

Assessment of Domestic Pollution Load from Urban Agglomeration in Ganga Basin: Uttarakhand and Himachal Pradesh

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 (GRBMP). 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 GRBMP. 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:

Uttarakhand and Himachal Pradesh are the 27th and 18th state respectively and among the most scenic and beautiful states in India. Both states are situated at the foothills of the Himalayan mountain ranges, identified as "Dev Bhumi" and is believed to be the abode of Gods and Goddesses. Both states are rich in natural resources especially water and forests with many glaciers, rivers, dense forests and snow-clad mountain peaks. Several small streams originated from these states join and contribute to watershed of Ganga and Yamuna rivers. These states share boundaries with Uttar Pradesh, Haryana, Jammu & Kashmir, Panjab, Nepal and Tibet (China).

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. Uttarakhand and Himachal Pradesh are two states out 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 originating streams of Ganga and Yamuna rivers flow approximately in the direction of North West. The geographical area of the states contributing in GRB where Ganga and Yamuna Rivers traverses is depicted in 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 (sq km)	#Area contributing to Ganga Basin (sq km)	Percentage of the Basin Area (%)
Uttarakhand	53,483	53,436	6.2
Himachal Pradesh	55,673	4,317	0.5
Uttar Pradesh	240,928	240,928	28.0
Bihar	94,163	94,163	10.9
Jharkhand	79,716	49,798	5.8
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
Rajasthan	342,239	112,490	13.1
West Bengal	88,752	71,485	8.3

Source: *Census 2011; #<https://nmcg.nic.in/location.aspx>

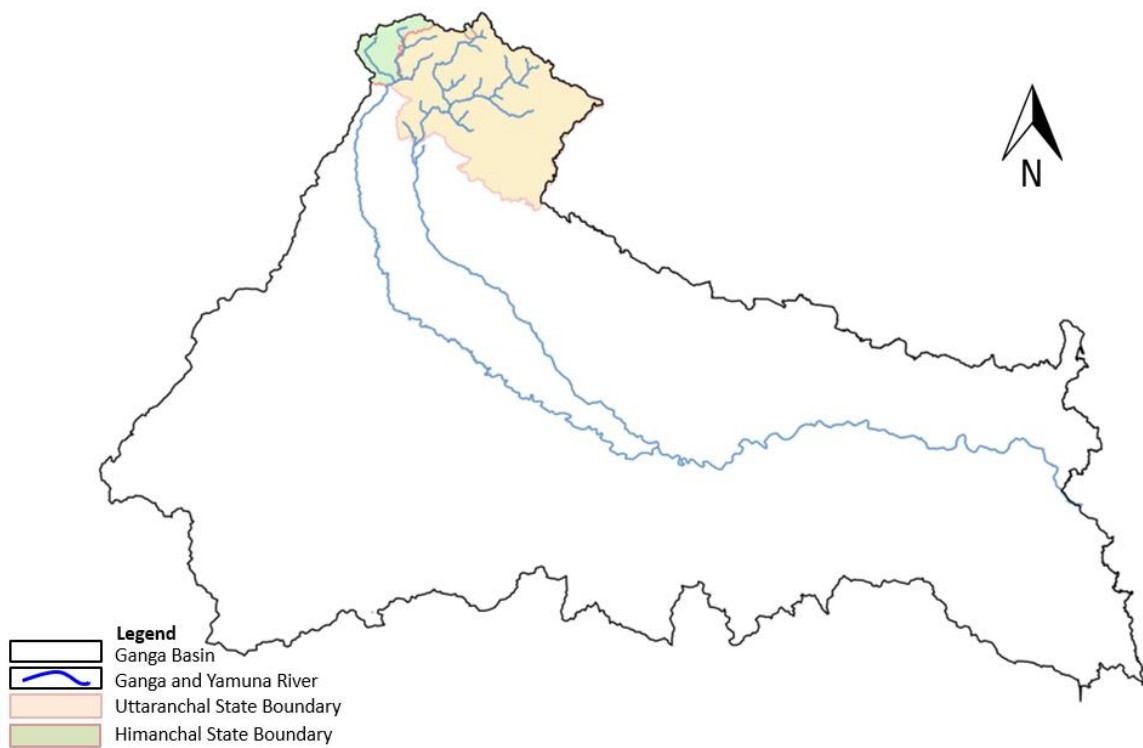


Figure 1: Uttarakhand and Himachal Pradesh in Indian Boundaries of Ganga River Basin

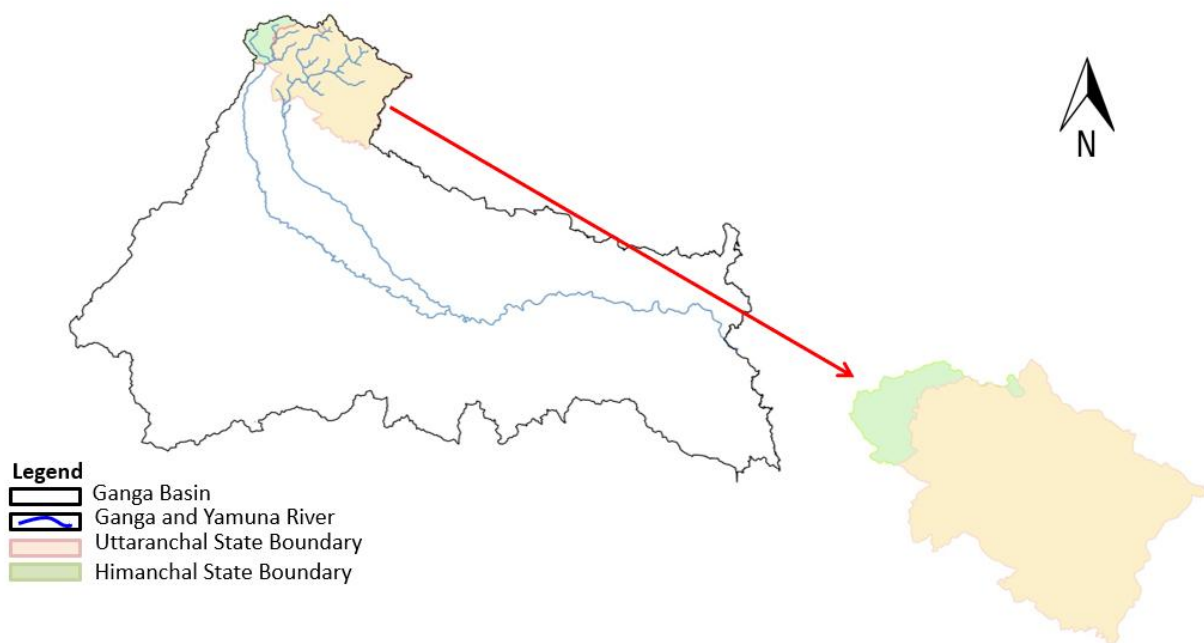


Figure 2: Uttarakhand and Himachal Pradesh State Boundaries in Ganga River Basin

Table 2: The Salient Features of Tributaries of the Ganga River Basin Contributing to the River Ganga in the State of Uttarakhand and Himachal Pradesh

Characteristics	Bhagirathi	Alaknanda	Yamuna
Position	Head stream	Head Stream	Right bank
Region of origin	Gaumukh (Gangotri)	Confluence of Satopanth Glacier and Bhagirathi Kharak Glacier	Yamunotri glacier at Bandar Punch
Mouth	Ganga	Ganga	Ganga
Total length (km)	205	190	1376
Total catchment area (sq km)	6,921	10,882	366,223
Catchment area in Uttarakhand and HP (sq. km)	6,921	10,882	1,484
River bed/ Soil texture	Clay, silt and gravel of various grades	Clay, silt and gravel of various grades	Alluvial about 42% of the basin area, followed by medium black soil 25.5% and mixed red and black soil 15%

Gopal and Sah (1993); Dwivedi (2006); * Rai et al. 2012

The total annual average rainfall in the state of Himachal Pradesh and Uttarakhand are 1251 mm and 1285 mm, respectively.

2. Major Obstruction and Abstraction Projects on the Tributaries of the River Ganga Executed in the States

The natural flow regime in the river Ganga and her tributaries have been altered due to construction of a number of dams and barrages in the mountainous reaches of Uttarakhand and Himachal Pradesh state. The mountainous region of the main stem river Ganga is obstructed due to the ongoing hydroelectric projects *i.e.*, Maneri Bhali I, Maneri Bhali II, Tehri and Koteswar. Further downstream, Bhimgauda barrage diverts nearly all water during non-monsoon season to upper Ganga canal through Har ki Pauri, Haridwar. These dams and barrages are essentially made for domestic/irrigation water supplies. The list of the major dams on Yamuna and Ganga River in HP and Uttarakhand are mentioned underneath. These barrages are essentially for domestic water supplies. The list of the major dams on Yamuna and Ganga River in Himachal Pradesh and Uttarakhand are mentioned in Table 2.

