanjharpur	1.722	1.875	0.650	0.153	6.320	0	8
173	Jiabharali NT Road Xing	2.964	1.871	10.610	0.170	10.610	0	8

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
174	Jondhra	1.910	1.910	-	1.910	1.910	0	1
175	K.M. Vadi	2.550	2.550	-	1.210	3.890	0	2
176	Kachlabridge	6.043	7.044	0.040	0.040	26.840	1	6
177	Kalampur	1.167	1.167	-	0.190	2.310	0	3
178	Kalanaur	4.369	4.706	2.010	0.460	8.460	0	8
179	Kallooppara	3.900	3.900	-	1.150	8.530	0	3
180	Kalna (EBB)	1.306	1.603	0.120	0.120	4.080	0	5
181	Kalna (Flow)*	0.216	0.216		0.008	0.350	0	3
182	Kamalapuram	0.950		0.950	0.950	0.950	0	1
183	Kamalpur	0.480	0.480	-	0.230	0.730	0	2
184	Kampur	2.922	3.267	0.510	0.250	10.670	0	8
185	Kanpur	3.598	4.184	0.080	0.080	17.170	0	7
186	Kantamal	8.590	8.590	-	0.950	19.520	0	3
187	Karad	-	-	-	0.000	0.000	0	0
188	Karathodu	1.377	1.377		0.180	3.010	0	3
189	Kashinagar	0.999	0.999		0.125	1.730	0	5
190	Katwa	0.898	1.015	0.080	0.025	3.500	0	8
191	Keesara	19.790	19.790	-	19.790	19.790	0	1
192	Kellodu	1.180	1.180	-	1.180	1.180	0	1
193	Keolari	2.388	2.602	0.890	0.075	10.420	0	8
194	Kesinga	3.163	3.163	-	1.010	6.360	0	3
195	Khanitar	2.455	2.455	-	1.270	3.640	0	2
196	Khanpur	1.277	1.281	1.250	0.177	4.870	0	8
197	Kharkhana	0.456	0.491	0.350	0.062	0.950	0	4
198	Khatoli	5.238	2.830	17.280	0.320	17.280	0	6
199	Kheronighat	1.615	1.477	2.580	0.180	4.790	0	8
200	Kidangoor	1.147	1.147	-	0.900	1.490	0	3
201	Kodumudi	3.028	3.028	-	0.310	8.780	0	5
202	Koelwar	1.933	2.132	0.540	0.060	8.400	0	8
203	Kogaon	0.612	0.773	0.290	0.290	0.946	0	3
204	Kokrajhar	2.650	2.650	-	1.050	3.680	0	3
205	Kollegal	1.253	1.253	-	0.990	1.640	0	3
206	Konta	3.268	3.268	-	0.180	10.590	0	4
207	Koperagaon	-	-	-	0.000	0.000	0	0
208	Kora	3.360	3.694	1.690	0.080	6.530	0	6
209	Koteshwar	3.169	3.782	0.100	0.050	15.450	0	6
210	Kudalaiyathur	5.750	5.750	-	5.750	5.750	0	1
211	Kudige	3.206	3.206	-	0.550	11.320	0	5
212	Kudlur	4.890	4.890	-	4.890	4.890	0	1
213	Kuldah Bridge	2.346	2.320	2.500	0.131	7.890	0	7
214	Kulsi	2.097	2.362	0.240	0.190	7.330	0	8
215	Kumbidi	1.600	1.600	-	1.230	1.840	0	3
216	Kumhari	1.818	1.920	1.100	0.073	10.000	0	8
217	Kuniyil	2.373	2.373	-	0.300	5.770	0	3

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
218	Kuppelur	1.350	1.350	-	1.350	1.350	0	1
219	Kurubhata	12.710	12.710	-	0.730	27.570	1	2
220	Kurundwad	-	-	--	0.000	0.000	0	0
221	Kuttyadi	2.830	2.830	-	1.000	4.670	0	3
222	Kuzhithurai	4.310	4.310	-	1.060	10.350	0	3
223	Labha	0.932	1.041	0.170	0.027	3.180	0	8
224	Lakhisarai	1.476	1.486	1.420	0.120	5.270	0	7
225	Lalganj	1.394	1.314	1.950	0.220	3.440	0	8
226	Lowara	36.312	41.462	0.260	0.194	184.640	2	6
227	Lucknow	3.415	3.722	1.570	0.253	11.150	0	7
228	M.H. Halli	2.913	2.913	-	0.250	5.530	0	3
229	Madhira	10.945	10.945	-	4.590	17.300	0	2
230	Madla	1.860	1.762	2.350	0.230	3.770	0	6
231	Mahidpur	1.550	2.140	0.960	0.960	2.140	0	2
232	Mahuwa	4.826	5.741	0.250	0.245	19.330	0	6
233	Maighat	2.285	2.519	0.650	0.122	11.080	0	8
234	Majhitar	5.080	5.080	-	5.080	5.080	0	1
235	Malakkara	1.353	1.353	-	0.480	2.000	0	3
236	Malkhed	3.495	3.495	-	0.510	6.480	0	2
237	Manas NH Crossing	0.845	0.845	-	0.160	1.530	0	2
238	Mancherial	4.523	4.523	-	0.180	8.160	0	4
239	Mandleshwar	0.638	0.727	0.010	0.010	1.540	0	8
240	Manendragarh	0.695	0.695	-	0.630	0.760	0	2
241	Mangaon (Seasonal)	-	-	-	0.000	0.000	0	0
242	Mankara	3.030	3.030	-	1.200	6.150	0	3
243	Manot	2.515	2.533	2.390	0.110	9.263	0	8
244	Mantralayam	12.587	12.587	-	0.620	31.390	1	2
245	Marella	10.533	10.533	-	5.070	16.150	0	3
246	Margherita	2.206	2.431	0.630	0.040	10.210	0	8
247	Marol	1.200	1.200	-	1.200	1.200	0	1
248	Mataji	1.466	1.441	1.640	0.225	4.450	0	8
249	Mathabhanga	1.840	1.840	-	0.520	3.160	0	2
250	Mathanguri	0.250	0.250	-	0.250	0.250	0	1
251	Mathura	5.604	6.187	1.520	0.790	12.870	0	8
252	Matigara	3.847	3.847		0.290	8.840	0	3
253	Matijuri	0.793	1.110	0.160	0.160	1.980	0	3
254	Matunga	1.821	2.048	0.230	0.157	9.170	0	8
255	Mawi	5.655	5.206	8.800	0.320	11.830	0	8
256	Meja Road	2.320	2.642	0.390	0.132	10.050	0	7
257	Mekhliganj	1.187	1.187	-	0.230	2.080	0	3
258	Miao	2.531	2.234	4.610	0.060	9.410	0	8
259	Mirzapur	2.099	2.374	0.170	0.170	8.590	0	8
260	Mohana (Betwa)	4.222	4.783	1.980	0.640	9.340	0	5
261	Mohana (Yamuna)	3.660	3.773	2.870	0.270	7.400	0	8

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
262	Mohgaoan	1.096	1.077	1.230	0.080	3.850	0	8
263	Moradabad	4.217	4.910	0.060	0.060	16.580	0	7
264	Motinaroli	3.392	3.914	0.260	0.103	9.460	0	7
265	Murappanadu	4.796	4.796	-	0.160	11.520	0	5
266	Muri	1.753	1.753	-	0.117	4.530	0	5
267	Murti	1.217	1.217	-	0.100	2.660	0	3
268	Musiri	3.900	3.900	-	0.380	8.590	0	5
269	Muthankera	1.900	1.900	-	0.970	3.080	0	3
270	Nagrakata	2.400	2.400	-	1.270	3.720	0	3
271	Naharkatia	3.925	4.304	1.270	0.310	19.590	0	8
272	Naidupet	0.050	0.050	-	0.050	0.050	0	1
273	Nallammaranpatty	2.525	2.525	-	1.720	3.330	0	2
274	Nallathur	2.857	2.857	-	0.480	6.910	0	3
275	Namsai	2.140	2.334	0.780	0.090	8.300	0	8
276	Nandgaon	0.843	0.956	0.280	0.280	1.420	0	6
277	Nandipalli	0.924	1.141	0.490	0.132	2.150	0	3
278	Nanglamoraghat	2.813	3.051	1.150	0.230	16.690	0	8
279	Neamatighat	0.967	1.052	0.370	0.250	2.300	0	8
280	Neeleswaram	1.003	1.003	-	0.200	1.940	0	3
281	Neemsar	3.397	3.946	0.650	0.172	11.870	0	6
282	Nellithurai	2.583	2.583	-	0.060	8.100	0	4
283	Nellore	0.825	0.825	-	0.460	1.190	0	2
284	Neora	2.860	2.860	-	0.300	5.640	0	3
285	Nowrangpur	4.070	4.070	-	0.380	12.680	0	4
286	Numaligarh	2.232	2.293	1.810	0.220	9.500	0	8
287	P.G.Bridge	2.421	2.786	0.230	0.115	10.010	0	7
288	Pachauli	7.820	7.820	-	7.820	7.820	0	1
289	Pachegaon	-	-	-	0.000	0.000	0	0
290	Paderdibadi	1.329	1.366	1.070	0.220	4.790	0	8
291	Pagladiya N.T.Road Crossing	1.577	1.758	0.310	0.010	8.150	0	8
292	Paleru Bridge	5.407	5.407	-	2.370	9.970	0	3
293	Paliakalan	7.956	3.829	32.720	0.253	32.720	1	6
294	Palla	5.296	5.539	3.600	1.030	8.500	0	8
295	Panbari	1.745	1.745	-	1.710	1.780	0	2
296	Pancharatna	1.696	1.864	0.520	0.020	10.310	0	8
297	Pandu	1.605	1.824	0.070	0.050	10.210	0	8
298	Panposh	12.702	12.702	-	0.128	56.740	1	4
299	Passighat	5.056	5.056	-	0.130	21.180	1	4
300	Patan	2.162	2.455	0.110	0.110	12.730	0	8
301	Pathagudem	4.438	4.438	-	0.290	15.040	0	4
302	Pathardhi	1.190	1.190	-	1.190	1.190	0	1
303	Pati	0.600	0.728	0.090	0.090	1.240	0	5
304	Patna	0.962	0.959	0.980	0.010	3.230	0	8
305	Pattazhy	5.073	5.073	-	0.990	12.130	0	3

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
306	Pauni	1.349	1.403	0.970	0.040	6.530	0	8
307	Peralam	0.070	0.070	-	0.070	0.070	0	1
308	Perumannu	4.917	4.917	-	1.140	10.640	0	3
309	Perur	3.435	3.435	-	0.100	10.380	0	4
310	Phulgaon (Seasonal)	-	-	-	0.000	0.000	0	0
311	Pingalwada	3.569	4.120	0.260	0.260	13.500	0	7
312	Polavaram	3.025	3.025		0.220	10.000	0	4
313	Pratapgarh	1.345	1.422	0.880	0.134	3.640	0	7
314	Pratapur	2.722	2.980	1.430	0.040	6.500	0	6
315	Prem Nagar	2.259	2.259	-	0.154	4.370	0	5
316	Pudur	2.473	2.473	-	0.730	3.720	0	3
317	Pulamanthole	2.917	2.917	-	0.170	7.660	0	3
318	Purna	7.470	7.470	-	7.470	7.470	0	1
319	Purushottampur	1.205	1.205	-	0.123	3.320	0	5
320	Puthimari D.R.F.	1.842	2.102	0.020	0.020	12.040	0	8
321	Puthimari NH Road crossing	1.803	2.102	0.010	0.010	10.290	0	7
322	Raibareli	3.837	4.502	0.510	0.510	9.460	0	6
323	Rajapur	4.886	5.423	2.740	1.440	10.810	0	5
324	Rajegaon	3.516	3.988	0.680	0.119	17.320	0	7
325	Rajghat	1.516	1.450	1.780	0.120	2.810	0	5
326	Rajim	0.870	0.870	-	0.870	0.870	0	1
327	Ram Munshi Bagh	0.900	0.900	-	0.158	2.320	0	4
328	Ramakona	3.246	3.750	0.220	0.180	11.460	0	7
329	Ramamangalam	2.143	2.143	-	0.250	4.820	0	3
330	Rampur	21.397	21.397	-	1.100	57.790	1	2
331	Ranganadi NT-Road Xing	1.322	1.491	0.140	0.140	8.200	0	8
332	Rangeli	1.601	1.787	0.300	0.090	4.690	0	8
333	Rangpo	2.330	2.330		0.610	3.490	0	3
334	Regauli	3.785	4.329	0.520	0.252	14.800	0	7
335	Rishikesh	2.612	2.974	0.080	0.080	10.760	0	8
336	Rudraprayag	3.277	3.801	0.130	0.098	13.080	0	7
337	Safapora	3.605	3.605	-	0.150	7.040	0	4
338	Sakleshpur	2.922	2.922	-	0.060	11.630	0	5
339	Sakmur	3.495	3.927	0.470	0.076	16.770	0	8
340	Salebhata	17.837	17.837	-	1.030	50.070	1	2
341	Samdoli	-	-	-	0.000	0.000	0	0
342	Sandia	1.379	1.563	0.090	0.090	5.040	0	8
343	Sangam	3.467	3.467	-	0.149	18.120	0	9
344	Sangod	6.305	3.840	8.770	3.840	8.770	0	2
345	Sankalan	1.570	1.570	-	0.930	2.190	0	3
346	Sankosh LRP	1.023	1.023	-	0.190	1.710	0	3
347	Santeguli	2.560	2.560	-	0.300	9.460	0	5
348	Sarangkheda	0.995	0.956	1.190	0.060	3.350	0	6
349	Satrapur	1.005	1.083	0.460	0.092	1.980	0	8

