Status of River Ganga
and
Action Plan to improve its water quality
in
Phase-II
(District Unnao D/S to District Balia)
for Chamber Meeting at NGT
on 15 September, 2017

UP Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow

01-09-17

Introduction

River Ganga enters in U.P. in District Bijnor and after passing through major districts Meerut, Hapur, Bulandshahar, Aligarh, Kanpur Allahabad, Varanasi, Balia, it goes to Bihar onwards. Hon'ble National Green Tribunal, New Delhi is also monitoring the progress of improvement of river Ganga in Phased manner. Hon'ble NGT after hearing different steps being taken by different authorities responsible for improving the river Ganga water quality has passed order on dated 13-07-2017 for Segment-B from Haridwar D/s to Unnao. The main action which is required in this segment is to take action in the identified 86 drains meeting into Ganga & its tributaries and for treating the drains as per their quality, recycling the treated water and discharging rest treated water into river as per the prescribed standards and maintaining E-flow in every stretch of the Ganga & its tributaries. Similar steps will be required from different Stakeholders mentioned in the Hon'ble NGT order to improve river Ganga water quality in Phase-II, from Unnao D/s to Balia having total length of approx. 600 Km.

Main cities on the bank of river Ganga & its tributaries from D/s Unnao to U.P. Border (Phase-II)-

a) **Ganga**
   Fatehpur, Raebareli, Allahabad, Mirzapur, Varanasi, Ghazipur, Balia.
b) **Yamuna & its Tributaries (Hindon, Kali West)**
   Yamuna- Saharanpur, Muzaffarnagar, Baghpat, Ghaziabad, Gautam Budh Nagar, Bulandshahar, Mathura, Agra, Firozabad, Etawah, Auraiya, Kalpi (Jalaun), Fatehpur, Allahabad, Hamirpur, Banda.
   Hindon- Saharanpur, Muzaffarnagar, Baghpat, Ghaziabad, Noida, Greater Noida.
   Kali West- Muzaffarnagar
c) **Gomti**
   Pilibhit, Sitapur, Lakhimpur, Lucknow, Sultanpur, Jaunpur.
d) **Ghaghra**
   Ambedkar Nagar, Azamgarh, Barabanki, Basti, Balia, Bahraich, Deoria, Faizabad, Gonda, Gorakhpur, Sant Kabir Nagar, Jaunpur, Lakhimpur Khiri, Sitapur

Grossly Polluting Industries (GPI) in Phase-II

- Total GPI 764
- Operational Units 553
- Self Closed 141
- Closed by Board 70

All operational units have either installed their own ETP or member of CETP.

River wise breakup of Grossly Polluting Industries

River	No. Of Units	ETP Status			Operational Units	Breakup of not operational units		Discharge (MLD)
		Installed	Not Installed	Not Required		Self closed	Closed by Board/ CPCB/NGT	
1	2	3	4	5	6	7	8	9
Ganga	105	84	17	4	32	30	43	73.29
Yamuna	535	493	23	19	414	100	21	161.40
Gomti	41	41	0	0	37	3	1	36.94
Ghaghra	55	55	0	0	46	4	5	71.89
Other Tributaries	28	24	4	0	24	4	0	190.68
Total	764	697	44	23	553	141	70	534.20

Other Tributaries -Narayani, Tamsa, Son etc.

Sector wise breakup of Grossly Polluting Industries

Sector	No. Of Units	ETP Status			Operational Units	Breakup of not operational units		Discharge (MLD)
		Installed	Not Installed	Not Required		Self closed	Closed by Board/ CPCB/NGT	
1	2	3	4	5	6	7	8	9
Distillery	34	34	0	0	23	6	5	0.00
Sugar	69	69	0	0	56	11	2	43.56
Paper	69	66	1	2	51	10	8	89.85
Tannery	15	15	0	0	7	6	2	0.96
Textile	421	368	33	20	296	81	44	32.17
Other	156	145	10	1	120	27	9	367.66
Total	764	697	44	23	553	141	70	534.20

Other includes dairy, thermal power plants, slaughter house, pharmaceuticals, fertilizer, etc

Status of 05 Sector Grossly Polluting Industries

Pulp & Paper units:-

- Total units- 69
  - Agro waste based paper units- 13
  - Waste Paper based paper units - 56
- ETP installed in all Operational units- 51
- Self Closed- 10
- Closed by Board 08

Agro waste based units which generate black liquor have installed Chemical Recovery Plant (CRP). All paper units have executed action plan for reduction of water consumption and effluent discharge.

S.No.	District	Paper Units
1	Allahabad	1
2	Baghpat	1
3	Basti	1
4	Bulandshahar	1
5	Chandauli	4
6	Deoria	1
7	Faizabad	1
8	Firozabad	3
9	Ghaziabad	3
10	Greater Noida	3
11	Kanpur	2
12	Kanpur Dehat	1
13	Meerut	1
14	Muzaffarnagar	36
15	Raebareli	1
16	Saharanpur	4
17	Sant Kabir Nagar	2
18	Shamli	2
19	Sitapur	1
	Total	**69**

Directions :

- Operational units have installed the adequate effluent treatment plant.
- The SPCB has ensured the removal/ dismantling of chemical pulping facilities, namely digesters, pulp washing systems, etc. from their premises by all such Pulp & Paper industrial units which have not either operational chemical recovery plants (CRPs) (individual) or membership of operational common CRPs.