Table 2: Details of the Major Dams on the River Ganga and Her Tributaries in the Uttarakhand and Himachal Pradesh

Projects	River	Year of Completion	Remark
Baigul Dam	Baigul and Sukhi	1968	Major Irrigation Project
Baur Dam	Baur	1967	Major Irrigation Project
Bhimtal Dam	Bhimtal Tal	1883	Major Irrigation Project
Dhauliganga Dam	Dhauli Ganga	-	Major Irrigation Project
Chora Dam	Kiccha	1960	Major Irrigation Project
Haripura Dam	Kiccha	1975	Major Irrigation Project
Ichari Dam	Tons	1972	Major Irrigation Project
Jamrani Dam	Gola	1990	Major Irrigation Project
Maneri Dam	Bhagirathi	1984	Major Irrigation Project
Ramganga Dam	Ramganga	1974	Major Irrigation Project
Tehri Dam	Bhagirathi	2005	Major Irrigation Project
Tumaria Dam	Phika	1970	Major Irrigation Project

3. Demographic Profile of Ganga Basin in the States

Uttarakhand and Himachal Pradesh have 6 Class I cities, 5 Class II and 20 Class III towns under Ganga basin (Figure 4-6). The total population of the Himachal Pradesh and Uttarakhand are 6.8 and 10.1 million (Census 2011). The density in the states are about 123 and 189 people per square kilometer (Census, 2011), respectively. Some of the Class I cities are Dehradun, Haldwani-cum-Kathgodam, Hardwar, Kashipur, Roorkee and Rudrapur under the Ganga basin. The details of the area, population and the major river systems of all the Class I, II and III cities are presented in Table 3-5, respectively.

Figure 3 shows the population distribution of Class I cities, Class II and III towns in the Ganga basin in the states. 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 states is 0.23 million, approximately 4 times and 8 times higher than the population of class II and class III towns, respectively. Dehradun is the highly populated class I city having the population of 11.04 million, while Roorkee is the least populated (0.12 million) class I city. Rishikesh and Jaspur are the towns having maximum and minimum population under class II towns, contains 0.071 and 0.051 million, respectively. In class III towns where the population is less than 0.05 million, the maximum population is in the BHEL Ranipur town

(0.047 million), while minimum is in the Srinager (0.02 million). Approximately 61.59 % of class I cities population lives outside of defined basin, and 12.63% of class II cities population lives outside of defined basin (Figure 3).

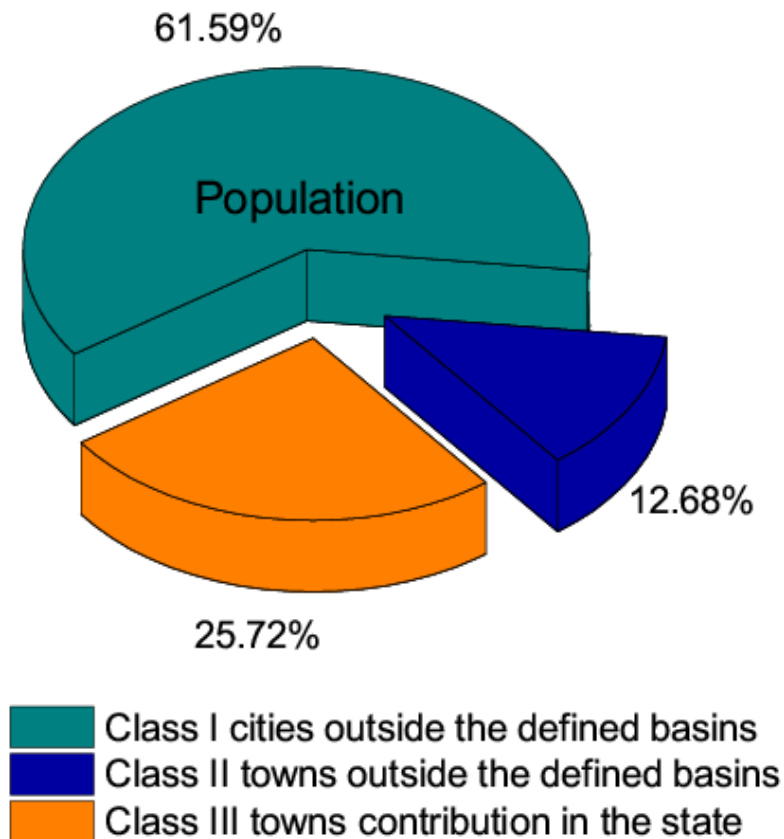


Figure 3: Population Distribution of Class I Cities and Class II, Class III Towns in Himachal Pradesh and Uttarakhand states.

Table 3: Demographic details of Major urban centers (Class I) in HP and Uttarakhand.

S No.	Name	River System	Area (sq km)	Population (Census 2011)
1	Dehradun	Ganga River	71.62	569578
2	Haldwani-cum-Kathgodam	Ganga River	44.11	201461
3	Haridwar	Ganga River	23.56	231338
4	Kashipur	Ganga River	5.50	121623
5	Roorkee	Ganga River	8.11	118200
6	Rudrapur	Ganga River	27.65	140857

Table 4: Demographic details of class II cites in HP and Uttarakhand.

S No.	Name	River System	Area (sq km)	Population (Census 2011)
1	Jasgur	Ganga River	4.02	50523
2	Manglaur	Ganga River	1.32	52971
3	Pithoragarh	Ganga River	9.00	56044
4	Ramnagar	Ganga River	2.43	54787
5	Rishikesh	Ganga River	10.00	70499

Table5: Demographic details of class III cites in HP and Uttarakhand.

S No.	Name	River System	Area (sq km)	Population (Census 2011)
1	Almora	Ganga River	7.35	34122
2	Bajpur	Ganga River	2.40	25524
3	Bharat Heavy Electricals Limited Ranipur	Ganga River	26.48	46948
4	Chamoli Gopeshwar	Ganga River	14.08	21447
5	Dhandera	Ganga River	4.41	23276
6	Kichha	Ganga River	4.02	41965
7	Kotdwara	Ganga River	3.00	28859
8	Laksar	Ganga River	5.00	21760
9	Mukhani	Ganga River	3.76	22475
10	Mussoorie	Ganga River	64.75	30118
11	Nagla	Ganga River	28.00	22258
12	Nainital	Ganga River	11.73	41377
13	Paonta Sahib	Yamuna River	NA	25183
14	Pauri	Ganga River	42.00	25440
15	Raipur	Ganga River	14.59	32900
16	Sitarganj	Ganga River	2.00	29965
16	Solan	Yamuna River	NA	39256
17	Srinagar	Ganga River	9.00	20115
18	Tehri	Ganga River	37.05	24014
19	Umru Khurd	Ganga River	4.71	20593
20	Almora	Ganga River	7.60	34122

