

Assessment of Domestic Pollution Load from Urban Agglomeration in Ganga Basin: Bihar

GRBMP: Ganga River Basin Management Plan

by

Consortium of 7 “Indian Institute of Technology”s (IITs)



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Preface

In exercise of the powers conferred by sub-sections (1) and (3) of Section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government has constituted National Ganga River Basin Authority (NGRBA) as a planning, financing, monitoring and coordinating authority for strengthening the collective efforts of the Central and State Government for effective abatement of pollution and conservation of the river Ganga. One of the important functions of the NGRBA is to prepare and implement a Ganga River Basin Management Plan (GRBMP).

A Consortium of 7 Indian Institute of Technology (IIT) has been given the responsibility of preparing Ganga River Basin Environment Management Plan (GRBMP) by the Ministry of Environment and Forests (MoEF), GOI, New Delhi. Memorandum of Agreement (MoA) has been signed between 7 IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and MoEF for this purpose on July 6, 2010.

This report is one of the many reports prepared by IITs to describe the strategy, information, methodology, analysis and suggestions and recommendations in developing Ganga River Basin Management Plan (GRB EMP). The overall Frame Work for documentation of GRBMP and Indexing of Reports is presented on the inside cover page.

There are two aspects to the development of GRB EMP. Dedicated people spent hours discussing concerns, issues and potential solutions to problems. This dedication leads to the preparation of reports that hope to articulate the outcome of the dialog in a way that is useful. Many people contributed to the preparation of this report directly or indirectly. This report is therefore truly a collective effort that reflects the cooperation of many, particularly those who are members of the IIT Team. Lists of persons who have contributed directly and those who have taken lead in preparing this report is given on the reverse side.

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1. Introduction

Bihar has the total area of 94,163 sq km, which is about 2.86 % of the total area of the country. Bihar has total 38 districts and the third largest populated state with ~8.6% of the total population in India. Bihar shares its boundaries with Uttar Pradesh to west, Nepal to the North, West Bengal to the east and by Jharkhand to the south. Bihar is divided by the river Ganges into two parts and flows from west to east. It is also known for its historically rich heritage and culture and religious tourism. Patna is the capital as well as the most populated city of Bihar.

The Ganga River Basin (GRB) has a total catchment area of 1,086,000 sq km across India, Tibet (China), Nepal and Bangladesh. The river basin in India, nearly covers 26% (861,404 sq km; about 80% of total catchment area of Ganga river basin) of the total geographical area. The sprawling Ganga basin, spread across 11 states, is the world's most populous river basin and home to more than 492 million Indians. Bihar is one of the 11 states (Uttarakhand, Uttar Pradesh, Bihar, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Rajasthan, Madhya Pradesh, Jharkhand and West Bengal) of the GRB in India through which the Ganga River and her tributaries flow approximately in the direction of North West to South East. The entire geographical area of the state Bihar lies in GRB where many small and large tributaries join Ganga while traversing through the state (Figures 1 and 2). A comparison of state-wise distribution of GRB area within the geographical areas of different states is presented in Table 1.

Table 1: State-wise Distribution of the Ganga River Basin Area

State/ Union Territory	*Total Geographical Area (sqkm)	#Area contributing to Ganga Basin (sqkm)	Percentage of the Basin Area (%)
Uttarakhand	53,483	53,436	6.2
Uttar Pradesh	240,928	240,928	28
Bihar	94,163	94,163	10.93
Jharkhand	79,716	49,798	5.78
Madhya Pradesh	308,252	198,962	23.1
Chhattisgarh	135,192		
Delhi	1,484	1,484	0.17
Haryana	44,212	34,341	4.0
Himachal Pradesh	55,673	4,317	0.5
Rajasthan	342,239	112,490	13.1
West Bengal	88,752	71,485	8.3

Source: *Census 2011

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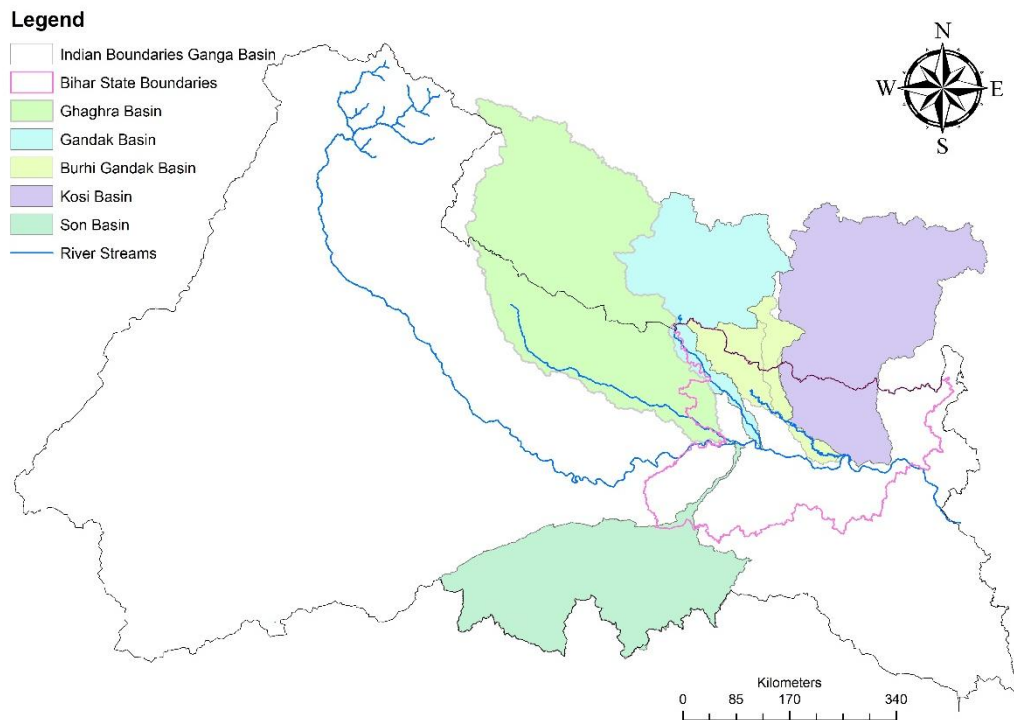


Figure 1: Ganga River Basin with its Major Sub-Basins of Bihar within the Indian Territory

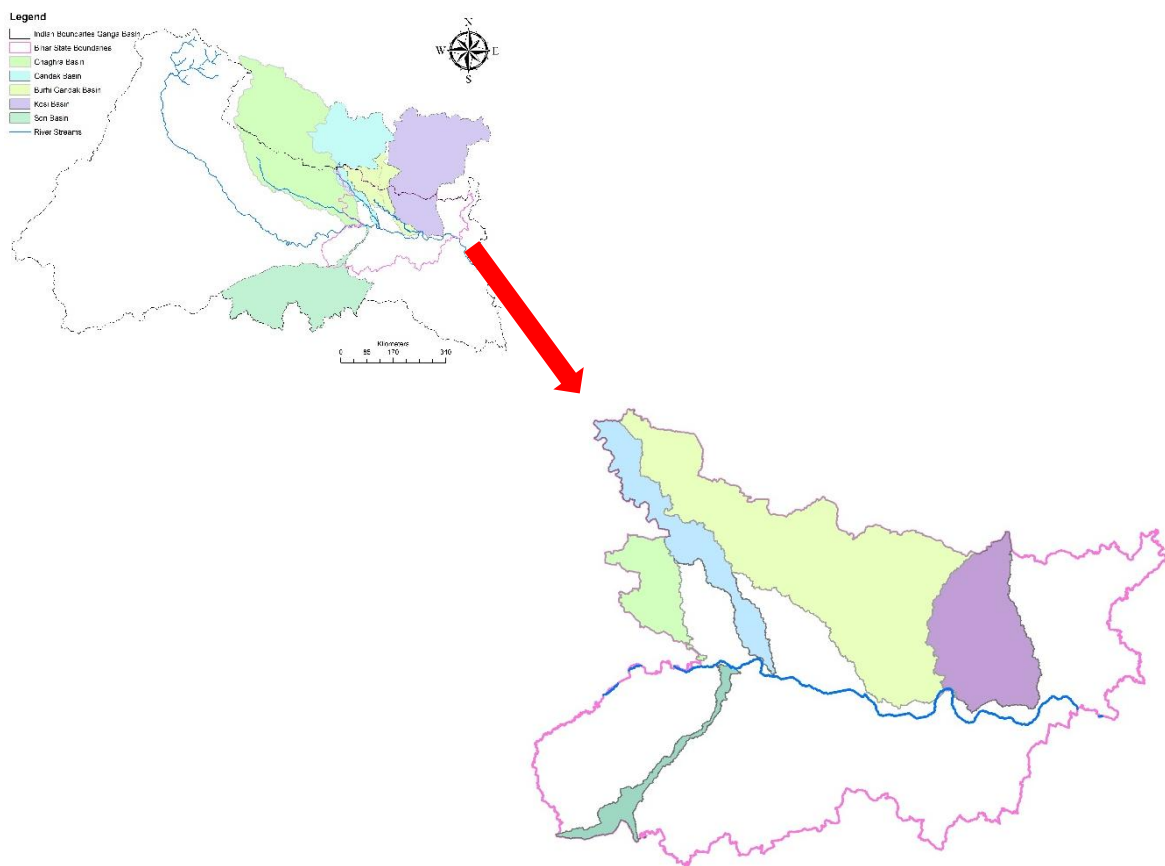


Figure 2: Portions of Major Sub-Basins of Ganga River Basin in the State of Bihar

River Ganga touches the Bihar near Chausa (Buxar) and share around 110 km boundary with Uttar Pradesh and then finally enters to Bihar near Chhapra and exits near Manihari (Katihar). During her course in Bihar tributaries such as Ghaghara, Gandak, Burhi Gandak, Kosi joins on her left bank while Son and kuil joins on right bank. The entire state of Bihar is in Ganga River Basin (GRB), and in terms of catchment area it comes in the list of top four contributors. The salient features of some major tributaries and sub-tributaries contributing directly or indirectly to the river Ganga in the state of Bihar are presented in Table 2.

Table 2: The Salient Features of Tributaries of the Ganga River Basin Contributing to the River Ganga in the State of Bihar.

Characteristics	Ghaghara	Gandak	Kosi	BurhiGandak	Son
Position	Left bank	Left bank	Left bank	Left bank	Right bank
Region of origin	Tibetan Plateau near Lake Mansarovar	Tibetan Plateau near Nhubine Himal Glacier	Tibetan Plateau near Tribenighat, Nepal	near Bisambhar pur, West Champaran district Bihar	Amarkantak
Mouth	Ganga	Ganga	Ganga	Ganga	Ganga
Total length (km)	1,080	630	720	320	784
Total catchment area (sq km)	127,950	46,300	61,788	10,150	11,100
Catchment area in Bihar (sq km)	43,488	7288	30,437	-	6,184
River bed/ Soil texture	Clay, sand, loam and deep black soil	Clay, sand,	Sand, silt, clay and	Clay, silt, and sand	Red soil,

The major tributaries (Ghaghara, Gandak, Kosi, Burhi Gandak and Son) of the river Ganga cover the catchment area of nearly 67% of the total area of the state of Bihar. The total annual average rainfall in the state of Bihar is in the order of 1,196 mm.

2. Major Obstruction and Abstraction Projectson the Tributaries of the River GangaExecutedin the State

Bihar has 21 Dams, 35 Barrage /Weir/Annicuts under Ganga river basin. These Dams and barrages are essentially for irrigationand domestic water supplies. The list of the major dams on Ganga River and its tributaries in Bihar are mentioned underneath in Table 3.

Table 3: Details of the Major Dams on the River Ganga and HerTributaries in the State of Bihar (WRIS-wiki)

Projects	River	Year of Completion	Remark
Ajan Dam	Ajan	1989	Major Irrigation Project
Badua Dam	Badua	1965	Major Irrigation Project
Baskund Dam	Baskund	1984	Major Irrigation Project
Belharna Dam	Belharna	1987	Major Irrigation Project
Bilasi Dam	Bilasi	2001	Major Irrigation Project
Chandan Dam	Chandan	1968	Major Irrigation Project
Jalkund Dam	Jalkund	1968	Major Irrigation Project
Job Dam	JOB	1977	Major Irrigation Project
Kailash Ghati Dam	Kailash Ghati	1980	Major Irrigation Project
Khargpur Lake Dam	Man	1876	Major Irrigation Project
Kohira Dam	Kohira	1962	Major Irrigation Project
Kolmahadeo Dam	Kolmahadev(bhusari)	1966	Major Irrigation Project
Morwy Dam	Morwe	1960	Major Irrigation Project
Nagi Dam	Nagi	1958	Major Irrigation Project
Nakti (Bihar) Dam	Nakti	1980	Major Irrigation Project
Orhni Dam	Orni	2000	Major Irrigation Project
Phulwaria Dam	Tilaiya	1988	Major Irrigation Project
Srikhandi Dam	Srikhandi	1965	Major Irrigation Project
Upper Kiul Dam	Kiul	2004	Major Irrigation Project

3. Demographic Profile of Ganga Basin in the State

Bihar has 26 Class I cities, 28 Class II cities and 75 Class III cities (Figure 4-6). The total population of the state according to the Census 2011 is 102 million out of which 11.3% belong to the urban area. The density in the state is about 881 people per square kilometre. According to the Population Census 2011, some of the Class I cities are Arrah, Aurangabad, Bagaha, Bhagalpur, Buxar, Darbhanga, Gaya, Hajipur, Katihar, Muzaffarpur, Patna, Saharsa, and Siwan. The details of the area, population and the major river systems of all the Class I, II and III cities are presented in Table 4-6, respectively.

Figure 3 shows the population distribution of Class I cities, Class II and III towns in the major basins of river Ganga in the state and along the main stem of the river Ganga, Kosi, Bodhi Gandak and Gandak. Map in the Figure 4, 5 and 6 showing the distribution of Class I cities, Class II, and Class III towns, respectively in the state under Ganga River Basin. The average population of class I town in the state is 0.26 million, approximately four times and eight times higher than the population of class II and class III towns, respectively. Patna is the highly populated class I city having the population of 1.7 million while Aurangabad is the least populated (0.1 million) class I city. Lakhisarai and Bhabua are the cities having maximum and minimum population under class II towns, contains 0.09 and 0.05 million, respectively. In class III towns where the population is less than 0.05 million, the maximum population is in the Narkatiaganj town (0.049 million) while minimum is in the Nirmali (0.02 million).