- The directions under Water Act regarding time bound reduction of water consumption from 200 Kl/ton - 50 Kl/ton to 50 Kl/ton-10 Kl/ton and reduction of effluent discharge upto 40 Kl/ton- 6 Kl/ton of paper produced.
- The operating paper units have installed the Online Continuous Effluent Monitoring System (OCEMS) along with the connectivity to CPCB/SPCB server for the continuous monitoring of the characteristics of the effluent.
- No trade effluent to be discharged in any stream and treated waste water should be used for recycling and irrigation purposes.

Sugar Units:-

- Total units 69
- ETP installed in all Operational units- 56
- Self Closed- 11
- Closed by Board 02

S.No.	District	Sugar Units
1	Ambedkar Nagar	1
2	Azamgarh	1
3	Baghpat	3
4	Bahraich	4
5	Balia	1
6	Balrampur	3
7	Barabanki	1
8	Basti	4
9	Deoria	1
10	Faizabad	2
11	Gonda	4
12	Hardoi	1
13	Kushinagar	5
14	Lakhimpur Khiri	9
15	Maharajganj	2
16	Mau	1
17	Meerut	1
18	Muzaffarnagar	6
19	Pilibhit	1
20	Saharanpur	7
21	Sant Kabir Nagar	1
22	Shahjahanpur	1
23	Shamli	2
24	Sitapur	6
25	Sultanpur	1
	Total	**69**

Directions :

- The operating Sugar units have installed the Online Continuous Effluent Monitoring System (OCEMS) along with the connectivity to CPCB/SPCB server for the continuous monitoring of the characteristics of the effluent.
- The Ministry of Environment, Forests and climate change has notified the standard for effluent and loading rates for different soil textures vide notification no. G.S.R 35(E) dated 14/01/2016. The operating sugar units have been directed to comply with the various provisions of the notification.
- Sugar units have been directed to recycle the treated waste water in the process and use remaining treated waste water for irrigation purposes.

Distilleries & Fermentation Units:-

- Total units- 34
- Operational - 23
- Self Closed - 06
- Closed by Board/NGT- 05
- MEE, RO, Inceneration Boiler and Bio Composting- 03
- MEE, Incineration Boiler and Bio Composting- 01
- MEE and Inceneration Boiler - 02
- RO, MEE and Bio Composting- 05
- RO and Bio Composting- 05
- MEE and Bio Composting- 08
- Only Bio Composting- 06
- RO (Only bottling without distillation)- 01
- Closed Since Long 03

The distilleries are achieving ZLD of Spent Wash by installing technology comprising of combination of MEE, RO, Incineration Boiler and Bio Composting. Board has issued direction u/s 33-A to the distillery units which have not complied the direction as per action plan of CPCB.

S.No.	District	Distillery Units
1	Bahraich	2
2	Balrampur	1
3	Basti	1
4	Bulandshahar	3
5	Faizabad	1
6	Ghaziabad	1
7	Ghazipur	1
8	Gonda	3
9	Gorakhpur	2
10	Hardoi	1
11	Lakhimpur Khiri	4
12	Mau	2

13	Meerut	1
14	Muzaffarnagar	2
15	Saharanpur	5
16	Shamli	1
17	Sitapur	3
	Total	**34**

Direction :

- Installing systems for volume reduction of spent wash by RO and MEE or MEE.
- Adopting advanced process technology for reduction of spent wash to 6-8 Kl/Kl of alcohol produced.
- Achieving ZLD.
- Installation of Web Camera at strategic points.

Textile Units:-

- Total units- 421
- ETP installed in all Operational units- 296
- Self Closed- 81
- Closed by Board /CPCB/NGT 44

S.No.	District	Total Units
1	Agra	1
2	Aligarh	1
3	Allahabad	2
4	Baghpat	18
5	Barabanki	1
6	Bhadohi	50
7	Bulandshahar	9
8	Chandauli	3
9	Fatehpur	3
10	Ghaziabad	240
11	Gorakhpur	3
12	Greater Noida	31
13	Hapur	4
14	Hathras	4
15	Jalaun	1
16	Jaunpur	3
17	Kanpur	1
18	Kanpur Dehat	8
19	Mathura	13
20	Mau	2
21	Mirzapur	10
22	Saharanpur	9
23	Sitapur	3
24	Varanasi	1
25	Agra	1
	Total	**421**

Direction :

- Textile units have to make arrangements regarding treatment of effluent as per new notification dated 10-10-2016 by MoEF&CC.
- As per above notification, all the medium and small scale industries shall be allowed to discharge treated effluent in the ambient environment only after exhausting options for reuse in industrial process / irrigation in order to minimise freshwater usage and meet requisite standard. These industries having discharge more than 10 KLD have also to install Online Continuous Effluent Monitoring System with connectivity to CPCB and UPPCB Server for data transmission. All the textile units discharging less than 10 KLD have to install flow meter and web camera.
- The standalone large scale units shall install Zero Liquid Discharge system along with web camera at strategic locations, with connectivity to CPCB and UPPCB Server for data transmission.
- Any textile unit attached with the Common Effluent Treatment Plant (CETP) shall achieve the inlet and treated effluent quality standards as specified in serial number 55 of Schedule-I to the Environment (Protection) Rules, 1986 and shall also be jointly and severally responsible for ensuring compliance.