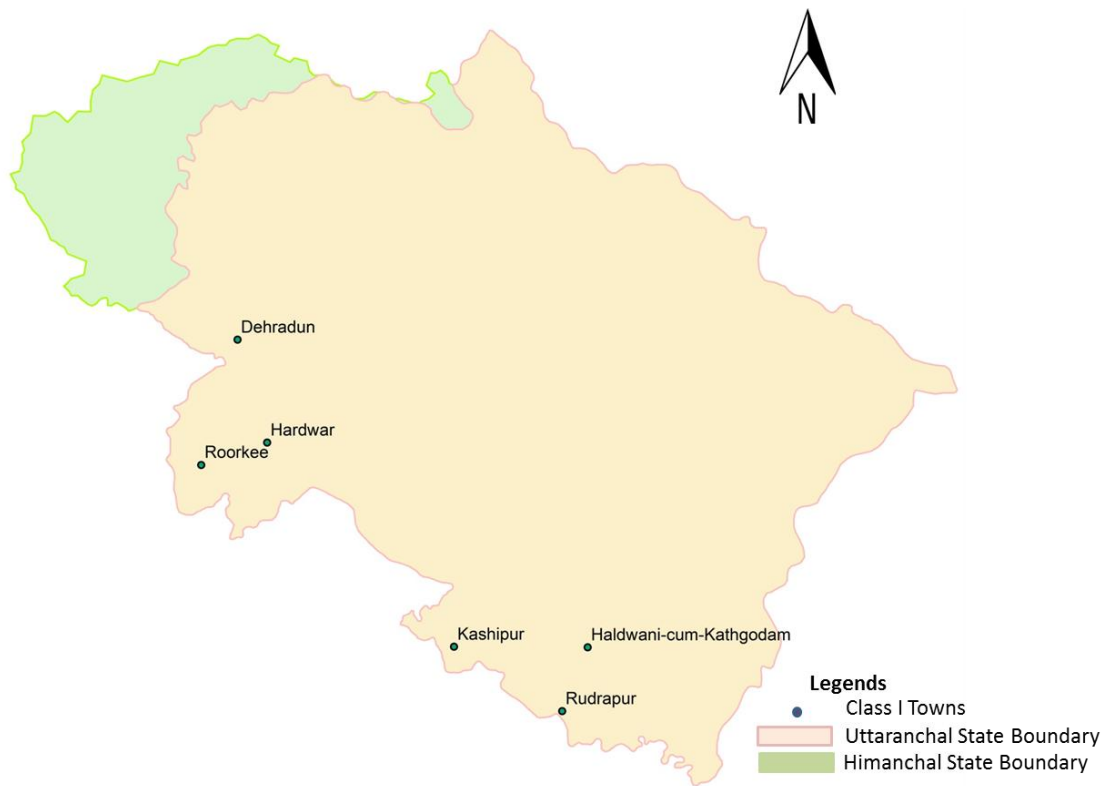


Figure 4: Class I Cities in Himachal Pradesh and Uttarakhand in Ganga River Basin

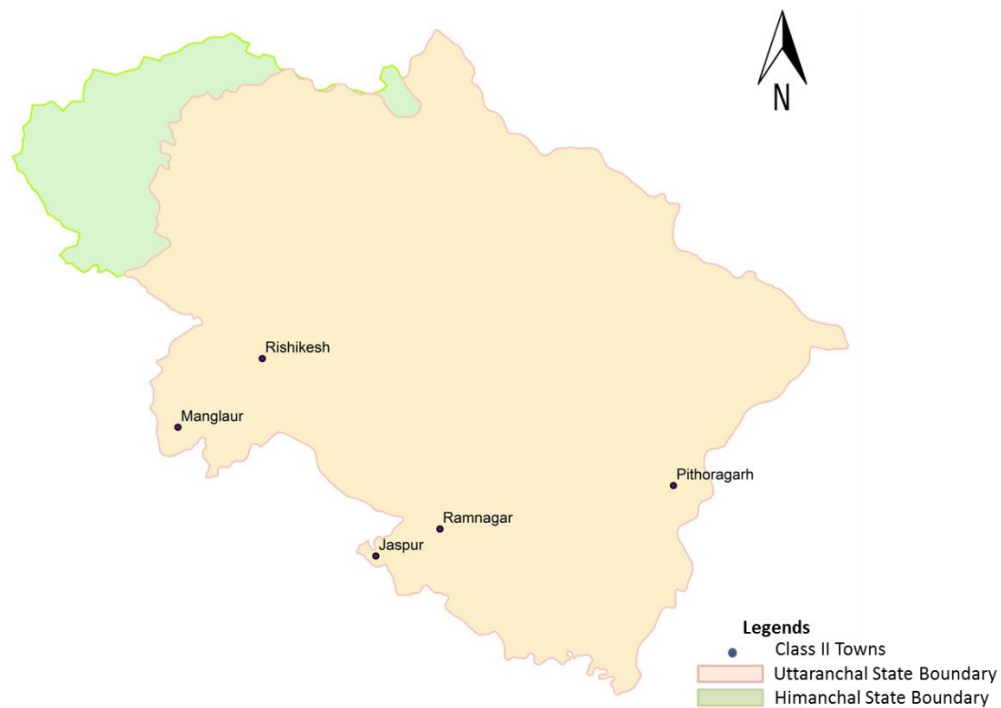


Figure 5: Class II Towns in Himachal Pradesh and Uttarakhand in Ganga River Basin

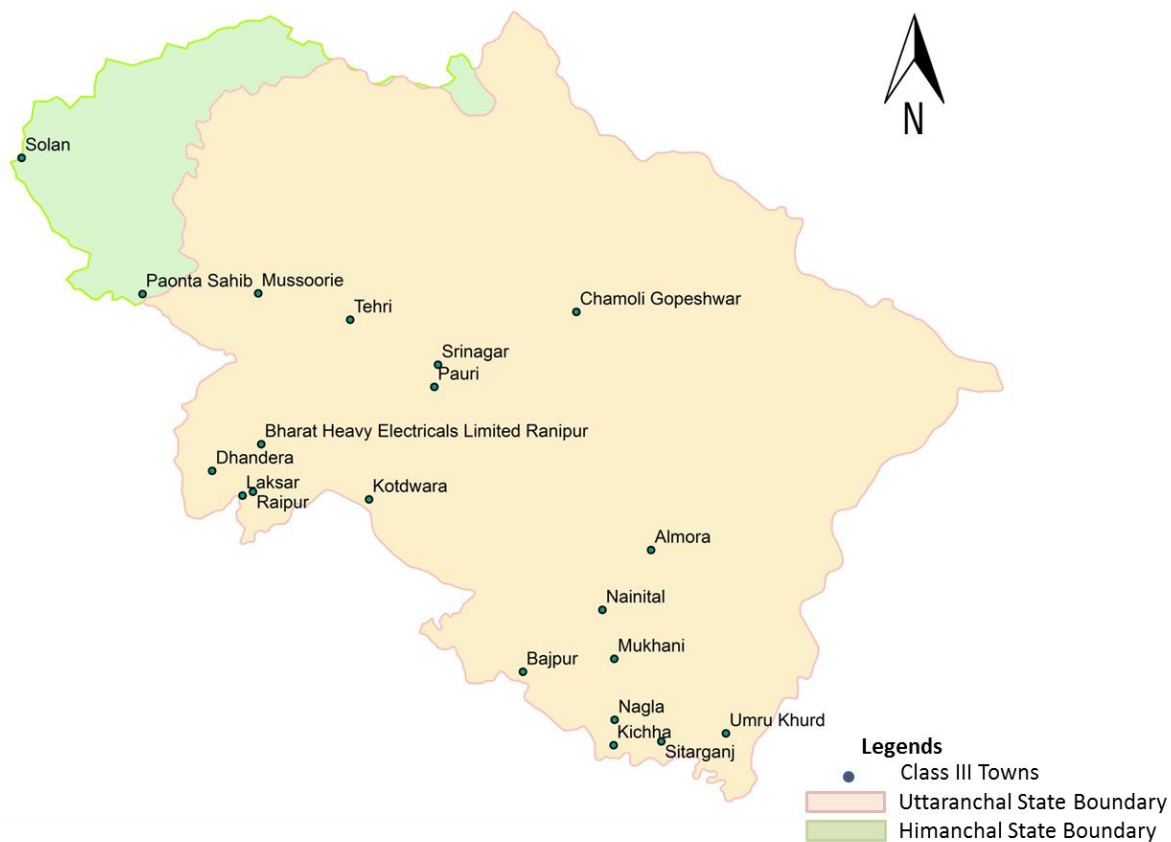


Figure 6: Class III Towns in Himachal Pradesh and Uttarakhand in Ganga River Basin

5. Pollution Load

The major pollution load in the area of basin in the state is due to point and nonpoint sources. Discharges of untreated/partially treated sewage from urban centers, discharge from open drain carrying sewage, 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 report published by CPCB in 2009 revealed that the total sewage generation of class I cities in whole 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.

There is no water supply and sewage generation data available for the class I, II, and Class III cities of Himachal Pradesh and Uttarakhand, so all calculation has been done on average water consumption (**135 liters per capita per day**). The maximum sewage generated by class I cities and class II towns of are 149 and 31 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 8. The trends of the data in Himachal Pradesh and Uttarakhand depicted that the maximum share of sewage generation (85.75%) is from class I cities followed by class II and III towns, 9.3 and 4.9%, respectively (Figure 7). The BOD and COD load for Class I cities, Class II and Class III towns are in the range of 61.59, 12.68 and 25.72%, respectively. The TKN load showing almost the same trend as BOD and COD load.