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
350	Savandapur	2.416	2.416	-	0.040	8.070	0	5
351	Seondha	0.863	0.778	1.290	0.010	1.820	0	6
352	Seppa	3.594	3.809	2.090	0.390	10.380	0	8
353	Sevanur	2.240	2.240	-	2.240	2.240	0	1
354	Sevoke	1.480	1.480	--	0.250	2.770	0	3
355	Shahijina	3.638	3.872	2.470	1.230	8.580	0	6
356	Shahzadpur	2.374	2.681	0.530	0.248	10.320	0	7
357	Shimoga	2.900	2.900	-	0.040	11.390	0	5
358	Sibbari	0.482	0.446	0.590	0.178	0.880	0	4
359	Sikandarpur	1.572	1.754	0.300	0.190	4.450	0	8
360	Simga	11.253	11.253	-	0.960	25.630	1	2
361	Singla-Bazar	2.727	2.727	-	1.050	6.030	0	3
362	Sivasagar	3.242	3.313	2.750	0.290	8.810	0	8
363	Sonapur	5.447	5.847	3.050	0.380	19.780	0	7
364	Srikakulam	1.426	1.426	-	0.112	4.530	0	5
365	Srinagar	2.840	2.840	-	0.100	8.320	0	3
366	Sripalpur	1.376	1.371	1.410	0.140	2.980	0	8
367	Suklai	1.525	1.738	0.040	0.040	7.860	0	8
368	Sultanpur	2.362	2.592	0.980	0.132	7.860	0	7
369	Sulurpet	0.510	0.510	-	0.510	0.510	0	1
370	Sundergarh	18.870	18.870	-	8.670	37.320	1	2
371	T. Bekuppe	12.424	12.424	--	1.430	44.460	1	4
372	T. Narasipur	0.415	0.415	-	0.130	0.700	0	2
373	T. Ramapuram	26.135	26.135	-	8.700	43.570	1	1
374	T.K.Halli	6.127	6.127	-	1.450	11.370	0	3
375	Tal	1.615	1.800	1.430	1.430	1.800	0	2
376	Talcher	4.224	4.224	-	0.090	8.910	0	5
377	Tandi	-	--	-	0.000	0.000	0	0
378	Teesta-Bazar	1.530	1.530	-	0.050	3.020	0	4
379	Tehri	1.715	1.715	-	0.240	3.190	0	2
380	Tekra	2.822	3.131	0.660	0.157	10.230	0	8
381	Tezpur	2.461	2.386	2.990	0.290	8.310	0	8
382	Tezu	1.419	1.547	0.650	0.270	6.560	0	7
383	Thengudi	0.280	0.280	-	0.010	0.550	0	2
384	Thengumarahada	2.072	2.072	-	0.300	6.810	0	5
385	Theni	3.238	3.238	-	0.040	10.270	0	5
386	Therriaghat	0.859	0.968	0.530	0.044	1.640	0	4
387	Thevur	0.830	0.830	-	0.830	0.830	0	1
388	Thimmanahalli	2.448	2.448	--	0.280	9.230	0	5
389	Thoppur	-	-	-	0.000	0.000	0	0
390	Thumpamon	0.827	0.827	-	0.210	1.300	0	3
391	Tikarpara	1.413	1.413	-	0.123	3.190	0	5
392	Tilga	1.935	1.935	-	0.127	7.440	0	5
393	Tonk	1.785	3.020	0.550	0.550	3.020	0	2

S. No.	Water Quality Site	Nickel (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 20 µg/L	Below 20 µg/L
394	Tribeni	1.081	1.053	1.270	0.330	2.510	0	8
395	Tufanganj	0.783	0.783	-	0.320	1.170	0	3
396	Tuini	1.924	1.861	2.360	0.380	4.270	0	8
397	Turtipar	5.984	6.913	0.410	0.250	14.290	0	7
398	Udaipur (Chandra)	-	-	-	0.000	0.000	0	0
399	Udaipur (Tirap)	2.624	2.971	0.200	0.110	9.380	0	8
400	Udi	3.663	4.018	1.890	0.880	12.200	0	6
401	Ujjain	3.460	4.430	2.490	2.490	4.430	0	2
402	Urachikottai	2.868	2.868	-	0.170	8.950	0	4
403	Uttarkashi	2.649	2.826	1.410	0.030	10.350	0	8
404	Vandiperiyar	8.180	8.180	-	1.010	21.880	1	2
405	Vapi	1.813	2.030	0.510	0.110	4.850	0	7
406	Varanasi	1.864	2.095	0.250	0.164	6.320	0	8
407	Vautha	12.666	14.400	0.530	0.309	49.180	2	6
408	Vazhavachanur	0.335	0.335	-	0.100	0.570	0	2
409	Wadenapally	3.890	3.890	-	0.730	8.500	0	4
410	Wairagarh	0.664	0.638	0.770	0.330	1.450	0	5
411	Warunji	-	-	-	0.000	0.000	0	0
412	Yadgir	-	-	-	0.000	0.000	0	0
413	Yashwant nagar	4.005	4.364	1.490	0.880	9.360	0	8
414	Yennehole	0.530	0.530	-	0.100	0.820	0	3

LEAD

S. No.	Water Quality Site	Lead (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
1	A B Road Xing	2.386	0.587	3.285	0.190	6.380	0	3
2	A.P. Puram	0.747	0.747	-	0.060	2.430	0	4
3	A.P.Ghat	2.038	2.120	1.915	0.251	5.090	0	5
4	Aauriya	2.163	2.626	1.005	0.120	8.220	0	7
5	Abu Road	1.875	1.860	1.920	0.200	4.920	0	4
6	Addoor	0.680	0.180	1.180	0.180	1.180	0	2
7	Adityapur	4.153	4.149	4.170	0.020	13.800	1	5
8	Agra	1.957	2.176	1.410	0.420	4.070	0	7
9	Aie NH Crossing	2.131	2.131	-	0.160	4.940	0	3
10	Akabarpur	9.397	12.296	2.150	0.310	40.840	2	5
11	Akhnoor	1.337	1.034	2.850	0.090	2.850	0	6
12	Akkihebbal	1.069	1.007	1.440	0.010	1.890	0	7
13	Aklera	1.908	0.800	3.015	0.180	5.850	0	4
14	Alladupalli	7.818	9.141	3.850	0.550	22.630	2	6
15	Allahabad	2.465	2.171	3.495	0.380	5.390	0	9
16	Alutuma	0.932	0.760	1.790	0.130	2.070	0	6
17	Ambarampalayam	3.128	3.200	2.915	0.040	13.310	1	7
18	Ambasamudram	0.280	0.280	-	0.280	0.280	0	1
19	Anandpur	3.137	3.574	0.950	0.180	9.861	0	6
20	Andhiyar Kore	0.996	0.996	-	0.120	2.400	0	3
21	Ankinghat	4.690	5.533	2.160	0.220	19.940	1	7
22	Annavasal	0.150	0.150	-	0.150	0.150	0	1
23	Arangaly	1.699	1.922	0.810	0.176	3.620	0	5
24	Arcot	51.520	-	51.520	51.520	51.520	1	0
25	Arjunwad	4.920	-	4.920	4.920	4.920	0	1
26	Ashramam	2.014	2.186	1.330	0.472	4.290	0	5
27	Ashti	1.303	1.182	1.725	0.330	4.530	0	9
28	Avershe	1.995	2.287	1.120	0.040	5.090	0	4
29	Ayilam	0.555	0.562	0.530	0.400	0.740	0	5
30	Ayodhya	5.277	5.840	3.585	0.440	15.810	1	7
31	Azmabad	3.695	4.458	1.025	0.020	22.860	1	8
32	B.P. Ghat	3.711	4.858	1.415	0.720	8.520	0	6
33	Badatighat	3.053	3.519	1.420	0.040	13.780	1	8
34	Badlapur	4.359	4.627	3.290	0.350	13.600	1	4
35	Balrampur	4.336	4.879	2.705	0.550	13.000	1	7
36	Baltara	1.646	1.708	1.430	0.180	6.310	0	9
37	Bamni (Banjar)	2.049	2.508	0.670	0.230	7.040	0	8
38	Bamni (Wardha)	2.556	2.941	1.210	0.146	8.120	0	9
39	Bamnidih	3.657	3.657	-	0.040	9.690	0	3
40	Banda	1.276	1.168	1.545	0.570	2.520	0	7
41	Bansi	4.111	5.504	0.630	0.030	17.430	1	6
42	Bantwal	1.409	0.844	2.540	0.010	2.540	0	3
43	Baranwada	2.932	1.390	7.560	1.198	7.560	0	4

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44	Bareilly	4.813	5.273	3.430	0.820	12.880	1	7
45	Barmanghat	1.201	1.234	1.085	0.150	2.726	0	9
46	Barobisha	2.761	2.101	4.740	0.270	4.740	0	4
47	Barod	2.969	2.814	3.280	0.250	7.726	0	6
48	Baronda	0.010	0.010	-	0.010	0.010	0	1
49	Basantpur	3.655	3.655	-	0.060	7.180	0	3
50	Basti	6.447	7.141	4.365	0.140	28.410	1	7
51	Bawapuram	16.875	16.875	-	0.340	33.410	1	1
52	Behalpur	1.967	1.967	-	0.470	3.464	0	2
53	Beki Mathanguri	2.570	2.570	-	0.330	4.810	0	2
54	Beki Road Bridge	4.009	2.311	9.100	0.290	9.100	0	4
55	Belkhedi	1.895	2.316	0.420	0.020	6.181	0	9
56	Belne Bridge	3.150	-	3.150	3.150	3.150	0	1
57	Bendrahalli	0.040	0.040	-	0.040	0.040	0	1
58	Berhampore	0.851	0.781	1.095	0.070	2.120	0	9
59	Bhadrachalam	1.618	1.466	2.230	0.042	4.520	0	5
60	Bhalukpong	1.799	1.711	2.110	0.310	3.770	0	9
61	Bhatpalli	1.404	1.227	2.025	0.040	4.780	0	9
62	Bhitaura	9.275	10.463	5.710	0.070	34.040	2	6
63	Bhomoraguri	2.410	2.490	2.130	0.053	7.060	0	9
64	Bihubar	3.999	3.621	5.320	0.367	8.610	0	9
65	Biligundullu	2.983	3.143	2.020	0.520	6.740	0	7
66	Birdghat	7.186	8.478	3.310	0.050	18.650	3	5
67	Bokajan	1.478	1.867	0.115	0.019	3.560	0	9
68	Burhanpur	3.494	4.420	1.180	0.750	7.960	0	7
69	Buxar	3.862	4.834	0.460	0.020	16.380	1	8
70	Byaladahalli	0.490	0.490	-	0.010	0.970	0	2
71	Champasari	6.406	6.406	-	1.410	13.600	1	2
72	Champua	1.461	1.407	1.730	0.040	5.810	0	6
73	Chanwada	9.061	8.549	10.600	0.750	39.800	2	6
74	Chapra	1.497	1.534	1.365	0.110	3.079	0	9
75	Chel	4.687	4.687	-	0.790	9.400	0	3
76	Chengalpet	2.007	3.000	0.020	0.020	5.580	0	3
77	Chenimari	3.707	1.520	11.365	0.377	20.550	1	8
78	Chennur	7.607	9.365	2.335	0.580	38.500	1	7
79	Chepan	5.758	6.168	4.530	0.880	9.880	0	4
80	Chhidgaon	1.294	1.417	0.865	0.200	3.590	0	9
81	Chitrasani	1.693	1.822	1.370	0.260	5.280	0	7
82	Chittorgarh	1.830	1.830	-	1.830	1.830	0	1
83	Cholachguda	0.380	0.380	-	0.380	0.380	0	1
84	Chopan	3.154	2.774	4.485	0.090	9.900	0	9
85	Chouldhowaghat	1.913	1.919	1.895	0.010	4.330	0	9
86	Chuchankatte	0.840	0.090	1.590	0.090	1.590	0	2
87	Coronation	3.196	3.196	-	1.280	4.507	0	3

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88	Dabri	5.672	6.778	2.355	0.270	16.540	2	6
89	Damarcherla	3.150	3.150	-	0.160	8.630	0	3
90	Dawki	2.802	3.587	1.625	0.920	5.130	0	5
91	Delhi Rly Bridge	3.265	3.535	2.320	0.110	12.652	1	8
92	Deoprayag	1.495	1.786	0.475	0.190	4.309	0	9
93	Derol Bridge	1.977	2.162	1.330	0.110	7.780	0	9
94	Desangpani	2.322	2.071	3.200	0.449	4.920	0	9
95	Dhamkund	1.582	1.264	3.170	0.010	4.670	0	6
96	Dharamtul	1.496	1.678	0.860	0.100	4.220	0	9
97	Dheng Bridge	1.083	1.155	0.830	0.100	2.580	0	9
98	Dholabazar	2.978	1.576	7.885	0.150	13.130	1	8
99	Dholai	2.241	2.361	2.000	0.260	4.800	0	6
100	Dholpur	0.919	1.122	0.410	0.050	1.890	0	7
101	Dhubri	1.727	1.727	-	1.380	2.073	0	2
102	Dhulsar	1.040	0.190	1.890	0.190	1.890	0	2
103	Diana	0.982	0.982	-	0.982	0.982	0	1
104	Dibrugarh	4.284	2.883	9.185	0.582	14.250	1	8
105	Dillighat	3.323	2.291	6.935	0.204	8.480	0	9
106	Dimapara	6.098	5.163	7.500	0.940	13.090	2	3
107	Dindori	2.243	2.698	0.650	0.410	7.850	0	9
108	Domohani	2.636	2.752	2.290	1.090	4.240	0	4
109	Duddhi	2.898	2.898	2.900	0.066	9.010	0	9
110	Dudhnai	2.875	1.972	6.035	0.140	10.920	1	8
111	Durvesh	55.454	74.822	7.035	0.730	227.930	4	3
112	Ekmighat	1.256	1.319	1.035	0.100	4.230	0	9
113	Elginbridge	4.840	5.110	4.030	0.440	10.850	1	7
114	Elunuthimanagalam	26.250	26.250	-	0.440	76.490	1	2
115	English Bazar	1.393	1.527	0.925	0.160	6.020	0	9
116	Erinjipuzha	1.520	0.505	5.580	0.068	5.580	0	5
117	Etawah	1.739	1.932	1.255	0.490	3.670	0	7
118	Fakirabazar	5.696	8.036	2.185	1.560	19.759	1	4
119	Farakka	2.061	2.252	1.390	0.170	7.460	0	9
120	Farakka/(HR)	1.099	1.045	1.260	0.100	4.550	0	8
121	Fatehgarh	4.421	5.668	0.680	0.030	14.610	1	7
122	Fulertal	10.200	18.535	1.865	1.210	32.680	1	3
123	Gadarwara	0.884	1.130	0.145	0.010	2.410	0	8
124	Gadat	2.054	1.610	3.165	0.780	5.430	0	7
125	Gajaldoba	2.678	2.678	-	1.020	4.300	0	3
126	Galeta	4.619	4.924	3.550	0.280	18.520	1	8
127	Ganod	2.164	2.308	1.300	0.046	7.790	0	7
128	Garhamukteshwar	3.259	3.424	2.765	1.280	9.350	0	8
129	Garrauli	1.870	2.323	1.190	0.460	4.430	0	5
130	Garudeshwar	4.240	5.263	1.170	0.540	21.930	1	7
131	Gaya	2.270	2.865	1.675	0.450	5.020	0	4

