BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

Principal Bench, New Delhi
O.A. No. 200/2014

In The Matter of: -

M.C. Mehta **Applicant**

Vs.

Union of India & Ors **Respondents**

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Ajit Kumar Vidyarthi

(Dr. A. K. Vidyarthi)
Scientist 'E'
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
Delhi- 110032.

Date: 23.06.2020
Place: Delhi

Compliance Report on behalf of CPCB

in compliance to Hon'ble NGT Order dated 12th December, 2019 in the matter of M.C. Mehta Vs. Union of India & Ors., OA No. 200/2014

Hon'ble NGT in the matter of M.C. Mehta vs. Union of India, O.A. No. 200/2014 vide its Order dated 22.08.2019 **(Annexure-I)** has directed:

" 9. Flood plains were to be demarcated, encroachments removed, bio-diversity parks set up, afforestation works undertaken, guidelines for bio-diversity parks prepared by the CPCB and the MoEF&CC, flood plains were to be handed over to the State Forest Departments.

20. There is need to issue guidelines by the MoEF&CC for setting up of biodiversity parks for handing over flood plains of the rivers in the country to the Forest Department, for the purpose, within four months in terms of Para 21."

2. Subsequently, vide its Order dated 12.12.2019 **(Annexure-II)** Hon'ble NGT further directed:

" 28. We may now sum up our directions as follows:

i. *As already directed vide order dated 22.08.2019, timely completion of all projects relating to sewage treatment be ensured i.e. by 31.06.2020 in respect of ongoing projects and by 31.12.2020 in respect of others failing which compensation has to be paid in terms of the said order, apart from action against the erring officers. Till then, to avoid untreated sewage being discharged directly into Ganga, interim remedial measures have to be adopted and for the default after 01.11.2019 compensation has to be deposited in terms of order dated 22.08.2019. CPCB may make necessary calculation within one month from today and raise demands with the Chief Secretaries of the concerned States which may be complied within one month from the date of such demand failing which accountability will be of the Chief Secretaries personally."*

iv. CPCB may take further action to finalise and circulate Guidelines for Biodiversity parks expeditiously which may be complied with by the concerned States and status of compliance included in the reports to be filed before this Tribunal.

3. In compliance to the direction of Hon'ble NGT regarding Guidelines for biodiversity parks, CPCB constituted a committee and entrusted the work of preparation of guidelines for setting up of Biodiversity parks to Prof. C.R. Babu Prof. Emeritus, CEMDE, University of Delhi.

4. The Interim report on the guidelines was prepared by Prof. C.R. Babu which was discussed by the committee in its meetings held on 27.09.2019 and 06.12.2019**.** Based on the recommendations of the committee, draft guidelines were prepared and submitted by Prof. C.R. Babu vide email dated 12.05.2020. The same was uploaded on the CPCB website on 15.05.2020 for public comments. The draft guidelines were also sent separately to various experts viz, Director BSI, Kolkata; Chairman, National Biodiversity authority, Chennai; DG, Forest and Special Secretary, MOEF&CC; DG, NMCG; Executive Engineer, Department of Irrigation, Govt of U.P for their comments. Considering the comments and suggestions received, revisions were made in the draft guidelines and the final guidelines were discussed and approved by the Committee in its meeting held on 08.06.2020. Minutes of the meeting are attached as **Annexure III.** Final Guidelines is being circulated among States and Union Territories. Final guidelines are attached as **Annexure IV**.

5. Further, Hon'ble NGT vide its order dated 12th December, 2019 directed CPCB to calculate EC and raise demands with Chief Secretaries of Ganga States in case STPs projects are not completed in drains or interim measures have not been adopted after 1st November, 2019.

6. Hence, to review the status of drains tapped or interim remedial measures initiated, a meeting was held on 07.01.2020 in CPCB, Delhi and meeting dated 10.01.2020 in Kolkata organized by Kolkata Metropolitan Development Authority with participation of West Bengal Pollution Control Board, CPCB and other responsible agencies). As per the information provided by the concerned agencies (Jharkhand Urban Infrastructure Development Company Limited, Bihar Urban Infrastructure Development Corporation Limited, SPMG, UD&HD (Bihar), Uttarakhand Peyjal Nigam, State Mission for Clean Ganga (Uttar Pradesh), West Bengal Pollution Control Board, Kolkata Metropolitan Development Authority and Uttarakhand Jal Sansthan) of the States and also considering the information/ records available with the Central Pollution Control Board, Environmental Compensation for the drains in the 5 Ganga States were calculated from 1st November, 2019 to 31st January, 2020 and letters dated 3.02.2020 were sent to the Chief Secretaries of the 5 Ganga States raising the demand for EC with a request to re-confirm the status of drains. Letters sent to the Chief Secretaries of Uttar Pradesh **(Annexure-V)**, West Bengal **(Annexure-VI)**, Uttarakhand **(Annexure-VII)**, Bihar **(Annexure-VIII)** and Jharkhand **(Annexure-IX)** are attached.