Tannery Units:-

- Total units- 15
- ETP installed in all Operational units- 07
- Self Closed- 06
- Closed by Board /CPCB/NGT 02

S.No.	District	Total Units
1	Agra	1
2	Ghaziabad	3
3	Greater Noida	2
4	Kanpur Dehat	4
5	Mathura	2
6	Meerut	1
7	Muzaffarnagar	2
	Total	**15**

Direction :

All the large sector tannery units should install online effluent quality monitoring system and should have arrangement to recycle the treated effluent in the process as well as irrigation and rest effluent should be discharged as per prescribed norms.

District wise GPI units covered in Phase-II, from Unnao D/s to Balia

S.No.	District	Total Units	Distillery	Sugar	Paper	Textile	Tannery	Others
1	Agra	6	0	0	0	1	1	4
2	Aligarh	11	0	0	0	1	0	10
3	Allahabad	8	0	0	1	2	0	5
4	Ambedkar Nagar	2	0	1	0	0	0	1
5	Amethi	3	0	0	0	0	0	3
6	Auraiya	1	0	0	0	0	0	1
7	Azamgarh	1	0	1	0	0	0	0
8	Baghpat	24	0	3	1	18	0	2
9	Bahraich	6	2	4	0	0	0	0
10	Balia	1	0	1	0	0	0	0
11	Balrampur	5	1	3	0	0	0	1
12	Barabanki	4	0	1	0	1	0	2
13	Basti	6	1	4	1	0	0	0
14	Bhadohi	50	0	0	0	50	0	0
15	Bulandshahar	39	3	0	1	9	0	26
16	Chandauli	8	0	0	4	3	0	1
17	Deoria	2	0	1	1	0	0	0
18	Etawa	1	0	0	0	0	0	1
19	Faizabad	5	1	2	1	0	0	1
20	Fatehpur	3	0	0	0	3	0	0
21	Firozabad	5	0	0	3	0	0	2
22	Ghaziabad	259	1	0	3	240	3	12
23	Ghazipur	2	1	0	0	0	0	1
24	Gonda	8	3	4	0	0	0	1
25	Gorakhpur	5	2	0	0	3	0	0
26	Greater Noida	43	0	0	3	31	2	7
27	Hapur	5	0	0	0	4	0	1
28	Hardoi	2	1	1	0	0	0	0
29	Hathras	7	0	0	0	4	0	3
30	Jalaun	2	0	0	0	1	0	1
31	Jaunpur	6	0	0	0	3	0	3
32	Jhansi	2	0	0	0	0	0	2
33	Kanpur	14	0	0	2	1	0	11
34	Kanpur Dehat	13	0	0	1	8	4	0
35	Kushinagar	5	0	5	0	0	0	0
36	Lakhimpur Khiri	14	4	9	0	0	0	1
37	Lucknow	9	0	0	0	0	0	9
38	Maharajganj	2	0	2	0	0	0	0
39	Mathura	21	0	0	0	13	2	6
40	Mau	5	2	1	0	2	0	0
41	Meerut	4	1	1	1	0	1	0
42	Mirzapur	13	0	0	0	10	0	3
43	Muzaffarnagar	49	2	6	36	0	2	3
44	Pilibhit	1	0	1	0	0	0	0
45	Raebareli	3	0	0	1	0	0	2
46	Saharanpur	31	5	7	4	9	0	6
47	Sant Kabir Nagar	3	0	1	2	0	0	0
48	Shahjahanpur	1	0	1	0	0	0	0
49	Shamli	11	1	2	2	0	0	6
50	Sitapur	14	3	6	1	3	0	1
51	Sonbhadra	12	0	0	0	0	0	12
52	Sultanpur	1	0	1	0	0	0	0
53	Unnao	2	0	0	0	0	0	2
54	Varanasi	4	0	0	0	1	0	3
	Total	**764**	**34**	**69**	**69**	**421**	**15**	**156**

CETP in Phase-II

- Status of 03 CETPs for textile sector, operational in Phase-II is as follows :

S.N	Name of CETP	Sector	Capacity	ETP Status
1	CETP Industrial Area, Site-A, Mathura	Textile	6.25 MLD	Achieving Norms
2	Appral Park Tronica City, CETP, Phase-I, Ghaziabad	Textile	4 MLD	Not Achieving Norms
3	CETP Bhadohi	Textile	1.0 MLD	Not operational

Status of STPs in Phase-II

Districtwise Status of Domestic Sewage generation and treatment in different rivers in Phase-II (D/s Unnao to Balia) as per information provided by UP Jal Nigam

S.No.	River	City	District	Total Sewage Generation in MLD (Year 2017)	STP Capacity (MLD)			
					Operational	Gap	Under construction	Additional Capacity required
1	2	3	4	5	6	7	8	9
1	Ganga	Allahabad	Allahabad	264	268	Nil	0	Nil
2		Varanasi	Varanasi	321.5	101.8	219.7	310	Nil
3		Mirzapur	Mirzapur	29.06	18	11.06	0	11.06
4		Balia	Balia	14	0	14	19.6	Nil
5		Dalmau	Raebareli	1.61	0	1.61	0	1.61
6		Chunar	Mirzapur	4.58	0	4.58	0	4.58
7		Ramnagar	Varanasi	5.49	0	5.49	0	5.49
8		Mughalsarai	Varanasi	13.23	0	13.23	0	13.23
9		Saidpur	Ghazipur	2.82	0	2.82	0	2.82
10		Ghazipur	Ghazipur	13.34	0	13.34	0	13.34
11		Jamnia	Ghazipur	4.3	0	4.3	0	4.3
Total (Ganga)				**673.93**	**387.8**	**290.13**	**329.6**	**56.43**
1	Gomti	Lucknow	Lucknow	459.5	401	58.5	120	Nil
2		Sultanpur	Sultanpur	19	5	14	0	14
3		Jaunpur	Jaunpur	30	0	30	0	30
Total (Gomti)				**508.5**	**406**	**102.5**	**120**	**44**
1	Sai	Pratapgarh	Pratapgarh	6.98	0	6.98	8.95	Nil
2		Raebareli	Raebareli	23.66	0	23.66	0	23.66
Total (Sai)				**30.64**	**0**	**30.64**	**8.95**	**23.66**
1	Ghaghra	Faizabad	Faizabad	30.5	0	30.5	0	30.5
2		Ayodhya	Faizabad	10.5	12	Nil	0	Nil