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132	Gelabil	3.458	2.290	4.625	1.610	7.540	0	4
133	Ghat	3.721	3.807	3.465	1.070	7.820	0	8
134	Ghatora	1.489	1.489	-	0.570	3.290	0	3
135	Ghatsila	9.185	10.676	1.730	0.200	37.660	1	5
136	Ghish	3.927	3.927	-	0.140	8.122	0	3
137	Ghugumari	2.894	2.972	2.660	0.280	6.090	0	4
138	Gokak	2.315	0.430	4.200	0.430	4.200	0	2
139	Golagang	2.530	2.530	-	0.270	4.790	0	2
140	Golaghat	2.143	1.828	3.245	0.010	5.500	0	9
141	Gomlai	13.792	16.336	1.070	0.040	77.420	1	5
142	Gopalkheda	18.945	18.015	19.875	1.260	37.620	2	2
143	Govindapur	2.288	2.538	1.040	0.460	4.970	0	6
144	Gummanur	3.665	4.222	1.995	0.230	13.980	1	7
145	Gumrabazar	2.993	3.820	1.340	0.970	5.170	0	6
146	Gunupur	0.891	0.939	0.650	0.230	2.030	0	6
147	Haladi	2.483	2.677	1.320	0.080	12.180	1	6
148	Halia	3.104	3.104	-	0.260	9.500	0	4
149	Hamirpur	1.097	1.220	0.790	0.070	2.050	0	7
150	Handia	1.490	1.737	0.625	0.290	4.530	0	9
151	Hanskhali	1.684	2.055	0.385	0.010	8.080	0	9
152	Haridwar	1.208	1.412	0.595	0.150	4.020	0	8
153	Harlahalli	1.533	1.360	2.050	0.220	3.350	0	4
154	Hasimara	5.579	6.528	2.730	1.690	9.120	0	4
155	Hathidah	4.978	6.251	0.520	0.040	36.910	1	8
156	Hayaghat	1.320	1.207	1.715	0.070	4.260	0	9
157	Hivra	1.365	1.366	1.360	0.030	8.201	0	9
158	Holehonnur	1.214	1.093	1.940	0.450	2.360	0	7
159	Honnali	2.198	2.306	1.550	0.070	3.900	0	7
160	Hoshangabad	1.448	1.682	0.630	0.210	6.440	0	9
161	Huvin Hedgi	4.256	5.228	1.340	0.595	14.340	1	3
162	Jagdalpur	1.405	0.070	2.740	0.070	2.740	0	2
163	Jagibhakatgaon	1.618	1.812	0.940	0.040	4.620	0	9
164	Jai Nagar	1.146	1.194	0.980	0.100	4.140	0	9
165	Jaldhaka NH-31	8.077	10.043	2.180	2.180	21.960	1	3
166	Jammu Tawi	1.457	0.953	3.980	0.150	3.980	0	6
167	Jamshedpur	0.813	0.637	1.690	0.050	1.760	0	6
168	Jamsolghat	2.280	2.910	1.020	0.130	5.690	0	3
169	Japla	1.981	2.084	1.620	0.010	7.440	0	9
170	Jaraikela	0.790	0.515	2.160	0.120	2.160	0	6
171	Jenapur	3.737	4.201	1.420	0.690	8.364	0	6
172	Jhanjharpur	1.400	1.166	2.220	0.010	3.620	0	9
173	Jiabharali NT Road Xing	5.204	5.498	4.175	0.100	29.260	1	8
174	Jondhra	0.040	0.040	--	0.040	0.040	0	1
175	K.M. Vadi	1.977	1.985	1.960	0.040	3.930	0	3

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176	Kachlabridge	9.312	11.974	1.325	0.410	33.780	2	6
177	Kalampur	0.449	0.431	0.520	0.044	0.870	0	5
178	Kalanaur	1.769	1.513	2.665	0.300	5.030	0	9
179	Kallooppara	1.870	2.173	0.660	0.080	4.440	0	5
180	Kalna (EBB)	2.459	3.191	0.995	0.163	8.330	0	6
181	Kalna (Flow)*	0.713	0.713	-	0.160	1.240	0	3
182	Kamalapuram	3.235	-	3.235	1.320	5.150	0	2
183	Kamalpur	0.660	0.420	1.140	0.050	1.140	0	3
184	Kampur	1.707	1.983	0.740	0.130	5.470	0	9
185	Kanpur	7.856	9.220	3.765	0.050	25.160	2	6
186	Kantamal	2.456	2.456	-	0.177	6.380	0	3
187	Karad	4.810	-	4.810	4.810	4.810	0	1
188	Karathodu	1.958	2.043	1.620	0.282	3.560	0	5
189	Kashinagar	1.118	1.124	1.090	0.110	2.500	0	6
190	Katwa	2.170	2.627	0.570	0.040	8.590	0	9
191	Keesara	6.820	12.080	1.560	1.560	12.080	1	1
192	Kellodu	0.070	0.070	-	0.070	0.070	0	1
193	Keolari	1.274	1.268	1.295	0.060	5.380	0	9
194	Kesinga	1.483	1.483	-	0.128	4.090	0	3
195	Khanitar	2.284	2.284	-	0.490	4.077	0	2
196	Khanpur	3.391	3.761	2.095	0.010	19.830	1	8
197	Kharkhana	4.726	6.753	1.685	1.430	9.120	0	5
198	Khatoli	2.905	2.735	3.330	0.016	9.808	0	7
199	Kheronighat	3.787	3.710	4.055	0.060	13.880	1	8
200	Kidangoor	1.508	1.477	1.630	0.279	4.860	0	5
201	Kodumudi	4.113	4.639	1.480	0.290	16.670	1	5
202	Koelwar	3.587	4.030	2.035	0.010	16.750	1	8
203	Kogaon	0.958	1.310	0.605	0.390	2.230	0	4
204	Kokrajhar	2.811	2.741	3.020	0.360	4.410	0	4
205	Kollegal	2.848	3.367	1.290	0.340	6.750	0	4
206	Konta	2.691	3.069	1.180	0.610	8.400	0	5
207	Koperagaon	1.350	-	1.350	1.350	1.350	0	1
208	Kora	0.840	0.694	1.205	0.200	1.910	0	7
209	Koteshwar	1.263	1.455	0.785	0.190	4.740	0	7
210	Kudalaiyathur	3.091	3.091	-	3.091	3.091	0	1
211	Kudige	1.677	1.766	1.140	0.010	5.450	0	7
212	Kudlur	0.163	0.140	0.210	0.070	0.210	0	3
213	Kuldah Bridge	3.889	2.769	7.250	0.200	11.740	1	7
214	Kulsi	2.722	1.874	5.690	0.350	7.290	0	9
215	Kumbidi	1.046	0.843	1.860	0.010	2.930	0	5
216	Kumhari	0.890	0.664	1.680	0.240	3.070	0	9
217	Kuniyil	0.844	0.972	0.330	0.189	2.890	0	5
218	Kuppelur	0.030	0.030	-	0.030	0.030	0	1
219	Kurubhata	1.959	1.959	-	0.067	5.260	0	3

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220	Kurundwad	4.960	-	4.960	4.960	4.960	0	1
221	Kuttyadi	1.414	1.481	1.150	0.322	3.550	0	5
222	Kuzhithurai	1.545	1.904	0.110	0.050	6.790	0	5
223	Labha	0.986	0.928	1.190	0.280	2.100	0	9
224	Lakhisarai	1.634	1.388	2.370	0.010	3.410	0	8
225	Lalganj	1.376	1.167	2.105	0.250	3.380	0	9
226	Lowara	47.763	60.856	1.940	0.090	374.580	2	7
227	Lucknow	7.286	9.303	1.235	0.310	21.670	2	6
228	M.H. Halli	2.183	2.183	-	0.180	3.920	0	3
229	Madhira	1.775	1.775	-	0.100	3.450	0	2
230	Madla	1.051	0.992	1.200	0.100	2.260	0	7
231	Mahidpur	2.103	0.640	2.835	0.270	5.400	0	3
232	Mahuwa	3.011	3.662	1.385	0.700	6.890	0	7
233	Maighat	2.504	2.518	2.455	0.250	5.850	0	9
234	Majhitar	5.468	5.468	-	5.468	5.468	0	1
235	Malakkara	2.999	2.929	3.280	0.304	7.970	0	5
236	Malkhed	3.893	5.135	1.410	1.410	5.690	0	3
237	Manas NH Crossing	3.517	2.505	5.540	1.240	5.540	0	3
238	Mancherial	1.569	1.727	0.940	0.300	3.080	0	5
239	Mandleshwar	0.946	1.070	0.510	0.080	1.810	0	9
240	Manendragarh	0.500	0.500	-	0.130	0.870	0	2
241	Mangaon (Seasonal)	4.970	-	4.970	4.970	4.970	0	1
242	Mankara	0.988	0.965	1.080	0.178	1.840	0	5
243	Manot	2.076	2.358	1.090	0.370	4.747	0	9
244	Mantralayam	10.922	10.922	--	0.060	32.290	1	2
245	Marella	2.983	2.983	-	0.579	7.450	0	3
246	Margherita	19.813	24.410	3.725	0.040	156.070	1	8
247	Marol	0.845	0.010	1.680	0.010	1.680	0	2
248	Mataji	1.724	1.961	0.895	0.035	4.980	0	9
249	Mathabhanga	2.278	1.998	2.840	0.070	3.925	0	3
250	Mathanguri	2.886	2.886	-	2.886	2.886	0	1
251	Mathura	1.593	1.319	2.550	0.070	5.030	0	9
252	Matigara	3.667	3.667	-	0.900	5.350	0	3
253	Matijuri	1.997	2.683	1.310	0.110	4.946	0	4
254	Matunga	2.078	2.050	2.175	0.510	6.130	0	9
255	Mawi	2.109	2.022	2.415	0.230	5.126	0	9
256	Meja Road	2.863	3.299	1.555	0.350	8.460	0	8
257	Mekhliganj	2.015	1.789	2.690	0.160	3.450	0	4
258	Miao	5.450	6.146	3.015	0.160	19.300	2	7
259	Mirzapur	2.192	1.690	3.950	0.180	5.410	0	9
260	Mohana (Betwa)	1.448	1.928	0.490	0.160	4.460	0	6
261	Mohana (Yamuna)	6.143	6.699	4.195	0.280	20.044	2	7
262	Mohgaoan	1.358	1.599	0.515	0.250	2.431	0	9
263	Moradabad	8.942	11.701	0.665	0.010	32.850	3	5

S. No.	Water Quality Site	Lead (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
264	Motinaroli	3.001	3.070	2.795	0.910	5.420	0	8
265	Murappanadu	2.375	2.440	2.050	0.010	4.740	0	6
266	Muri	0.762	0.692	1.110	0.200	1.330	0	6
267	Murti	3.490	3.490	-	0.180	7.650	0	3
268	Musiri	2.363	2.363	-	1.414	3.900	0	5
269	Muthankera	0.862	0.850	0.910	0.158	2.130	0	5
270	Nagrakata	1.269	1.269	-	0.180	2.460	0	3
271	Naharkatia	3.415	3.219	4.100	0.354	7.750	0	9
272	Naidupet	38.860	38.860	-	38.860	38.860	1	0
273	Nallammaranpatty	0.693	0.810	0.460	0.070	1.550	0	3
274	Nallathur	3.672	3.672	-	0.280	6.130	0	3
275	Namsai	2.906	2.550	4.155	0.027	5.820	0	9
276	Nandgaon	2.277	2.382	2.015	0.080	7.040	0	7
277	Nandipalli	1.893	1.255	2.530	0.180	4.340	0	4
278	Nanglamoraghat	2.570	2.077	4.295	0.121	6.530	0	9
279	Neamatighat	1.922	1.947	1.835	0.060	4.130	0	9
280	Neeleswaram	1.421	1.484	1.170	0.517	2.830	0	5
281	Neemsar	9.294	12.694	0.795	0.140	23.440	3	4
282	Nellithurai	1.990	1.990	-	0.320	4.470	0	4
283	Nellore	3.295	3.295	-	2.160	4.430	0	2
284	Neora	4.281	4.281	-	1.430	6.784	0	3
285	Nowrangpur	5.239	5.866	2.730	0.150	16.480	1	4
286	Numaligarh	1.927	1.601	3.070	0.070	3.970	0	9
287	P.G.Bridge	1.195	1.007	1.760	0.010	3.880	0	8
288	Pachauli	1.550	1.870	1.230	1.230	1.870	0	2
289	Pachegaon	0.640	-	0.640	0.640	0.640	0	1
290	Paderdibadi	1.765	1.680	2.065	0.200	3.720	0	9
291	Pagladiya N.T.Road Crossing	3.558	1.862	9.495	0.200	18.700	1	8
292	Paleru Bridge	2.498	2.540	2.370	0.250	6.920	0	4
293	Paliakalan	4.124	4.616	2.645	0.120	9.930	0	8
294	Palla	2.220	1.808	3.660	0.040	7.280	0	9
295	Panbari	1.604	1.604	-	0.390	2.817	0	2
296	Pancharatna	3.260	1.742	8.575	0.500	15.810	1	8
297	Pandu	4.056	1.546	12.840	0.020	21.480	1	8
298	Panposh	1.811	1.877	1.480	0.030	3.680	0	6
299	Passighat	1.175	1.175	-	0.076	3.090	0	5
300	Patan	1.230	1.287	1.030	0.250	2.730	0	9
301	Pathagudem	2.983	3.376	1.410	0.934	7.490	0	5
302	Pathardhi	1.300	1.300	-	1.300	1.300	0	1
303	Pati	1.694	1.405	2.850	0.160	3.450	0	5
304	Patna	2.095	2.384	1.085	0.030	9.610	0	9
305	Pattazhy	5.666	6.961	0.490	0.250	13.660	2	3
306	Pauni	1.206	1.032	1.815	0.110	2.480	0	9
307	Peralam	0.120	0.120	-	0.120	0.120	0	1