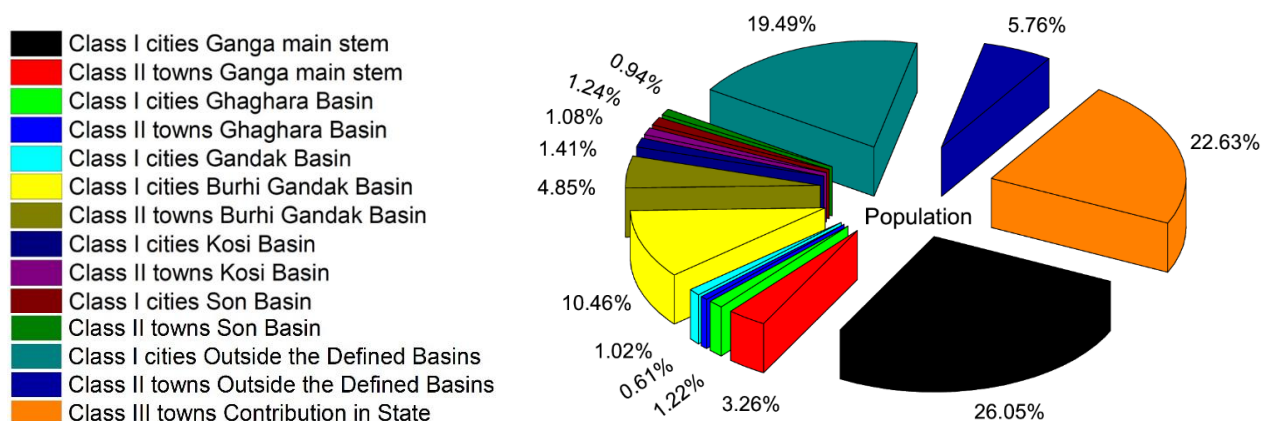


Figure 3: Population Distribution of Class I Cities and Class II, Class III Towns in the Major Basins of River Ganga in the Bihar State and Along the Main Stem of the River Ganga

Table 4: Demography of Class I Cities in Portion of the Ganga Basin Lying in the State of Bihar

S No.	Details	River System	Total Area (sq km)	Population (Census 2011)
1	Arrah (M Corp.)	Ganga River	30.97	261430
2	Aurangabad (NPP)	Adari River	21.33	102244
3	Bagaha (NPP)	Gandak River	46.83	112634
4	Begusarai (M Corp.)	Ganga River	47.51	252008
5	Bettiah (NPP)	Gandak River	8.01	132209
6	Bhagalpur (M Corp.)	Ganga River	30.17	400146
7	Biharsharif (M Corp.)	Panchane River	23.50	297268
8	Buxar (NPP)	Ganga River	5.16	102861
9	Chapra (NPP)	Ganga River	16.96	202352
10	Darbhanga (M Corp.)	Baghmati River	19.18	296,039
11	Dehri (NPP)	Sone	21.32	137231
12	DanapurNizamat (NPP)	Panchane River	16.41	182429
13	Gaya (M Corp. + OG)	Falgu River	50.17	474093
14	Hajipur (NPP)	Gandak& Ganga River	19.64	147688
15	Jamalpur (NPP)	Ganga River	10.65	105434
16	Jehanabad (NPP)	Dardha River	20.23	103202
17	Katihar (M Corp. + OG)	Ganga River	51.70	240838
18	Kishanganj (NPP)	Mahananda River	30.12	105782
19	Motihari (NPP)	BahuriGandak	16.38	126158
20	Munger (M Corp.)	Ganga River	17.50	213303
21	Muzaffarpur (M Corp.)	BahuriGandak River	26.43	354462
22	Patna (M Corp. + OG)	Ganga River	107.69	1684297
23	Purnia (M Corp.)	Kosi& Ganga River	92.29	282248
24	Saharsa (NPP)	Koshi River	21.13	156540
25	Sasaram (NPP)	Kadir & Sone River	10.90	147408
26	Siwan (NPP)	River Daha	13.05	135066

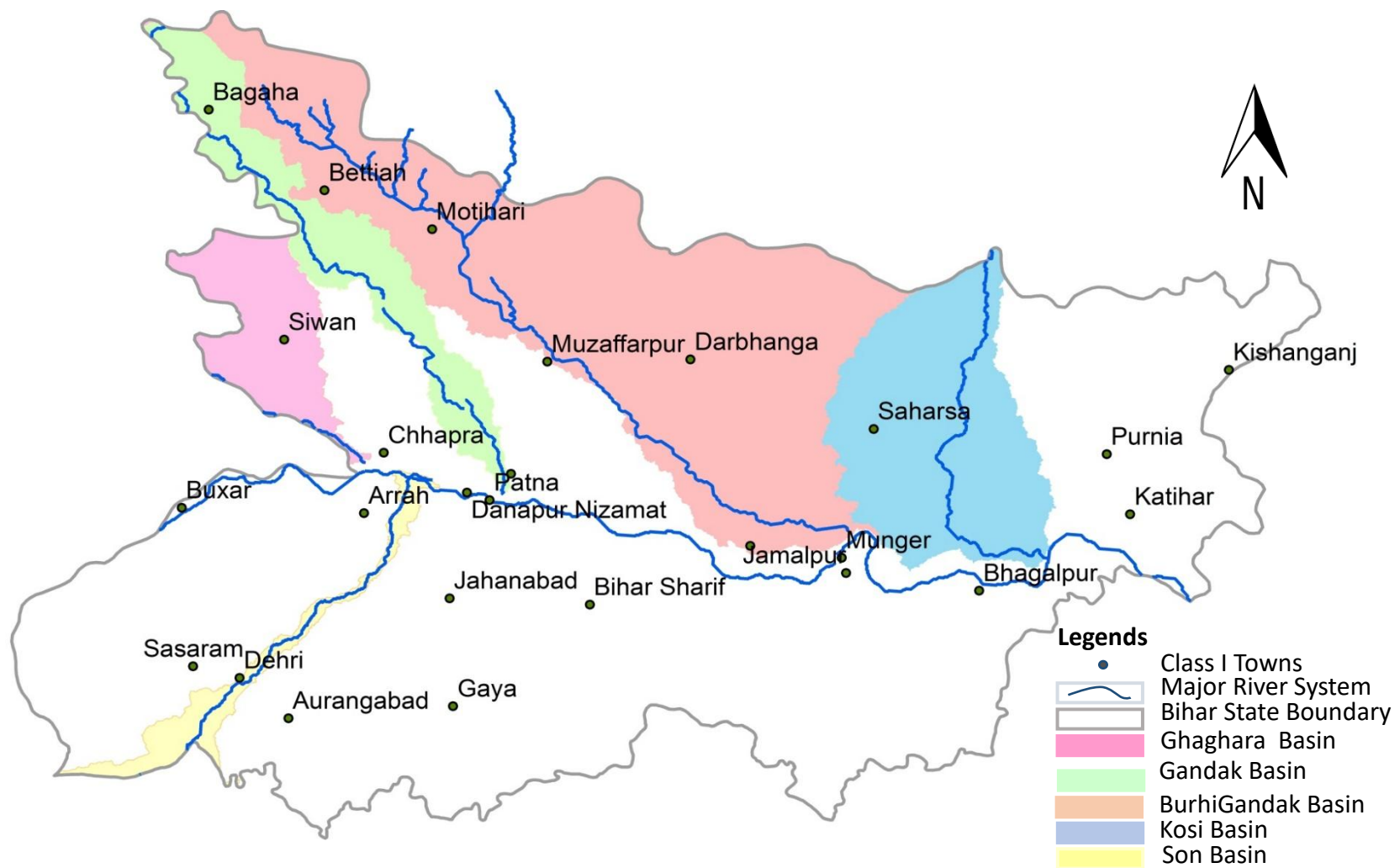


Figure 4: Class I Cities in the state of Bihar under Ganga River Basin

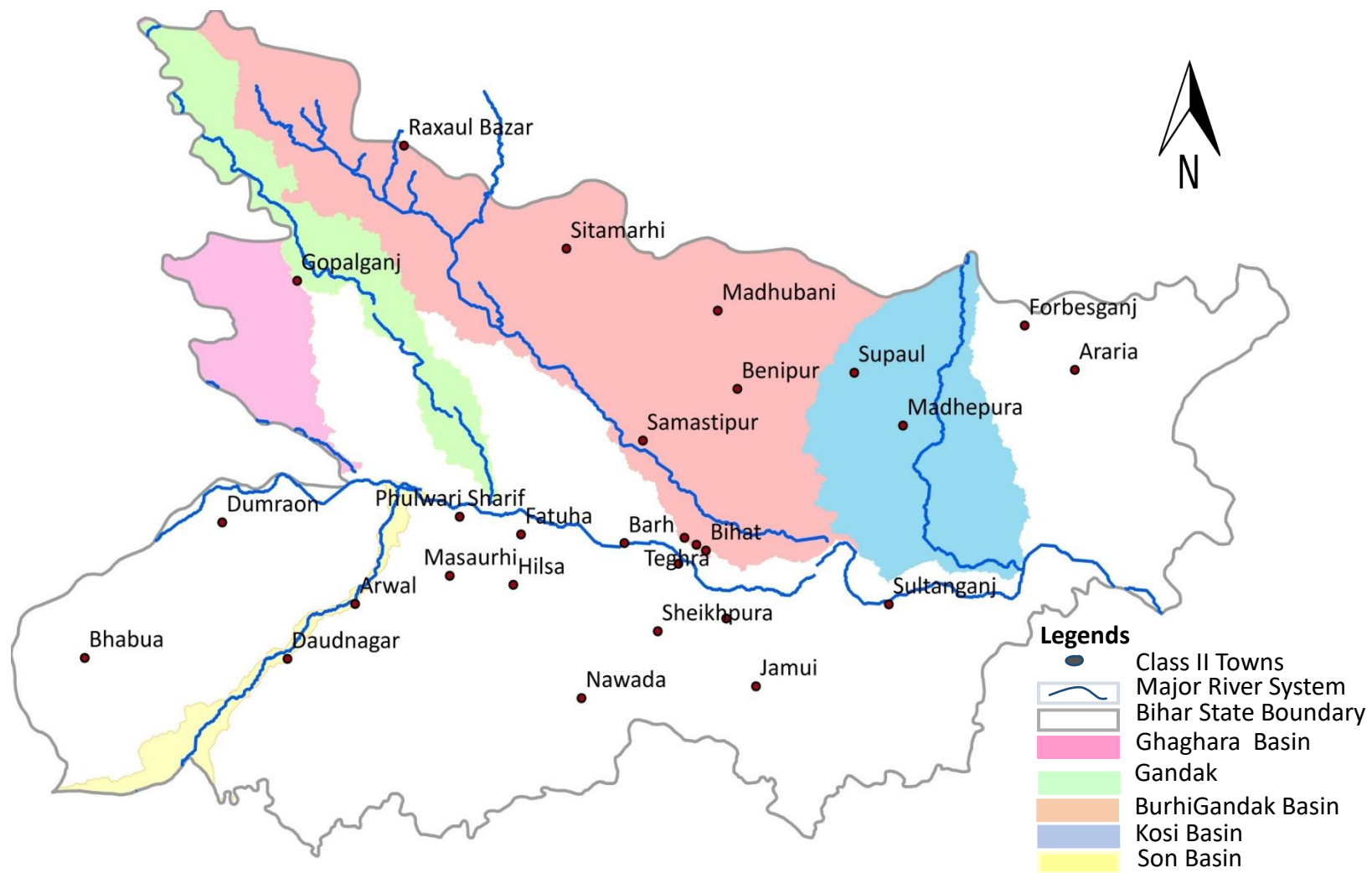


Figure 5: Class II Cities in the state of Bihar under Ganga River Basin

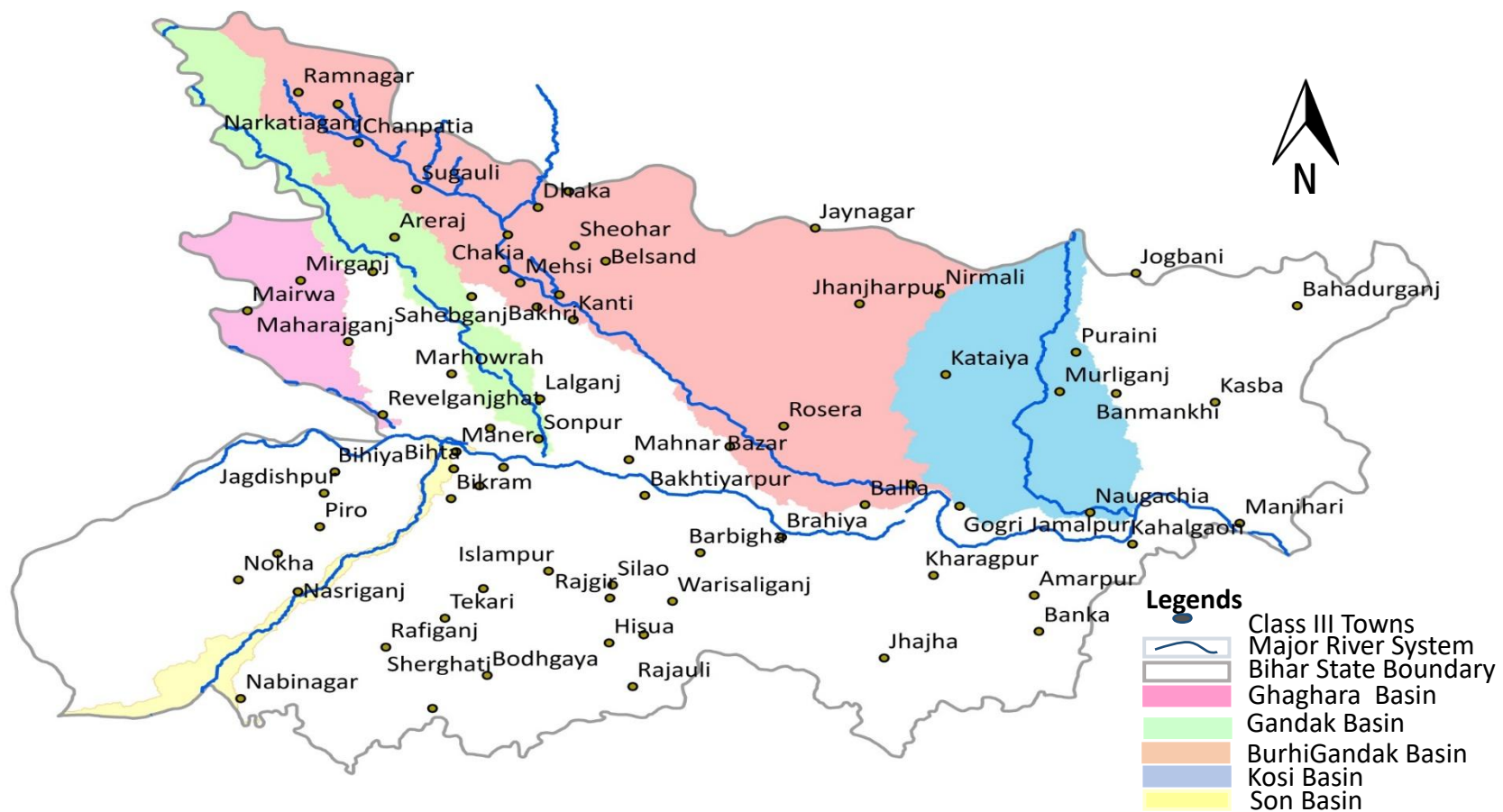


Figure 6: Class III Cities in the state of Bihar under Ganga River Basin

Table 5: Demography of Class II Cities in Portion of the Ganga Basin Lying in the State of Bihar

S No.	Details	River System	Total Area (sq km)	Population (Census 2011)
1	Araria (NPP)	Panar River	30.97	79021
2	Arwal (NPP)	Sone River	24.43	51849
3	Barauni (NPP)	Ganga River	17.55	71660
4	Barh (NPP)	Ganga River	4.50	61470
5	Benipur (NPP)	Kamla River	46.02	75317
6	Bhabua (NPP)	Suwara River	7.12	50179
7	Bihat (NPP)	Ganga River	23.45	67952
8	Daudnagar (NP)	Sone River	13.96	52364
9	Dumraon (NPP)	Ganga River	15.33	53618
10	Fatwah (NP)	Ganga River	4.90	50961
11	Forbesganj (NPP)	Koshi River	4.98	50475
12	Gopalganj (NPP)	Gandak River	11.11	67339
13	Hilsa (NPP)	Falgu River	22.96	51052
14	Jamui (NPP)	Kiul River	26.45	87357
15	Lakhisarai (NPP)	Kiul River	24.79	99979
16	Madhepura (NPP)	Koshi River	25.84	54472
17	Madhubani (NPP)	Kamla River	2.52	75736
18	Masaurhi (NPP)	Sone and Ganga River	9.43	59803
19	Mokameh (NPP)	Ganga River	14.18	60678
20	Nawada (NPP)	Panchane River	5.68	98029
21	Phulwari Sharif (NPP)	Ganga River	6.48	81740
22	RaxaulBazar (NPP)	Sirsiya River	5.82	55536
23	Samastipur (NPP + OG)	BurhiGandak River	3.45	67925
24	Sheikhpura (NPP)	Tati River	27.90	62927
25	Sitamarhi (NPP)	Gandak River	4.35	67818
26	Sultanganj (NPP)	Ganga River	12.29	52892
27	Supaul (NPP)	Koshi River	22.37	65437
28	Teghra (NP)	Ganga River	15.80	56234