Total (Ghaghra)				**41**	**12**	**30.5**	**0**	**30.5**
1	Eshan	Mainpuri	Mainpuri	20.5	23	Nil	0	Nil
2	Rapti	Gorakhpur	Gorakhpur	136.62	45	91.62	0	91.62
Total (Other river)				**157.12**	**68**	**91.62**	**0**	**91.62**
1	Yamuna	Saharanpur	Saharanpur	93.5	38	55.5	0	55.5
2		Muzaffarnagar	Muzaffarnagar	68.5	32.5	36	0	36
3		Ghaziabad	Ghaziabad	411.21	401	10.21	56	Nil
4		Noida	Noida	225	355	Nil	0	Nil
5		Virandavan	Virandavan	11.83	12	Nil	0	Nil
6		Mathura	Mathura	54.28	46.85	7.43	0	7.43
7		Agra	Agra	262.06	220.75	41.31	0	41.31
8		Firozabad	Firozabad	56	3	53	67	Nil
9		Etawah	Etawah	36.83	23.9	12.93	0	12.93
10		Baghpat	Baghpat	13.5	0	13.5	0	13.5
Total (Yamuna)				**1232.71**	**1133**	**229.88**	**123**	**166.67**
Grand Total			**30**	**2643.9**	**2006.8**	***775.27***	**581.55**	**412.88**

Total STPs in U.P. (Phase-II) - 64
STPs under construction - 04

UPPCB has issued directions to municipal bodies of U.P. namely Ghaziabad, Lucknow, Allahabad etc under the provisions of Water (Prevention & Control of Pollution) Act, 1974 as amended, regarding treatment and utilization of sewage for restoration of water quality of the river bodies vide letter dated 28-04-16, 08-06-17 & 22-08-17. Some of the municipal bodies namely Agra, Allahabad & Varanasi have submitted proposals regarding treated sewage management.

Water Quality of River Ganga in Phase-II

Year 2012-2016

The **Ganga River** is a trans-boundary river of Asia which flows through the nations of India and Bangladesh. The 2,525 km river rises in the western Himalayas in the Indian state Uttaranchal, and flows south and east through the Gangetic Plain of North India into Bangladesh, where it empties into the Bay of Bengal. It is the third largest river by discharge.

Presently Uttar Pradesh Pollution Control Board has been continuously conducting water monitoring of River Ganga at 10 sampling points in Phase-II located at Raibareli, Pratapgadh, Kaushambi, Allahabad, Mirzapur Varanasi and Ghazipur.

S.No	District	Sample Collection Point	2012	2013	2014	2015	2016
1	Raibareli	Dalmau, Raibareli	3.5	3.58	3.68	4.18	4.37
2	Pratapgadh	Kala Kankar, Pratapgarh	3.43	3.45	3.56	4.01	4.23
3	Koshambi	Kada Ghat	4.83	3.51	3.87	4.05	4.2
4	Allahabad	Allahabad U/s	5.25	3.58	3.63	3.87	3.94
5	Allahabad	Allahabad D/s	5.13	3.63	3.69	4.12	4.15
6	Mirzapur	U/s Vindhyachal,Mirzapur	2.76	2.68	2.4	2.05	2.23
7	Mirzapur	D/s Mirzapur	3.31	3.2	2.6	2.23	2.48
8	Varanasi	Varanasi U/s	3.2	2.99	2.87	3.12	3.12
9	Varanasi	Varanasi D/s	4.95	4.57	4.45	5.09	5.79
10	Gazipur	Tarighat D/s Ghazipur	3.67	3.7	3.93	4.28	4.79

Improvement in B.O.D. in 2016 with respect to 2012 was found at Kadaghat, Allahabad U/s, Allahabad D/s, Vindhyachal U/s, Mirzapur D/s, Varanasi U/s.

Average data of Biochemical Oxygen Demand (B.O.D.) obtained from water quality monitoring during 2012 to 2016 indicates that :-

- Water quality Of River Ganga at D/s Mirzapur falls under category-C (Drinking Water Source with conventional treatment and after disinfection).
- Water quality Of River Ganga at Dalmau- Raibareli, Kala Kankar-Pratapgarh, Kada Ghat- Kaushambi U/s & D/s Allahabad, U/s & D/s Varanasi and Tarighat D/s Ghazipur falls under category-D (Fish Culture and wild life propagation).