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 Dehradun, 61.5 MLD, approximately 80.0% of the water supply. In case of the class II towns the sewage generation in Rishikesh is maximum 7.6 MLD. The total BOD and COD load in Kg/day has been estimated on the per capita basis in Class I cities and its average are approximately 6.2 and 10.5 tons/day, respectively. The average BOD and COD load from the Class II towns is 1.5 and 2.6 tons/day, respectively whereas Class III towns contribute approximately 0.8 tons/day and 1.3 tons/day of BOD and COD, respectively. The maximum and minimum BOD and COD contributing cities in Class I towns are Dehradun and Roorkee, respectively. In Class II towns maximum BOD and COD is from Rishikesh, whereas minimum BOD and COD are from Jaspur. In class III towns maximum and minimum BOD and COD is from Bharat Heavy Electricals Limited Ranipur and Srinager respectively.

The total TKN in metric tons/day contributed by Class I, Class II and Class III towns are approximately 1.24, 0.31 and 0.16 tons/day, respectively. The maximum and minimum contribution of TKN from class I towns are from Deharadun and Roorkee, respectively. The maximum and minimum contribution of TKN from class II towns is from Rishikesh and Jaspur, respectively while the maximum and minimum contribution of TKN from class III towns is from Bharat Heavy Electricals Limited Ranipur and Srinager, respectively. The estimates of total water supplied, total sewage generated, BOD, COD and TKN loads are summarized and illustrated in Figures (8-10) 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 11.

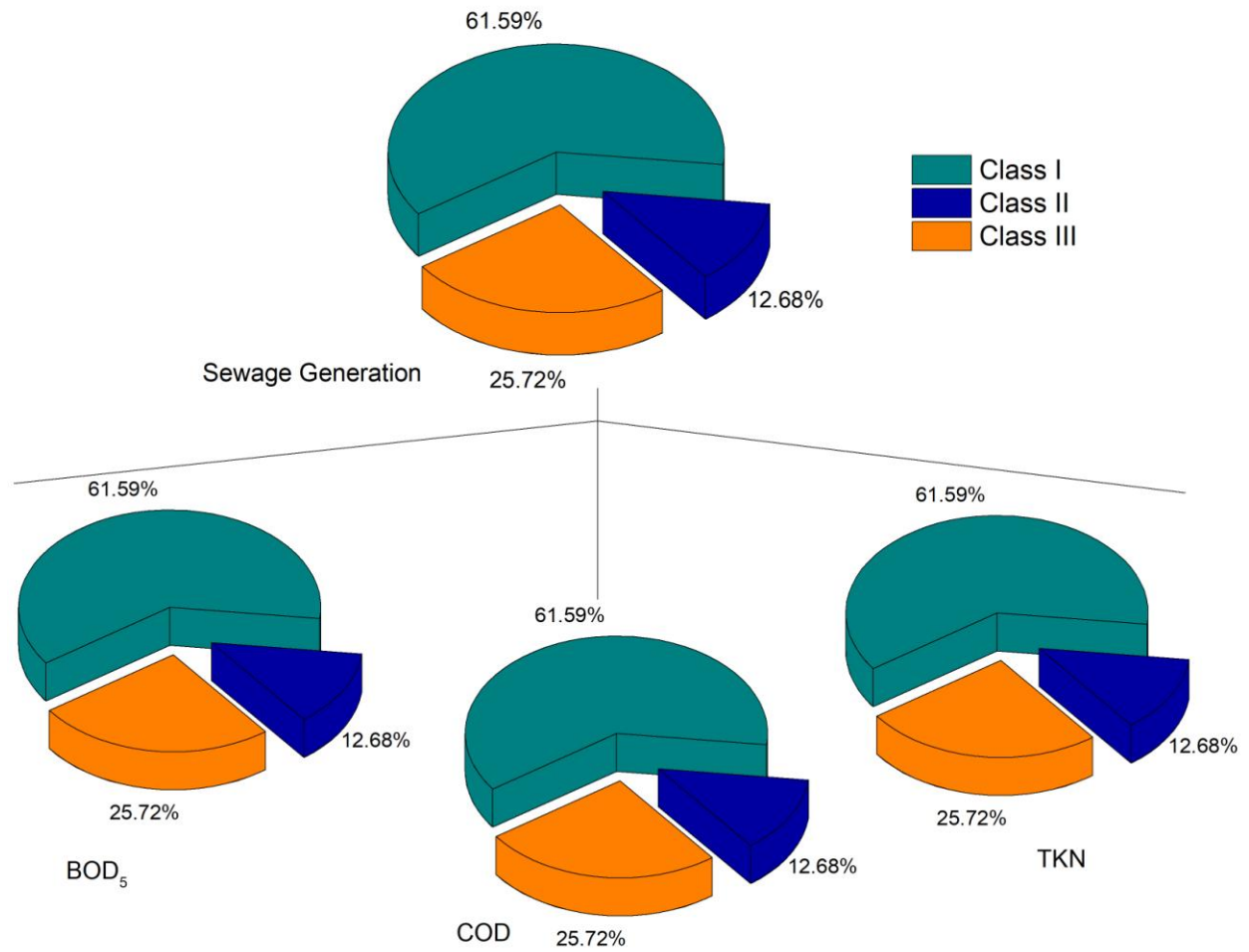


Figure 7: Distribution of Pollution Load of Class I Cities and Class II, Class III Towns in Himachal Pradesh and Uttarakhand

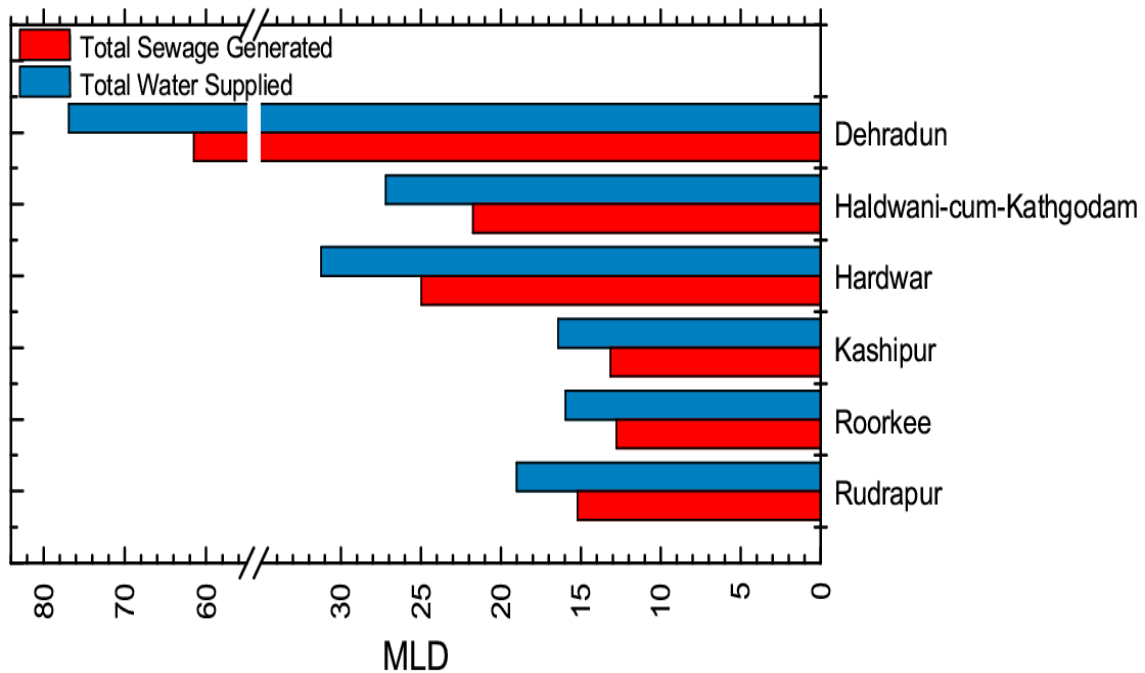


Figure 8a: Assessment of Water Supply and Sewage Generation (MLD) in Class I Cities in Himachal Pradesh and Uttarakhand