Table 6: Demography of Class III Cities in Portion of the Ganga Basin Lying in the State of Bihar

S No.	Details	River System	Total Area (sq km)	Population (2011)
1	Amarpur (NP)	Chandan River	11.18	25336
2	Areraj (NP)	Gandak River	13.70	26014
3	Bahadurganj (NP)	Kankai River	29.17	36993
4	Bairgania (NP)	Bagmati River	14.32	42895
5	Bakhri (NP)	BurhiGandak River	10.65	40043
6	Bakhtiarpur (NP)	Ganga River	13.18	47897
7	Balia (NP)	Ganga River	14.74	47550
8	Banka (NP)	Chandan River	18.87	45977
9	Banmankhi Bazar (NP)	Koshi River	20.15	30336
10	Barahiya (NP)	Ganga River	26.54	43032
11	Barauli (NP)	Gandak River	22.21	41877
12	Barbiga (NP)	Falgu River	15.60	46075
13	Behea (NP)	Ganga River	4.06	26707
14	Belsand (NP)	Bagmati River	10.09	20566
15	Bhadauni (CT)	Panchane River	3.14	20739
16	Bihta (NP)	Sone River	25.91	47549
17	Bikram (NP)	Sone River	13.99	22486
18	Bikramganj (NP)	Sone River	15.64	48465
19	Bodh Gaya (NP)	Falgu River	19.58	38439
20	Chakia (NP)	BurhiGandak River	6.23	20686
21	Chanpatia (NP)	BurhiGandak River	7.57	27095
22	Colgong (NP)	Ganga River	0.63	33700
23	Dalsinghsarai (NP)	Balaan River	2.94	23862
24	Dhaka (NP)	Bagmati River	12.93	42063
25	Dighwara (NP)	Ganga River	13.27	32741
26	Gogri Jamalpur (NP)	Ganga River	9.49	37753
27	Hisua (NP)	Tilaiya River	6.33	32585
28	Islampur (NP)	Falgu River	6.00	35641
29	Jagdishpur (NP)	Ganga River	25.63	32447
30	Jainagar (NP)	Kamla River	1.61	21782
31	Jhajha (NP)	Ulai River	9.87	40646
32	Jhanjharpur (NP)	Kamla River	12.44	30590
33	Jogabani (NP)	Koshi River	15.12	39281
34	Kanti (NP)	BurhiGandak River	16.16	25051
35	Kasba (NP)	Koshi River	15.74	30421
36	Kataiya (NP)	Koshi River	12.06	20193

S No.	Details	River System	Total Area (sq km)	Population (2011)
37	Khagaria (NPP)	BurhiGandak River	2.97	49406
38	Khagaul (NPP)	Ganga River	3.66	44364
39	Kharagpur (NP)	Mani Nadi	9.74	31385
40	Lalganj (NP)	Gandak River	7.86	37098
41	Maharajganj (NP)	Daha River	7.60	24282
42	Mahnar Bazar (NP)	Ganga River	10.02	48293
43	Mairwa (NP)	Siahi River	6.23	23565
44	Makhdumpur (NP)	Dardha River	20.39	31994
45	Maner (NP)	Sone & Ganga River	12.00	40068
46	Manihari (NP)	Ganga River	11.31	26629
47	Marhaura (NP)	Ganga River	12.62	29932
48	Mehsi (NP)	BurhiGandak River	7.16	25995
49	Mirganj (NP)	Daha River	5.48	26240
50	Motipur (NP)	BurhiGandak River	12.77	28572
51	Murliganj (NP)	Koshi River	14.07	28691
52	Nabinagar (NP)	Sone River	17.42	23984
53	Narkatiaganj (NPP)	BurhiGandak River	10.96	49507
54	Nasriganj (NP)	Sone River	8.69	23819
55	Naubatpur (NP)	Ganga River	14.39	25011
56	Naugachhia (NP)	Koshi River	11.24	49069
57	Nirmali (NP)	Koshi River	5.30	20189
58	Nokha (NP)	Sone River	13.45	27302
59	PakriDayal (NP)	BurhiGandak River	19.13	29582
60	Piro (NP)	Sone River	6.47	33785
61	Puraini (CT)	Koshi River	9.33	30829
62	Rafiganj (NP)	DhavaNadi	4.56	35536
63	Rajauli (NP)	Dhanarjay River	18.08	30170
64	Rajgir (NP)	Panchane River	50.18	41587
65	Ramnagar (NP)	RamrekhaNadi	16.20	48411
66	Revelganj (NP)	Ganga River	12.48	39039
67	Rosera (NP)	BurhiGandak River	1.03	31155
68	Sahebganj (NP)	Gandak River	9.81	23224
69	Sheohar (NP)	Bagmati River	9.33	28116
70	Sherghati (NP)	Morhor	10.79	40666
71	Silao (NP)	Panchane River	9.00	25674
72	Sonepur (NP)	Gandak River	8.27	37776
73	Sugauli (NP)	BurhiGandak River	19.25	38815
74	Tikari (NP)	Falgu River	2.66	21324
75	Warisaliganj (NP)	Sakri River	13.11	34056

4. Religious Places and Their Importance

Bihar, a state in the Indo-Gangetic basin is home to many holy places, marked with the presence of sages, seers, devotees and mystics. Gaya, Patna, Bodhgaya, Sitamadhi, Bhagalpur, Vikramshila and Rajgir are major holy cities for Hindu, Buddhist and Jain communities. The hordes of pilgrims and devotees visit these places of pilgrimage every year and participate in festivals.

Gaya is the second largest city in Bihar having population of 0.47 million. The city has ancient historical significance and one of the major tourist attractions of Bihar. This place has great importance for the Hindu, Buddhist, and Jain followers. Gaya is situated on the bank of Phalgu River and other three sides by small rocky hills. Bodhgaya is approximately 15 km from Gaya and one of the most important sites for Buddhists. UNESCO world heritage site Mahabodhi temple is situated here.

Patna city is the capital of Bihar state and largest city with 1.7 million population, situated on the bank of Ganga. The city was founded in 490 BCE by the king Magadha with the name Pataliputra. Patan Devi temple, which is known as the oldest and one of the most revered places of worship for Hindus situated in Patna. This city is also important for the Sikh community as the birth place of tenth guru, Guru Gobind Singh. Similarly, Vaishali, Sitamadi, Nalanda, Rajgir, Vikramshila and Bhagalpur have the importance for Hindu, Buddhist, and Jain religions. Some major religious events and their features in Bihar state have been illustrated in Table 7.

Table 7: Major Religious Events on River Banks in Bihar

S No	Religious Events	Place	River Bank	Duration	Period
1	Chatth Puja	All river banks	Ganga and Tributaries	October-November	Annual
2	Kartik Poornima	All river banks	Ganga and Tributaries	November	Annual
3	Krishna Leela	All river banks	Ganga	October–November	Annual
4	Ganga Dusshera	All river banks	Ganga	June	Annual

5. Pollution Load

The major pollution load in the area of basin under the state is due to point and nonpoint sources. Discharges of untreated/partially treated sewage from urban centres, discharge from open drain carrying sewage, discharges from the tributaries and discharge of untreated/partially treated wastewater from industrial units are the major point sources that contribute to the pollution load in the state. The major cities contributing the wastewater discharge of approximately 579 MLD through 25 numbers of drains in river Ganga are in Buxer, Patana, Munger, Bhagalpur, and Kahalgaon (CPCB, 2013). The discharge of wastewater through the state of Bihar is 9.5 % of the total discharge through 4 major states (Uttarakhand, Uttar Pradesh, Bihar, West Bengal) covered under the GRB. The Central Pollution Control Board (CPCB) and Central Water Commission (CWC) have planned to install 13 Real Time Water Quality Monitoring Station for monitoring in-situ river water quality parameters of the river Ganga and her tributaries including one in Patna. The report published by CPCB in 2009 revealed that the total sewage generation of class I cities in Ganga basin is 15,305.55 MLD while its treatment capacity is only one third (32%) of the

total sewage generation (4,886.28 MLD). The situation getting more critical in the class II towns as the difference between the sewage generation (1,083.85 MLD) and its treatment capacity (91.82 MLD) increased. The sewage treatment capacity is only 8% of the total sewage generation in class II town in the states under Ganga river basin.

The maximum sewage generated by class I cities and class II towns of Bihar are 1003.5 and 174.2 MLD. The comparison of the total sewage generation and sewage treatment capacity of the class I cities and Class II towns of the states lying under Ganga basin has been represented in Figure 7. The assessment shows that there is also a massive gap between the generation and treatment capacity in the main stretch of the Ganga. The trends of the data in Bihar depicted that the maximum share of sewage generation (58.53%) is from class I cities followed by class II and III towns, 17.48 and 23.99%, respectively (Figure 8). The BOD and COD load for Class I cities, Class II and Class III towns are in the range of 68.78, 16.53 and 22.69%, respectively. The TKN load almost showing the same trend as BOD and COD load. CPCB in 2013 has been identified 64 STPs (Sewage Treatment Plants) under Ganga river Catchment, out of which 5 STPs in Bihar having the total installed capacity is 140 MLD utilized the waste water of 100 MLD. A single STP was found to be nonoperational.

The assessment of the total water supply and total sewage generation of class I cities in the state revealed that the maximum sewage generation is in Patna 182 MLD, approximately 79.9% of the water supply. In case of the class II towns the sewage generation in Lakhisari is maximum 10.8 MLD, ~80% of its total water supply. The total BOD and COD load in Kg/day has been estimated on the per capita basis in Class I towns and its average are approximately 6.98 and 11.87 tons/day, respectively. The average BOD and COD load from the Class II towns is 1.75 and 2.99 tons/day, respectively whereas Class III towns contribute approximately 0.9 tons/day and 1.55 tons/day of BOD and COD, respectively. The maximum and minimum BOD and COD contributing cities in Class I towns are Patna and Aurangabad, respectively. In Class II towns maximum BOD and COD is from Lakhisarai, whereas minimum BOD and COD are from Bhahua. In class III towns maximum and minimum BOD and COD is from Narkatiaganj and Nirmali respectively.

The total TKN in metric tons/day contributed by Class I, Class II and Class III towns are approximately 1.39, 0.38 and 0.18 tons/day, respectively. The maximum and minimum contribution of TKN from class I towns are from Patna and Aurangabad respectively. The maximum and minimum contribution of TKN from class II towns is from Lakhisarai and Bhahua, respectively while the maximum and minimum contribution of TKN from class III towns is from Narkatiaganj and Nirmali, respectively. The estimates of total water supplied, total sewage generated, BOD, COD and TKN loads are summarized and illustrated in Figures (9a-11b) for class I cities and class II towns. The comparative account of all the classes (I, II and III) for its population, sewage generation, water supply and BOD, COD and TKN load are presented in Figure 12.

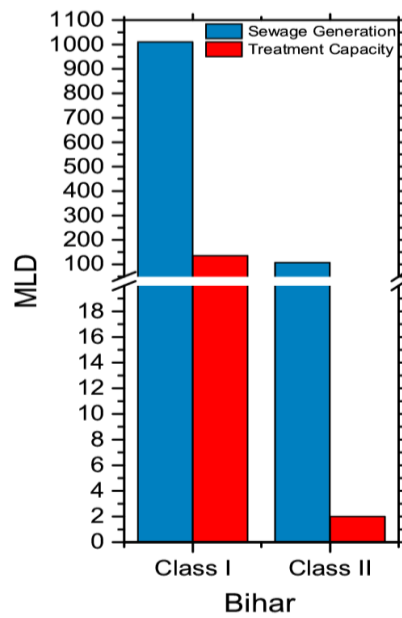


Figure 7: Assessment of Total Sewage Generation (MLD) and Sewage Treatment Capacity of Class I and II Cities in the State of Bihar

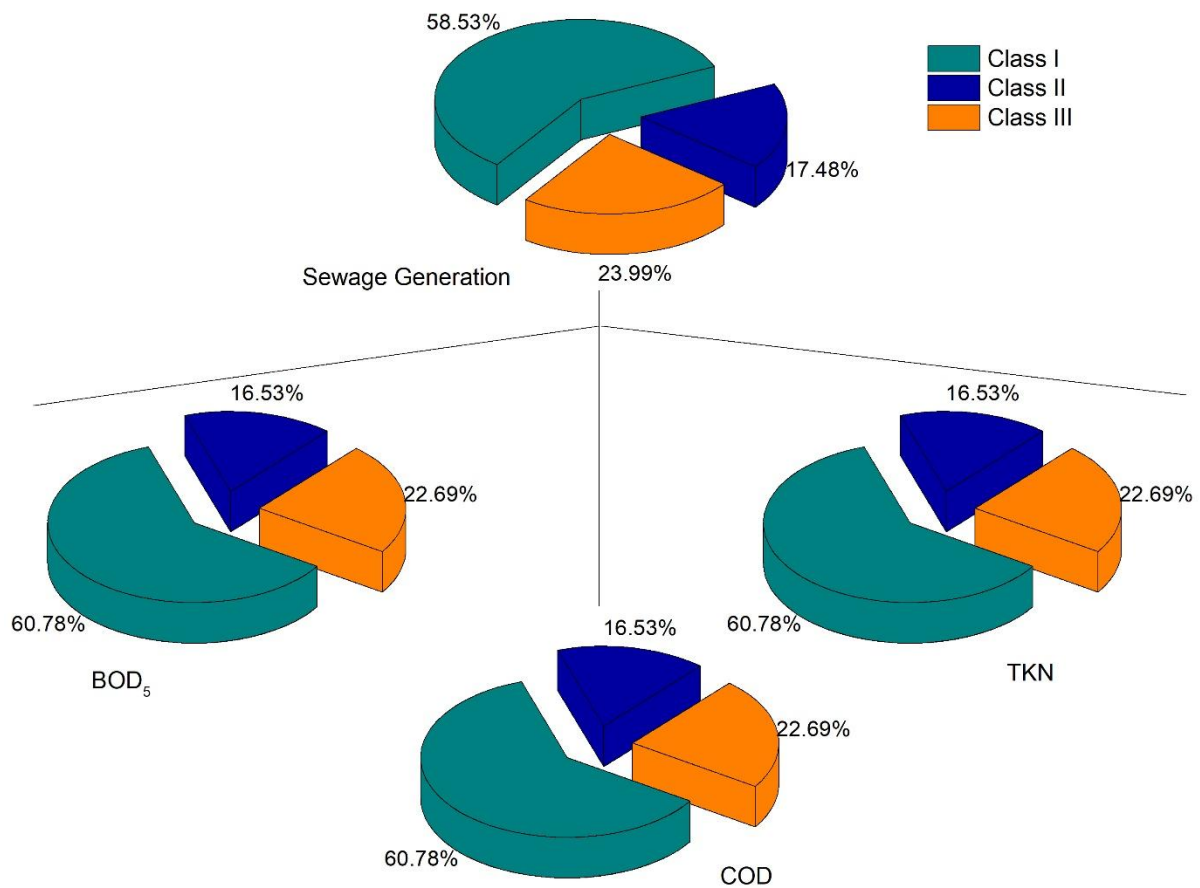


Figure 8: Distribution of Pollution Load of Class I Cities and Class II, Class III Towns in Bihar