Water Quality Of River Ganga in Phase-II
Year- 2017

Month	SAMPLING LOCATION 1: Dalmau, Raibareli D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	2: Kala Kankar, Pratapgarh D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	3: Kada Ghat, Kaushambi D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	4: Allahabad D/s (Rasoolabad Ghat) D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	5: Allahabad D/s (Sangam) D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
Jan-17	8.50	3.80	7900	5600	8.60	3.70	7700	5100	8.30	4.40	40000	26000	8.50	4.00	39000	21000	8.40	3.90	43000	27000
Feb-17	8.40	3.80	7900	5400	8.50	3.60	7700	5100	8.40	4.80	43000	23000	8.80	3.70	40000	26000	8.50	3.80	41000	27000
Mar-17	8.00	4.00	8200	5900	8.20	3.90	7900	5400	8.50	4.30	46000	17000	8.70	3.90	41000	21000	8.30	3.70	46000	21000
Apr-17	7.50	4.30	8500	6000	7.70	4.10	8200	5600	8.20	4.50	46000	26000	8.30	5.70	41000	22000	8.50	3.80	43000	25000
May-17	7.10	4.50	8500	6400	7.20	4.30	8300	6200	8.00	4.60	46000	21000	8.40	5.80	40000	21000	8.30	4.00	46000	35000
Jun-17	6.80	4.60	8600	6300	6.90	4.50	8500	6100	8.20	4.50	40000	21000	8.20	3.80	39000	17000	8.00	4.10	41000	22000
Jul-17	7.00	4.40	8000	5400	7.10	4.40	7800	5100	7.50	5.00	28000	13000	7.80	5.60	21000	11000	7.60	5.70	34000	15000
Average	7.61	4.20	8229	5857	7.74	4.07	8014	5514	8.16	4.59	41286	21000	8.39	4.64	37571	19857	8.23	4.14	40571	23429

Month	6: U/s Vindhyachal, Mirzapur D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	7: D/s Mirzapur D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	8: Varanasi U/s D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	9: Varanasi D/s D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	10: Tarighat, D/s Ghazipur D.O. (mg/l)	B.O.D. (mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
Jan-17	8.60	2.10	2150	1100	8.40	2.60	2500	1700	8.80	3.20	2700	1400	7.70	5.50	46000	23000	7.20	4.60	44000	17000
Feb-17	8.30	2.30	2400	1400	8.00	2.90	3000	1700	8.80	3.00	3100	1100	7.50	5.50	45000	23000	7.70	4.60	43000	23000
Mar-17	8.50	2.40	2500	1100	8.20	2.70	3900	1300	8.50	3.00	3400	2200	7.00	5.80	62000	33000	7.50	4.80	46000	25000
Apr-17	8.00	2.30	3900	1400	7.60	2.60	4700	2700	8.00	3.20	3400	1700	6.50	6.00	69000	31000	7.40	5.20	46000	25000
May-17	8.10	2.50	3300	1300	8.00	2.80	3500	1700	7.50	3.30	3400	2300	6.50	6.10	62000	31000	7.20	5.40	39000	31000
Jun-17	8.50	2.50	3900	1400	8.10	2.90	1700	2900	7.80	3.20	3400	1700	6.40	6.00	70000	49000	6.50	5.60	35000	31000
Jul-17	8.00	2.50	2100	1100	7.90	2.90	2400	1300	7.80	3.20	3100	1700	6.50	5.80	63000	43000	5.50	5.50	49000	33000
Average	8.31	2.50	2743	1257	8.03	2.77	3157	1900	8.23	3.14	3214	1729	6.87	5.81	59571	33286	7.27	5.10	43286	26143

Water Quality of River Yamuna in Phase-II

Year 2012-2016

River **Yamuna** is the longest and the second largest tributary river of the Ganga in northern India. Originating from the Yamunotri Glacier at a height of 6,387 metres on the south western slopes of Banderpooch peaks in the uppermost region of the Lower Himalayas in Uttarakhand, it travels a total length of 1,376 kilometers (855 mi) and has a drainage system of 366,223 square kilometres (141,399 sq mi), 40.2% of the entire Ganges Basin, before merging with the Ganges at Triveni Sangam, Allahabad, the site for the Kumbha Mela every twelve years.

Uttar Pradesh Pollution Control Board has been continuously conducting water monitoring of River Yamuna at 12 sampling points in UP. These sampling stations are located at Saharanpur, Bagpat, Vrindavan, Mathura, Agra and Allahabad.

Average data of Dissolved Oxygen (D.O.), Biochemical Oxygen Demand (B.O.D.) and Total Coliform (T.C.) obtained from water quality monitoring during 2012-2016 indicates that :-

- Water Quality Of River Yamuna at Bairaj-Saharanpur and Bagpat Sonipat Road, Baghpat falls under category –B(Outdoor Bathing).
- Water Quality Of River Yamuna at U/s Water Intake-Allahabad, D/s Chhachhar nala-Allahabad and D/s Emergency Outfall-Allahabad falls under category-C(Drinking Water Source with conventional treatment and after disinfection).
- Water Quatity Of River Yamuna at U/s & D/s Vrindavan, U/s Kailashghat-Agra, U/s Waterworks-Agra, D/s Tajmahal-Agra and U/s Mathura falls under category-D (Fish Culture and wild life propagation).
- Water Quality Of River Yamuna at D/s Mathura falls under category-E. (Irrigation, Industrial Cooling, Controlled waste disposal)

Improvement in B.O.D. in 2016 with respect to 2012 was found at U/s Vrindavan, D/s Vrindavan, U/s Mathura, D/s Mathura, U/s Kailash Ghat Agra, U/s Water works Agra, D/s Tajmahal Agra.