7. Through the above said letters, CPCB intimated the calculated EC of 120 Lacs for 8 drains of West Bengal, EC of 60 Lacs for 4 drains of Jharkhand, EC of 1800 Lacs for 120 drains of Uttar Pradesh, EC of 30 Lacs for 2 drains of Uttarakhand and EC of 120 Lacs for 8 drains of Bihar to the respective States. Replies to the letters of CPCB are awaited from the States of Uttarakhand and Uttar Pradesh. Therefore, reminder letters dated 16.06.2020(**Annexure X)** and 16.06.2020**(Annexure XI)** were sent to the Chief Secretary of Uttar Pradesh and Chief Secretary of Uttarakhand, respectively. EC calculated & communicated vide letters dated 3.02.2020 is considered as final for the two States.

8. Principal Secretary, Urban Development & Housing Department, Government of Jharkhand vide letter dated 15th February, 2020 **(Annexure-XII)** informed that interim measures have been adopted in the four drains (Mahajantoli, Neel Kothi, Kasim Bazar and Ferry Ghat drains) which were considered for EC calculations and requested to reconsider the EC calculations and waive off the EC imposed. CPCB vide letter dated 17.03.2020 **(Annexure-XIII)** has replied to the letter received requesting to provide the details of the interim measures taken including work order issued, analysis results of the drain before and after interim measures started for the drains. In reply to the letter of CPCB, Principal Secretary, UD&HD, Government of Jharkhand vide letter dated 22.05.2020 **(Annexure XIV)** has submitted the requisite documents. Therefore, on the basis of the reply received, EC levied on the drains is waived off as it was informed that interim measures have been adopted in all the drains. The same is communicated to the State Government vide CPCB letter dated 16.06.2020 (**Annexure XV).**

9. With respect to the State of West Bengal, Member Secretary, West Bengal Pollution Control Board vide reply letter dated 25th February, 2020 **(Annexure-XVI)** requested CPCB to reconsider EC on seven drains which are within tidal zone. Based on the documents received, CPCB reconsidered the EC levied on the drains and as the 7 drains are considered to have tidal effect where interim measures are not feasible therefore, vide reply letter dated 12th May, 2020 **(Annexure XVII)** to the Member Secretary, WBPCB, CPCB intimated the recalculated EC of 20 lacs for one drain for the period 1st November, 2019 to 29th February, 2020. Subsequently, a reminder letter dated 16.06.2020 (**Annexure XVIII)** was sent to the Chief Secretary, Government of West Bengal for depositing the EC for defaulting drain.

10. In response to the CPCB letter dated 3.02.2020, Secretary, Urban Development Department, Government of Bihar vide letter dated 13.03.2020 (A**nnexure XIX)** submitted the opinion of the two institutes that interim bioremediation measures are not feasible in the defaulting drains and requested CPCB to waive off the EC. In response, CPCB vide letter dated 16.06.2020 **(Annexure XX)** requested to consider the report submitted by CPCB in the matter of Manoj Mishra Vs Union of India & Ors., OA No. 06/2012 on "Alternative Treatment

Technologies for Wastewater Treatment In Drains" for interim measures in the drains and deposit the calculated EC. EC calculated & communicated vide letter dated 03.02.2020 is considered as final.

11. However, none of the States have yet deposited the EC amount with CPCB.

12. While calculating EC for the defaulting drains, drains having BOD less than 40mg/L were not considered for calculations because such drains do not need further treatment. For interim measures to be successfully adopted in drains, there is need to have some level of pollution load in the waste water to support microbial activity where these microbes can grow and metabolize actively. However, waste water with less than 40 mg/L of BOD load pollution cannot support microbial activity and also their pollution load can be reduced to 3 and 4 mg/L with available dilution in the river system without any adverse impact.