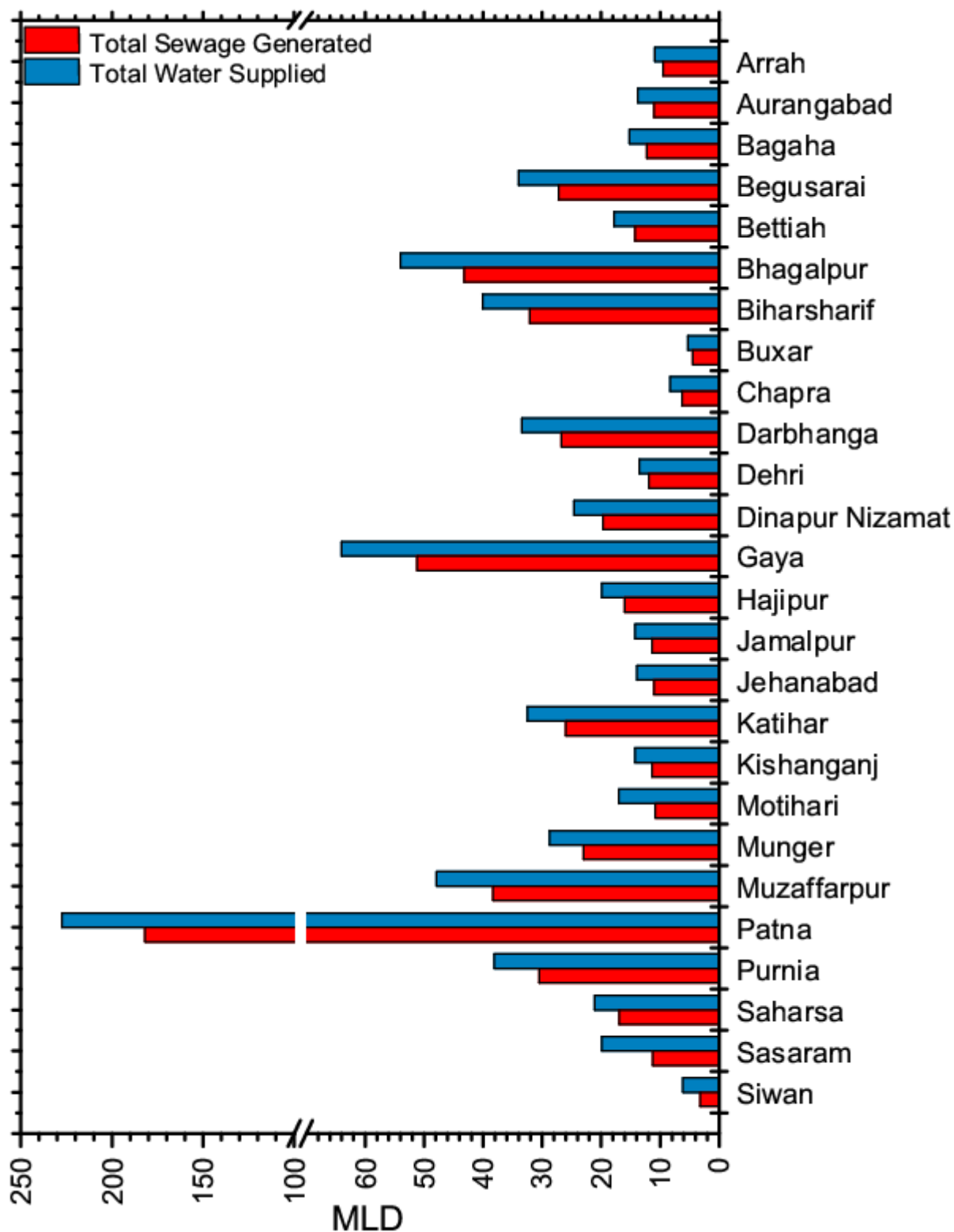


Figure 9a: Assessment of water supply and sewage generation (MLD) in Class I towns in the Ganga river Basin lying in the State of Bihar

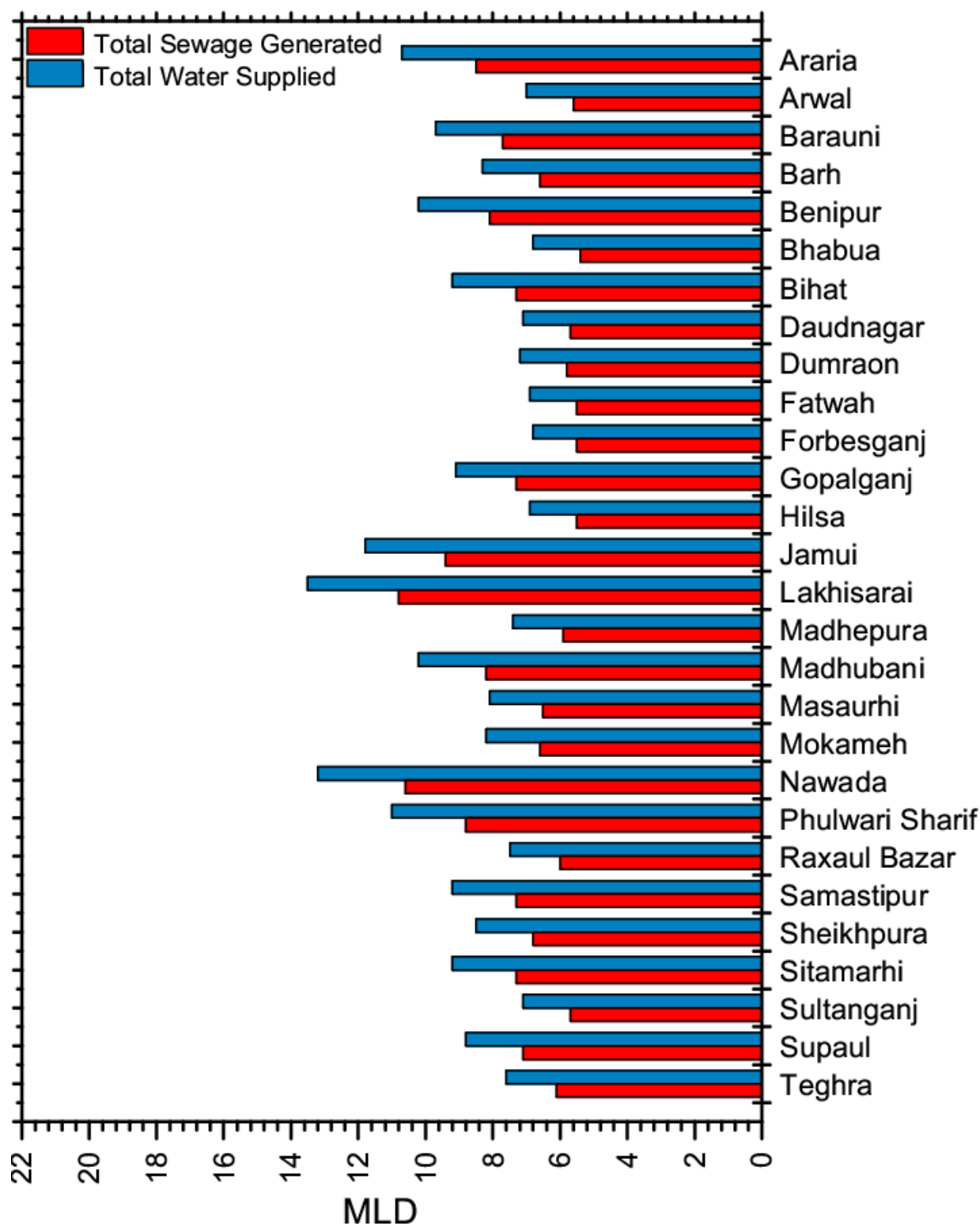


Figure 9b: Assessment of water supply and sewage generation (MLD) in Class II towns in the Ganga river Basin lying in the State of Bihar

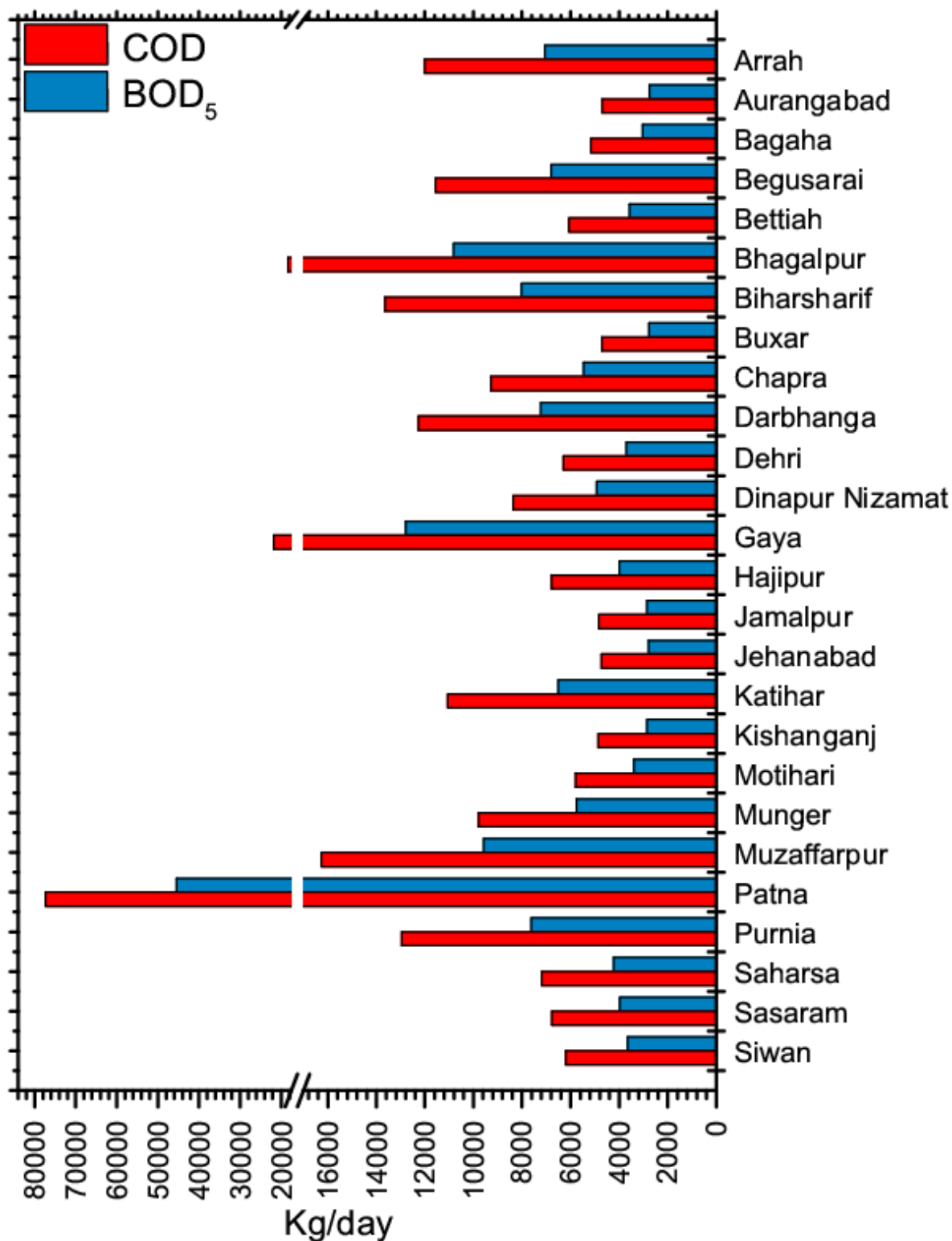


Figure 10a: Assessment of Organic Pollution Load (kg/day) from Class I Towns in the Ganga River Basin lying in the State of Bihar

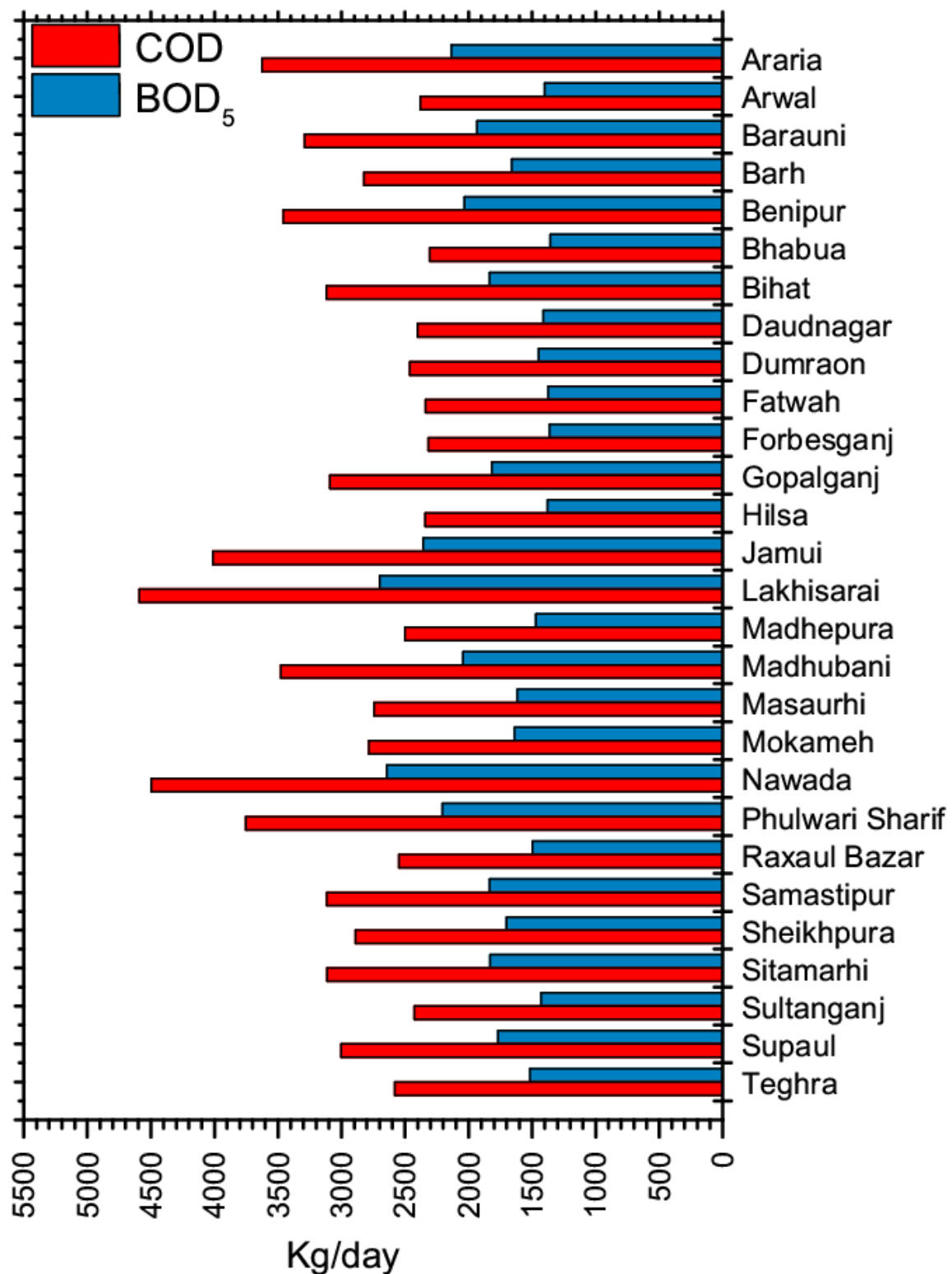


Figure 10b: Assessment of Organic Pollution Load (kg/day) from Class II Towns in the Ganga River Basin lying in the State of Bihar