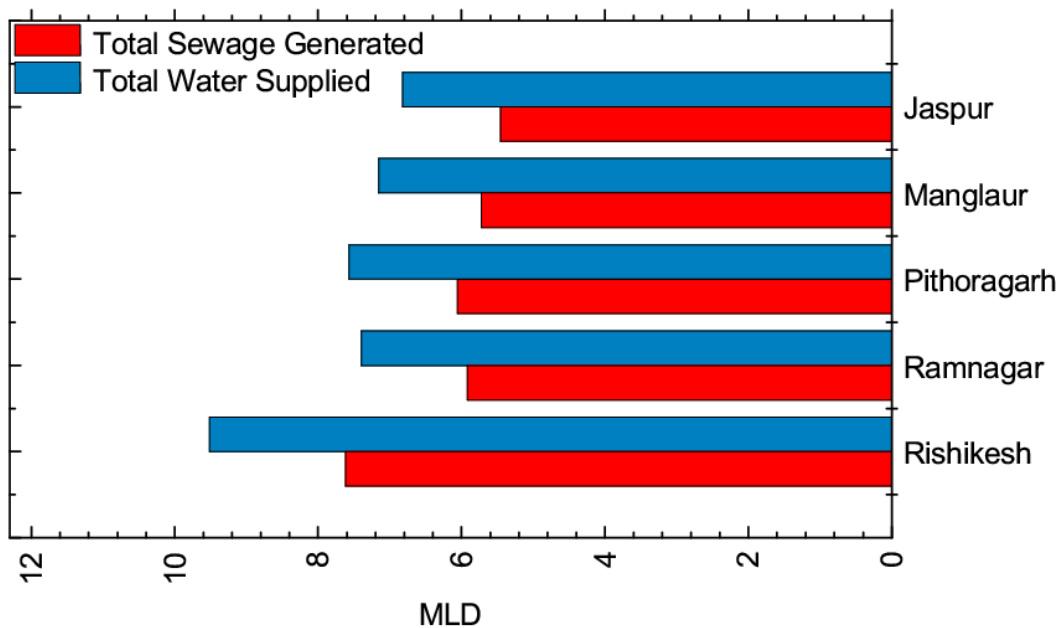


Figure 8b: Assessment of Water Supply and Sewage Generation (MLD) in Class II Towns in Himachal Pradesh and Uttarakhand

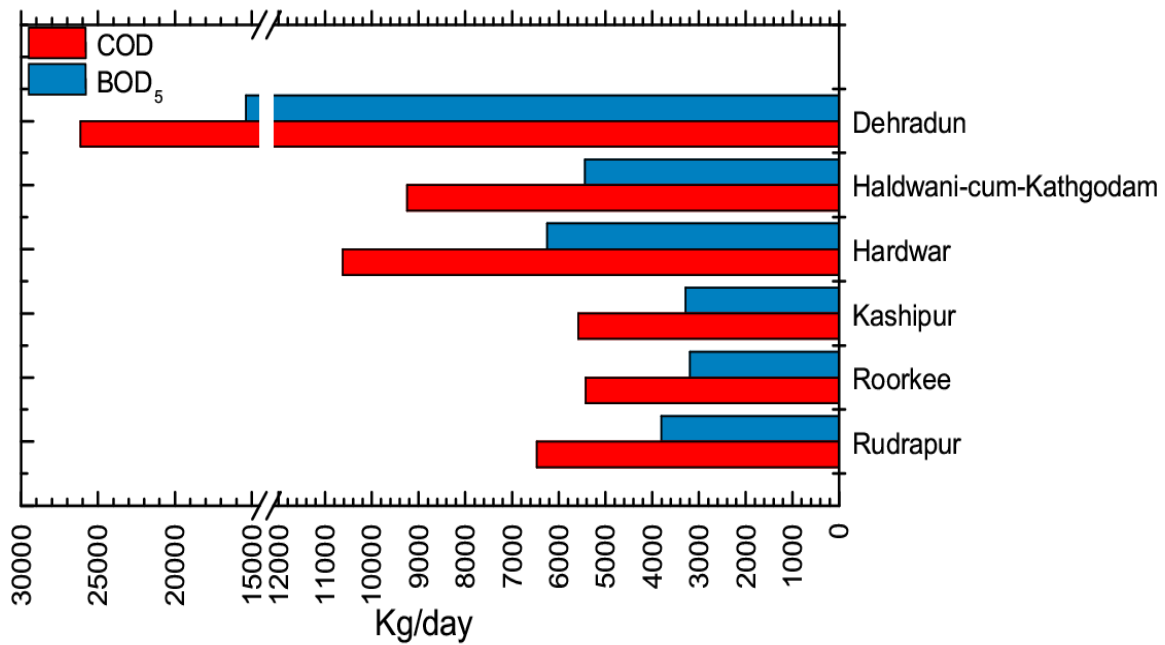


Figure 9a: Assessment of Pollution Load (kg/day) from Class I Cities in Himachal Pradesh and Uttarakhand

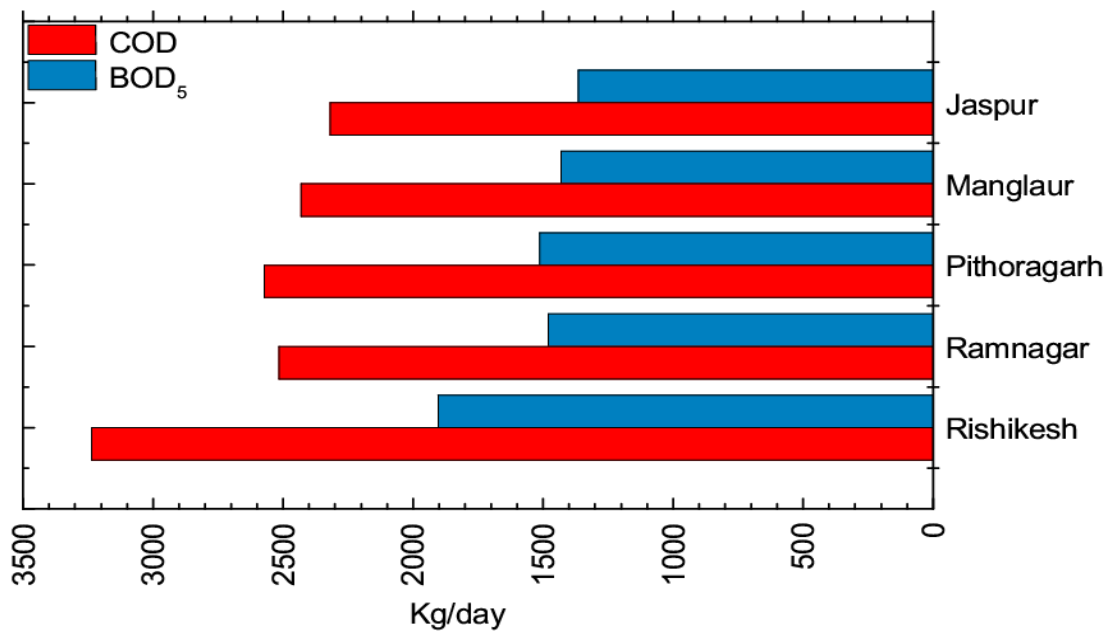


Figure 9b: Assessment of Pollution Load (kg/day) from Class II Towns in Himachal Pradesh and Uttarakhand

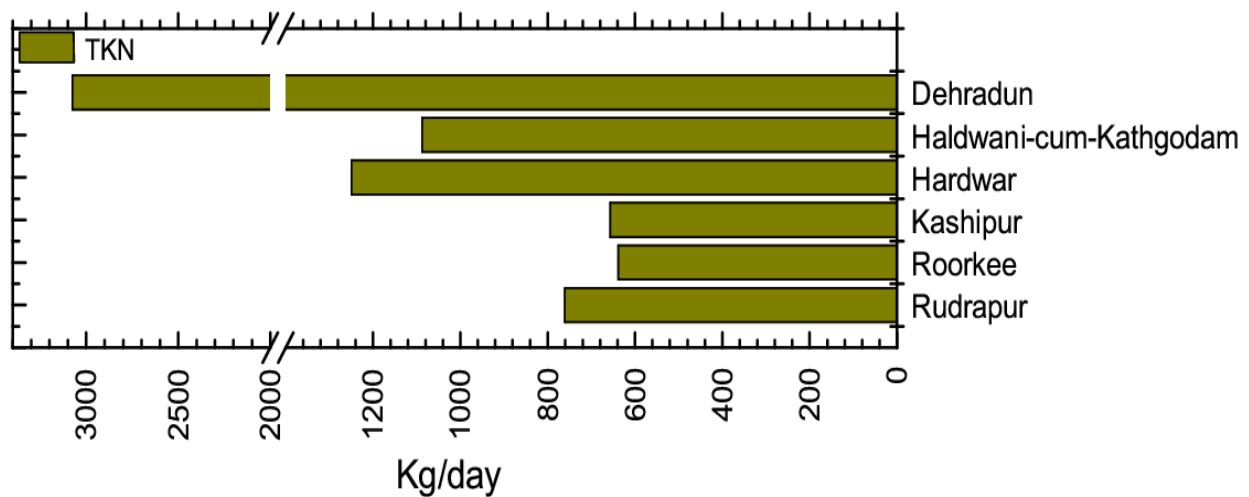


Figure 10a: Assessment of TKN Load (kg/day) from Class I Cities in Himachal Pradesh and Uttarakhand