State wise Summary of the drains for which EC is calculated is as follows:

Summary of West Bengal Drains for which EC is calculated

1.	Drains Discharging into River Ganga being monitored by CPCB	:	56
2.	Drains Tapped	:	03
3.	Interim Measures not required (Tidal impact/ Dry/ Stagnant)	:	29
4.	Interim Measures not feasible (BOD <40mg/l)	:	23
5.	Interim Measures required	:	01
6.	Interim Measures taken	:	Nil
7.	No. of drains for which EC is calculated	:	01
8.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 29.02.2020)**	**:**	**1 x 5 x 4 = 20**

Summary of Uttarakhand Drains for which EC is calculated

1.	Drains Discharging into River Ganga being monitored by CPCB	:	17
2.	Additional drains list provided by Pay Jal Nigam, Uttarakhand which are not monitored by CPCB	:	125
3.	Drains Tapped	:	10 + 108 = 118
4.	Interim Measures not required (Dry/Stagnant)	:	04 + 01 = 05
5.	Interim Measures not feasible (BOD <40mg/l)	:	01 + 07 = 08
6.	Interim Measures required	:	02
7.	Interim Measures taken	:	09
8.	No. of drains for which EC is to be calculated	:	02
9.	**Calculated EC = No. of drains X @5 lakhs/month/drain(Since 01.11.2019 till 31.01.2020)**	**:**	**2 x 5 x 3 = 30**

Summary of Uttar Pradesh Drains for which EC is calculated

1.	Drains Discharging into River Ganga being monitored by CPCB	:	54

2.	Additional drain list provided by RO, Varanasi, SPCB which are not monitored by CPCB	:	98
3.	Drains Tapped	:	08
4.	Partially Tapped (tapped overflow)	:	12
5.	Interim Measures not required (Dry/Stagnant)	:	02
6.	Interim Measures not feasible (BOD <40mg/l)	:	22
7.	Interim Measures required (54-8-2-22)	:	22
8.	Interim Measures taken	:	Nil
9.	No. of drains for which EC is to be calculated	:	22 + 98 (as per additional list by RO,Varanasi)= 120
10.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	**:**	**120 x 5x 3 = 1800**

Summary of Bihar Drains for which EC is calculated

1.	Drains Discharging into River Ganga being monitored by CPCB	:	19
2.	Drains Tapped	:	Nil
3.	Interim Measures not required (Dry/Stagnant)	:	01
4.	Interim Measures not feasible (BOD <40mg/l)	:	08
5.	Interim Measures required	:	10
6.	Interim Measures taken	:	02
7.	No. of drains for which EC is to be calculated	:	08
8.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	**:**	**8 x 5x 3 = 120**

Summary of Jharkhand Drains for which EC is calculated

1.	Drains Discharging into River Ganga being monitored by CPCB	:	02
2.	Additional drain list provided by UDHD, Jharkhand which are not monitored by CPCB	:	04
3.	Drains Tapped	:	02
4.	Interim Measures not required (Dry/Stagnant)	:	Nil
5.	Interim Measures not feasible (BOD <40mg/l)	:	Nil
6.	Interim Measures required	:	04
7.	Interim Measures taken	:	04
8.	No. of drains for EC to be calculate	:	Nil
9.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	**:**	**Nil**

Now, this Compliance Report is submitted in compliance of Hon'ble NGT directions.

Item No. 01 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 200/2014

M.C. Mehta Applicant(s)

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 07.08.2019
Date of uploading of the order on website: 22.08.2019

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

ORDER

1. The matter has been taken up for reviewing the progress of compliance of directions of this Tribunal dated 10.12.2015 and 13.07.2017 on the subject of preventing and remedying the pollution of river Ganga. The matter was earlier being considered by the Hon'ble Supreme Court since the year 1985, before being transferred to this Tribunal, in the year 2014 and 2017[1].

2. The Tribunal dealt with the pollution caused on account of illegal discharge of untreated sewage and industrial effluents either directly into the River Ganga or its tributaries and connected drains, besides, issues of dumping of solid waste,

[1] M.C. Mehta vs. Union of India & Ors. Writ Petition (Civil) No. 3727/1985 order dated 29.10.2014 and 24.01.2017

bio-medical waste, hazardous waste, plastic waste, muck and other waste, illegal sand mining, illegal encroachment of the floodplains, absence of steps for conservation of ground water, reuse of treated water and restoration of water bodies and maintenance of e-flow.

3. The matter was dealt with by two orders dividing the area covered by the River Ganga into different phases and segments. Order dated 10.12.2015 dealt with **Phase-I – Segment-A**: Gaumukh to Haridwar. Order dated 13.07.2017 dealt with:

Phase-I – Segment B: Haridwar to Kanpur,

Phase-II: Kanpur to Uttar Pradesh Border,

Phase-III: UP Border to Jharkhand Border (via Bihar), and

Phase-IV: Jharkhand Border to Bay of Bengal (West Bengal).