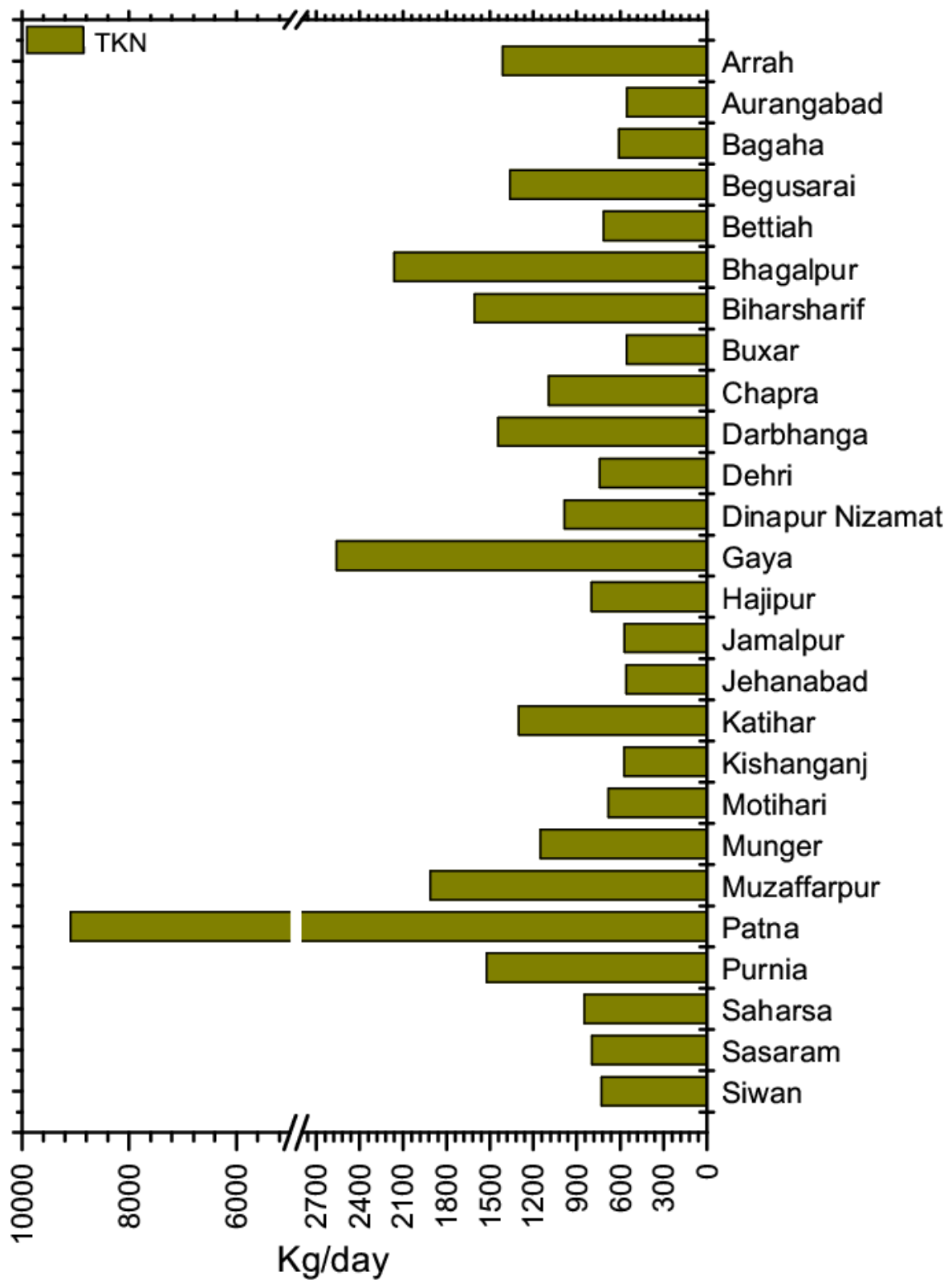


Figure 11a: Assessment of TKN Load (kg/day) from Class I Towns in the Ganga River Basin Lying in the State of Bihar

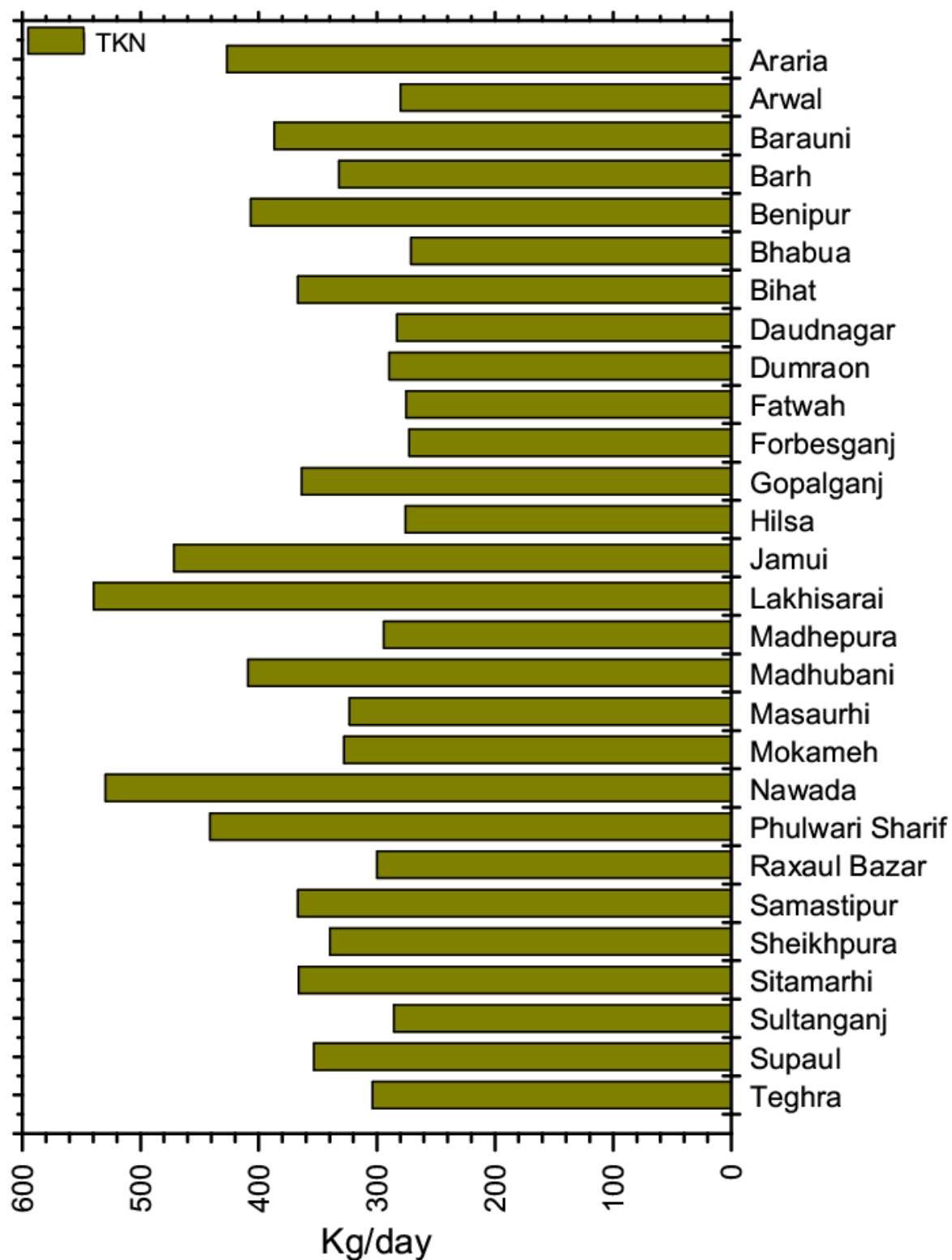


Figure 11b: Assessment of TKN Load (kg/day) from Class II Towns in the Ganga River Basin Lying in the State of Bihar

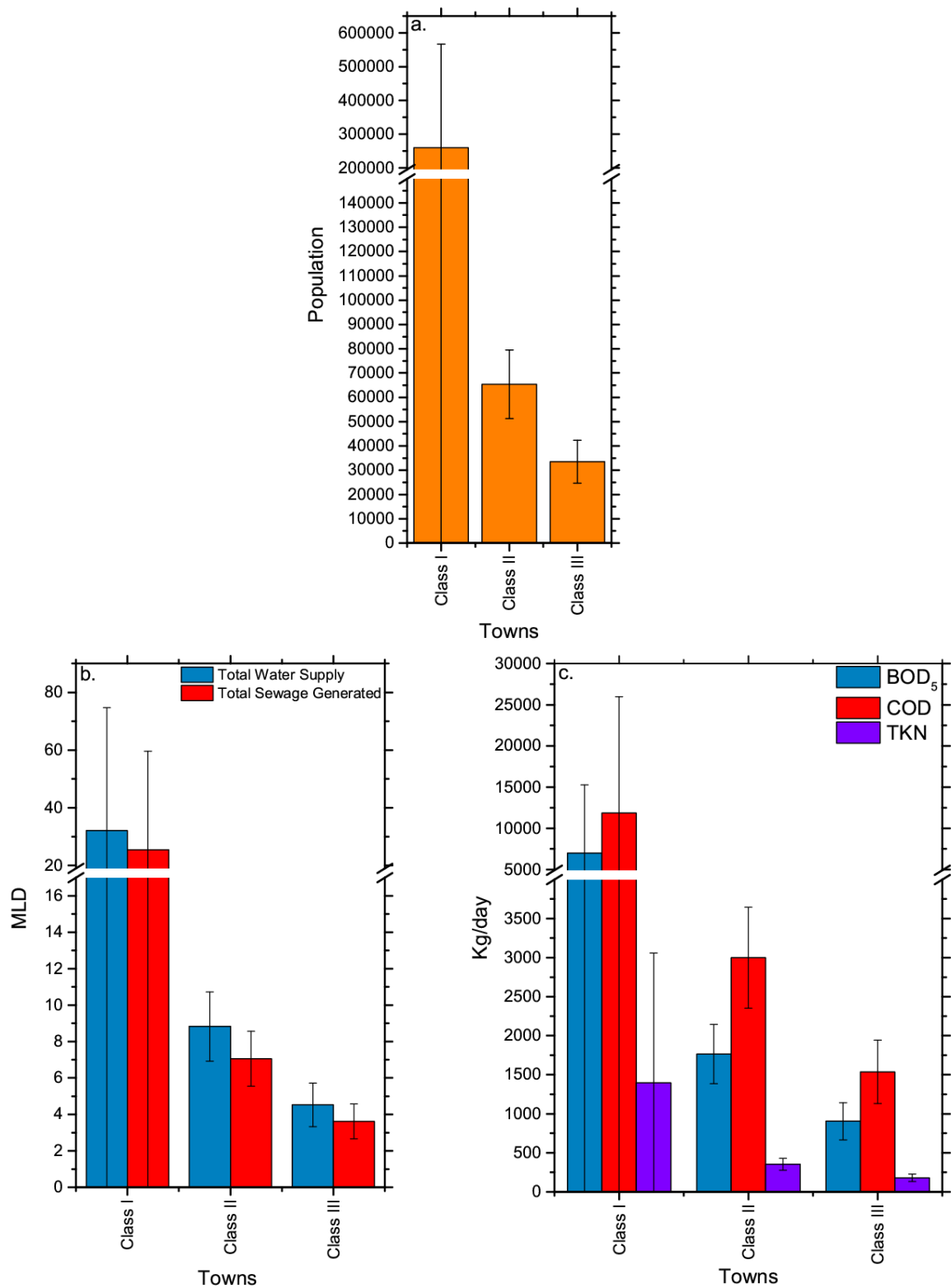


Figure 12: Comparative Analysis of Class I, Class II and Class III Cities/Towns Lying Under the Bihar State: (a) Population (b) Total Water Supply and Sewage Generation (c) Pollution Load

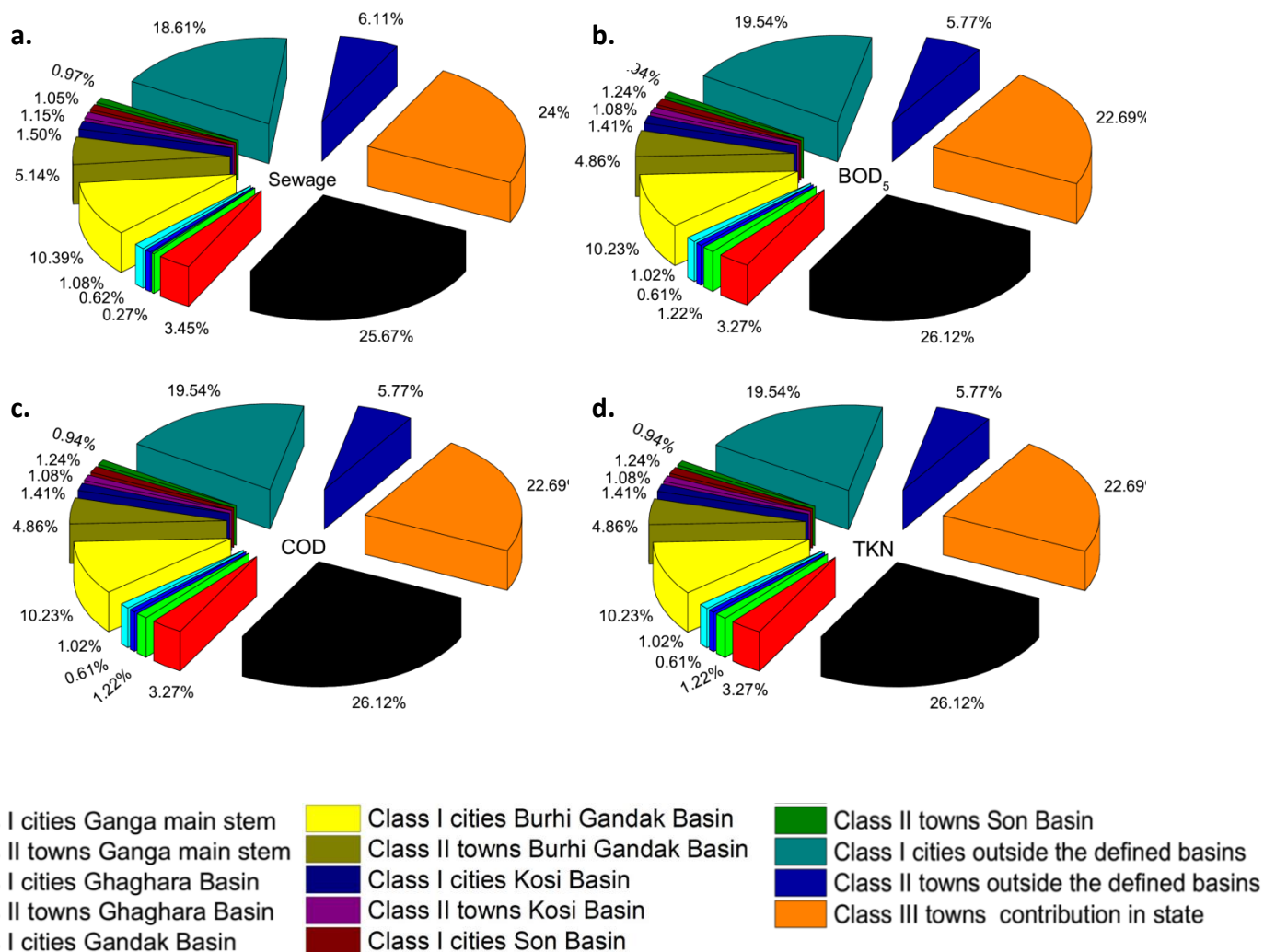


Figure 13 (a-d): Pollution load of Class I Cities and Class II, Class III Towns in the Major Basins of River Ganga in the State and Along the Main Stem of the River Ganga: (a) Sewage Generation; (b) BOD₅; (c) COD; (d) TKN

The results of the pollution load of Class I cities, Class II and Class III towns under the major basins of river Ganga in the state has been evaluated (Figure 13a-d) and the results revealed that the percentage of the total sewage generation is maximum in the Class I cities situated along the main stem of Ganga (25.67%). The sewage generation in the BuhriGandak basin is highest for Class I cities (10.39%) and is higher than the Kosi (6.11%), Son basin (1.05%) and Ghaghara (0.27) compared with the total sewage generation. The sewage generation in all Class II towns in all the basins in the state is contributed ~9% of the total sewage generation. The Class I cities and Class II towns outside the major defined basins combinedly release 24.71% of waste water. The percentage sewage generation by Class III towns of the entire state is 24% of the total sewage generated by the state.