Water Quality of River Yamuna In U.P. (Year 2017)

S.no.	Month	Balraj, Saharanpur			Baghpat Sonipat Road, Baghpat		U/s Vrindavan			D/s Vrindavan			U/s Mathura			D/s Mathura		
		DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Fecal Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)
1	January	7.4	2.0	140	5.5	1.6	5.4	6.8	57000	5.1	7.2	68000	4.7	8.6	78000	4.4	9.2	160000
2	February	7.1	2.1	150	8.40	1.7	4.10	8.50	68000	5.10	5.80	79000	4.90	7.6	84000	4.30	6.0	180000
3	March	7.0	1.2	230	8.20	1.90	5.80	7.20	67000	5.40	5.90	90000	5.50	7.6	95000	4.50	6.2	16000
4.	April	6.4	1.1	280	8.0	2.1	5.8	7.2	63000	5.4	7.8	72000	5.5	7.6	84000	4.9	8.2	16000
5	May	6.2	2.1	290	8.4	1.5	5.7	7.4	70000	5.4	8.6	92000	5.3	8.4	79000	4.7	9.2	140000
6	June	6.8	2.0	280	8.4	1.4	5.2	6.4	63000	5.0	6.8	79000	4.9	7.2	85000	4.3	7.8	110000
Average		6.8	1.8	245	8.3	1.7	5.3	7.3	64000	4.9	8.0	76333	5.1	7.6	85667	4.6	7.9	103667

S.no.	Month	U/s Kailashghat, Agra			D/s Waterworks, Agra			D/s Tajmahal, Agra			U/s Water Intake, Allahabad			D/s Chhachhar nala, Allahabad			D/s Emergency Outfall, Allahabad		
		DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)
1	January	5.5	12.4	28000	5.2	14.4	47000	4.0	19.6	130000	8.8	2.5	7000	8.5	2.8	8400	8.7	2.6	8400
2	February	5.20	10.6	31000	4.6	15.6	39000	5.70	19.6	170000	8.7	2.5	6300	8.4	2.5	7000	8.60	2.7	7000
3	March	6.20	11.2	35000	5.8	14.0	57000	4.20	18.8	140000	8.3	2.5	7900	8.2	2.7	9400	8.7	2.4	8400
4.	April	6.2	11.5	33000	5.9	13.0	54000	4.6	21.5	120000	8.3	2.3	6400	8.5	2.8	8400	8.5	2.5	9400
5	May	6.3	11.2	31000	5.6	13.6	47000	4.9	19.2	110000	8.6	2.3	6400	8.2	2.8	9400	8.5	2.6	5600
6	June	7.3	11.6	31000	7.8	15.6	50000	5.8	19.8	130000	8.5	2.7	6400	--	--		--	--	--
Average		6.1	11.4	31500	5.9	14.0	49000	4.9	19.7	125000	8.6	2.4	7733	8.3	2.7	8720.0	8.5	2.5	6750

Water Quality of River Hindon in Phase-II
Year 2012 – 2016

River Hindon originates from the Shivalik hills in Saharanpur district and flows through Meerut, Ghaziabad, Noida and finally meets to river Yamuna in Gautam Buddha Nagar. The disposal of Domestic as well as Industrial waste of Saharanpur, Meerut, Ghaziabad and Noida districts are the main sources of Pollution in this river. Uttar Pradesh Control Board has been continuously conducting water monitoring of River Hindon at 03 sampling points under NWMP and at 04 sampling points by Boards own sources. These sampling points are located at Saharanpur, Meerut, Ghaziabad and Noida distirct.

As per Biochemical oxygen Demand (BOD) values available for year 2012 to 2016 the water quality of river Hindon is as follows-

- **Hindon D/s Maheshpur- Saharanpur : -** BOD values in River Hindon has been showing increasing trend from year 2012 to 2016.
- **Hindon at Sardhana- Burdhana road, village Baparsi and Meerut - Bhaghpat Road, Meerut : -** River Hindon has shown no change in trend of pollution for last five years at above location.
- **River Hindon at Karheda village, Road bridge and Chijarsi bridge, Ghaziabad :-** River Hindon has shown deccreasing trend of pollution in Ghaziabad district in comparision to year 2013.
- **River Hindon D/s Kulesra bridge Noida :-** River Hindon has been found extremely polluted in Noida during last five years but decreasing trend of pollution in comparision to year 2014 .

All the above districts have problem of pollution under category E. (only for irrigation purpose)

Improvement in B.O.D. in 2016 with respect to 2012 was found at Hindon, Meerut Baghpat Road, Meerut, Hindon, karheda village , Ghaziabad, Hindon, river Road Bridge, Ghaziabad Hindon, river Chijarsi Bridge, Ghaziabad.