4. As already noted, the proceedings have been pending since 1985. Various orders have been passed by the Hon'ble Supreme Court on the subject before transfer of proceedings to this Tribunal and thereafter by this Tribunal. The result of monitoring for 34 years has not been encouraging. Government of India took initiatives by way Ganga Action Plans I & II and thereafter by way of *Namami Gange*. The progress so far has been far from satisfactory, as noted in earlier orders.

5. While considering the progress of compliance of orders of this Tribunal, vide order dated 19.07.2018 with regard to **Phase-I –**

Segment-A and order dated 28.07.2018 with regard to **Phase-I – Segment–B**, the CPCB/SPCBs were required to display the result of water samples at various locations and atleast at one place within 100 kms showing whether water was fit or not fit for consumption or for bathing. Monitoring Committee was constituted headed by a former Judge of the Uttarakhand High Court for **Phase-I Segment-A** and Allahabad High Court for **Phase-I Segment-B** to take stock of the actions taken with clear measurable indicators of progress and success and to oversee the action plans. The actions were required to cover interception and diversion of drains carrying sewage to STPs, laying of sewerage network, utilization of treated sewage, compliance of norms by industries in the catchment areas, ground water regulation, flood plain regulation, rain water harvesting systems, good irrigation practices and filing list of industries which have the potential for pollution and creation of bio-diversity parks.

6. Further, order dated 29.11.2018 dealt with the progress in the **Segment A and B of Phase-I** on STPs, CETPs, tapping of drains, compliance of MSW Rules, setting up of bio-digesters, sewerage network, improvement in water quality, unregulated ground water extraction, e-flow, public involvement, decentralized waste processing facility close to the source of generation of waste, protection of floodplains and illegal mining.

7. Again, on 11.03.2019 deficient working of CETPs at Jajmau, Banthar and Unnao was considered and directions were issued to consider closure of non-compliant units to improve the water quality.

8. Vide order dated 14.05.2019, this Tribunal considered the report from Justice U.C. Dhyani with regard to **Segment-A of Phase-I** dated 09.05.2019 *inter-alia* pointing out non-compliance in respect of the STPs. The Tribunal directed remedial action including recovery of environmental compensation in view of repeated failures to comply with the directions by the Hon'ble Supreme Court and this Tribunal for the last 34 years. NMCG was to ensure compliance with regard to prevention and removal of encroachments, maintenance of e-flow, afforestation and setting up of bio-diversity parks, ground water regulation, sand mining regulation, stopping any camping on the banks of river Ganga or its tributaries. With regard to **Segment-B of Phase-I**, after noting that the industries were discharging untreated effluents in river Ganga, the Tribunal directed closure of all activities of the members of the dysfunctional CETPs, until the CETPs are compliant. It was further directed that only treated effluents may be discharged into the River Ganga and its tributaries. Further direction was that coercive measures be taken against officers of UPPCB and NMCG colluding in permitting continued operations of polluting activities. Direction was also given for remediation of chromium dumps at Kanpur Dehat, Khanpur and Rakhi Mandi in Uttar

Pradesh and ensuring of proper e-flow from the Narora Barrage.

9. With regard to **Phase-II to IV**, NMCG, in co-ordination with State Governments of Uttarakhand, Bihar, Jharkhand, West Bengal and Uttar Pradesh, was to file Action Plans with firm timelines on the subjects of interception and diversion of drains, utilization of treated sewage, compliances by industries in the catchment area, ground water regulation, flood plain regulation, rain water harvesting and good irrigation practices for water conservation in the light of order of this Tribunal dated 13.07.2017. NMCG was to give information about status of projects planned and executed between Kanpur to Ganga Sagar. Status of water quality in Uttarakhand, Bihar, Jharkhand, West Bengal and Uttar Pradesh was to be displayed on their respective websites. CPCB was also to indicate such status on its website. Flood plains were to be demarcated, encroachments removed, bio-diversity parks set up, afforestation works undertaken, guidelines for bio-diversity parks prepared by the CPCB and the MoEF&CC, flood plains were to be handed over to the State Forest Departments.