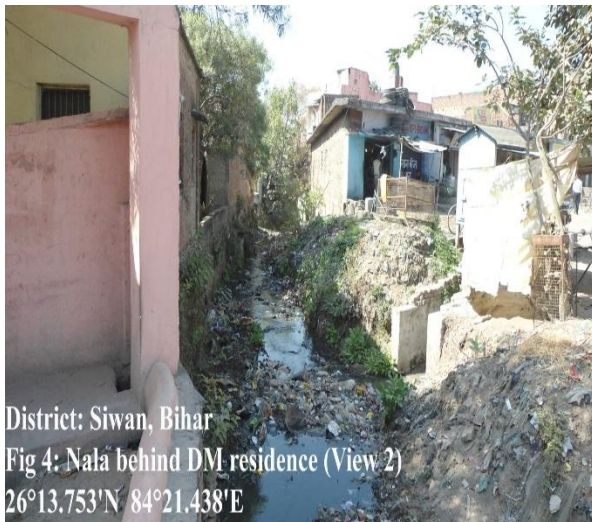
The BOD, COD and TKN load contributed by Class I cities of the main stem of Ganga and BurhiGandakare 26.12 and 10.23%, respectively. The Class II and Class III towns of the state imparted around 9% and 22.69% respectively of the total BOD, COD, and TKN load. The basin wise major contributors of Class I cities for BOD, COD, and TKN load are Kosi(1.41%), Son(1.24%) and Ghaghara (0.61%). The significant BOD,COD, and TKN load contributed by

the Class I cities and Class II towns lying outside the selected basins (BOD: 19.54%; COD: 19.54%). The details of the BOD and COD load in the state are presented in Figure 12b and c.

6. Conclusions:

River Ganga flows in the Indo-Gangetic plains of the state is one of the most sacred rivers in India, yet it is being polluted by many sources. Pollution levels in the river contributed 9-12% of the total burden of diseases in the state (Mallikarjun, 2003). The catchment of the river addressed the load of 63 Class I cities, 59 Class II towns and 232 Class III towns, directly or indirectly. The scenario of water quality in the system is deteriorating from bad to worse based on the spatial and temporal alterations. The multitudinous problems are also arising during lean season due to the continuous discharge of untreated and/or partially treated sewage and industrial wastewater. The Ghaghara, Gandak, Kosi, Burhi Gandak and Sontributaries discharge their partially treated and untreated effluent into river Ganga.

The maximum sewage generation is in the Class I cities (58.53%) followed by Class III (23.99%) and Class II towns (17.48%). Pollution load (BOD, COD and TKN load) also follows the same trend with maximum values for Class I cities. Patna and Lakhisarai are the Class I and Class II towns showing maximum amount of sewage generation in comparison to their water supply. The maximum BOD, COD and TKN contributing Class I cities, Class II and III towns are Patna, Lakhisarai and Narkatiaganj respectively. All calculations related to pollution load were done on per capita basis. There is lack of real data (Drains, water supply, etc.) for the Bihar state and suggested to be done for more accurate pollution situation.



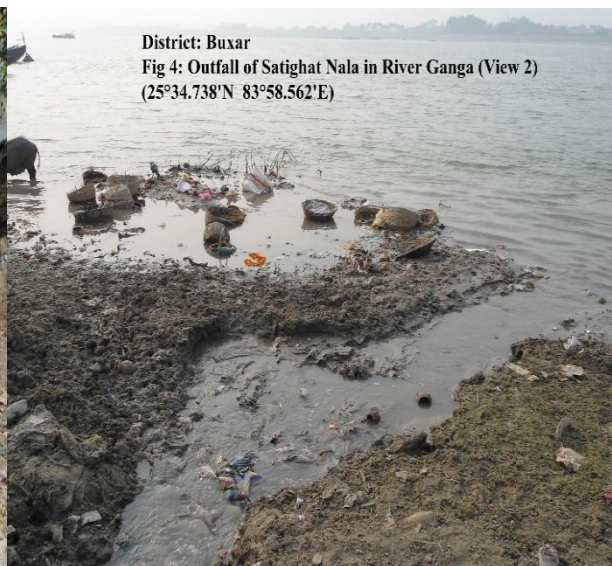
District: Siwan, Bihar
Fig 4: Nala behind DM residence (View 2)
26°13.753'N 84°21.438'E



District: Motihari, Bihar
Fig 11: Chhatauni Chowk Nala (View 2)
26°38.832'N 84°55.967'E



District: Mirzapur, U.P.
Chunar
Fig 4: Kachahari Nala
25°07.829'N 82°52.813'E



District: Buxar
Fig 4: Outfall of Satighat Nala in River Ganga (View 2)
(25°34.738'N 83°58.562'E)

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3. Jain S.K., Agarwal, P.K. and Singh, V.P. (2007). Hydrology and Water Resources of India. Springer Netherlands, p 358.
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Appendix-1

Compilation of Data-Sheets of Water Balance & Pollution Load (Domestic) of Major Class I Cities/Towns in Bihar

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Arrah			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		30.97
2	Population as in 2011	:		261430
3	Population Growth Rate as in 2011 (%)	:		28.5
4	Total Number of Wards	:		45
5	Population per Ward (Thousands)	:		5810
6	Total Number of Household as in 2011	:		39,274
7	Number of Household per Ward	:		873
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		10.62
10	Number of Bore Wells	:		16
11	Ground Water Extraction per Bore Well (MLD)	:		0.66
12	Number of Hand Pumps/ Tubewells	:		510
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		40.67
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		10.88
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		41.70
19	Total Sewage Generation (MLD)*	:		9.55
20	Per Capita Sewage Generation (lpcd)	:		36.52
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	7058.61
		COD	:	11999.64
		TKN	:	1411.72
30	Wastewater Disposal Means	:		River Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		11
33	Number of Water Bodies	:		4
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		NA

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Aurangabad			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		21.33
2	Population as in 2011	:		102244
3	Population Growth Rate as in 2011 (%)	:		28.78
4	Total Number of Wards	:		33
5	Population per Ward (Thousands)	:		3,098
6	Total Number of Household as in 2011	:		15782
7	Number of Household per Ward	:		478
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		13.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		11.0
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2760.6
		COD	:	4693.0
		TKN	:	552.1
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Adari River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Bagah River			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		46.83
2	Population as in 2011	:		112634
3	Population Growth Rate as in 2011 (%)	:		23.14
4	Total Number of Wards	:		35
5	Population per Ward (Thousands)	:		3,218
6	Total Number of Household as in 2011	:		20980
7	Number of Household per Ward	:		599
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		15.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		12.2
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3041.1
		COD	:	5169.9
		TKN	:	608.2
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Gandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Begusarai			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		47.51
2	Population as in 2011	:		252008
3	Population Growth Rate as in 2011 (%)	:		168.83
4	Total Number of Wards	:		45
5	Population per Ward (Thousands)	:		5,600
6	Total Number of Household as in 2011	:		47030
7	Number of Household per Ward	:		1045
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		34.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		27.2
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	6804.2
		COD	:	11567.2
		TKN	:	1360.8
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Bettiah			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		8.01
2	Population as in 2011	:		132209
3	Population Growth Rate as in 2011 (%)	:		13.32
4	Total Number of Wards	:		39
5	Population per Ward (Thousands)	:		3,390
6	Total Number of Household as in 2011	:		24463
7	Number of Household per Ward	:		627
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		17.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		14.3
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3569.6
		COD	:	6068.4
		TKN	:	713.9
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Gandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		9
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Bhagalpur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		30.17
2	Population as in 2011	:		400146
3	Population Growth Rate as in 2011 (%)	:		17.43
4	Total Number of Wards	:		51
5	Population per Ward (Thousands)	:		7,846
6	Total Number of Household as in 2011	:		69984
7	Number of Household per Ward	:		1372
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		54.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		43.2
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	10803.9
		COD	:	18366.7
		TKN	:	2160.8
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Biharsharif			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)		:	23.50
2	Population as in 2011		:	297268
3	Population Growth Rate as in 2011 (%)		:	28.09
4	Total Number of Wards		:	46
5	Population per Ward (Thousands)		:	6,462
6	Total Number of Household as in 2011		:	48641
7	Number of Household per Ward		:	1057
8	Surface Water Supply (MLD)		:	NA
9	Ground Water (GW) Supply (MLD)		:	NA
10	Number of Bore Wells		:	NA
11	Ground Water Extraction per Bore Well (MLD)		:	NA
12	Number of Hand Pumps/ Tubewells		:	NA
13	Ground Water Extraction per Hand Pump (lpcd)		:	NA
14	Number of Pumping Stations for Water Supply		:	NA
15	Total Pumping Capacity (MLD)		:	NA
16	Average Water Supply Rate from ULB Sources (lpcd)		:	NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)		:	40.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	32.1
20	Per Capita Sewage Generation (lpcd)		:	108.0
21	Sewage Collection (MLD)		:	NA
22	Percentage of Sewage Collection (%)		:	NA
23	Number of STPs		:	NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)		:	NA
25	Current Utilized Capacity of STPs (MLD)		:	NA
26	Percentage Utilization of Installed Capacity (%)		:	NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)		:	NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	8026.2
		COD	:	13644.6
		TKN	:	1605.2
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Panchane River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City:Buxar			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		5.16
2	Population as in 2011	:		102861
3	Population Growth Rate as in 2011 (%)	:		23.68
4	Total Number of Wards	:		34
5	Population per Ward (Thousands)	:		3025
6	Total Number of Household as in 2011	:		16,710
7	Number of Household per Ward	:		491
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		5.18
10	Number of Bore Wells	:		6
11	Ground Water Extraction per Bore Well (MLD)	:		0.86
12	Number of Hand Pumps/ Tubewells	:		240
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		50.54
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		5.30
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		51.70
19	Total Sewage Generation (MLD)*	:		4.46
20	Per Capita Sewage Generation (lpcd)	:		43.34
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2777.25
		COD	:	4721.32
		TKN	:	555.45
30	Wastewater Disposal Means	:		River&Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		5
33	Number of Water Bodies	:		5
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<<1%

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Chhapra			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		16.96
2	Population as in 2011	:		202352
3	Population Growth Rate as in 2011 (%)	:		12.93
4	Total Number of Wards	:		44
5	Population per Ward (Thousands)	:		4,599
6	Total Number of Household as in 2011	:		31501
7	Number of Household per Ward	:		716
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		4.35
10	Number of Bore Wells	:		13
11	Ground Water Extraction per Bore Well (MLD)	:		0.33
12	Number of Hand Pumps/ Tubewells	:		515
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		21.58
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.3
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		109.6
19	Total Sewage Generation (MLD)**	:		6.3
20	Per Capita Sewage Generation (lpcd)	:		31.2
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	5463.5
		COD	:	9288.0
		TKN	:	1092.7
30	Wastewater Disposal Means	:		River Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		1
33	Number of Water Bodies	:		7
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		NA

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Darbanga			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)		:	19.18
2	Population as in 2011		:	2,96,039
3	Population Growth Rate as in 2011 (%)		:	10.73
4	Total Number of Wards		:	48
5	Population per Ward (Thousands)		:	6,167
6	Total Number of Household as in 2011		:	56,492
7	Number of Household per Ward		:	1177
8	Surface Water Supply (MLD)		:	NA
9	Ground Water (GW) Supply (MLD)		:	13.37
10	Number of Tube Wells		:	8
11	Ground Water Extraction per Tube Well (MLD)		:	4.5
12	Number of Hand Pumps		:	3000
13	Ground Water Extraction per Hand Pump (lpcd)		:	500
14	Number of Pumping Stations for Water Supply		:	4
15	Total Pumping Capacity (MLD)		:	1.7
16	Average Water Supply Rate from ULB Sources (lpcd)		:	135
17	Total Water Supply from ULB and Non-ULB Sources (MLD)		:	33.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	124.8
19	Total Sewage Generation (MLD)		:	26.7
20	Per Capita Sewage Generation (lpcd)		:	99.9
21	Sewage Collection (MLD)		:	NA
22	Percentage of Sewage Collection (%)		:	NA
23	Number of STPs		:	NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)		:	NA
25	Current Utilized Capacity of STPs (MLD)		:	NA
26	Percentage Utilization of Installed Capacity (%)		:	NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)		:	NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	7218.4
		COD	:	12271.3
		TKN	:	1443.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Baghmati River
32	Number of Drains/Nallah for Wastewater Disposal		:	19
33	Number of Water Bodies		:	206
34	Gross Area of Water Bodies (sq km)		:	4.16
35	Area of Water Bodies as % of Total Area		:	21.69

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Dehri			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		21.32
2	Population as in 2011	:		137231
3	Population Growth Rate as in 2011 (%)	:		15.26
4	Total Number of Wards	:		39
5	Population per Ward (Thousands)	:		3519
6	Total Number of Household as in 2011	:		23,234
7	Number of Household per Ward	:		596
8	Surface Water Supply (MLD)	:		8
9	Ground Water (GW) Supply (MLD)	:		5.47
10	Number of Bore Wells	:		6
11	Ground Water Extraction per Bore Well (MLD)	:		0.91
12	Number of Hand Pumps/ Tubewells	:		30
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		135
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		13.49
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.00
19	Total Sewage Generation (MLD)*	:		11.89
20	Per Capita Sewage Generation (lpcd)	:		86.63
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3705.24
		COD	:	6298.90
		TKN	:	741.05
30	Wastewater Disposal Means	:		River Disposal
31	Name of River/Streams for Wastewater Disposal	:		Sone
32	Number of Drains/Nallah for Wastewater Disposal	:		5
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		NA