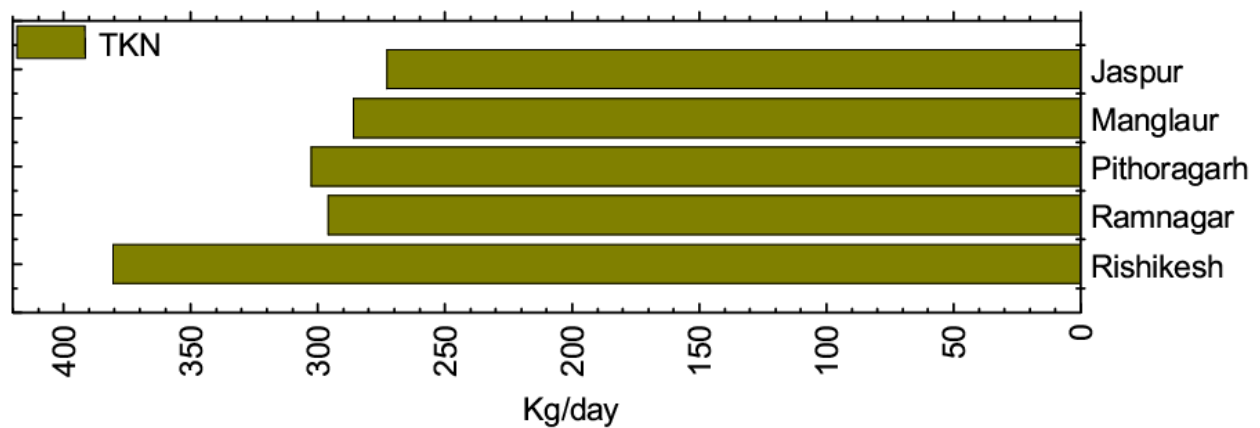


Figure 10a: Assessment of TKN Load (kg/day) from Class II Towns in Himachal Pradesh and Uttarakhand

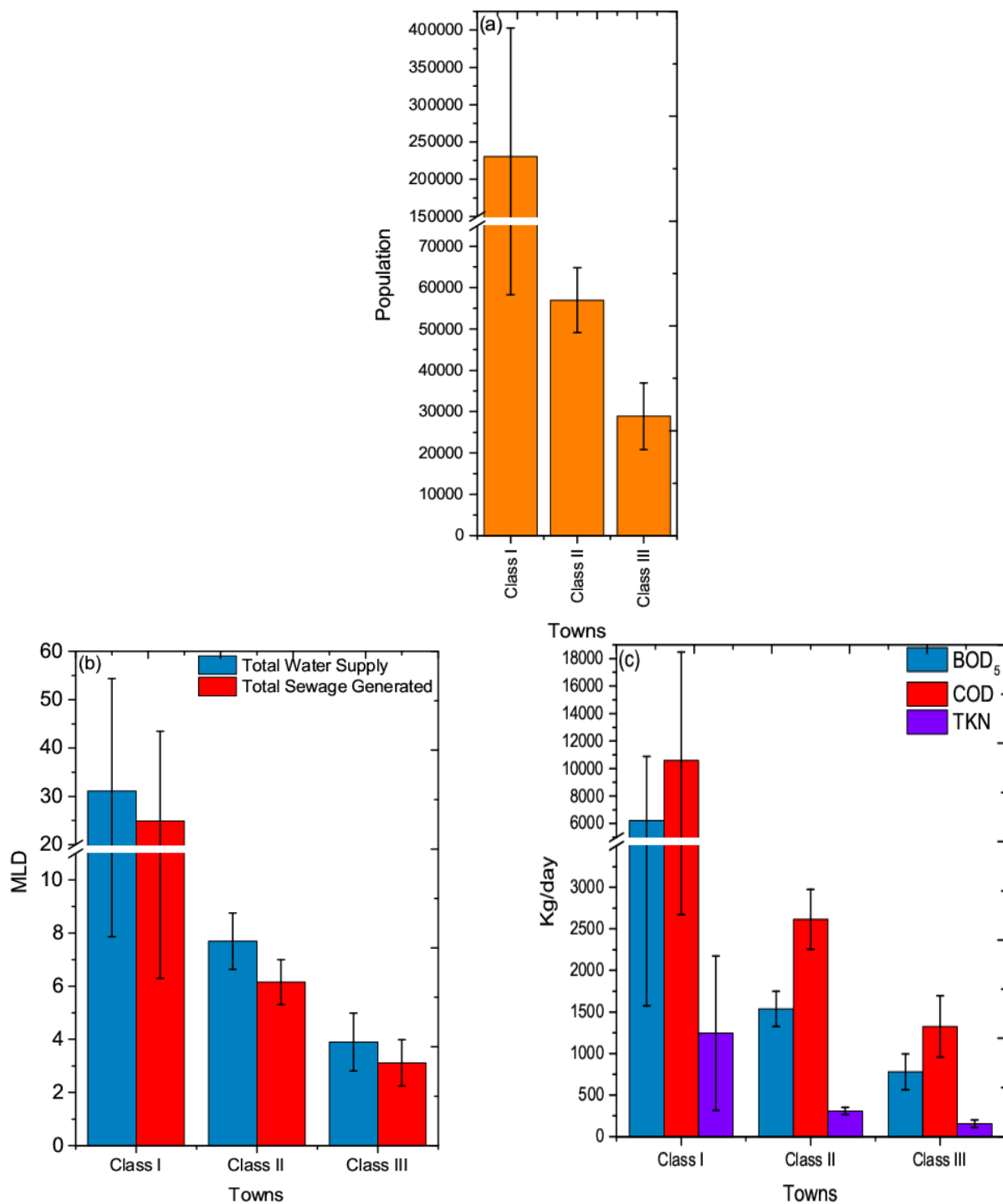


Figure 11: Comparative Analysis of Class I, Class II and Class III Cities/Towns Lying in States: (a) Population (b) Total Water Supply and Sewage Generation (c) Pollution Load