10. Vide order dated 29.05.2019, it was directed that Ganga pollution be monitored directly by the Chief Secretaries in view of such monitoring having already been directed in respect of 351 polluted river stretches in different States by the Chief

Secretaries vide order dated 16.01.2019 in O.A. No. 606/2018[2]. No construction zone distance on flood plains was to be measured from the Highest Flood Line (HFL) in the last 25 years and flood plains were to be identified on longitude and latitude. Responsibility for plantations and administrative control of areas beyond HFL were to be handed over to the Forest Departments. UPSPCB was directed to prohibit industrial polluting activities and to revise compensation regime so as to recover the actual cost of restoration. State of UP was to provide funds for remediation of Chromium dumps. E-flow was to be maintained as earlier directed in order dated 29.11.2018. Encroachments were to be removed. Tapping of remaining drains and prevention of pollution was to be expeditiously ensured. After noting the status of progress on sewage infrastructure projects in the Ganga Basin, the Chief Secretaries of Bihar, Jharkhand and West Bengal were directed to effectively monitor the progress. Timelines were directed to be reviewed and prepared. NMCG was to undertake progress on reduction of pollution load and improvement of water quality. Further road map, including identification of accountable persons and taking actions for the lapses was to be prepared.

11. Vide order dated 22.07.2019, prayer for extension of timelines for up-gradation of CETPs at Unnao and Banthar was rejected as the stipulated period of two years vide order dated 13.07.2017 had already expired.

[2] Compliance of Municipal Solid Waste Management Rules, 2016

12. In the above background, we have heard learned Amicus, learned ASG for the State of Uttarakhand and learned Counsel for the States of Uttar Pradesh, Bihar, Jharkhand, West Bengal, Central Pollution Control Board (CPCB) and National Mission for Clean Ganga (NMCG) and perused the reports and the documents filed.

13. It may be appropriate to note the precise issues which need immediate focus:

i) Prevention of discharge of untreated industrial waste and sewage in the River Ganga and its tributaries, including tapping of drains and bio-remediation, as applicable;

ii) Installation of STPs, CETPs, and making existing CETPs functional (including at Jajmau, Banthar and Unnao) and enhance the capacities, so assessed and monitoring of the standards before discharge of water into Ganga River;

iii) Installation of Continuous Emission Monitoring System (CEMS) at appropriate locations and Online Monitoring System (OMS);

iv) Usage of treated waste water, of sludge manure and setting up of bio-digesters and septage management

v) Preventing dumping of waste and scientific waste management including bio-medical wastes, plastic wastes and decentralizing waste processing, including waste generated from hotels, ashrams, etc.;

vi) Floodplains identification and zone demarcation with restrictions against any development/ construction /encroachment;

vii) Maintenance of E-flow as notified by Ministry of water Resources including releasing water by Hydel projects and barrages; and

viii) Other directions including displaying water quality data in public domain and at prominent places, development of bio-diversity parks, prohibition of river bed mining, remediation of chromium dumpsites in Uttar Pradesh, collection of compensation from violators and involvement of society including religious, charitable, social and educational institutions for preventing and remedying pollution of River Ganga.

14. We may now consider the progress State-wise.

State of Uttarakhand

15. Learned ASG appearing for the State of Uttarakhand has indicated progress on the subjects of STPs, use of treated water, action against polluting industries, compliance of norms by hydropower projects, water quality monitoring, e-flow, plantation in bio-diversity parks, action against violators and erring officers and contractors and bio-remediation of sewage. In short, the information furnished shows that out of 18 projects for setting up of STPs, 9 have been completed and the remaining will be completed upto February 2020. Water quality

upto Rishikesh was 'A' class and downstream Rishikesh was 'B' class, which is fit for outdoor bathing as per the 'Designated Best Uses Criteria'[3]. Hydropower projects have to maintain e-flow of 15% of the average lean season flow. Closure order was passed against 32 non-compliant industries. Show cause notice was issued to 166 units from April to July 2019. Four hotels were found discharging sewage out of which two hotels were closed and the remaining two hotels were found to be complying later. Action was also taken for non-compliance of the Bio-Medical Waste Management Rules, 2016. Compensation was collected from the plastic users/violators and for illegal mining. Rafting camps have been removed, Bio-remediation started wherever required. The State Government along with NHAI will consider preparation or revision of Master Plan for Haridwar – Rishikesh designating 'no motor' zones in some areas, 'only electric vehicles' in some areas, widening of roads, green belts and beautification, Information Education Communication (IEC) activities by including religious, charitable, social and educational institutions, plantation in bio-diversity parks along river Ganga and its tributaries, including on the encroached land (after removing such encroachments).