Water Balance & Pollution Load (Domestic) Data Sheet				
City: DinapurNizamat			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		16.41
2	Population as in 2011	:		182429
3	Population Growth Rate as in 2011 (%)	:		39.07
4	Total Number of Wards	:		40
5	Population per Ward (Thousands)	:		4,561
6	Total Number of Household as in 2011	:		28932
7	Number of Household per Ward	:		723
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		24.6
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		19.7
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	4925.6
		COD	:	8373.5
		TKN	:	985.1
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Panchane River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Gaya			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		50.17
2	Population as in 2011	:		474093
3	Population Growth Rate as in 2011 (%)	:		21.81
4	Total Number of Wards	:		53
5	Population per Ward (Thousands)	:		8,945
6	Total Number of Household as in 2011	:		72978
7	Number of Household per Ward	:		1377
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		64.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		51.2
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	12800.5
		COD	:	21760.9
		TKN	:	2560.1
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Falgu River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Hajipur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		19.64
2	Population as in 2011	:		147688
3	Population Growth Rate as in 2011 (%)	:		23.68
4	Total Number of Wards	:		39
5	Population per Ward (Thousands)	:		3,787
6	Total Number of Household as in 2011	:		24033
7	Number of Household per Ward	:		616
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		19.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		16.0
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3987.6
		COD	:	6778.9
		TKN	:	797.5
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Gandak & Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Jamalpur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)		:	10.65
2	Population as in 2011		:	105434
3	Population Growth Rate as in 2011 (%)		:	8.71
4	Total Number of Wards		:	36
5	Population per Ward (Thousands)		:	2,929
6	Total Number of Household as in 2011		:	20372
7	Number of Household per Ward		:	566
8	Surface Water Supply (MLD)		:	NA
9	Ground Water (GW) Supply (MLD)		:	NA
10	Number of Bore Wells		:	NA
11	Ground Water Extraction per Bore Well (MLD)		:	NA
12	Number of Hand Pumps/ Tubewells		:	NA
13	Ground Water Extraction per Hand Pump (lpcd)		:	NA
14	Number of Pumping Stations for Water Supply		:	NA
15	Total Pumping Capacity (MLD)		:	NA
16	Average Water Supply Rate from ULB Sources (lpcd)		:	NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)		:	14.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	11.4
20	Per Capita Sewage Generation (lpcd)		:	108.0
21	Sewage Collection (MLD)		:	NA
22	Percentage of Sewage Collection (%)		:	NA
23	Number of STPs		:	NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)		:	NA
25	Current Utilized Capacity of STPs (MLD)		:	NA
26	Percentage Utilization of Installed Capacity (%)		:	NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)		:	NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2846.7
		COD	:	4839.4
		TKN	:	569.3
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Jehanabad			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		20.23
2	Population as in 2011	:		103202
3	Population Growth Rate as in 2011 (%)	:		26.62
4	Total Number of Wards	:		33
5	Population per Ward (Thousands)	:		3,127
6	Total Number of Household as in 2011	:		16802
7	Number of Household per Ward	:		509
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		13.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		11.1
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2786.5
		COD	:	4737.0
		TKN	:	557.3
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Dardha River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Katihar			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		51.70
2	Population as in 2011	:		240838
3	Population Growth Rate as in 2011 (%)	:		26.18
4	Total Number of Wards	:		45
5	Population per Ward (Thousands)	:		5,352
6	Total Number of Household as in 2011	:		47059
7	Number of Household per Ward	:		1046
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		32.5
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		26.0
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	6502.6
		COD	:	11054.5
		TKN	:	1300.5
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Kishanganj			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		30.12
2	Population as in 2011	:		105782
3	Population Growth Rate as in 2011 (%)	:		23.59
4	Total Number of Wards	:		33
5	Population per Ward (Thousands)	:		3,206
6	Total Number of Household as in 2011	:		20698
7	Number of Household per Ward	:		627
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		14.3
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		11.4
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2856.1
		COD	:	4855.4
		TKN	:	571.2
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Mahananda River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Motihari			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		16.38
2	Population as in 2011	:		126158
3	Population Growth Rate as in 2011 (%)	:		25.30
4	Total Number of Wards	:		38
5	Population per Ward (Thousands)	:		3,320
6	Total Number of Household as in 2011	:		22224
7	Number of Household per Ward	:		585
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		17.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)!	:		NA
19	Total Sewage Generation (MLD)***	:		10.8
20	Per Capita Sewage Generation (lpcd)!	:		NA
21	Sewage Collection (MLD)	:		3.7
22	Percentage of Sewage Collection (%)	:		100
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3406.3
		COD	:	5790.7
		TKN	:	681.3
30	Wastewater Disposal Means	:		River & Lake
31	Name of River/Streams for Wastewater Disposal	:		Bahuri Ganda k
32	Number of Drains/Nallah for Wastewater Disposal	:		17
33	Number of Water Bodies	:		3
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		NA

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Munger			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)		:	17.50
2	Population as in 2011		:	213303
3	Population Growth Rate as in 2011 (%)		:	13.43
4	Total Number of Wards		:	45
5	Population per Ward (Thousands)		:	4,740
6	Total Number of Household as in 2011		:	38921
7	Number of Household per Ward		:	865
8	Surface Water Supply (MLD)		:	NA
9	Ground Water (GW) Supply (MLD)		:	NA
10	Number of Bore Wells		:	NA
11	Ground Water Extraction per Bore Well (MLD)		:	NA
12	Number of Hand Pumps/ Tubewells		:	NA
13	Ground Water Extraction per Hand Pump (lpcd)		:	NA
14	Number of Pumping Stations for Water Supply		:	NA
15	Total Pumping Capacity (MLD)		:	NA
16	Average Water Supply Rate from ULB Sources (lpcd)		:	NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)		:	28.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	23.0
20	Per Capita Sewage Generation (lpcd)		:	108.0
21	Sewage Collection (MLD)		:	NA
22	Percentage of Sewage Collection (%)		:	NA
23	Number of STPs		:	NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)		:	NA
25	Current Utilized Capacity of STPs (MLD)		:	NA
26	Percentage Utilization of Installed Capacity (%)		:	NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)		:	NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	5759.2
		COD	:	9790.6
		TKN	:	1151.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Muzaffarpur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		26.43
2	Population as in 2011	:		354462
3	Population Growth Rate as in 2011 (%)	:		16.02
4	Total Number of Wards	:		49
5	Population per Ward (Thousands)	:		7,234
6	Total Number of Household as in 2011	:		65870
7	Number of Household per Ward	:		1344
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		47.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)	:		38.3
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	9570.5
		COD	:	16269.8
		TKN	:	1914.1
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		BahuriGandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		20
33	Number of Water Bodies	:		14
34	Gross Area of Water Bodies (sq km)	:		3.02
35	Area of Water Bodies as % of Total Area	:		<<1.0

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Patna			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		107.69
2	Population as in 2011	:		1684297
3	Population Growth Rate as in 2011 (%)	:		17.60
4	Total Number of Wards	:		72
5	Population per Ward (Thousands)	:		23,393
6	Total Number of Household as in 2011	:		294631
7	Number of Household per Ward	:		4092
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		227.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)	:		181.9
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	45476.0
		COD	:	77309.2
		TKN	:	9095.2
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (sq km)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<1.0

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Purnia			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		92.29
2	Population as in 2011	:		282248
3	Population Growth Rate as in 2011 (%)	:		64.40
4	Total Number of Wards	:		46
5	Population per Ward (Thousands)	:		6,136
6	Total Number of Household as in 2011	:		54058
7	Number of Household per Ward	:		1175
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		38.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)	:		30.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	7620.7
		COD	:	12955.2
		TKN	:	1524.1
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Kosi& Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (sq km)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<1.0

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Saharsa			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		21.13
2	Population as in 2011	:		156540
3	Population Growth Rate as in 2011 (%)	:		25.06
4	Total Number of Wards	:		41
5	Population per Ward (Thousands)	:		3,818
6	Total Number of Household as in 2011	:		28862
7	Number of Household per Ward	:		704
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		21.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)	:		16.9
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	4226.6
		COD	:	7185.2
		TKN	:	845.3
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Koshi River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (sq km)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<1.0

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Sasaram			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		10.9
2	Population as in 2011	:		147408
3	Population Growth Rate as in 2011 (%)	:		12.38
4	Total Number of Wards	:		40
5	Population per Ward (Thousands)	:		3685
6	Total Number of Household as in 2011	:		23,866
7	Number of Household per Ward	:		597
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		19.90
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.00
19	Total Sewage Generation (MLD)*	:		11.29
20	Per Capita Sewage Generation (lpcd)	:		76.62
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3980.02
		COD	:	6766.03
		TKN	:	796.00
30	Wastewater Disposal Means	:		River and Land
31	Name of River/Streams for Wastewater Disposal	:		Kadir & Sone
32	Number of Drains/Nallah for Wastewater Disposal	:		9
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<<1%

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Siwan		State: Bihar		
S. No.	Items			Value
1	Total Area (sq km)	:		13.05
2	Population as in 2011	:		135066
3	Population Growth Rate as in 2011 (%)	:		22.88
4	Total Number of Wards	:		38
5	Population per Ward (Thousands)	:		3,554
6	Total Number of Household as in 2011	:		21223
7	Number of Household per Ward	:		559
8	Surface Water Supply (MLD)	:		3
9	Ground Water (GW) Supply (MLD)	:		2.84
10	Number of Bore Wells	:		8
11	Ground Water Extraction per Bore Well (MLD)	:		0.38
12	Number of Hand Pumps/ Tubewells	:		550
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		6.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		45.3
19	Total Sewage Generation (MLD)	:		3.2
20	Per Capita Sewage Generation (lpcd)	:		24.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	3646.8
		COD	:	6199.5
		TKN	:	729.4
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		River Daha
32	Number of Drains/Nallah for Wastewater Disposal	:		2
33	Number of Water Bodies	:		2
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		NA

Appendix-2

Compilation of Data Sheets of Water Balance & Pollution Load (Domestic) of Major Class II Cities/Towns in Bihar

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Araria			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		30.97
2	Population as in 2011	:		79021
3	Population Growth Rate as in 2011 (%)	:		29.84
4	Total Number of Wards	:		32
5	Population per Ward (Thousands)	:		2,469
6	Total Number of Household as in 2011	:		15248
7	Number of Household per Ward	:		477
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		500
14	Number of Pumping Stations for Water Supply	:		4
15	Total Pumping Capacity (MLD)	:		4
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		10.7
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)	:		8.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2133.6
		COD	:	3627.1
		TKN	:	426.7
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Panar River
32	Number of Drains/Nallah for Wastewater Disposal	:		13
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (sq km)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<1.0