S. No.	Water Quality Site	Lead (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
308	Perumannu	0.725	0.589	1.270	0.130	1.510	0	5
309	Perur	2.357	2.364	2.330	0.020	4.284	0	5
310	Phulgaon (Seasonal)	3.270	-	3.270	3.270	3.270	0	1
311	Pingalwada	5.472	6.342	2.860	1.360	17.650	1	7
312	Polavaram	5.925	7.037	1.480	0.060	22.870	1	4
313	Pratapgarh	2.971	3.157	2.415	0.360	8.850	0	8
314	Pratapur	1.647	2.092	0.535	0.060	7.180	0	7
315	Prem Nagar	3.261	2.587	6.630	0.087	9.180	0	6
316	Pudur	1.514	1.200	2.770	0.059	3.670	0	5
317	Pulamanthole	1.259	1.226	1.390	0.164	2.810	0	5
318	Purna	7.258	7.258	-	7.258	7.258	0	1
319	Purushottampur	1.362	1.353	1.410	0.724	2.270	0	6
320	Puthimari D.R.F.	3.003	2.860	3.505	0.170	10.120	1	8
321	Puthimari NH Road crossing	1.724	1.752	1.640	0.150	3.540	0	8
322	Raibareli	9.288	12.689	0.785	0.290	26.240	2	5
323	Rajapur	0.960	1.198	0.485	0.160	2.150	0	6
324	Rajegaon	1.450	1.305	1.885	0.060	5.170	0	8
325	Rajghat	1.043	1.245	0.640	0.190	2.640	0	6
326	Rajim	0.050	0.050		0.050	0.050	0	1
327	Ram Munshi Bagh	2.219	1.569	4.820	0.355	4.820	0	5
328	Ramakona	3.776	4.522	1.540	0.050	17.510	1	7
329	Ramamangalam	1.042	0.973	1.320	0.210	1.850	0	5
330	Rampur	1.708	1.708	-	0.280	4.180	0	3
331	Ranganadi NT-Road Xing	1.978	2.138	1.420	0.393	3.330	0	9
332	Rangeli	1.816	1.850	1.700	0.249	4.990	0	9
333	Rangpo	3.504	3.504	-	0.170	5.410	0	3
334	Regauli	6.135	7.191	2.965	0.470	14.210	3	5
335	Rishikesh	1.022	0.854	1.610	0.060	2.270	0	9
336	Rudraprayag	2.077	2.437	0.995	0.190	6.490	0	8
337	Safapora	2.106	1.623	4.520	0.010	4.520	0	6
338	Sakleshpur	4.227	4.580	2.110	0.140	23.000	1	6
339	Sakmur	1.234	0.990	2.090	0.190	2.750	0	9
340	Salebhata	2.511	2.511	-	0.150	7.030	0	3
341	Samdoli	4.240	-	4.240	4.240	4.240	0	1
342	Sandia	1.166	1.393	0.370	0.240	2.440	0	9
343	Sangam	1.707	1.305	3.515	0.020	5.840	0	11
344	Sangod	2.920	0.590	4.085	0.220	7.950	0	3
345	Sankalan	2.271	2.271	-	0.630	3.110	0	3
346	Sankosh LRP	5.571	6.281	3.440	1.080	14.730	1	3
347	Santeguli	0.744	0.715	0.920	0.090	2.320	0	7
348	Sarangkheda	10.376	13.438	2.720	0.610	62.120	1	6
349	Satrapur	0.899	0.639	1.810	0.020	3.320	0	9
350	Savandapur	1.626	1.498	2.010	0.230	3.420	0	8
351	Seondha	0.802	0.920	0.210	0.210	2.330	0	6

S. No.	Water Quality Site	Lead (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
352	Seppa	8.989	9.285	7.955	0.163	46.820	2	7
353	Sevanur	0.110	0.110	-	0.110	0.110	0	1
354	Sevoke	2.289	2.289	-	0.600	3.880	0	3
355	Shahijina	1.396	1.724	0.575	0.150	3.480	0	7
356	Shahzadpur	4.264	5.058	1.880	0.190	24.590	1	7
357	Shimoga	1.243	1.109	2.050	0.110	3.480	0	7
358	Sibbari	2.756	3.363	1.845	0.160	7.080	0	5
359	Sikandarpur	1.148	1.253	0.780	0.060	4.330	0	9
360	Simga	4.031	4.031	-	0.030	11.910	1	2
361	Singla-Bazar	3.447	3.447	-	0.010	6.150	0	3
362	Sivasagar	4.230	2.263	11.115	0.059	20.630	1	8
363	Sonapur	6.235	1.817	32.740	0.740	32.740	1	6
364	Srikakulam	1.136	1.176	0.940	0.130	2.090	0	6
365	Srinagar	1.738	1.580	2.210	0.990	2.690	0	4
366	Sripalpur	1.919	1.848	2.165	0.140	5.687	0	9
367	Suklai	1.633	1.734	1.280	0.220	5.066	0	9
368	Sultanpur	2.365	2.201	2.860	0.250	5.510	0	8
369	Sulurpet	4.010	4.010	-	4.010	4.010	0	1
370	Sundergarh	2.022	2.022	-	0.446	4.680	0	3
371	T. Bekuppe	7.636	8.274	3.810	0.550	26.290	2	5
372	T. Narasipur	1.413	0.940	2.360	0.130	2.360	0	3
373	T. Ramapuram	21.125	21.125	-	0.430	41.820	1	1
374	T.K.Halli	3.823	3.823	-	0.600	9.960	0	3
375	Tal	1.983	0.650	2.650	0.230	5.070	0	3
376	Talcher	3.125	3.222	2.640	0.530	5.531	0	6
377	Tandi	4.860	-	4.860	4.860	4.860	0	1
378	Teesta-Bazar	3.897	3.613	5.030	0.110	7.900	0	5
379	Tehri	2.084	2.084	-	0.787	3.380	0	2
380	Tekra	1.669	1.397	2.620	0.230	3.600	0	9
381	Tezpur	2.557	2.388	3.145	0.210	8.630	0	9
382	Tezu	2.541	2.490	2.695	0.590	3.820	0	8
383	Thengudi	4.825	4.825	-	0.260	9.390	0	2
384	Thengumarahada	1.286	0.932	2.345	0.100	3.530	0	8
385	Theni	1.822	1.869	1.680	0.170	4.200	0	8
386	Therriaghat	6.042	4.063	9.010	1.210	16.810	1	4
387	Thevur	0.070	0.070	-	0.070	0.070	0	1
388	Thimmanahalli	2.986	2.986	-	0.020	13.840	1	4
389	Thoppur	0.570	-	0.570	0.570	0.570	0	1
390	Thumpamon	9.124	11.171	0.940	0.050	38.580	1	4
391	Tikarpara	0.972	0.948	1.090	0.040	1.760	0	6
392	Tilga	1.171	1.052	1.770	0.080	1.790	0	6
393	Tonk	1.562	2.734	0.390	0.390	2.734	0	2
394	Tribeni	1.452	1.482	1.345	0.150	3.980	0	9
395	Tufanganj	6.277	6.922	4.340	0.250	16.590	1	3

S. No.	Water Quality Site	Lead (in µg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 10 µg/L	Below 10 µg/L
396	Tuini	1.168	0.884	2.165	0.010	4.320	0	9
397	Turtipar	7.947	9.480	3.345	0.150	29.260	2	6
398	Udaipur (Chandra)	3.250	-	3.250	3.250	3.250	0	1
399	Udaipur (Tirap)	2.245	1.392	5.230	0.280	7.500	0	9
400	Udi	1.421	1.744	0.615	0.010	4.590	0	7
401	Ujjain	0.516	0.831	0.200	0.200	0.831	0	2
402	Urachikottai	2.694	3.298	0.280	0.090	10.610	1	4
403	Uttarkashi	1.688	1.792	1.325	0.660	4.850	0	9
404	Vandiperiyar	3.122	3.280	2.490	0.111	5.680	0	5
405	Vapi	3.694	1.903	9.065	0.310	16.990	1	7
406	Varanasi	2.262	1.974	3.270	0.160	5.170	0	9
407	Vautha	6.311	7.797	1.110	0.077	17.570	3	6
408	Vazhavachanur	2.295	2.295	-	0.440	4.150	0	2
409	Wadenapally	2.430	2.557	1.920	0.260	7.850	0	5
410	Wairagarh	1.250	0.608	2.535	0.020	2.680	0	6
411	Warunji	3.240	-	3.240	3.240	3.240	0	1
412	Yadgir	1.930	-	1.930	1.930	1.930	0	1
413	Yashwant nagar	1.173	0.766	2.600	0.003	4.920	0	9
414	Yennehole	3.195	3.120	3.420	0.010	9.190	0	4

ZINC

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
1	A B Road Xing	0.008	0.011	0.006	0.003	0.011	0	3
2	A.P. Puram	0.009	0.009	-	0.005	0.015	0	4
3	A.P.Ghat	0.013	0.018	0.005	0.002	0.038	0	5
4	Aauriya	0.016	0.012	0.027	0.006	0.042	0	7
5	Abu Road	0.010	0.008	0.014	0.005	0.016	0	4
6	Addoor	0.008	0.011	0.004	0.004	0.011	0	2
7	Adityapur	0.009	0.010	0.005	0.001	0.025	0	6
8	Agra	0.132	0.022	0.406	0.008	0.800	0	7
9	Aie NH Crossing	0.226	0.226	-	0.010	0.648	0	3
10	Akabarpur	0.020	0.026	0.005	0.003	0.107	0	7
11	Akhnoor	0.010	0.009	0.014	0.003	0.018	0	6
12	Akkihebbal	0.011	0.011	0.008	0.003	0.027	0	7
13	Aklera	0.006	0.009	0.003	0.003	0.016	0	4
14	Alladupalli	0.050	0.064	0.006	0.002	0.354	0	8
15	Allahabad	0.023	0.028	0.006	0.003	0.159	0	9
16	Alutuma	0.009	0.011	0.002	0.002	0.026	0	6
17	Ambarampalayam	0.015	0.012	0.023	0.005	0.028	0	8
18	Ambasamudram	0.006	0.006	-	0.006	0.006	0	1
19	Anandpur	0.007	0.008	0.004	0.002	0.012	0	6
20	Andhiyar Kore	0.012	0.012	-	0.002	0.033	0	3
21	Ankinghat	0.016	0.016	0.016	0.002	0.040	0	8
22	Annavasal	0.004	0.004	-	0.004	0.004	0	1
23	Arangaly	0.007	0.006	0.010	0.002	0.010	0	5
24	Arcot	0.005	-	0.005	0.005	0.005	0	1
25	Arjunwad	0.007	-	0.007	0.007	0.007	0	1
26	Ashramam	0.009	0.010	0.004	0.003	0.016	0	5
27	Ashti	0.006	0.007	0.005	0.004	0.010	0	9
28	Avershe	0.007	0.009	0.002	0.002	0.012	0	4
29	Ayilam	0.007	0.008	0.005	0.001	0.013	0	5
30	Ayodhya	0.014	0.014	0.014	0.001	0.035	0	8
31	Azmabad	0.018	0.016	0.025	0.002	0.046	0	9
32	B.P. Ghat	0.010	0.013	0.004	0.003	0.020	0	6
33	Badatighat	0.010	0.011	0.007	0.003	0.022	0	9
34	Badlapur	0.008	0.008	0.007	0.003	0.015	0	5
35	Balrampur	0.013	0.014	0.009	0.003	0.025	0	8
36	Baltara	0.009	0.009	0.011	0.005	0.019	0	9
37	Bamni (Banjar)	0.021	0.016	0.038	0.003	0.066	0	8
38	Bamni (Wardha)	0.007	0.008	0.005	0.003	0.012	0	9
39	Bamnidih	0.011	0.011	-	0.001	0.022	0	3
40	Banda	0.018	0.020	0.014	0.009	0.040	0	7
41	Bansi	0.011	0.009	0.013	0.003	0.020	0	7
42	Bantwal	0.008	0.010	0.004	0.004	0.013	0	3
43	Baranwada	0.010	0.012	0.003	0.003	0.018	0	4

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
44	Bareilly	0.014	0.015	0.010	0.001	0.025	0	8
45	Barmanghat	0.012	0.013	0.009	0.002	0.024	0	9
46	Barobisha	0.024	0.032	0.001	0.001	0.037	0	4
47	Barod	0.006	0.007	0.003	0.002	0.011	0	6
48	Baronda	0.002	0.002	-	0.002	0.002	0	1
49	Basantpur	0.035	0.035	-	0.002	0.079	0	3
50	Basti	0.031	0.037	0.013	0.001	0.127	0	8
51	Bawapuram	0.007	0.007	-	0.003	0.010	0	2
52	Behalpur	0.042	0.042	-	0.020	0.063	0	2
53	Beki Mathanguri	0.024	0.024	-	0.022	0.027	0	2
54	Beki Road Bridge	0.385	0.512	0.003	0.003	1.500	0	4
55	Belkhedi	0.012	0.013	0.011	0.002	0.018	0	9
56	Belne Bridge	0.009	-	0.009	0.009	0.009	0	1
57	Bendrahalli	0.007	0.007	-	0.007	0.007	0	1
58	Berhampore	0.005	0.005	0.002	0.001	0.011	0	9
59	Bhadrachalam	0.031	0.012	0.109	0.003	0.109	0	5
60	Bhalukpong	0.024	0.023	0.029	0.005	0.092	0	9
61	Bhatpalli	0.009	0.008	0.014	0.002	0.028	0	9
62	Bhitaura	0.030	0.029	0.032	0.004	0.104	0	8
63	Bhomoraguri	0.024	0.024	0.024	0.006	0.099	0	9
64	Bihubar	0.036	0.032	0.050	0.001	0.114	0	9
65	Biligundullu	0.012	0.012	0.008	0.005	0.026	0	7
66	Birdghat	0.021	0.024	0.010	0.003	0.079	0	8
67	Bokajan	0.017	0.011	0.040	0.003	0.056	0	9
68	Burhanpur	0.019	0.012	0.036	0.001	0.064	0	7
69	Buxar	0.016	0.008	0.044	0.002	0.081	0	9
70	Byaladahalli	0.005	0.005	-	0.002	0.009	0	2
71	Champasari	0.019	0.019	-	0.009	0.030	0	3
72	Champua	0.007	0.008	0.002	0.002	0.013	0	6
73	Chanwada	0.011	0.009	0.017	0.006	0.018	0	8
74	Chapra	0.004	0.004	0.003	0.001	0.011	0	9
75	Chel	0.028	0.028		0.020	0.037	0	3
76	Chengalpet	0.003	0.002	0.004	0.001	0.004	0	3
77	Chenimari	0.010	0.008	0.018	0.003	0.022	0	9
78	Chennur	0.008	0.008	0.008	0.002	0.012	0	8
79	Chepan	0.028	0.037	0.002	0.002	0.052	0	4
80	Chhidgaon	0.013	0.015	0.009	0.005	0.020	0	9
81	Chitrasani	0.006	0.005	0.008	0.002	0.013	0	7
82	Chittorgarh	0.008	0.008	-	0.008	0.008	0	1
83	Cholachguda	0.010	0.010	-	0.010	0.010	0	1
84	Chopan	0.010	0.011	0.007	0.001	0.032	0	9
85	Chouldhowaghat	0.011	0.008	0.019	0.002	0.022	0	9
86	Chuchankatte	0.008	0.009	0.007	0.007	0.009	0	2
87	Coronation	0.033	0.033	-	0.024	0.046	0	3