16. During the interaction, we have considered the remedial measures for expediting execution of the orders of this Tribunal having regard to long delay caused and importance of

[3] https://cpcb.nic.in/water-quality-criteria-2/

preventing and remedying the pollution of River Ganga. Since it has been stated that many industries were found operating without consent to operate under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981, action in accordance with the provision of law may be undertaken within three months after identifying such units. As already observed by this Tribunal including in the order dated 14.05.2019 that River Ganga being National River with distinct significance for the country, even a drop of pollution therein is a matter of concern. All the authorities have to be stringent and depict zero tolerance to the pollution of River Ganga. Wherever STPs are not operating, immediate bioremediation and/or phyto-remediation may be undertaken if feasible. To avoid procedural delay of tender processes, etc. specifications and norms for undertaking such activities may be specified in consultation with the CPCB as was earlier directed in our order dated 29.11.2018. Performance guarantees may be required to be furnished for ensuring timely performance. It needs to be ensured that setting up of STPs and sewerage network to be completed and carried out so as to avoid any idle capacities being created. Performance guarantees may be taken for preventing such defaults.

17. Wherever the work has not commenced, it is necessary that no untreated sewage is discharged into the River Ganga. Bioremediation and/or phytoremediation or any other

remediation measures may start as an interim measure positively from 01.11.2019, failing which the State may be liable to pay compensation of Rs. 5 Lakhs per month per drain to be deposited with the CPCB. This however, is not to be taken as an excuse to delay the installation of STPs. For delay of the work, the Chief Secretary must identify the officers responsible and assign specific responsibilities. Wherever there are violations, adverse entries in the ACRs must be made in respect of such identified officers. For delay in setting up of STPs and sewerage network beyond prescribed timelines, State may be liable to pay Rs. 10 Lakhs per month per STP and its network. It will be open to the State to recover the said amount from the erring officers/contractors.

18. With regard to works under construction, after 01.07.2020, direction for payment of environmental compensation of Rs. 10 lakhs per month to CPCB for discharging untreated sewage in any drain connected to river Ganga or its tributaries and Rs. 10 lakhs per month to CPCB per incomplete STP and its sewerage network will apply. Further with regard to the sectors where STP and sewerage network works have not yet started, the State has to pay an Environmental Compensation of Rs. 10 lakhs per month after 31.12.2020. The NMCG will also be equally liable for its failure to the extent of 50% of the amount to be paid. Till such compliance, bioremediation or any other appropriate interim measure may start from 01.11.2019.

19. There is need to evolve a tourism policy for permitting hotels, vehicles or other such activities consistent with the carrying capacity to avoid pollution of River Ganga. There is also need for proper planning in all the areas adjacent to the River Ganga to regulate traffic and orderly movement, avoiding vehicular pollution and having 'vehicle free' or only non-polluting vehicles, scientific disposal of solid waste dumps consistent with the orders of this Tribunal dated 17.07.2019 in *O.A. No. 519/2019*[4].

20. Learned Amicus pointed out that at Gaumukh, there was pollution of sewers and resultantly bacteriophage activity of River Ganges which gives it inherent ability to kill harmful bacteria is decreasing which is not good in terms of maintaining water quality of the River Ganga. There is need to issue guidelines by the MoEF&CC for setting up of biodiversity parks for handing over flood plains of the rivers in the country to the Forest Department, for the purpose, within four months in terms of Para 21. Guidelines for levying compensation for discharge of untreated sewage/effluents into the river in terms of Para 13 of the order dated 14.05.2019 also needs to be devised.

21. We do not consider it necessary to consider point-wise progress in the present order in view of pre-existing directions on each of

[4] News item published in "The Times of India" Authored by Jasjeev Gandhiok & Paras Singh Titled "Below mountains of trash lie poison lakes"

the points. The State of Uttarakhand may take action under each head, accordingly.

State of Uttar Pradesh (Phase –I, Segment- B)

22. The State of UP is yet to provide the cost of removing the Chromium dumps in terms of Para 5 of the order dated 29.05.2019. It is reported that out of 86 drains to be tapped, only 33 have been wholly or partially tapped, 59 remain to be tapped. For 23 drains, work is yet to commence. It is stated that the land for tapping of two drains was not available. Needless to say that where the land is not available, the State Government can take steps for its acquisition or purchase. **Directions with regard to State of Uttarakhand in paras 16, 17 and 18 will apply to the State of Uttar Pradesh also with regard to the timelines and compensation.**

23. It was stated that though the tanneries were closed for violating the norms of discharge, the dues have not been collected from the members of the CETPs and the industries are clandestinely operating as shown from the data of water samples which contained high Chromium.

24. Chromium dump has been stored since 1976 which is required to be shifted to TSDF. The State of Uttar Pradesh may undertake health survey of the area and ensure shifting of the Chromium dumps within three months failing which it would be liable to pay environmental compensation of Rs. 10 lakhs

per month to CPCB besides furnishing performance guarantee of Rs. 1 Crore to CPCB.