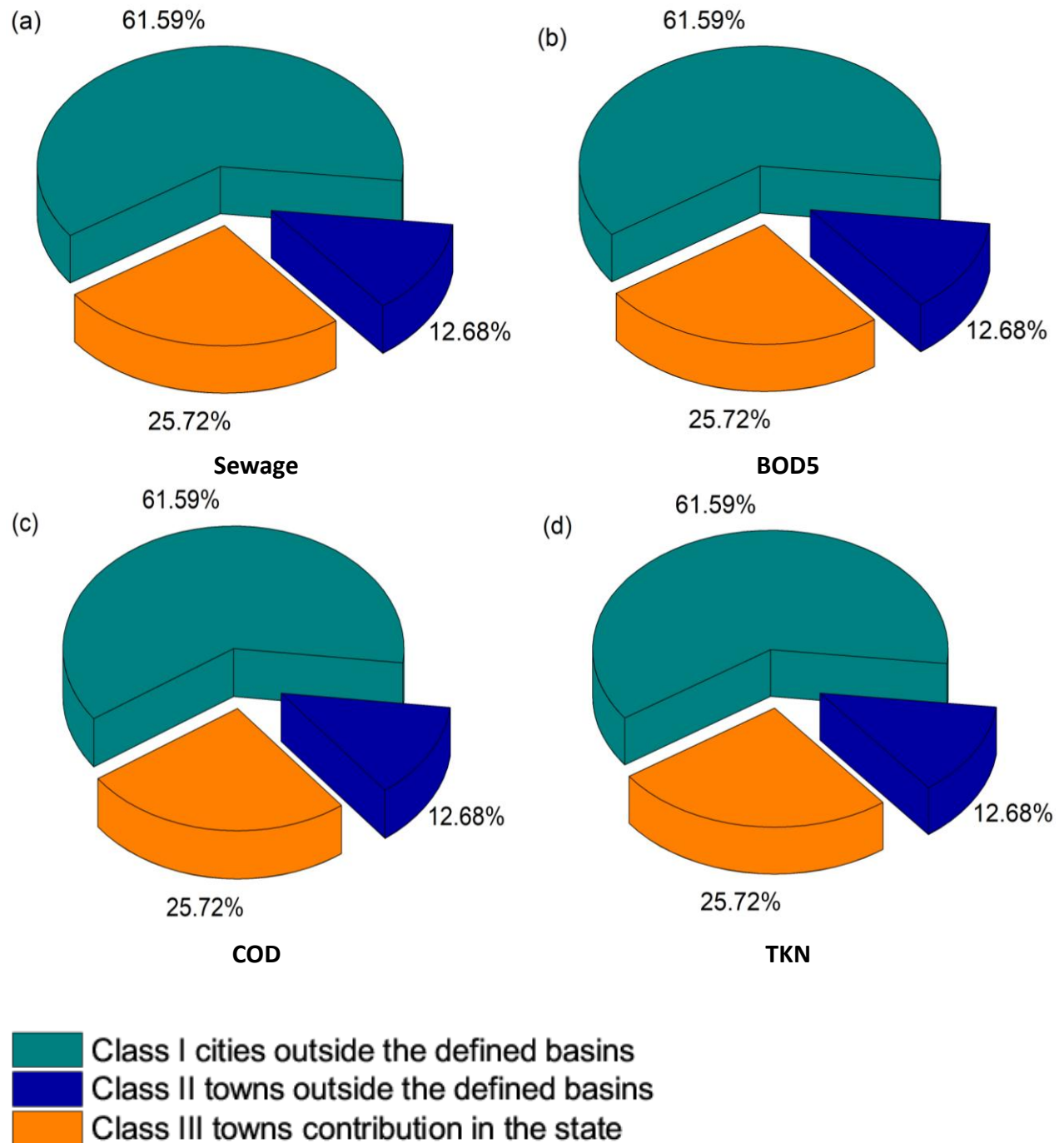


Figure 12 (a-d): Pollution load of Class I Cities and Class II, Class III Towns in Himachal Pradesh and Uttarakhand: (a) Sewage Generation; (b) BOD₅; (c) COD; (d) TKN

The results of the pollution load of Class I cities, Class II and Class III towns in the major basins of river Ganga in states has been evaluated (Figure 12a-d) and the results revealed that the percentage of the total sewage generation is maximum in the Class I cities situated outside of defined basins (61.59%). The Class II towns outside the major defined basins combinedly release 12.68% of waste water. The percentage sewage generation by Class III towns of the entire state is 25.72% of the total sewage generated by the state. The BOD, COD and TKN load contributed by Class I cities of the outside the defined basin is 61.59%. The details of the BOD and COD load in the state are presented in Figure 12b and c.

5. Conclusions:

River Yamuna is the one of the main tributaries of River Ganga flows in the Indo-Gangetic plains. Yamuna flows from Yamunotri to Allahabad, and merge with river Ganga. While Alaknanda and Bhagirathi are major head streams which merge at Devprayag to form River Ganga. The catchment of the river addressed the load of 6 Class I cities, 5 Class II towns and 20 Class III towns, directly or indirectly in HP and Uttarakhand. The scenario of water quality in the system is varies from bad to worse base 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 maximum sewage generation is in the Class I cities (61.59%) followed by Class III (25.72%) and Class II towns (12.69%). Pollution load (BOD, COD and TKN load) also follows the same trend with maximum values for Class I cities. Dehradun and Rishikesh 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 Dehradun, Rishikesh and Bharat Heavy Electricals Limited Ranipur respectably. All calculations related to pollution load were done on per capita basis (135 liters per capita per day).

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Appendix-1

Compilation of Data Sheets of Water Balance & Pollution Load (Domestic) of Major Class I Cities/Towns in Uttarakhand and Himachal Pradesh

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Dehradun			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	71.62
2	Population as in 2011		:	569578
3	Population Growth Rate as in 2011 (%)		:	33.49
4	Total Number of Wards		:	60
5	Population per Ward (Thousands)		:	9,493
6	Total Number of Household as in 2011		:	125271
7	Number of Household per Ward		:	2088
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)		:	76.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	61.5
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	:	15378.6
		COD	:	26143.6
		TKN	:	3075.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Song 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: Haldwani-cum-Kathgodam			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	44.11
2	Population as in 2011		:	201461
3	Population Growth Rate as in 2011 (%)		:	26.79
4	Total Number of Wards		:	25
5	Population per Ward (Thousands)		:	8,058
6	Total Number of Household as in 2011		:	40599
7	Number of Household per Ward		:	1624
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)		:	27.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	21.8
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	:	5439.4
		COD	:	9247.1
		TKN	:	1087.9
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Gauia 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: Haridwar			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	23.56
2	Population as in 2011		:	231338
3	Population Growth Rate as in 2011 (%)		:	31.94
4	Total Number of Wards		:	33
5	Population per Ward (Thousands)		:	7,010
6	Total Number of Household as in 2011		:	47251
7	Number of Household per Ward		:	1432
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)		:	31.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	25.0
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	:	6246.1
		COD	:	10618.4
		TKN	:	1249.2
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: Kashipur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	5.50
2	Population as in 2011		:	121623
3	Population Growth Rate as in 2011 (%)		:	30.82
4	Total Number of Wards		:	20
5	Population per Ward (Thousands)		:	6,081
6	Total Number of Household as in 2011		:	22908
7	Number of Household per Ward		:	1145
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)		:	16.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	13.1
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	:	3283.8
		COD	:	5582.5
		TKN	:	656.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Dandi 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: Roorkee			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	8.11
2	Population as in 2011		:	118200
3	Population Growth Rate as in 2011 (%)		:	21.14
4	Total Number of Wards		:	20
5	Population per Ward (Thousands)		:	5,910
6	Total Number of Household as in 2011		:	22806
7	Number of Household per Ward		:	1140
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)		:	16.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	12.8
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	:	3191.4
		COD	:	5425.4
		TKN	:	638.3
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: Rudrapur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	27.65
2	Population as in 2011		:	140857
3	Population Growth Rate as in 2011 (%)		:	58.84
4	Total Number of Wards		:	23
5	Population per Ward (Thousands)		:	6,124
6	Total Number of Household as in 2011		:	29662
7	Number of Household per Ward		:	1290
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)		:	19.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	15.2
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	:	3803.1
		COD	:	6465.3
		TKN	:	760.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Kalyani 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-2

Compilation of Data Sheets of Water Balance & Pollution Load (Domestic) of Major Class II Cities/Towns in Uttarakhand and Himachal Pradesh

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Jaspur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	4.02
2	Population as in 2011		:	50523
3	Population Growth Rate as in 2011 (%)		:	29.76
4	Total Number of Wards		:	13
5	Population per Ward (Thousands)		:	3,886
6	Total Number of Household as in 2011		:	8624
7	Number of Household per Ward		:	663
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	:	1364.1
		COD	:	2319.0
		TKN	:	272.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Fica 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: Manglaur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	1.32
2	Population as in 2011		:	52971
3	Population Growth Rate as in 2011 (%)		:	24.39
4	Total Number of Wards		:	15
5	Population per Ward (Thousands)		:	3,531
6	Total Number of Household as in 2011		:	8737
7	Number of Household per Ward		:	582
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)*		:	5.7
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	:	1430.2
		COD	:	2431.4
		TKN	:	286.0
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: Pithoragarh			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	9.00
2	Population as in 2011		:	56044
3	Population Growth Rate as in 2011 (%)		:	24.64
4	Total Number of Wards		:	15
5	Population per Ward (Thousands)		:	3,736
6	Total Number of Household as in 2011		:	14036
7	Number of Household per Ward		:	936
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	:	1513.2
		COD	:	2572.4
		TKN	:	302.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Sarda 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: Ramnagar			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	2.43
2	Population as in 2011		:	54787
3	Population Growth Rate as in 2011 (%)		:	18.57
4	Total Number of Wards		:	15
5	Population per Ward (Thousands)		:	3,652
6	Total Number of Household as in 2011		:	10620
7	Number of Household per Ward		:	708
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	:	1479.2
		COD	:	2514.7
		TKN	:	295.8
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Kosi 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: Rishikesh			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	10.00
2	Population as in 2011		:	70499
3	Population Growth Rate as in 2011 (%)		:	6.51
4	Total Number of Wards		:	20
5	Population per Ward (Thousands)		:	3,525
6	Total Number of Household as in 2011		:	14975
7	Number of Household per Ward		:	749
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)		:	9.5
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	7.6
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	:	1903.5
		COD	:	3235.9
		TKN	:	380.7
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 Data Sheets of Water Balance & Pollution Load (Domestic) of Major Class III Cities/Towns in Uttarakhand and Himachal Pradesh