Water Quality of River Hindon in U.P. (Year-2017)

S. No.	Month	Sampling Point 1: Hindon D/S Maheshpur Saharanpur – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	Sampling Point 2: Hindon, Sardhana - Budhana Road, Vill Baparsi, Meerut – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
1	January	0.8	48.0	23000	20000	Nil	60.0	170000	110000
2	February	0.5	42.0	23000	21000	Nil	52.0	150000	84000
3	March	0.5	38.0	21000	14000	Nil	63.0	170000	110000
4	April	Nil	40.0	23000	15000	Nil	68.0	210000	150000
5	May	Nil	42.0	21000	14000	Nil	70.0	170000	94000
6	June	Nil	48.0	23000	15000	Nil	65.0	210000	110000
7	July	Nil	46.0			Nil	62.0	110000	79000
	Average	0.26	43.4	22333	16500	Nil	62.9	170000	105286

S. No.	Month	Sampling Point 3: Hindon, Meerut Baghpat Road, Meerut – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	Sampling Point 4: Hindon, karheda village, Ghaziabad – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
1	January	Nil	42.0	130000	94000	Nil	52.5	60000	12000
2	February	Nil	34.0	110000	84000	Nil	27.0	51000	14000
3	March	Nil	44.0	130000	94000	Nil	61.2	56000	12000
4	April	Nil	51.0	170000	120000	Nil	37.0	60000	14000
5	May	2.3	28.0	120000	70000	1.5	51.0	40000	19000
6	June	2.8	26.0	170000	94000	3.9	16.2	36000	16000
7	July	2.4	25.0	94000	63000	2.68	15.5	42000	8000
	Average	1.1	35.7	132000	88429	1.2	37.2	49286	13571

S. No.	Month	Sampling Point 5: Hindon, river Road Bridge, Ghaziabad – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)	Sampling Point 6: Hindon, river Chijarsi Bridge, Ghaziabad – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
1	January	Nil	58.0	80000	14000	Nil	78.0	210000	150000
2	February	Nil	29.1	90000	16000	Nil	41.7	230000	170000
3	March	Nil	69.0	80000	10000	Nil	79.8	220000	150000
4	April	Nil	21.0	80000	10000	Nil	59.4	260000	140000
5	May	1.7	28.3	50000	12000	Nil	63.0	240000	110000
6	June	4.18	11.1	40000	6000	Nil	21.2	260000	120000
7	July	2.46	17.7	39000	18000	Nil	15.3	280000	130000
	Average	1.2	33.5	65571	12286	Nil	51.2	242857	138571

S. No.	Month	Sampling Point 7: Hindon, D/S Kulsera Bridge, Noida – DO (mg/l)	BOD(mg/l)	Total Coliform (MPN/100ml)	Faecal Coliform (MPN/100ml)
1	January	Nil	63.6	250000	120000
2	February	Nil	49.0	260000	130000
3	March	Nil	36.0	260000	140000
4	April	Nil	52.0	280000	150000
5	May	Nil	120.0	260000	130000
6	June	Nil	75.6	240000	110000
7	July	Nil	32.00	250000	120000
	Average	Nil	61.2	257143	128571

Water Quality of River Gomti in Phase-II
Year 2012- 2016

The River Gomti originates from Gomat Taal which formally known as Fulhaar jheel, near Madho Tanda, Pilibhit, India. It extends 900 kilometres through Uttar Pradesh and meets the Ganges River near Saidpur, Kaithi in Varanasi district.

U.P. Pollution Control Board has been monitoring water quality of river Gomti at 04 station under National Water Monitoring Programme (NWMP) and at 07 stations through Board resources.These sampling stations are located at Sitapur,Lucknow,Jaunpur and Varanasi district.

Average data of Dissolved Oxygen (D.O.), Biochemical Oxygen Demand (B.O.D.) and Total Coliform (T.C.) obtained from water quality monitoring during 2012-2016 indicates that :-

- Water Quatity Of River Gomti at Dadhnamau Ghat-Sitapur, Manjhighat- Lucknow are falls under category-C(Drinking Water Source with conventional treatment and after disinfection).
- Water Quatity Of River Gomti at UPstream Water Intake-Lucknow Kudiyaghat- Lucknow, D/s Mohan Meakins- Lucknow, D/s Gomti-Jaunpur and Rajwari-Varanasi falls under category-D(Fish Culture and wild life propagation).
- Water Quatity Of River Gomti at Nishatganj Bridge, U/s Bairaj, D/s Pipraghat, D/s After meeting of STP, Nala Bharwara-Lucknow falls under category-E(Irrigation, Industrial Cooling, Controlled waste disposal).
- The Total coliform values are mainly higher at downstream may be due to the direct discharge of untreated Sewage & Industrial effluent into the river.

No improvement in B.O.D. in 2016 with respect to 2012 was found.

Water Quality of River Varuna in Phase-II

Year 2012-2016

The Varuna River is a minor tributary of the Ganga River. It is named after the god Varuna. The Varuna rises near Bhadohi, flows east-to-southeast for some 100 km, and joins the Ganga in Varanasi, just downstream of Varanasi. The name Varanasi itself is interpreted to be derived from the name of the river Varuna. The river demarcates the north end of Varanasi - the city that lies between Varuna and Assi Rivers.UP Pollution Control Board has been regularly monitoring 02 sampling station in Varanasi city under NWMP Programme.

Average data of Dissolved Oxygen (D.O.), Biochemical Oxygen Demand (B.O.D.) and Total Coliform (T.C.) obtained from water quality monitoring during 2012 to 2016 indicates that :-

- Water Quatity Of River Varuna at Rameshwar, Varanasi falls under category-D(Fish Culture and wild life propagation).
- Water Quality Of River Varuna at before confluence with river Ganga falls under category-E. (Irrigation, Industrial Cooling, Controlled waste disposal)

No improvement in B.O.D. in 2016 with respect to 2012 was found.

Status of Water Quality of River Ghaghra in Phase-II
Year- 2012- 2016

- River Ghaghra is a perennial trans boundary river originate also on the Tibetan Plateau near Lake Mansarover. It cuts through the Himalayas in Nepal and joins the Sharda river at Brahmaghat in India. Together they form the Ghaghra River, a major left bank tributary of the Ganges.