25. Let the remedial measures be taken by the SPCB for effective monitoring by installing CCTV cameras or undertaking surveillance in any other manner with the help of local police.

26. As observed in the case of Uttarakhand above, we do not consider it necessary to consider point-wise progress in the present order in view of pre-existing directions on each of the points. The State of Uttar Pradesh may take action under each head, accordingly.

State of Uttar Pradesh (Phase –II), State of Bihar, Jharkhand and West Bengal

27. With regard to **Phase-II to IV**, it is pointed out that no specific timelines have been laid down in the order dated 13.07.2017. Needless to say that if no specific timelines have been laid down, the compliance has to be ensured within reasonable time. A period of two years has gone by which can be treated as a reasonable time. Even if further allowance is to be made with regard to works under construction, after 01.07.2020, direction for payment of environmental compensation of Rs. 10 lakhs per month to CPCB for discharging untreated sewage in any drain connected to river Ganga or its tributaries and Rs. 10 lakhs per month to CPCB per incomplete STP and its sewerage network will apply with regard to States of Uttar Pradesh, Jharkhand,

Bihar and West Bengal falling in **Phase II to IV**. Further with regard to the sectors where STP and sewerage network works have not yet started, the States of UP, Jharkhand, Bihar and West Bengal have to pay an Environmental Compensation of Rs. 10 lakhs per month after 31.12.2020. The NMCG will also be equally liable for its failure to the extent of 50% of the amount to be paid. Till such compliance, bioremediation or any other appropriate interim measure may start from 01.11.2019. Directions for compensation for default in this regard will be on the same pattern as in the case of Uttarakhand and Uttar Pradesh as above.

28. As observed above, we do not consider it necessary to consider point-wise progress in the present order in view of pre-existing directions on each of the points. The States of Uttar Pradesh, Bihar, Jharkhand and West Bengal may take action under each head for Phases-II, III and IV accordingly.

29. As noted on an earlier order[5] in a study in respect of 97 Ganga towns, the sanitation status was found to be as follows:

"19 towns had municipal solid waste (MSW) plant within the town; 47 towns had adequate litterbins around the ghat area; 41 towns had anti-littering messages/hoardings placed around the ghat area; 72 towns had old & legacy dumpsites as well as garbage vulnerable points (GVPs) in the vicinity of the ghats; 66 towns had at least one nullah draining into Ganga;34 towns had sweeping & cleaning arrangements at the ghat area; 33 towns had solid waste floating on at least one of the ghats of the town. Further, the report mentions "The output of the survey offers a comprehensive report on cleanliness to aid the Government take action on the identified gaps. It also helps in understanding the

[5] Order dated 11.03.2019 at para 15

best practices being implemented in various towns and ghats and support in sharing of knowledge among the various stakeholders helping them to inculcate and tailor best actions according to the city's requirement."

The concerned Chief Secretaries may ensure that the above deficiencies are addressed expeditiously.

30. The two Monitoring Committees for **Segment-A Phase-I** and **Segment-B Phase-I** may submit their final reports by 31.10.2019. Thereafter the Chief Secretaries of States of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal Director General, *Namami Gange* and Secretary, Water Resources, Jal Shakti, Government of India may personally monitor the progress and report compliance to the Tribunal in terms of progress at every quarter in a tabular form as follows:

Sr. No.	**Targets to be achieved as per orders dated 10.12.2015, 13.07.2017 and 22.08.2019 the timelines**	**Targets achieved and the reasons for delay in compliance**	**Targets not achieved and the revised timelines proposed***	**Action taken or suggested for violation of timelines or non-achieving of targets**

**subject to payment of compensation as mentioned above*

31. Let a further quarterly progress report be filed by the Chief Secretaries of Uttarakhand, UP, Bihar, Jharkhand, West Bengal, with an advance copy to Secretary, Water Resources, Jal Shakti, Government of India by 30.11.2019 by e-mail at judicial-ngt@gov.in. The Director General, *Namami Gange* may

file a consolidated report before the nest date by e-mail at judicial-ngt@gov.in.

List for further consideration on 12.12.2019.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

August 07, 2019
Original Application No. 200/2014
DV

Item No. 01 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 200/2014

M.C. Mehta Applicant(s)

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 12.12.2019
Date of uploading: 18.12.2019

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

ORDER

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I. The issue: Review of progress of compliance of directions of this Tribunal to prevent and remedy pollution of river Ganga in the light of orders of the Hon'ble Supreme Court dated 29.10.2014 and 24.01.2017 in W.P.(C) 3727/1985:

1. This order may be read in continuation of order dated 22.08.2019 with regard to reviewing the progress of compliance of directions of this Tribunal dated 10.12.2015 and 13.07.2017 on the subject of preventing and remedying the pollution of river Ganga. The matter was earlier being considered by the Hon'ble Supreme Court since the year 1985, before being transferred to this Tribunal, in the year 2014 and 2017[1].