Water Balance & Pollution Load (Domestic) Data Sheet				
City: Almora			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	7.35
2	Population as in 2011		:	34122
3	Population Growth Rate as in 2011 (%)		:	13.16
4	Total Number of Wards		:	11
5	Population per Ward (Thousands)		:	3,102
6	Total Number of Household as in 2011		:	8014
7	Number of Household per Ward		:	729
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)		:	4.6
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	3.7
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	:	921.3
		COD	:	1566.2
		TKN	:	184.3
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Kosi 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: Bajpur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		2.40
2	Population as in 2011	:		25524
3	Population Growth Rate as in 2011 (%)	:		17.13
4	Total Number of Wards	:		11
5	Population per Ward (Thousands)	:		2,320
6	Total Number of Household as in 2011	:		4784
7	Number of Household per Ward	:		435
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)	:		3.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		2.8
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	:	689.1
		COD	:	1171.6
		TKN	:	137.8
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Ramganga 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: Bharat Heavy Electricals Limited Ranipur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	26.48
2	Population as in 2011		:	46948
3	Population Growth Rate as in 2011 (%)		:	8.53
4	Total Number of Wards		:	13
5	Population per Ward (Thousands)		:	3,611
6	Total Number of Household as in 2011		:	10381
7	Number of Household per Ward		:	799
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)		:	6.3
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	5.1
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	:	1267.6
		COD	:	2154.9
		TKN	:	253.5
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: Chamoli Gopeshwar			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		14.08
2	Population as in 2011	:		21447
3	Population Growth Rate as in 2011 (%)	:		8.14
4	Total Number of Wards	:		9
5	Population per Ward (Thousands)	:		2,383
6	Total Number of Household as in 2011	:		5513
7	Number of Household per Ward	:		613
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)	:		2.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		2.3
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	:	579.1
		COD	:	984.4
		TKN	:	115.8
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Alakananda 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: Dhandera			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	4.41
2	Population as in 2011		:	23276
3	Population Growth Rate as in 2011 (%)		:	52.25
4	Total Number of Wards		:	1
5	Population per Ward (Thousands)		:	23,276
6	Total Number of Household as in 2011		:	4490
7	Number of Household per Ward		:	4490
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)		:	3.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.5
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	:	628.5
		COD	:	1068.4
		TKN	:	125.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Song 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: Kichha			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	4.02
2	Population as in 2011		:	41965
3	Population Growth Rate as in 2011 (%)		:	37.58
4	Total Number of Wards		:	13
5	Population per Ward (Thousands)		:	3,228
6	Total Number of Household as in 2011		:	7999
7	Number of Household per Ward		:	615
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)		:	5.7
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	4.5
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	:	1133.1
		COD	:	1926.2
		TKN	:	226.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Gaula 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: Kotdwara			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		3.00
2	Population as in 2011	:		28859
3	Population Growth Rate as in 2011 (%)	:		15.68
4	Total Number of Wards	:		12
5	Population per Ward (Thousands)	:		2,405
6	Total Number of Household as in 2011	:		7005
7	Number of Household per Ward	:		584
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)	:		3.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		3.1
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	:	779.2
		COD	:	1324.6
		TKN	:	155.8
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Khoh 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: Laksar			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	5.00
2	Population as in 2011		:	21760
3	Population Growth Rate as in 2011 (%)		:	19.29
4	Total Number of Wards		:	9
5	Population per Ward (Thousands)		:	2,418
6	Total Number of Household as in 2011		:	4131
7	Number of Household per Ward		:	459
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)		:	2.9
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.4
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	:	587.5
		COD	:	998.8
		TKN	:	117.5
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: Mukhiani			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		3.76
2	Population as in 2011	:		22475
3	Population Growth Rate as in 2011 (%)	:		#DIV/0!
4	Total Number of Wards	:		1
5	Population per Ward (Thousands)	:		22,475
6	Total Number of Household as in 2011	:		5106
7	Number of Household per Ward	:		5106
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)	:		3.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		2.4
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	:	606.8
		COD	:	1031.6
		TKN	:	121.4
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Gaula 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: Mussoorie			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	64.75
2	Population as in 2011		:	30118
3	Population Growth Rate as in 2011 (%)		:	15.51
4	Total Number of Wards		:	11
5	Population per Ward (Thousands)		:	2,738
6	Total Number of Household as in 2011		:	6245
7	Number of Household per Ward		:	568
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)		:	4.1
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	3.3
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	:	813.2
		COD	:	1382.4
		TKN	:	162.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Yamuna 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: Nagla			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	28.00
2	Population as in 2011		:	22258
3	Population Growth Rate as in 2011 (%)		:	-3.00
4	Total Number of Wards		:	1
5	Population per Ward (Thousands)		:	22,258
6	Total Number of Household as in 2011		:	3798
7	Number of Household per Ward		:	3798
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)		:	3.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.4
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	:	601.0
		COD	:	1021.6
		TKN	:	120.2
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Gaula 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: Nainital			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		11.73
2	Population as in 2011	:		41377
3	Population Growth Rate as in 2011 (%)	:		7.11
4	Total Number of Wards	:		13
5	Population per Ward (Thousands)	:		3,183
6	Total Number of Household as in 2011	:		9329
7	Number of Household per Ward	:		718
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)	:		5.6
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		4.5
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	:	1117.2
		COD	:	1899.2
		TKN	:	223.4
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Nainital Lake
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: Pauri			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)	:		42.00
2	Population as in 2011	:		25440
3	Population Growth Rate as in 2011 (%)	:		2.82
4	Total Number of Wards	:		11
5	Population per Ward (Thousands)	:		2,313
6	Total Number of Household as in 2011	:		6127
7	Number of Household per Ward	:		557
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)	:		3.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)	:		135.0
19	Total Sewage Generation (MLD)*	:		2.7
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	:	686.9
		COD	:	1167.7
		TKN	:	137.4
30	Wastewater Disposal Means	:		River & Land Disposal
31	Name of River/Streams for Wastewater Disposal	:		Alakananda 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: Raipur			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	14.59
2	Population as in 2011		:	32900
3	Population Growth Rate as in 2011 (%)		:	32.02
4	Total Number of Wards		:	1
5	Population per Ward (Thousands)		:	32,900
6	Total Number of Household as in 2011		:	7471
7	Number of Household per Ward		:	7471
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)		:	4.4
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	3.6
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	:	888.3
		COD	:	1510.1
		TKN	:	177.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Rispana 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: Sitargang			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	2.00
2	Population as in 2011		:	29965
3	Population Growth Rate as in 2011 (%)		:	36.04
4	Total Number of Wards		:	11
5	Population per Ward (Thousands)		:	2,724
6	Total Number of Household as in 2011		:	5597
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)		:	4.0
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	3.2
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	:	809.1
		COD	:	1375.4
		TKN	:	161.8
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: Srinagar			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	9.00
2	Population as in 2011		:	20115
3	Population Growth Rate as in 2011 (%)		:	2.32
4	Total Number of Wards		:	9
5	Population per Ward (Thousands)		:	2,235
6	Total Number of Household as in 2011		:	4669
7	Number of Household per Ward		:	519
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)		:	2.7
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.2
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	:	543.1
		COD	:	923.3
		TKN	:	108.6
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Alakananda 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: Tehri			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	37.05
2	Population as in 2011		:	24014
3	Population Growth Rate as in 2011 (%)		:	-5.54
4	Total Number of Wards		:	13
5	Population per Ward (Thousands)		:	1,847
6	Total Number of Household as in 2011		:	6175
7	Number of Household per Ward		:	475
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)		:	3.2
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.6
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	:	648.4
		COD	:	1102.2
		TKN	:	129.7
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Bhagirathi 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: Umru Khurd			State: Uttarakhand	
S. No.	Items			Value
1	Total Area (sq km)		:	4.71
2	Population as in 2011		:	20593
3	Population Growth Rate as in 2011 (%)		:	#DIV/0!
4	Total Number of Wards		:	1
5	Population per Ward (Thousands)		:	20,593
6	Total Number of Household as in 2011		:	3529
7	Number of Household per Ward		:	3529
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)		:	2.8
18	Average Water Supply Rate from ULB & Non-ULB Sources (lpcd)		:	135.0
19	Total Sewage Generation (MLD)*		:	2.2
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	:	556.0
		COD	:	945.2
		TKN	:	111.2
30	Wastewater Disposal Means		:	River & Land Disposal
31	Name of River/Streams for Wastewater Disposal		:	Sharda 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