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Arwal			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		24.43
2	Population as in 2011	:		51849
3	Population Growth Rate as in 2011 (%)	:		NA
4	Total Number of Wards	:		25
5	Population per Ward (Thousands)	:		2,074
6	Total Number of Household as in 2011	:		8453
7	Number of Household per Ward	:		338
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.6
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1399.9
		COD	:	2379.9
		TKN	:	280.0
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Sone River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Barauni			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		17.55
2	Population as in 2011	:		71660
3	Population Growth Rate as in 2011 (%)	:		416.21
4	Total Number of Wards	:		4
5	Population per Ward (Thousands)	:		17,915
6	Total Number of Household as in 2011	:		12964
7	Number of Household per Ward	:		3241
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		9.7
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.7
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1934.8
		COD	:	3289.2
		TKN	:	387.0
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Barh			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		4.50
2	Population as in 2011	:		61470
3	Population Growth Rate as in 2011 (%)	:		26.89
4	Total Number of Wards	:		27
5	Population per Ward (Thousands)	:		2,277
6	Total Number of Household as in 2011	:		9310
7	Number of Household per Ward	:		345
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.3
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.6
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1659.7
		COD	:	2821.5
		TKN	:	331.9
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Banipur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		46.02
2	Population as in 2011	:		75317
3	Population Growth Rate as in 2011 (%)	:		NA
4	Total Number of Wards	:		29
5	Population per Ward (Thousands)	:		2,597
6	Total Number of Household as in 2011	:		15078
7	Number of Household per Ward	:		520
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		10.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		8.1
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2033.6
		COD	:	3457.1
		TKN	:	406.7
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Kamla River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Bhabua			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		7.12
2	Population as in 2011	:		50179
3	Population Growth Rate as in 2011 (%)	:		20.12
4	Total Number of Wards	:		25
5	Population per Ward (Thousands)	:		2,007
6	Total Number of Household as in 2011	:		7855
7	Number of Household per Ward	:		314
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		6.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.4
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1354.8
		COD	:	2303.2
		TKN	:	271.0
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Suwara River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Bihat			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		23.45
2	Population as in 2011	:		67952
3	Population Growth Rate as in 2011 (%)	:		NA
4	Total Number of Wards	:		7
5	Population per Ward (Thousands)	:		9,707
6	Total Number of Household as in 2011	:		12958
7	Number of Household per Ward	:		1851
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		9.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.3
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1834.7
		COD	:	3119.0
		TKN	:	366.9
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Daudnagar			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		13.96
2	Population as in 2011	:		52364
3	Population Growth Rate as in 2011 (%)	:		37.75
4	Total Number of Wards	:		23
5	Population per Ward (Thousands)	:		2,277
6	Total Number of Household as in 2011	:		8111
7	Number of Household per Ward	:		353
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.7
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1413.8
		COD	:	2403.5
		TKN	:	282.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Sone River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Dumaraon			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		15.33
2	Population as in 2011	:		53618
3	Population Growth Rate as in 2011 (%)	:		17.05
4	Total Number of Wards	:		26
5	Population per Ward (Thousands)	:		2,062
6	Total Number of Household as in 2011	:		8621
7	Number of Household per Ward	:		332
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.8
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1447.7
		COD	:	2461.1
		TKN	:	289.5
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Fatwah			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		4.90
2	Population as in 2011	:		50961
3	Population Growth Rate as in 2011 (%)	:		31.78
4	Total Number of Wards	:		23
5	Population per Ward (Thousands)	:		2,216
6	Total Number of Household as in 2011	:		8225
7	Number of Household per Ward	:		358
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		6.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1375.9
		COD	:	2339.1
		TKN	:	275.2
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City:Forbesganj			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		4.98
2	Population as in 2011	:		50475
3	Population Growth Rate as in 2011 (%)	:		21.63
4	Total Number of Wards	:		25
5	Population per Ward (Thousands)	:		2,019
6	Total Number of Household as in 2011	:		9632
7	Number of Household per Ward	:		385
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		6.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1362.8
		COD	:	2316.8
		TKN	:	272.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Koshi River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Gopalganj			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		11.11
2	Population as in 2011	:		67339
3	Population Growth Rate as in 2011 (%)	:		23.67
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,405
6	Total Number of Household as in 2011	:		10796
7	Number of Household per Ward	:		386
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		9.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.3
20	Per Capita Sewage Generation (lpcd)	:		110.5
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1818.2
		COD	:	3090.9
		TKN	:	363.6306
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Gandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City:Hilsa			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		22.96
2	Population as in 2011	:		51052
3	Population Growth Rate as in 2011 (%)	:		35.15
4	Total Number of Wards	:		26
5	Population per Ward (Thousands)	:		1,964
6	Total Number of Household as in 2011	:		8681
7	Number of Household per Ward	:		334
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		6.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1378.4
		COD	:	2343.3
		TKN	:	275.7
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Falgu River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City:Jamui			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		26.45
2	Population as in 2011	:		87357
3	Population Growth Rate as in 2011 (%)	:		30.78
4	Total Number of Wards	:		30
5	Population per Ward (Thousands)	:		2,912
6	Total Number of Household as in 2011	:		14509
7	Number of Household per Ward	:		484
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		11.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		9.4
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2358.6
		COD	:	4009.7
		TKN	:	471.7
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Kiul River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Lakhisarai			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		24.79
2	Population as in 2011	:		99979
3	Population Growth Rate as in 2011 (%)	:		28.38
4	Total Number of Wards	:		33
5	Population per Ward (Thousands)	:		3,030
6	Total Number of Household as in 2011	:		17214
7	Number of Household per Ward	:		522
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		13.5
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		10.8
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2699.4
		COD	:	4589.0
		TKN	:	539.9
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Kiul River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Madhepura			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		25.84
2	Population as in 2011	:		54472
3	Population Growth Rate as in 2011 (%)	:		20.97
4	Total Number of Wards	:		26
5	Population per Ward (Thousands)	:		2,095
6	Total Number of Household as in 2011	:		10577
7	Number of Household per Ward	:		407
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.9
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1470.7
		COD	:	2500.3
		TKN	:	294.1
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Koshi River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Madhubani			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		2.52
2	Population as in 2011	:		75736
3	Population Growth Rate as in 2011 (%)	:		14.16
4	Total Number of Wards	:		30
5	Population per Ward (Thousands)	:		2,525
6	Total Number of Household as in 2011	:		13583
7	Number of Household per Ward	:		453
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		10.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		8.2
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2044.9
		COD	:	3476.3
		TKN	:	409.0
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Kamla River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Masaurhi			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		9.43
2	Population as in 2011	:		59803
3	Population Growth Rate as in 2011 (%)	:		32.17
4	Total Number of Wards	:		26
5	Population per Ward (Thousands)	:		2,300
6	Total Number of Household as in 2011	:		10210
7	Number of Household per Ward	:		393
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.5
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1614.7
		COD	:	2745.0
		TKN	:	322.9
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Sone and Ganga River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Mokameh			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		14.18
2	Population as in 2011	:		60678
3	Population Growth Rate as in 2011 (%)	:		7.18
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,167
6	Total Number of Household as in 2011	:		9742
7	Number of Household per Ward	:		348
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.6
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1638.3
		COD	:	2785.1
		TKN	:	327.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Nawada			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		5.68
2	Population as in 2011	:		98029
3	Population Growth Rate as in 2011 (%)	:		19.71
4	Total Number of Wards	:		33
5	Population per Ward (Thousands)	:		2,971
6	Total Number of Household as in 2011	:		15399
7	Number of Household per Ward	:		467
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		13.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		10.6
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2646.8
		COD	:	4499.5
		TKN	:	529.4
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Panchane River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Phulwari Sharif			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		6.48
2	Population as in 2011	:		81740
3	Population Growth Rate as in 2011 (%)	:		52.93
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,919
6	Total Number of Household as in 2011	:		13404
7	Number of Household per Ward	:		479
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		11.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		8.8
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	2207.0
		COD	:	3751.9
		TKN	:	441.4
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Raxaul Bazar			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		5.82
2	Population as in 2011	:		55536
3	Population Growth Rate as in 2011 (%)	:		33.47
4	Total Number of Wards	:		25
5	Population per Ward (Thousands)	:		2,221
6	Total Number of Household as in 2011	:		9513
7	Number of Household per Ward	:		381
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.5
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.0
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1499.5
		COD	:	2549.1
		TKN	:	299.9
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Sirsiya River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Samastipur			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		3.45
2	Population as in 2011	:		67925
3	Population Growth Rate as in 2011 (%)	:		9.56
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,426
6	Total Number of Household as in 2011	:		13135
7	Number of Household per Ward	:		469
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		9.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.3
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1834.0
		COD	:	3117.8
		TKN	:	366.8
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		BurhiGandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Sheikhpura			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		27.90
2	Population as in 2011	:		62927
3	Population Growth Rate as in 2011 (%)	:		45.96
4	Total Number of Wards	:		27
5	Population per Ward (Thousands)	:		2,331
6	Total Number of Household as in 2011	:		10181
7	Number of Household per Ward	:		377
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.5
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.8
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1699.0
		COD	:	2888.3
		TKN	:	339.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Tati River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Sitamarhi			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		4.35
2	Population as in 2011	:		67818
3	Population Growth Rate as in 2011 (%)	:		-6.77
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,422
6	Total Number of Household as in 2011	:		12718
7	Number of Household per Ward	:		454
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		9.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.3
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1831.1
		COD	:	3112.8
		TKN	:	366.2
30	Wastewater Disposal Means	:		River & Land
31	Name of River/Streams for Wastewater Disposal	:		Gandak River
32	Number of Drains/Nallah for Wastewater Disposal	:		NA
33	Number of Water Bodies	:		NA
34	Gross Area of Water Bodies (Hectare)	:		NA
35	Area of Water Bodies as % of Total Area	:		<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Sultanganj			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		12.29
2	Population as in 2011	:		52892
3	Population Growth Rate as in 2011 (%)	:		26.06
4	Total Number of Wards	:		25
5	Population per Ward (Thousands)	:		2,116
6	Total Number of Household as in 2011	:		9410
7	Number of Household per Ward	:		376
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		5.7
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1428.1
		COD	:	2427.7
		TKN	:	285.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Supaul			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		22.37
2	Population as in 2011	:		65437
3	Population Growth Rate as in 2011 (%)	:		20.99
4	Total Number of Wards	:		28
5	Population per Ward (Thousands)	:		2,337
6	Total Number of Household as in 2011	:		12495
7	Number of Household per Ward	:		446
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		8.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		7.1
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1766.8
		COD	:	3003.6
		TKN	:	353.4
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Koshi River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Toghra			State: Bihar	
S. No.	Items			Value
1	Total Area (sq km)	:		15.80
2	Population as in 2011	:		56234
3	Population Growth Rate as in 2011 (%)	:		NA
4	Total Number of Wards	:		5
5	Population per Ward (Thousands)	:		11,247
6	Total Number of Household as in 2011	:		10772
7	Number of Household per Ward	:		2154
8	Surface Water Supply (MLD)	:		NA
9	Ground Water (GW) Supply (MLD)	:		NA
10	Number of Bore Wells	:		NA
11	Ground Water Extraction per Bore Well (MLD)	:		NA
12	Number of Hand Pumps/ Tubewells	:		NA
13	Ground Water Extraction per Hand Pump (lpcd)	:		NA
14	Number of Pumping Stations for Water Supply	:		NA
15	Total Pumping Capacity (MLD)	:		NA
16	Average Water Supply Rate from ULB Sources (lpcd)	:		NA
17	Total Water Supply from ULB and Non-ULB Sources (MLD)	:		7.6
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		6.1
20	Per Capita Sewage Generation (lpcd)	:		108.0
21	Sewage Collection (MLD)	:		NA
22	Percentage of Sewage Collection (%)	:		NA
23	Number of STPs	:		NA
24	Total Installed Capacity of STPs under GAP & YAP I & II (MLD)	:		NA
25	Current Utilized Capacity of STPs (MLD)	:		NA
26	Percentage Utilization of Installed Capacity (%)	:		NA
27	Capacity of STPs Sanctioned under JNNURM & Others (MLD)	:		NA
28	Pollution Load (Domestic) (Method 1: Actual Flow) (kg/d)	BOD ₅	:	NA
		COD	:	NA
		TKN	:	NA
29	Pollution Load (Domestic) (Method 2: Per Capita Contribution) (kg/d)	BOD ₅	:	1518.3
		COD	:	2581.1
		TKN	:	303.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Ganga River
32	Number of Drains/Nallah for Wastewater Disposal		:	NA
33	Number of Water Bodies		:	NA
34	Gross Area of Water Bodies (Hectare)		:	NA
35	Area of Water Bodies as % of Total Area		:	<<< 1

Appendix-3

Compilation of the total sewage discharge through point sources in river Ganga basin (Adopted from CPCB, 2013)

State	Region		Name of the Drains	Discharge	Remark
Uttarakhand	Uttarkashi & Devprayag	1	Storm Water Drain Uttarkashi	1.73	Domestic, industrial wastewater
		2	Kodianala, Devprayag	1.73	
	Rishikesh	1	Triveni Drain/ Saraswati Nala	11.5	
		2	Rambha nadi/drain	152	
		3	Lakkar Ghat STP Drain	12	
		4	IDPL- STP Drain	3	
		5	Swarg Ashram STP Drain	2.5	
		6	Gadhi Shyampur Drain	0	
	Haridwar	1	Jagjeetpur STP Drain	42	
		2	Kassavan Drain	11	
		3	Pandey wala Drain	0	
		4	Matra Sadan Drain	3.8	
		5	Rawlirao Drain	2.8	
	Laksar	1	Laksar drain	196	
Uttar Pradesh	Sukratal	1	Banganga River (at confluence with river Ganga)	0	Domestic, industrial wastewater
	Bijnor	1	Hemraj Drain	0	
		2	Bijnor Sewage Drain	7.6	
		3	Malan River (at confluence with river Ganga)	16.5	
		4	Chhoiya Drain (at conf. with river Ganga)	124	
	Gajrola and Babrala	1	Bagad River	1.8	
	Garh	1	Garh Drain	14	
		2	Fuldehra Drain (at confluence with river Ganga)	32	
	Badaun	1	Badaun Sewage Drain	29.9	
		2	Sot River	42	
	Anupshar	1	Anupsahar STP Drain-1	0.85	
		2	Anupsahar STP Drain-2	1.75	
	Kanpur	1	Dabka Nalla-1 (Kachhanala)	94	
		2	Dabka Nalla-2 (Pakkanala)	25	

	3	Dabka Nalla-3 (Pakkanala)	0.26	
	4	Shetla Bazar (Kachhanala)	29	
	5	WazidpurNalla	54	
	6	SattiChaura	1.1	
	7	GolaghatNala	0.83	
	8	BhagwatdasNala	11	
	9	Sisamau Nala	197	
	10	PermiyaNala	186	
Unnao	1	Loni Drain	41.9	
	2	City Jail Drain	35.86	
Fatehpur to Raibareilly	1	Pandu River	1396	
	2	Seepage	0	
	3	Arihari Drain	34.25	
	4	NTPC drain	60.29	
Allahabad	1	Rasulabad-1 (Pakkanala)	29.8	
	2	Rasulabad-2 (Pakkanala)	20.2	
	3	Rasulabad-3 (kachhanala)	14.2	
	4	Rasulabad-4 (Kachhanala)	48.5	
	5	Nehru Drain	7	
	6	Kodar Drain	20	
	7	Pongaghat Drain	8	
	8	Solari Drain	34.8	
	9	Maviya Drain	65	
	10	Mugalaha Drain	46	
Mirzapur	1	GhoreSaheed drain	86.4	
	2	Khandwa drain	62.21	
Varanasi	1	Rajghat drain	16.19	
	2	Nagwa drain	66.45	
	3	Ramnagar drain	23.65	

		4	Varuna drain	304.5	
		5	Shivala Drain	0	
Bihar	Buxer	1	Sidhharth Drain	7.5	Domestic ,industrial wastewater
		2	Sati Ghat Drain	7.7	
		3	Nath Baba Drain	5.2	
		4	Tadka Drain	6.8	
		5	Sariupur Drain	6.7	
	Patna	1	Danapur Cantt Drain	10.1	
		2	DighaGhat Drain	9.6	
		3	Kurzi Drain	120.4	
		4	Rajapur Drain	40.7	
		5	BanshGhat Drain	6.6	
		6	CollectriateGhat Drain	14.3	
		7	MittanGhat Drain	5.4	
		8	Mahavir Drain	5.4	
		9	Badshahi Drain	21.4	
	Munger	1	ITC Drain	10.13	
		2	Lal Darwala Drain	8.5	
	Bhagalpur	1	Jamunia Drain	82.61	
		2	Adampur Drain	11.75	
		3	Sarkikal Drain	6.62	
		4	Saklichand Drain	7.7	
		5	Hathiya Drain	11.8	
		6	Chama Drain	10.6	
		7	BarariGhat Drain	9.7	
	Kahalgaon	1	Kowa Drain	147.28	
		2	Kagzi Drain	5.2	
West Bengal	Left bank	1	Circular Canal adjacent to River Hooghly	320.3	Domestic, industrial wastewater
		2	TollyNala adjacent to Dahighata	380.2	
		3	Dhankheti Khal Near CESE Intake Point	65.2	

		4	Akhra Food Ghar Adjacent to Hooghly River	83.4	
		5	Khardah Municipal Drain Connected to Hooghly River	63	
		6	DebitalaPancha Khal, Ichapore (Adjacent to R.N.S Brick Field)	46	
		7	Khal Near Nimtala Burning Ghat	20.7	
		8	MuniKhali Khal Adjacent to Arun MistriGhat	19.4	
		9	Kashipur Khal Adjacent to Khamarhati Jute Mill	16.1	
		10	In front of S.P Bunglow, S.N Banerjee Road, Mistry Ghat, Barrackpore	22.7	
		11	Adjacent to Cossiporeferryghat&gunshellDataory	19.8	
		12	ChitpurGhat, Dilarjung Road	15	
		13	Majher Char Khal & Kalyani combined waste sewage near brick field with foam near sluice gate	16.5	
		14	Drain Opposite to Fort William , Judges Court Ghat	7.65	
		15	Adjacent to GarifaRly.Stn., Patterson road, adjacent to Ram Ghat	7.78	
		16	Adjacent to Garifa Rly. Stn.(North side) on Patterson road(domestic)	9.68	
		17	Baranagar Khal Adjacent to Ratan Babu Ghat	10.3	
		18	Mohan Misra lane & crossing of Ghosh para road, Halisahar, adjacent to Prabhat Sangha playground	10.7	
		19	Bagher Khal, adjacent to Hotel Dreamland, near sluice gate, open pucca drain	11.1	
		20	Drain between Pratapnagar and Rajbari	4.19	
		21	By the side of Alliance jute mill, Jagatdal Jetty, opposite side of bank Chandannagar Jetty	4.96	
		22	Adjacent to boundary wall of Gandhighat& near Upashak Social Welfare Organization, Gandhighat, South gate-1,Barrackpore	3.61	
		23	Balughat, Manirampur pucca drain	2.28	

		24	BishalakshmiGhat, adjacent to CESC Power House, Titagarh	4.01	
		25	Thanar Khal, adjacent to Thana & over tank by Naihati Municipality	5.29	
		26	Sasanghat	2.92	
		27	Open pucca drain carrying waste for ward nos. 9 & 10	1.2	
		28	Saidabad kunjaBhata(opposite to auto center)ward no. 25	1.26	
		29	Shovabazar Canal Near Shovabazar Launch Ghat	0.42	
		30	Open pucca drain flowing adjacent to Diamond club,	0.96	
		31	Open Kuccha drain carrying domestic waste for Ward 16	0.66	
		32	Adjacent to boundary wall of Jangipur College and B D Office	1.08	
		33	Shasan (burning) Ghat,Bhairabpur, Purbaparaword9 no16	0.54	
		34	RadharGhat(Old IchagrashasanGhat) Bhairabpur, Purbapara	0.48	
	Right bank	1	Bhagirathi lane, Mahesh, Serampore	41.5	
		2	Hastings Ghat road, adjacent to Hastings jute mill, Rishra, Hooghly	42	
		3	Najerganj Khal, north side of Shalimar paint, near Hans Khali Poll, Sankrail	326	
		4	Singhi More Khal (Singhimara Khal), Manikpur, Sankrail, near brick field	26.1	
		5	Chatra Khal, Beniapara, Serampore, Behind Ganga Darsan, Raja K. L Goswami street, Serampore	28.4	
		6	Bagh Khal, border of Rishra&Konnagar Municipality on G.T Road	18.4	
		7	TelkalGhat	21.9	

		8	RamkrishnaMullickghat Road	12.2	
		9	130 Foreshore Road Martin Burn	17.6	
		10	Shibpur Burning Ghat	13.3	
		11	Jagannath Ghat Road, opposite to China pharmacy, by the side of Bijoy lakshmi rolling mill	17.3	
		12	Combined of Swarasati Khal and Rajganj Khal, near Sankrail Police station, near PareshnathHazraGhat	2.77	
		13	Champdany Ferry Ghat, opposite nabalgarrage, Champdany ,Poura bhavan road, Pin-712222	4.15	
		14	South side of DawnagaziGhat, Bally Municipality, Bally	1.31	
		15	JagatnathGhat, Ward No.-14, LalababuSaha Rd., South side of KathgolaGhat	9.33	
		16	101,Foreshore Road	6.24	
		17	Kuthighat South Side of Belur Math	5.76	
		18	N.C.Pal Khal, Sankrail	3.87	
		19	Adjacent to bazarpara and Garighat (ward no. 18) Kuccha drain	1.2	
		20	Shalimar Coal Deposit No 1Naresh Kumar Ward	0.16	
			Total Discharge	6088.4	