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
88	Dabri	0.013	0.014	0.010	0.005	0.029	0	8
89	Damarcherla	0.005	0.005	-	0.001	0.009	0	3
90	Dawki	0.011	0.016	0.004	0.003	0.042	0	5
91	Delhi Rly Bridge	0.006	0.007	0.002	0.001	0.013	0	9
92	Deoprayag	0.020	0.024	0.008	0.005	0.052	0	9
93	Derol Bridge	0.008	0.008	0.007	0.002	0.016	0	9
94	Desangpani	0.027	0.029	0.020	0.004	0.129	0	9
95	Dhamkund	0.009	0.011	0.002	0.002	0.025	0	6
96	Dharamtul	0.010	0.009	0.011	0.004	0.014	0	9
97	Dheng Bridge	0.009	0.009	0.007	0.002	0.022	0	9
98	Dholabazar	0.007	0.007	0.005	0.001	0.023	0	9
99	Dholai	0.008	0.011	0.003	0.002	0.023	0	6
100	Dholpur	0.084	0.097	0.053	0.006	0.444	0	7
101	Dhubri	0.036	0.036	-	0.016	0.055	0	2
102	Dhulsar	0.008	0.008	0.009	0.008	0.009	0	2
103	Diana	0.046	0.046	-	0.046	0.046	0	1
104	Dibrugarh	0.009	0.007	0.015	0.001	0.019	0	9
105	Dillighat	0.012	0.007	0.030	0.001	0.044	0	9
106	Dimapara	0.004	0.004	0.003	0.002	0.007	0	5
107	Dindori	0.045	0.053	0.015	0.007	0.168	0	9
108	Domohani	0.018	0.023	0.002	0.002	0.036	0	4
109	Duddhi	0.018	0.020	0.010	0.002	0.114	0	9
110	Dudhnai	0.040	0.047	0.015	0.003	0.243	0	9
111	Durvesh	0.018	0.018	0.019	0.006	0.027	0	7
112	Ekmighat	0.009	0.008	0.012	0.002	0.022	0	9
113	Elginbridge	0.017	0.015	0.021	0.004	0.028	0	8
114	Elunuthimanagalam	0.006	0.006	-	0.005	0.008	0	3
115	English Bazar	0.006	0.007	0.003	0.002	0.010	0	9
116	Erinjipuzha	0.007	0.008	0.005	0.002	0.014	0	5
117	Etawah	0.018	0.020	0.015	0.008	0.025	0	7
118	Fakirabazar	0.013	0.019	0.004	0.003	0.030	0	5
119	Farakka	0.004	0.005	0.002	0.001	0.010	0	9
120	Farakka/(HR)	0.004	0.005	0.002	0.001	0.010	0	8
121	Fatehgarh	0.040	0.049	0.014	0.003	0.124	0	8
122	Fulertal	0.017	0.030	0.005	0.002	0.057	0	4
123	Gadarwara	0.011	0.012	0.009	0.004	0.019	0	8
124	Gadat	0.016	0.017	0.013	0.008	0.046	0	7
125	Gajaldoba	0.019	0.019	-	0.017	0.022	0	3
126	Galeta	0.029	0.033	0.018	0.004	0.156	0	9
127	Ganod	0.022	0.011	0.089	0.002	0.089	0	7
128	Garhamukteshwar	0.014	0.011	0.022	0.002	0.026	0	8
129	Garrauli	0.022	0.023	0.020	0.008	0.045	0	5
130	Garudeshwar	0.013	0.012	0.014	0.002	0.027	0	8
131	Gaya	0.005	0.005	0.006	0.004	0.007	0	4

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
132	Gelabil	0.035	0.013	0.057	0.012	0.082	0	4
133	Ghat	0.012	0.013	0.009	0.001	0.036	0	8
134	Ghatora	0.014	0.014	-	0.006	0.025	0	3
135	Ghatsila	0.013	0.015	0.005	0.005	0.020	0	6
136	Ghish	0.041	0.041	-	0.010	0.073	0	3
137	Ghugumari	0.023	0.030	0.002	0.002	0.038	0	4
138	Gokak	0.008	0.010	0.006	0.006	0.010	0	2
139	Golagang	0.030	0.030	-	0.029	0.031	0	2
140	Golaghat	0.163	0.120	0.313	0.003	0.770	0	9
141	Gomlai	0.008	0.009	0.003	0.003	0.014	0	6
142	Gopalkheda	0.011	0.009	0.013	0.006	0.018	0	4
143	Govindapur	0.008	0.009	0.001	0.001	0.013	0	6
144	Gummanur	0.010	0.009	0.011	0.005	0.014	0	8
145	Gumrabazar	0.047	0.066	0.008	0.004	0.130	0	6
146	Gunupur	0.009	0.009	0.006	0.002	0.019	0	6
147	Haladi	0.014	0.015	0.005	0.002	0.029	0	7
148	Halia	0.005	0.005	-	0.001	0.009	0	4
149	Hamirpur	0.010	0.009	0.011	0.001	0.017	0	7
150	Handia	0.014	0.014	0.011	0.001	0.023	0	9
151	Hanskhali	0.008	0.010	0.002	0.002	0.045	0	9
152	Haridwar	0.014	0.017	0.006	0.003	0.041	0	8
153	Harlahalli	0.026	0.022	0.036	0.010	0.036	0	4
154	Hasimara	0.025	0.032	0.002	0.002	0.042	0	4
155	Hathidah	0.007	0.006	0.010	0.002	0.014	0	9
156	Hayaghat	0.016	0.018	0.010	0.004	0.073	0	9
157	Hivra	0.005	0.005	0.007	0.002	0.010	0	9
158	Holehonnur	0.013	0.013	0.011	0.001	0.021	0	7
159	Honnali	0.010	0.011	0.007	0.001	0.019	0	7
160	Hoshangabad	0.012	0.013	0.010	0.004	0.019	0	9
161	Huvin Hedgi	0.026	0.006	0.087	0.001	0.087	0	4
162	Jagdalpur	0.053	0.004	0.101	0.004	0.101	0	2
163	Jagibhakatgaon	0.011	0.008	0.020	0.002	0.023	0	9
164	Jai Nagar	0.008	0.007	0.009	0.003	0.017	0	9
165	Jaldhaka NH-31	0.015	0.020	0.003	0.003	0.036	0	4
166	Jammu Tawi	0.008	0.009	0.003	0.003	0.017	0	6
167	Jamshedpur	0.016	0.018	0.004	0.004	0.042	0	6
168	Jamsolghat	0.005	0.005	0.005	0.003	0.008	0	3
169	Japla	0.010	0.010	0.007	0.005	0.022	0	9
170	Jaraikela	0.006	0.007	0.003	0.001	0.013	0	6
171	Jenapur	0.021	0.024	0.007	0.002	0.095	0	6
172	Jhanjharpur	0.010	0.008	0.017	0.003	0.023	0	9
173	Jiabharali NT Road Xing	0.015	0.009	0.037	0.004	0.063	0	9
174	Jondhra	0.002	0.002	-	0.002	0.002	0	1
175	K.M. Vadi	0.015	0.010	0.025	0.009	0.025	0	3

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
176	Kachlabridge	0.093	0.113	0.034	0.008	0.520	0	8
177	Kalampur	0.007	0.009	0.003	0.001	0.016	0	5
178	Kalanaur	0.029	0.008	0.102	0.002	0.200	0	9
179	Kallooppara	0.007	0.008	0.004	0.003	0.010	0	5
180	Kalna (EBB)	0.004	0.006	0.002	0.001	0.010	0	6
181	Kalna (Flow)*	0.008	0.008	-	0.004	0.010	0	3
182	Kamalapuram	0.008	-	0.008	0.004	0.013	0	2
183	Kamalpur	0.008	0.006	0.013	0.002	0.013	0	3
184	Kampur	0.016	0.012	0.030	0.001	0.042	0	9
185	Kanpur	0.016	0.019	0.006	0.001	0.046	0	8
186	Kantamal	0.649	0.649	-	0.001	1.941	0	3
187	Karad	0.026	-	0.026	0.026	0.026	0	1
188	Karathodu	0.005	0.006	0.003	0.002	0.009	0	5
189	Kashinagar	0.010	0.011	0.007	0.002	0.027	0	6
190	Katwa	0.006	0.007	0.002	0.002	0.021	0	9
191	Keesara	0.030	0.009	0.052	0.009	0.052	0	2
192	Kellodu	0.008	0.008	-	0.008	0.008	0	1
193	Keolari	0.012	0.010	0.018	0.004	0.026	0	9
194	Kesinga	0.013	0.013	-	0.002	0.027	0	3
195	Khanitar	0.033	0.033	-	0.013	0.053	0	2
196	Khanpur	0.009	0.009	0.009	0.002	0.018	0	9
197	Kharkhana	0.059	0.095	0.006	0.001	0.256	0	5
198	Khatoli	0.007	0.009	0.002	0.001	0.014	0	7
199	Kheronighat	0.020	0.016	0.034	0.005	0.051	0	9
200	Kidangoor	0.006	0.007	0.003	0.002	0.010	0	5
201	Kodumudi	0.006	0.007	0.003	0.003	0.010	0	6
202	Koelwar	0.008	0.007	0.010	0.002	0.018	0	9
203	Kogaon	0.011	0.013	0.009	0.008	0.015	0	4
204	Kokrajhar	0.033	0.043	0.002	0.002	0.074	0	4
205	Kollegal	0.018	0.021	0.009	0.008	0.045	0	4
206	Konta	0.030	0.010	0.113	0.003	0.113	0	5
207	Koperagaon	0.017	-	0.017	0.017	0.017	0	1
208	Kora	0.019	0.020	0.016	0.003	0.051	0	7
209	Koteshwar	0.026	0.033	0.007	0.003	0.083	0	7
210	Kudalaiyathur	0.011	0.011	-	0.011	0.011	0	1
211	Kudige	0.011	0.012	0.003	0.003	0.033	0	7
212	Kudlur	0.017	0.014	0.024	0.003	0.024	0	3
213	Kuldah Bridge	0.013	0.013	0.014	0.002	0.036	0	8
214	Kulsi	0.038	0.047	0.008	0.002	0.201	0	9
215	Kumbidi	0.008	0.009	0.004	0.004	0.010	0	5
216	Kumhari	0.009	0.010	0.006	0.003	0.022	0	9
217	Kuniyil	0.047	0.053	0.021	0.007	0.165	0	5
218	Kuppelur	0.009	0.009	-	0.009	0.009	0	1
219	Kurubhata	0.010	0.010	-	0.002	0.023	0	3

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
220	Kurundwad	0.004	-	0.004	0.004	0.004	0	1
221	Kuttyadi	0.005	0.006	0.004	0.002	0.009	0	5
222	Kuzhithurai	0.011	0.013	0.004	0.001	0.028	0	5
223	Labha	0.004	0.005	0.003	0.001	0.010	0	9
224	Lakhisarai	0.010	0.009	0.010	0.005	0.017	0	8
225	Lalganj	0.008	0.007	0.012	0.002	0.019	0	9
226	Lowara	0.012	0.012	0.011	0.004	0.028	0	9
227	Lucknow	0.014	0.015	0.012	0.005	0.036	0	8
228	M.H. Halli	0.013	0.013	-	0.008	0.023	0	3
229	Madhira	0.010	0.010	-	0.009	0.010	0	2
230	Madla	0.011	0.007	0.020	0.005	0.033	0	7
231	Mahidpur	0.007	0.016	0.003	0.002	0.016	0	3
232	Mahuwa	0.028	0.035	0.011	0.005	0.132	0	7
233	Maighat	0.015	0.018	0.003	0.001	0.109	0	9
234	Majhitar	0.033	0.033	-	0.033	0.033	0	1
235	Malakkara	0.005	0.006	0.003	0.001	0.010	0	5
236	Malkhed	0.024	0.006	0.060	0.003	0.060	0	3
237	Manas NH Crossing	0.022	0.031	0.005	0.005	0.040	0	3
238	Mancherial	0.024	0.007	0.091	0.004	0.091	0	5
239	Mandleshwar	0.025	0.028	0.013	0.002	0.126	0	9
240	Manendragarh	0.015	0.015	-	0.003	0.027	0	2
241	Mangaon (Seasonal)	0.014	-	0.014	0.014	0.014	0	1
242	Mankara	0.007	0.006	0.009	0.003	0.009	0	5
243	Manot	0.312	0.019	1.336	0.010	2.658	0	9
244	Mantralayam	0.006	0.006	-	0.002	0.009	0	3
245	Marella	0.006	0.006	-	0.003	0.009	0	3
246	Margherita	0.014	0.011	0.026	0.001	0.039	0	9
247	Marol	0.008	0.010	0.006	0.006	0.010	0	2
248	Mataji	0.021	0.025	0.007	0.001	0.142	0	9
249	Mathabhanga	0.020	0.029	0.002	0.002	0.030	0	3
250	Mathanguri	0.048	0.048	-	0.048	0.048	0	1
251	Mathura	0.007	0.009	0.003	0.001	0.020	0	9
252	Matigara	0.054	0.054	-	0.011	0.119	0	3
253	Matijuri	0.033	0.063	0.004	0.003	0.112	0	4
254	Matunga	0.042	0.051	0.010	0.003	0.264	0	9
255	Mawi	0.008	0.010	0.003	0.001	0.019	0	9
256	Meja Road	0.010	0.011	0.007	0.001	0.038	0	8
257	Mekhliganj	0.019	0.025	0.002	0.002	0.034	0	4
258	Miao	0.016	0.016	0.014	0.008	0.052	0	9
259	Mirzapur	0.012	0.014	0.005	0.003	0.053	0	9
260	Mohana (Betwa)	0.009	0.009	0.009	0.006	0.011	0	6
261	Mohana (Yamuna)	0.010	0.012	0.005	0.003	0.029	0	9
262	Mohgaoan	0.015	0.017	0.011	0.003	0.040	0	9
263	Moradabad	0.075	0.093	0.023	0.009	0.248	0	8