- The total length of Ghaghra River up to its confluence with the Ganges at Doriganj in Bihar is 1,080 Kilometes (670mi). It is the largest tributary of the Ganges by volume and the second longest tributary of the Ganges by length after Yamuna.

- Uttar Pradesh pollution Control Board has been continuously conducting water quality of River Ghaghra at 02 station under national Water Quality Monitoring Programme.

- These sampling points are located in Deoria and Gorakhpur District.

- Average date of Dissolved Oxygen, Biochemical; Oxygen Demand and Total Coliform values obtained from Water Quality Monitoring during 2012 to 2016 indicates that-
  - At Badhalganj U/s Gorakhpur water is fit under category D (Fish culture and wild life propagation) and at Turtipur D/s, Deoria water is fit for category C.

Action Plan for improvement of water quality of river Ganga & its tributaries in Phase-II

Short Term Action Plan

Sl. No.	Activity	Timeline
Monitoring of Drains, Rivers and GPI units in the catchment area of rivers in Phase-II		
1	Regular water quality monitoring of river Ganga at Raebareli, Pratapgarh, Koshambi, Allahabad, Mirzapur, Varanasi & Ghazipur.	Monthly
2	Regular water quality monitoring of other major tributaries of river Ganga in Phase-II i.e. Yamuna, Hindon, West Kali, Krishni, Gomti, Varuna, Ghaghra.	Monthly
3	Regular monitoring of GPI units situated in the catchment of the drains in Phase-II and Board will take action against defaulter units under the provisions of Water (Prevention & Control of Pollution) Act 1974 as amended. **Note-**Quarterly checking of the industries shall be conducted in a manner that every industry is monitored.	Quarterly
4	Data related to river water and ground water quality monitoring shall be displayed on Board's website	Continuous
5	Strict and regular supervision including surprise inspection of industries through special squads.	Random
Effective monitoring & capacity utilization of installed CETPs by UPSIDC/BIDA/industries association in Phase-II		
6	• For effective operation and maintenance of installed CETPs, SPVs should be formed involving industries and Govt. agencies if any. SPVs should be made responsible for effective operation and maintenance of CETP to achieve prescribed standards notified by MoEF&CC. • All the member textile units should install electromagnetic flow meter at outlet of Unit to	Immediate 30 days.

	measure the quantity of effluent discharge to CETP. • The CETP installed for textile units of Bhadohi is not operational till now. Bhadohi Industrial Development Authority (BIDA) should take immediate steps to make it operational and ensure connectivity of all textile units, till then each textile unit in that catchment area should be allowed to operate only if it makes suitable arrangements to treat the effluent as per the prescribed standards as well as make connectivity with CETP. • The CETP at Tronica City, Ghaziabad installed and operated by UPSIDC should be effectively operated and maintained to achieve the prescribe standards. A case is under consideration in Hon'ble NGT in OA No. 317/2015 Rashid Ali Warsi Vs UPSIDC regarding malfunctioning of CETP at Tronica city, Loni Ghaziabad. Hon'ble NGT has ordered UPSIDC on 15-06-2017, to deposit Rs. 2.0 Lac per day as environmental compensation till the deficiencies in CETP are removed. • The CETP at Industrial Area, Site-A, Mathura installed and operated by forming SPV of textile industries should be effectively operated and maintained to achieve the prescribe standards. • Online Continuous Effluent Monitoring System with connectivity to CPCB & UPPCB server should be installed at final outlet of CETPs	30 days. Immediate Immediate 60 days
7	• Online Continuous Effluent Monitoring System / Web Camera in major category of industries i.e. Distillery, Sugar, Paper, and Textile as per directions of Central Pollution Control Board and adoption of Charter provisions.	Immediate
8	• Board will issue consent to establish to new industries, having land use as per master plan and coming with proposal of cleaner technology, waste minimization, treated water recycling arrangements etc.	Immediate

Long Term Action Plan

Sl. No.	Activity	Timeline
1	• The hazardous waste generated from industrial units in clusters at Ghaziabad, Mathura, Bhadohi is being transported to common TSDF at Kanpur Dehat, which is quite far away, so in view of that Board will facilitate UPSIDC/District Administration/Private Enterprenure to make plan for developing common TSDF at environment friendly location in those region. • UPPCB will facilitate UPSIDC/Devlopment Authorities to develop common TSDF in present and proposed industrial area, where plots are allotted for industries generating hazardous waste.	02 Years 02 Years
2	• In Phase-II, major category of water polluting industries is textile sector. In Bhadohi and similar other places i.e. Ghaziabad, Mathura, textile units are in cluster and their anciliary units are traditional and operational in unplanned manner. Board will facilitate them for Adoption of cleaner technology (change in process technology, reduction in consumption of water and discharge, recycling of the treated water in different use) through Workshops, Seminars in the guidance of Central Pollution Control Board. Board will take action against the units, which do not adopt the cleaner technology and take suitable steps for reduction of effluent and reuse of treated water as per provisions of charter of CPCB.	01 Year
3	• Existing CETP like Tronica City Ghaziabad, which are not performing to achieve the standard prescribed under E(P) Act, 1986 and Bhadohi which is still not operational needs to be upgraded or made functional. Board will enforce for upgradation of existing CETP or to make operational non-functional CETP. Otherwise Board will take action against defaulting units.	01 Year

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