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
264	Motinaroli	0.012	0.010	0.017	0.004	0.022	0	8
265	Murappanadu	0.008	0.007	0.012	0.004	0.012	0	6
266	Muri	0.007	0.007	0.004	0.002	0.014	0	6
267	Murti	0.031	0.031	-	0.023	0.046	0	3
268	Musiri	0.007	0.007	-	0.004	0.013	0	5
269	Muthankera	0.014	0.015	0.007	0.001	0.044	0	5
270	Nagrakata	0.024	0.024	-	0.011	0.034	0	3
271	Naharkatia	0.011	0.010	0.016	0.003	0.019	0	9
272	Naidupet	0.011	0.011	-	0.011	0.011	0	1
273	Nallammaranpatty	0.004	0.005	0.003	0.003	0.006	0	3
274	Nallathur	0.005	0.005	--	0.001	0.012	0	3
275	Namsai	0.012	0.009	0.022	0.005	0.035	0	9
276	Nandgaon	0.005	0.006	0.003	0.001	0.010	0	7
277	Nandipalli	0.007	0.007	0.008	0.002	0.013	0	4
278	Nanglamoraghat	0.044	0.041	0.054	0.003	0.245	0	9
279	Neamatighat	0.012	0.009	0.023	0.005	0.026	0	9
280	Neeleswaram	0.005	0.006	0.003	0.001	0.010	0	5
281	Neemsar	0.014	0.014	0.013	0.004	0.026	0	7
282	Nellithurai	0.007	0.007	-	0.004	0.012	0	4
283	Nellore	0.005	0.005	-	0.003	0.007	0	2
284	Neora	0.199	0.199	-	0.017	0.526	0	3
285	Nowrangpur	0.025	0.007	0.097	0.004	0.097	0	5
286	Numaligarh	0.026	0.027	0.022	0.006	0.069	0	9
287	P.G.Bridge	0.009	0.006	0.016	0.001	0.022	0	8
288	Pachauli	0.014	0.011	0.017	0.011	0.017	0	2
289	Pachegaon	0.048	-	0.048	0.048	0.048	0	1
290	Paderdibadi	0.008	0.009	0.005	0.001	0.022	0	9
291	Pagladiya N.T.Road Crossing	0.036	0.045	0.004	0.002	0.262	0	9
292	Paleru Bridge	0.030	0.005	0.104	0.001	0.104	0	4
293	Paliakalan	0.012	0.014	0.006	0.003	0.027	0	8
294	Palla	0.010	0.011	0.008	0.001	0.038	0	9
295	Panbari	0.042	0.042		0.036	0.047	0	2
296	Pancharatna	0.063	0.080	0.005	0.003	0.300	0	9
297	Pandu	0.040	0.049	0.009	0.001	0.278	0	9
298	Panposh	0.009	0.010	0.005	0.005	0.019	0	6
299	Passighat	0.011	0.011	-	0.003	0.018	0	5
300	Patan	0.015	0.015	0.013	0.001	0.026	0	9
301	Pathagudem	0.030	0.010	0.109	0.003	0.109	0	5
302	Pathardhi	0.007	0.007	-	0.007	0.007	0	1
303	Pati	0.016	0.018	0.009	0.002	0.038	0	5
304	Patna	0.007	0.006	0.010	0.001	0.017	0	9
305	Pattazhy	0.008	0.007	0.015	0.001	0.015	0	5
306	Pauni	0.008	0.008	0.008	0.003	0.017	0	9
307	Peralam	0.003	0.003	-	0.003	0.003	0	1

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
308	Perumannu	0.006	0.006	0.009	0.001	0.009	0	5
309	Perur	0.023	0.006	0.089	0.004	0.089	0	5
310	Phulgaon (Seasonal)	0.006	-	0.006	0.006	0.006	0	1
311	Pingalwada	0.169	0.198	0.084	0.010	1.079	0	8
312	Polavaram	0.026	0.007	0.102	0.004	0.102	0	5
313	Pratapgarh	0.007	0.006	0.012	0.001	0.019	0	8
314	Pratapur	0.015	0.012	0.022	0.002	0.036	0	7
315	Prem Nagar	0.009	0.010	0.003	0.003	0.024	0	6
316	Pudur	0.005	0.006	0.003	0.003	0.009	0	5
317	Pulamanthole	0.006	0.007	0.003	0.001	0.010	0	5
318	Purna	0.009	0.009	-	0.009	0.009	0	1
319	Purushottampur	0.006	0.007	0.001	0.001	0.011	0	6
320	Puthimari D.R.F.	0.052	0.066	0.004	0.002	0.221	0	9
321	Puthimari NH Road crossing	0.044	0.056	0.007	0.004	0.271	0	8
322	Raibareli	0.022	0.027	0.010	0.009	0.034	0	7
323	Rajapur	0.008	0.008	0.010	0.004	0.012	0	6
324	Rajegaon	0.008	0.008	0.009	0.003	0.018	0	8
325	Rajghat	0.009	0.009	0.007	0.006	0.013	0	6
326	Rajim	0.001	0.001	-	0.001	0.001	0	1
327	Ram Munshi Bagh	0.011	0.013	0.002	0.002	0.031	0	5
328	Ramakona	0.008	0.006	0.014	0.002	0.026	0	8
329	Ramamangalam	0.015	0.018	0.002	0.002	0.054	0	5
330	Rampur	0.033	0.033	-	0.024	0.042	0	3
331	Ranganadi NT-Road Xing	0.017	0.020	0.008	0.003	0.097	0	9
332	Rangeli	0.013	0.015	0.006	0.002	0.048	0	9
333	Rangpo	0.034	0.034	-	0.030	0.036	0	3
334	Regauli	0.016	0.016	0.014	0.003	0.047	0	8
335	Rishikesh	0.043	0.049	0.022	0.003	0.181	0	9
336	Rudraprayag	0.020	0.024	0.009	0.003	0.050	0	8
337	Safapora	0.008	0.009	0.005	0.002	0.022	0	6
338	Sakleshpur	0.013	0.014	0.008	0.005	0.025	0	7
339	Sakmur	0.027	0.007	0.098	0.002	0.195	0	9
340	Salebhata	0.013	0.013	-	0.005	0.025	0	3
341	Samdoli	0.016	-	0.016	0.016	0.016	0	1
342	Sandia	0.014	0.015	0.010	0.008	0.020	0	9
343	Sangam	0.011	0.008	0.026	0.002	0.049	0	11
344	Sangod	0.307	0.017	0.452	0.004	0.900	0	3
345	Sankalan	0.038	0.038		0.013	0.079	0	3
346	Sankosh LRP	0.016	0.020	0.002	0.002	0.027	0	4
347	Santeguli	0.013	0.015	0.002	0.002	0.034	0	7
348	Sarangkheda	0.013	0.011	0.019	0.005	0.022	0	7
349	Satrapur	0.007	0.007	0.008	0.003	0.012	0	9
350	Savandapur	0.018	0.014	0.030	0.003	0.056	0	8
351	Seondha	0.021	0.024	0.007	0.006	0.075	0	6

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
352	Seppa	0.112	0.095	0.172	0.011	0.304	0	9
353	Sevanur	0.007	0.007	-	0.007	0.007	0	1
354	Sevoke	0.055	0.055	-	0.023	0.103	0	3
355	Shahijina	0.017	0.018	0.014	0.006	0.039	0	7
356	Shahzadpur	0.071	0.093	0.005	0.003	0.521	0	8
357	Shimoga	0.010	0.010	0.007	0.004	0.020	0	7
358	Sibbari	0.007	0.010	0.003	0.003	0.020	0	5
359	Sikandarpur	0.006	0.007	0.006	0.002	0.022	0	9
360	Simga	0.015	0.015	-	0.003	0.026	0	3
361	Singla-Bazar	0.022	0.022	-	0.013	0.040	0	3
362	Sivasagar	0.085	0.095	0.049	0.005	0.602	0	9
363	Sonapur	0.034	0.033	0.036	0.002	0.106	0	7
364	Srikakulam	0.008	0.007	0.010	0.002	0.012	0	6
365	Srinagar	0.015	0.018	0.008	0.008	0.030	0	4
366	Sripalpur	0.007	0.007	0.007	0.002	0.020	0	9
367	Suklai	0.021	0.025	0.004	0.004	0.061	0	9
368	Sultanpur	0.021	0.026	0.006	0.002	0.136	0	8
369	Sulurpet	0.002	0.002	-	0.002	0.002	0	1
370	Sundergarh	0.016	0.016	-	0.005	0.032	0	3
371	T. Bekuppe	0.013	0.014	0.008	0.008	0.034	0	7
372	T. Narasipur	0.011	0.012	0.009	0.007	0.017	0	3
373	T. Ramapuram	0.006	0.006	-	0.004	0.009	0	2
374	T.K.Halli	0.008	0.008	-	0.008	0.009	0	3
375	Tal	0.008	0.015	0.005	0.002	0.015	0	3
376	Talcher	0.083	0.098	0.008	0.002	0.461	0	6
377	Tandi	0.004	-	0.004	0.004	0.004	0	1
378	Teesta-Bazar	0.020	0.024	0.003	0.003	0.034	0	5
379	Tehri	0.109	0.109	-	0.029	0.189	0	2
380	Tekra	0.009	0.007	0.017	0.004	0.030	0	9
381	Tezpur	0.061	0.070	0.028	0.005	0.390	0	9
382	Tezu	0.008	0.006	0.012	0.004	0.013	0	8
383	Thengudi	0.007	0.007	-	0.003	0.011	0	2
384	Thengumarahada	0.007	0.007	0.007	0.004	0.010	0	8
385	Theni	0.011	0.010	0.016	0.005	0.018	0	8
386	Therriaghat	0.005	0.006	0.004	0.002	0.014	0	5
387	Thevur	0.007	0.007		0.007	0.007	0	1
388	Thimmanahalli	0.014	0.014	-	0.001	0.032	0	5
389	Thoppur	0.009		0.009	0.009	0.009	0	1
390	Thumpamon	0.006	0.007	0.003	0.003	0.010	0	5
391	Tikarpara	0.006	0.007	0.004	0.003	0.012	0	6
392	Tilga	0.008	0.009	0.002	0.002	0.014	0	6
393	Tonk	0.159	0.017	0.300	0.017	0.300	0	2
394	Tribeni	0.008	0.009	0.008	0.004	0.019	0	9
395	Tufanganj	0.024	0.032	0.002	0.002	0.044	0	4

S. No.	Water Quality Site	Zinc (in mg/L)					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 5 mg/L	Below 5 mg/L
396	Tuini	0.107	0.008	0.452	0.002	0.900	0	9
397	Turtipar	0.018	0.021	0.011	0.004	0.053	0	8
398	Udaipur (Chandra)	0.004	-	0.004	0.004	0.004	0	1
399	Udaipur (Tirap)	0.013	0.008	0.033	0.004	0.048	0	9
400	Udi	0.050	0.049	0.052	0.005	0.202	0	7
401	Ujjain	0.007	0.013	0.001	0.001	0.013	0	2
402	Urachikottai	0.005	0.005	0.004	0.004	0.005	0	5
403	Uttarkashi	0.045	0.056	0.008	0.003	0.197	0	9
404	Vandiperiyar	0.005	0.006	0.004	0.001	0.010	0	5
405	Vapi	0.051	0.057	0.035	0.007	0.269	0	8
406	Varanasi	0.007	0.008	0.006	0.001	0.019	0	9
407	Vautha	0.030	0.016	0.079	0.010	0.147	0	9
408	Vazhavachanur	0.007	0.007	-	0.004	0.011	0	2
409	Wadenapally	0.024	0.004	0.100	0.001	0.100	0	5
410	Wairagarh	0.024	0.028	0.014	0.001	0.091	0	6
411	Warunji	0.007	-	0.007	0.007	0.007	0	1
412	Yadgir	0.093	-	0.093	0.093	0.093	0	1
413	Yashwant nagar	0.007	0.009	0.002	0.000	0.020	0	9
414	Yennehole	0.008	0.007	0.011	0.001	0.012	0	4

IRON

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
1	A B Road Xing	0.048	0.074	0.035	0.020	0.074	0	3
2	A.P. Puram	0.033	0.033	-	0.010	0.054	0	4
3	A.P.Ghat	0.071	0.035	0.126	0.002	0.203	0	5
4	Aauriya	0.106	0.103	0.112	0.003	0.252	0	7
5	Abu Road	0.099	0.082	0.150	0.058	0.150	0	4
6	Addoor	0.392	0.102	0.681	0.102	0.681	1	1
7	Adityapur	0.152	0.063	0.595	0.002	0.595	1	5
8	Agra	0.222	0.112	0.499	0.005	0.613	2	5
9	Aie NH Crossing	0.339	0.339	-	0.031	0.794	1	2
10	Akabarpur	0.162	0.104	0.309	0.021	0.492	1	6
11	Akhnoor	0.091	0.053	0.280	0.002	0.280	0	6
12	Akkihebbal	0.044	0.040	0.072	0.005	0.102	0	7
13	Aklera	0.039	0.041	0.037	0.002	0.079	0	4
14	Alladupalli	0.063	0.045	0.116	0.005	0.181	0	8
15	Allahabad	0.172	0.103	0.416	0.021	0.585	1	8
16	Alutuma	0.221	0.103	0.808	0.008	0.808	1	5
17	Ambarampalayam	0.113	0.088	0.190	0.010	0.223	0	8
18	Ambasamudram	0.009	0.009	-	0.009	0.009	0	1
19	Anandpur	0.193	0.093	0.689	0.009	0.689	1	5
20	Andhiyar Kore	0.026	0.026	-	0.010	0.047	0	3
21	Ankinghat	0.331	0.367	0.224	0.015	1.126	3	5
22	Annavasal	0.005	0.005	-	0.005	0.005	0	1
23	Arangaly	0.049	0.046	0.062	0.003	0.105	0	5
24	Arcot	0.043	-	0.043	0.043	0.043	0	1
25	Arjunwad	0.396	-	0.396	0.396	0.396	1	0
26	Ashramam	0.164	0.165	0.162	0.028	0.436	1	4
27	Ashti	0.117	0.037	0.399	0.016	0.404	2	7
28	Avershe	0.113	0.026	0.373	0.011	0.373	1	3
29	Ayilam	0.077	0.086	0.041	0.029	0.217	0	5
30	Ayodhya	0.376	0.410	0.274	0.005	1.457	4	4
31	Azmabad	0.295	0.122	0.899	0.002	1.496	3	6
32	B.P. Ghat	0.159	0.070	0.337	0.003	0.626	1	5
33	Badatighat	0.282	0.256	0.374	0.028	0.586	3	6
34	Badlapur	0.053	0.030	0.143	0.004	0.143	0	5
35	Balrampur	0.310	0.325	0.263	0.011	1.061	2	6
36	Baltara	0.805	0.290	2.605	0.015	4.352	5	4
37	Bamni (Banjar)	0.286	0.104	0.831	0.013	1.322	2	6
38	Bamni (Wardha)	0.087	0.038	0.261	0.020	0.286	0	9
39	Bamnidih	0.033	0.033	-	0.012	0.047	0	3
40	Banda	0.127	0.137	0.104	0.038	0.199	0	7
41	Bansi	0.592	0.521	0.769	0.010	1.362	4	3

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
42	Bantwal	0.263	0.059	0.673	0.047	0.673	1	2
43	Baranwada	0.070	0.076	0.052	0.052	0.077	0	4
44	Bareilly	0.285	0.197	0.549	0.009	0.573	3	5
45	Barmanghat	0.295	0.205	0.608	0.012	1.100	2	7
46	Barobisha	0.378	0.488	0.049	0.039	1.361	1	3
47	Barod	0.048	0.054	0.036	0.002	0.077	0	6
48	Baronda	0.046	0.046	-	0.046	0.046	0	1
49	Basantpur	0.027	0.027	-	0.009	0.039	0	3
50	Basti	0.590	0.619	0.505	0.007	1.674	5	3
51	Bawapuram	0.058	0.058	-	0.023	0.092	0	2
52	Behalpur	0.362	0.362	-	0.097	0.626	1	1
53	Beki Mathanguri	0.266	0.266	-	0.033	0.499	1	1
54	Beki Road Bridge	0.407	0.497	0.135	0.031	1.370	1	3
55	Belkhedi	0.117	0.063	0.310	0.008	0.489	1	8
56	Belne Bridge	0.205	-	0.205	0.205	0.205	0	1
57	Bendrahalli	0.014	0.014	-	0.014	0.014	0	1
58	Berhampore	0.038	0.035	0.047	0.003	0.120	0	9
59	Bhadrachalam	0.164	0.041	0.655	0.008	0.655	1	4
60	Bhalukpong	1.514	0.148	6.297	0.007	8.518	4	5
61	Bhatpalli	0.076	0.050	0.167	0.014	0.182	0	9
62	Bhitaura	0.369	0.339	0.460	0.008	1.094	4	4
63	Bhomoraguri	1.222	0.606	3.376	0.008	3.412	6	3
64	Bihubar	2.112	1.124	5.571	0.028	8.980	5	4
65	Biligundullu	0.089	0.067	0.223	0.020	0.223	0	7
66	Birdghat	0.400	0.461	0.218	0.006	1.244	3	5
67	Bokajan	2.464	0.611	8.950	0.031	13.608	5	4
68	Burhanpur	0.337	0.230	0.604	0.010	0.780	3	4
69	Buxar	0.248	0.103	0.753	0.002	1.029	3	6
70	Byaladahalli	0.032	0.032	-	0.021	0.043	0	2
71	Champasari	0.494	0.494	-	0.037	0.921	2	1
72	Champua	0.163	0.073	0.611	0.012	0.611	1	5
73	Chanwada	0.355	0.107	1.100	0.011	1.736	2	6
74	Chapra	0.025	0.019	0.043	0.002	0.050	0	9
75	Chel	0.626	0.626	-	0.032	1.119	2	1
76	Chengalpet	0.053	0.056	0.047	0.023	0.089	0	3
77	Chenimari	2.223	0.334	8.837	0.022	14.555	5	4
78	Chennur	0.076	0.062	0.119	0.014	0.199	0	8
79	Chepan	0.960	1.264	0.047	0.030	3.672	1	3
80	Chhidgaon	0.155	0.069	0.459	0.010	0.791	1	8
81	Chitrasani	0.081	0.064	0.126	0.027	0.132	0	7
82	Chittorgarh	0.064	0.064	-	0.064	0.064	0	1
83	Cholachguda	0.017	0.017	-	0.017	0.017	0	1
84	Chopan	0.241	0.129	0.635	0.021	1.000	2	7
85	Chouldhowaghat	1.638	0.278	6.398	0.031	8.937	4	5

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
86	Chuchankatte	0.180	0.004	0.356	0.004	0.356	1	1
87	Coronation	3.296	3.296	-	0.028	8.246	2	1
88	Dabri	0.398	0.337	0.581	0.009	1.109	5	3
89	Damarcherla	0.059	0.059	-	0.021	0.102	0	3
90	Dawki	0.151	0.022	0.346	0.002	0.640	1	4
91	Delhi Rly Bridge	0.057	0.064	0.035	0.002	0.148	0	9
92	Deoprayag	0.456	0.572	0.050	0.003	2.568	2	7
93	Derol Bridge	0.289	0.111	0.912	0.012	1.677	1	8
94	Desangpani	1.983	0.547	7.010	0.030	10.279	4	5
95	Dhamkund	0.059	0.057	0.070	0.007	0.143	0	6
96	Dharamtul	0.888	0.824	1.111	0.027	2.868	5	4
97	Dheng Bridge	0.138	0.073	0.367	0.002	0.564	1	8
98	Dholabazar	0.278	0.185	0.605	0.023	0.779	4	5
99	Dholai	0.051	0.049	0.056	0.002	0.120	0	6
100	Dholpur	0.087	0.072	0.126	0.026	0.189	0	7
101	Dhubri	1.861	1.861	-	0.254	3.467	1	1
102	Dhulsar	0.057	0.054	0.060	0.054	0.060	0	2
103	Diana	0.137	0.137	-	0.137	0.137	0	1
104	Dibrugarh	1.204	0.204	4.702	0.020	5.801	4	5
105	Dillighat	1.536	0.233	6.097	0.023	8.684	3	6
106	Dimapara	0.096	0.129	0.047	0.008	0.303	1	4
107	Dindori	0.110	0.094	0.166	0.013	0.294	0	9
108	Domohani	0.478	0.621	0.051	0.032	1.261	2	2
109	Duddhi	0.305	0.074	1.114	0.017	1.395	2	7
110	Dudhnai	0.467	0.499	0.353	0.034	1.155	5	4
111	Durvesh	0.318	0.101	0.860	0.011	0.970	2	5
112	Ekmighat	0.761	0.249	2.552	0.009	4.414	4	5
113	Elginbridge	0.365	0.341	0.437	0.005	0.943	5	3
114	Elunuthimanagalam	0.031	0.031	-	0.013	0.056	0	3
115	English Bazar	0.031	0.026	0.049	0.002	0.055	0	9
116	Erinjipuzha	0.067	0.059	0.097	0.034	0.120	0	5
117	Etawah	0.111	0.107	0.122	0.002	0.239	0	7
118	Fakirabazar	0.040	0.029	0.057	0.002	0.071	0	5
119	Farakka	0.031	0.027	0.047	0.002	0.088	0	9
120	Farakka/(HR)	0.044	0.044	0.045	0.002	0.136	0	8
121	Fatehgarh	0.382	0.352	0.470	0.013	0.950	5	3
122	Fulertal	0.065	0.034	0.097	0.032	0.110	0	4
123	Gadarwara	0.113	0.093	0.176	0.012	0.249	0	8
124	Gadat	0.396	0.156	0.994	0.012	1.023	2	5
125	Gajaldoba	0.858	0.858	-	0.033	1.273	2	1
126	Galeta	0.088	0.086	0.095	0.002	0.211	0	9
127	Ganod	0.248	0.208	0.488	0.005	0.592	2	5
128	Garhamukteshwar	0.336	0.338	0.328	0.007	0.630	5	3
129	Garrauli	0.140	0.090	0.214	0.037	0.280	0	5

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
130	Garudeshwar	0.135	0.083	0.289	0.012	0.429	1	7
131	Gaya	0.373	0.095	0.652	0.076	1.145	1	3
132	Gelabil	4.657	3.514	5.801	0.903	7.894	4	0
133	Ghat	0.394	0.467	0.175	0.008	1.294	4	4
134	Ghatora	0.018	0.018	-	0.010	0.027	0	3
135	Ghatsila	0.185	0.086	0.679	0.019	0.679	1	5
136	Ghish	0.496	0.496	-	0.030	0.991	2	1
137	Ghugumari	1.661	2.197	0.051	0.033	6.462	1	3
138	Gokak	0.093	0.008	0.178	0.008	0.178	0	2
139	Golagang	0.273	0.273	-	0.027	0.518	1	1
140	Golaghat	1.456	0.837	3.621	0.002	5.089	4	5
141	Gomlai	0.230	0.077	0.997	0.031	0.997	1	5
142	Gopalkheda	0.990	0.193	1.788	0.010	2.319	3	1
143	Govindapur	0.155	0.060	0.630	0.020	0.630	1	5
144	Gummanur	0.102	0.080	0.170	0.010	0.205	0	8
145	Gumrabazar	0.045	0.030	0.076	0.008	0.098	0	6
146	Gunupur	0.280	0.267	0.347	0.031	0.796	3	3
147	Haladi	0.108	0.054	0.436	0.016	0.436	1	6
148	Halia	0.022	0.022	-	0.004	0.052	0	4
149	Hamirpur	0.098	0.092	0.112	0.003	0.253	0	7
150	Handia	0.130	0.127	0.141	0.011	0.276	0	9
151	Hanskhali	1.040	1.320	0.060	0.002	9.058	1	8
152	Haridwar	0.185	0.233	0.041	0.002	1.203	1	7
153	Harlahalli	0.160	0.050	0.489	0.011	0.489	1	3
154	Hasimara	1.564	2.069	0.048	0.039	6.097	1	3
155	Hathidah	0.302	0.134	0.891	0.002	1.530	2	7
156	Hayaghat	0.361	0.120	1.205	0.014	2.150	2	7
157	Hivra	0.081	0.034	0.244	0.013	0.312	1	8
158	Holehonnur	0.131	0.068	0.515	0.012	0.515	1	6
159	Honnali	0.124	0.049	0.577	0.022	0.577	1	6
160	Hoshangabad	0.279	0.174	0.647	0.009	1.009	2	7
161	Huvin Hedgi	0.133	0.053	0.375	0.023	0.375	1	3
162	Jagdalpur	0.617	0.053	1.181	0.053	1.181	1	1
163	Jagibhakatgaon	0.847	0.506	2.041	0.031	2.554	6	3
164	Jai Nagar	0.308	0.136	0.910	0.007	1.580	2	7
165	Jaldhaka NH-31	0.250	0.316	0.049	0.032	0.557	2	2
166	Jammu Tawi	0.053	0.054	0.048	0.002	0.153	0	6
167	Jamshedpur	0.105	0.050	0.381	0.002	0.381	1	5
168	Jamsolghat	0.308	0.062	0.800	0.015	0.800	1	2
169	Japla	0.303	0.091	1.046	0.015	2.050	1	8
170	Jaraikela	0.218	0.065	0.980	0.008	0.980	1	5
171	Jenapur	0.229	0.128	0.732	0.008	0.732	2	4
172	Jhanjharpur	0.335	0.120	1.087	0.002	1.877	2	7
173	Jiabharali NT Road Xing	1.491	0.426	5.218	0.015	6.118	5	4

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
174	Jondhra	0.035	0.035	-	0.035	0.035	0	1
175	K.M. Vadi	0.120	0.020	0.320	0.020	0.320	1	2
176	Kachlabridge	0.406	0.390	0.454	0.019	1.379	5	3
177	Kalampur	0.055	0.058	0.045	0.026	0.097	0	5
178	Kalanaur	0.059	0.066	0.036	0.002	0.155	0	9
179	Kallooppara	0.051	0.049	0.058	0.028	0.103	0	5
180	Kalna (EBB)	0.029	0.019	0.049	0.003	0.052	0	6
181	Kalna (Flow)*	0.027	0.027	-	0.008	0.056	0	3
182	Kamalapuram	0.806	-	0.806	0.046	1.565	1	1
183	Kamalpur	0.526	0.129	1.322	0.123	1.322	1	2
184	Kampur	0.909	0.367	2.805	0.018	3.163	4	5
185	Kanpur	0.498	0.515	0.448	0.008	1.339	5	3
186	Kantamal	0.056	0.056	-	0.030	0.102	0	3
187	Karad	0.243	-	0.243	0.243	0.243	0	1
188	Karathodu	0.040	0.040	0.041	0.027	0.056	0	5
189	Kashinagar	0.059	0.059	0.058	0.015	0.125	0	6
190	Katwa	0.277	0.343	0.046	0.002	2.221	1	8
191	Keesara	0.046	0.023	0.069	0.023	0.069	0	2
192	Kellodu	0.003	0.003	-	0.003	0.003	0	1
193	Keolari	0.114	0.058	0.314	0.016	0.436	1	8
194	Kesinga	0.024	0.024	-	0.010	0.039	0	3
195	Khanitar	0.712	0.712	-	0.249	1.174	1	1
196	Khanpur	0.240	0.206	0.359	0.002	0.978	2	7
197	Kharkhana	0.050	0.047	0.055	0.005	0.074	0	5
198	Khatoli	0.052	0.060	0.035	0.002	0.098	0	7
199	Kheronighat	0.753	0.193	2.712	0.010	3.588	4	5
200	Kidangoor	0.091	0.099	0.056	0.020	0.301	1	4
201	Kodumudi	0.046	0.044	0.055	0.011	0.067	0	6
202	Koelwar	0.255	0.078	0.875	0.002	1.431	2	7
203	Kogaon	0.118	0.075	0.161	0.056	0.266	0	4
204	Kokrajhar	1.069	1.407	0.052	0.035	2.442	2	2
205	Kollegal	0.115	0.085	0.204	0.019	0.216	0	4
206	Konta	0.204	0.034	0.881	0.009	0.881	1	4
207	Koperagaon	0.453	-	0.453	0.453	0.453	1	0
208	Kora	0.092	0.071	0.143	0.005	0.240	0	7
209	Koteshwar	0.191	0.249	0.048	0.002	1.087	1	6
210	Kudalaiyathur	0.046	0.046	-	0.046	0.046	0	1
211	Kudige	0.128	0.081	0.416	0.013	0.416	2	5
212	Kudlur	0.142	0.108	0.212	0.003	0.212	0	3
213	Kuldah Bridge	0.262	0.064	0.854	0.016	0.993	2	6
214	Kulsi	0.322	0.296	0.413	0.004	0.763	4	5
215	Kumbidi	0.043	0.038	0.065	0.010	0.070	0	5
216	Kumhari	0.201	0.065	0.679	0.012	0.740	2	7
217	Kuniyil	0.044	0.044	0.044	0.024	0.082	0	5

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
218	Kuppelur	0.011	0.011	-	0.011	0.011	0	1
219	Kurubhata	0.022	0.022	-	0.011	0.034	0	3
220	Kurundwad	0.203	-	0.203	0.203	0.203	0	1
221	Kuttyadi	0.051	0.053	0.040	0.024	0.122	0	5
222	Kuzhithurai	0.032	0.028	0.046	0.002	0.058	0	5
223	Labha	0.051	0.053	0.044	0.002	0.230	0	9
224	Lakhisarai	0.373	0.221	0.830	0.002	1.241	4	4
225	Lalganj	0.242	0.109	0.708	0.003	0.949	3	6
226	Lowara	0.224	0.120	0.589	0.032	0.789	2	7
227	Lucknow	0.268	0.284	0.220	0.010	0.782	2	6
228	M.H. Halli	0.117	0.117	-	0.016	0.318	1	2
229	Madhira	0.014	0.014	-	0.003	0.025	0	2
230	Madla	0.111	0.087	0.172	0.029	0.278	0	7
231	Mahidpur	0.051	0.079	0.037	0.024	0.079	0	3
232	Mahuwa	0.613	0.274	1.462	0.009	1.966	3	4
233	Maighat	0.136	0.058	0.409	0.022	0.578	1	8
234	Majhitar	3.298	3.298	-	3.298	3.298	1	0
235	Malakkara	0.096	0.109	0.045	0.025	0.238	0	5
236	Malkhed	0.074	0.018	0.186	0.012	0.186	0	3
237	Manas NH Crossing	1.967	2.895	0.112	0.033	5.757	1	2
238	Mancherial	0.048	0.042	0.069	0.024	0.069	0	5
239	Mandleshwar	0.088	0.062	0.180	0.012	0.282	0	9
240	Manendragarh	0.013	0.013	-	0.011	0.015	0	2
241	Mangaon (Seasonal)	0.152	-	0.152	0.152	0.152	0	1
242	Mankara	0.037	0.035	0.048	0.004	0.062	0	5
243	Manot	0.180	0.089	0.499	0.008	0.620	2	7
244	Mantralayam	0.063	0.063	-	0.024	0.111	0	3
245	Marella	0.053	0.053	-	0.022	0.082	0	3
246	Margherita	1.482	0.562	4.703	0.027	7.684	5	4
247	Marol	0.250	0.027	0.473	0.027	0.473	1	1
248	Mataji	0.212	0.098	0.610	0.013	0.809	2	7
249	Mathabhanga	0.465	0.672	0.050	0.050	1.183	1	2
250	Mathanguri	0.697	0.697	-	0.697	0.697	1	0
251	Mathura	0.052	0.057	0.034	0.002	0.156	0	9
252	Matigara	2.032	2.032	-	0.030	5.340	2	1
253	Matijuri	0.051	0.019	0.083	0.002	0.124	0	4
254	Matunga	0.119	0.126	0.095	0.026	0.272	0	9
255	Mawi	0.056	0.062	0.036	0.002	0.144	0	9
256	Meja Road	0.164	0.062	0.473	0.013	0.667	1	7
257	Mekhliganj	0.391	0.506	0.045	0.030	1.379	1	3
258	Miao	1.283	0.931	2.514	0.022	3.655	4	5
259	Mirzapur	0.172	0.085	0.476	0.019	0.676	1	8
260	Mohana (Betwa)	0.099	0.071	0.157	0.015	0.188	0	6
261	Mohana (Yamuna)	0.057	0.062	0.042	0.002	0.158	0	9

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
262	Mohgaoan	0.186	0.068	0.600	0.012	0.655	2	7
263	Moradabad	0.352	0.362	0.321	0.008	1.160	4	4
264	Motinaroli	0.254	0.154	0.554	0.011	0.759	2	6
265	Murappanadu	0.054	0.046	0.094	0.008	0.103	0	6
266	Muri	0.130	0.059	0.485	0.004	0.485	1	5
267	Murti	1.794	1.794	-	0.034	5.197	1	2
268	Musiri	0.111	0.111	-	0.007	0.289	0	5
269	Muthankera	0.041	0.041	0.042	0.029	0.064	0	5
270	Nagrakata	0.590	0.590	-	0.036	1.607	1	2
271	Naharkatia	2.047	0.572	7.208	0.021	11.270	6	3
272	Naidupet	0.019	0.019	-	0.019	0.019	0	1
273	Nallammaranpatty	0.031	0.007	0.081	0.003	0.081	0	3
274	Nallathur	0.057	0.057	-	0.004	0.111	0	3
275	Namsai	0.889	0.396	2.614	0.031	4.289	5	4
276	Nandgaon	0.063	0.021	0.168	0.011	0.236	0	7
277	Nandipalli	0.146	0.070	0.223	0.008	0.391	1	3
278	Nanglamoraghat	0.985	0.230	3.627	0.006	4.086	4	5
279	Neamatighat	0.946	0.269	3.315	0.010	5.075	4	5
280	Neeleswaram	0.040	0.041	0.039	0.003	0.088	0	5
281	Neemsar	0.266	0.296	0.191	0.009	0.614	4	3
282	Nellithurai	0.150	0.150	-	0.010	0.434	1	3
283	Nellore	0.049	0.049	-	0.043	0.054	0	2
284	Neora	0.593	0.593	-	0.032	1.457	1	2
285	Nowrangpur	0.762	0.511	1.767	0.012	1.923	2	3
286	Numaligarh	1.726	0.621	5.595	0.013	7.894	5	4
287	P.G.Bridge	0.104	0.049	0.269	0.021	0.329	1	7
288	Pachauli	0.144	0.035	0.252	0.035	0.252	0	2
289	Pachegaon	0.339		0.339	0.339	0.339	1	0
290	Paderdibadi	0.130	0.099	0.237	0.024	0.267	0	9
291	Pagladiya N.T.Road Crossing	0.253	0.283	0.147	0.016	0.948	1	8
292	Paleru Bridge	0.057	0.056	0.058	0.025	0.096	0	4
293	Paliakalan	0.300	0.314	0.259	0.008	0.908	4	4
294	Palla	0.077	0.088	0.038	0.002	0.201	0	9
295	Panbari	0.773	0.773		0.138	1.408	1	1
296	Pancharatna	0.281	0.229	0.462	0.039	0.720	3	6
297	Pandu	0.360	0.392	0.246	0.020	1.649	3	6
298	Panposh	0.526	0.459	0.858	0.028	1.793	3	3
299	Passighat	0.088	0.088		0.008	0.251	0	5
300	Patan	0.202	0.092	0.588	0.011	0.988	1	8
301	Pathagudem	0.225	0.039	0.969	0.008	0.969	1	4
302	Pathardhi	0.027	0.027	-	0.027	0.027	0	1
303	Pati	0.073	0.064	0.110	0.010	0.181	0	5
304	Patna	0.279	0.097	0.918	0.002	1.371	3	6
305	Pattazhy	0.067	0.071	0.048	0.030	0.087	0	5

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
306	Pauni	0.114	0.035	0.389	0.017	0.435	2	7
307	Peralam	0.004	0.004	-	0.004	0.004	0	1
308	Perumannu	0.277	0.284	0.246	0.029	1.025	1	4
309	Perur	0.131	0.036	0.511	0.021	0.511	1	4
310	Phulgaon (Seasonal)	0.157	-	0.157	0.157	0.157	0	1
311	Pingalwada	0.781	0.697	1.033	0.010	3.500	3	5
312	Polavaram	0.161	0.033	0.670	0.009	0.670	1	4
313	Pratapgarh	0.228	0.060	0.734	0.011	1.007	2	6
314	Pratapur	0.105	0.093	0.136	0.006	0.195	0	7
315	Prem Nagar	0.050	0.050	0.054	0.011	0.154	0	6
316	Pudur	0.046	0.043	0.057	0.006	0.102	0	5
317	Pulamanthole	0.042	0.042	0.042	0.030	0.053	0	5
318	Purna	0.048	0.048	-	0.048	0.048	0	1
319	Purushottampur	0.076	0.061	0.149	0.028	0.149	0	6
320	Puthimari D.R.F.	0.182	0.196	0.133	0.032	0.687	1	8
321	Puthimari NH Road cross-ing	0.174	0.185	0.139	0.017	0.677	1	7
322	Raibareli	0.636	0.687	0.511	0.011	2.724	3	4
323	Rajapur	0.101	0.082	0.139	0.035	0.191	0	6
324	Rajegaon	0.204	0.070	0.608	0.022	0.646	2	6
325	Rajghat	0.102	0.090	0.127	0.020	0.167	0	6
326	Rajim	0.047	0.047	-	0.047	0.047	0	1
327	Ram Munshi Bagh	0.056	0.058	0.049	0.002	0.158	0	5
328	Ramakona	0.135	0.048	0.396	0.005	0.407	2	6
329	Ramamangalam	0.046	0.039	0.073	0.007	0.073	0	5
330	Rampur	0.027	0.027	-	0.014	0.035	0	3
331	Ranganadi NT-Road Xing	0.334	0.269	0.563	0.013	0.978	4	5
332	Rangeli	0.162	0.126	0.286	0.012	0.507	2	7
333	Rangpo	0.481	0.481	-	0.028	0.819	2	1
334	Regauli	0.418	0.391	0.500	0.009	0.977	5	3
335	Rishikesh	0.156	0.188	0.043	0.002	0.709	2	7
336	Rudraprayag	0.263	0.338	0.038	0.013	0.892	3	5
337	Safapora	0.047	0.046	0.049	0.001	0.150	0	6
338	Sakleshpur	0.151	0.070	0.635	0.015	0.635	1	6
339	Sakmur	0.101	0.063	0.237	0.019	0.296	0	9
340	Salebhata	0.019	0.019	-	0.011	0.031	0	3
341	Samdoli	0.233	-	0.233	0.233	0.233	0	1
342	Sandia	0.240	0.140	0.590	0.002	1.025	2	7
343	Sangam	0.054	0.047	0.085	0.002	0.149	0	11
344	Sangod	0.048	0.078	0.033	0.013	0.078	0	3
345	Sankalan	0.591	0.591	-	0.034	1.052	2	1
346	Sankosh LRP	0.344	0.444	0.044	0.034	1.242	1	3
347	Santeguli	0.146	0.111	0.353	0.007	0.358	2	5
348	Sarangkheda	1.210	0.150	3.863	0.012	6.257	3	4
349	Satrapur	0.107	0.038	0.349	0.014	0.574	1	8

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
350	Savandapur	0.061	0.053	0.085	0.009	0.113	0	8
351	Seondha	0.111	0.120	0.066	0.048	0.171	0	6
352	Seppa	2.385	1.502	5.477	0.013	9.174	5	4
353	Sevanur	0.021	0.021	-	0.021	0.021	0	1
354	Sevoke	0.881	0.881	-	0.032	2.299	2	1
355	Shahijina	0.158	0.139	0.205	0.054	0.258	0	7
356	Shahzadpur	0.179	0.091	0.440	0.018	0.626	1	7
357	Shimoga	0.139	0.052	0.660	0.010	0.660	1	6
358	Sibbari	0.106	0.105	0.107	0.032	0.178	0	5
359	Sikandarpur	0.146	0.071	0.408	0.003	0.568	1	8
360	Simga	0.027	0.027	-	0.010	0.042	0	3
361	Singla-Bazar	1.262	1.262	-	0.031	3.282	2	1
362	Sivasagar	1.088	0.600	2.796	0.026	3.434	4	5
363	Sonapur	0.566	0.651	0.062	0.062	1.171	5	2
364	Srikakulam	0.132	0.113	0.223	0.008	0.371	1	5
365	Srinagar	0.233	0.291	0.060	0.027	0.744	1	3
366	Sripalpur	0.473	0.233	1.312	0.002	2.258	4	5
367	Suklai	0.261	0.298	0.133	0.033	0.638	5	4
368	Sultanpur	0.167	0.063	0.478	0.026	0.528	2	6
369	Sulurpet	0.107	0.107	-	0.107	0.107	0	1
370	Sundergarh	0.021	0.021	-	0.010	0.028	0	3
371	T. Bekuppe	0.114	0.112	0.131	0.014	0.379	1	6
372	T. Narasipur	0.123	0.053	0.264	0.013	0.264	0	3
373	T. Ramapuram	0.067	0.067	-	0.025	0.109	0	2
374	T.K.Halli	0.027	0.027	-	0.010	0.053	0	3
375	Tal	0.050	0.079	0.035	0.020	0.079	0	3
376	Talcher	0.184	0.085	0.676	0.009	0.676	1	5
377	Tandi	0.048	-	0.048	0.048	0.048	0	1
378	Teesta-Bazar	0.402	0.489	0.053	0.029	1.204	2	3
379	Tehri	0.825	0.825	-	0.238	1.412	1	1
380	Tekra	0.095	0.054	0.238	0.011	0.427	1	8
381	Tezpur	2.185	0.801	7.031	0.027	9.872	5	4
382	Tezu	0.595	0.119	2.022	0.003	3.052	3	5
383	Thengudi	0.011	0.011	-	0.005	0.017	0	2
384	Thengumarahada	0.097	0.069	0.182	0.002	0.237	0	8
385	Theni	0.111	0.107	0.124	0.018	0.340	1	7
386	Therriaghat	0.038	0.034	0.044	0.002	0.055	0	5
387	Thevur	0.007	0.007	-	0.007	0.007	0	1
388	Thimmanahalli	0.038	0.038	-	0.019	0.076	0	5
389	Thoppur	0.146	-	0.146	0.146	0.146	0	1
390	Thumpamon	0.048	0.049	0.044	0.012	0.108	0	5
391	Tikarpara	0.158	0.078	0.557	0.013	0.557	1	5
392	Tilga	0.189	0.074	0.765	0.014	0.765	1	5
393	Tonk	0.065	0.075	0.054	0.054	0.075	0	2

S. No.	Water Quality Site	Iron					BIS:10500;2012	
		Average			Min	Max	No. of Stations	
		Total	Non-Monsoon	Monsoon			Above 0.3 mg/L	Below5 0.3 mg/L
394	Tribeni	0.482	0.210	1.438	0.013	2.688	2	7
395	Tufanganj	0.607	0.795	0.045	0.034	2.271	1	3
396	Tuini	0.061	0.067	0.040	0.002	0.157	0	9
397	Turtipar	0.712	0.823	0.377	0.007	2.231	4	4
398	Udaipur (Chandra)	0.049	-	0.049	0.049	0.049	0	1
399	Udaipur (Tirap)	1.408	0.789	3.575	0.019	4.132	6	3
400	Udi	0.143	0.153	0.117	0.036	0.276	0	7
401	Ujjain	0.050	0.075	0.025	0.025	0.075	0	2
402	Urachikottai	0.037	0.033	0.056	0.009	0.056	0	5
403	Uttarkashi	0.211	0.255	0.060	0.002	1.107	2	7
404	Vandiperiyar	0.064	0.068	0.047	0.027	0.177	0	5
405	Vapi	0.395	0.245	0.845	0.015	1.311	4	4
406	Varanasi	0.181	0.082	0.527	0.022	0.873	1	8
407	Vautha	0.318	0.248	0.562	0.032	0.780	5	4
408	Vazhavachanur	0.017	0.017	-	0.016	0.018	0	2
409	Wadenapally	0.045	0.039	0.068	0.008	0.076	0	5
410	Wairagarh	0.166	0.040	0.419	0.028	0.559	1	5
411	Warunji	0.191	-	0.191	0.191	0.191	0	1
412	Yadgir	0.154	-	0.154	0.154	0.154	0	1
413	Yashwant nagar	0.062	0.070	0.032	0.002	0.162	0	9
414	Yennehole	0.257	0.041	0.905	0.025	0.905	1	3

CENTRAL WATER COMMISSION

Ministry of Water Resources,
River Development and Ganga Rejuvenation
New Delhi