2. The Tribunal dealt with the pollution caused on account of illegal discharge of untreated sewage and industrial effluents either directly into the River Ganga or its tributaries and connected drains besides issues of dumping of solid waste, bio-medical waste, hazardous waste, plastic waste, muck and other waste, illegal sand mining, illegal encroachment of the floodplains, absence of steps for conservation of ground water, reuse of treated water, restoration of water bodies and maintenance of e-flow.

3. The matter was dealt with by orders dividing the area covered by the River Ganga into different phases and segments. Order dated 10.12.2015 dealt with **Phase-I – Segment-A**: Gaumukh to Haridwar. Order dated 13.07.2017 dealt with **Phase-I – Segment B**: Haridwar to Kanpur. Further order dated 06.08.2018 deals with **Phase-II**: Kanpur to Uttar Pradesh Border, **Phase-III**: UP Border to Jharkhand

[1] M.C. Mehta vs. Union of India & Ors. Writ Petition (Civil) No. 3727/1985 order dated 29.10.2014 (2015) 12 SCC 764 and 24.01.2017

Border (via Bihar), and **Phase-IV**: Jharkhand Border to Bay of Bengal (West Bengal).

4. As already noted, the proceedings have been pending since 1985. Various orders have been passed by the Hon'ble Supreme Court on the subject before transfer of proceedings to this Tribunal and thereafter by this Tribunal. The result of monitoring for 34 years has not been encouraging. Government of India took initiatives by way Ganga Action Plans I & II and thereafter by way of *Namami Gange.* The progress so far has been far from satisfactory, as noted in earlier orders.

II. Constitution of Monitoring Committees headed by former Judges in the States of Uttarakhand and Uttar Pradesh vide orders dated 29.11.2018 and 06.08.2018 to oversee execution of Action Plans in the light of stipulated timelines:

5. While considering the progress of compliance of orders of this Tribunal, vide order dated 19.07.2018 with regard to **Phase-I – Segment-A** and order dated 27.07.2018 with regard to **Phase-I – Segment–B**, the CPCB/SPCBs were required to display the result of water samples at various locations and atleast at one place within 100 kms showing whether water was fit or not fit for consumption or for bathing. A Monitoring Committee was constituted headed by a former Judge of the Uttarakhand High Court for **Phase-I Segment-A** and Allahabad High Court for **Phase-I Segment-B** vide orders dated 29.11.2018 and 06.08.2018 respectively to take stock of the actions taken with clear measurable indicators of progress and success and to oversee the action plans. The actions were required to cover interception and diversion of drains carrying sewage to STPs, laying

of sewerage network, utilization of treated sewage, compliance of norms by industries in the catchment areas, ground water regulation, flood plain regulation, rain water harvesting systems, good irrigation practices and filing list of industries which have the potential for pollution and creation of bio-diversity parks. Vide order dated 29.11.2018, the Tribunal reviewed the progress in **Segments A and B of Phase-I** on STPs, CETPs and tapping of drains with reference to the laid down timelines and also compliance of MSW Rules, setting up of bio-digesters, sewerage network, improvement in water quality, unregulated ground water extraction, e-flow, public involvement, decentralized waste processing facility close to the source of generation of waste, protection of floodplains and illegal mining. The Tribunal also observed that there was need to prepare a model DPR and standard terms and conditions for tenders to save time and cost. Further directions for public awareness programmes in the light of observations of the Hon'ble Supreme Court were also issued.

III. Further monitoring, in the light of reports of the Monitoring Committees, vide orders dated 11.03.2019, 14.05.2019 and 29.05.2019. Issue of waste management in 97 'Ganga Towns' and directions for zero discharge of pollutants in Ganga, making concerned officers accountable to be monitored by the Chief Secretaries' of the concerned States:

6. Again, on 11.03.2019, deficient working of CETPs at Jajmau, Banthar and Unnao was considered and directions were issued to consider closure of non-compliant units to improve the water quality.

7. Vide order dated 14.05.2019, this Tribunal considered the report from Justice U.C. Dhyani with regard to **Segment-A of Phase-I** dated 09.05.2019 *inter-alia* pointing out non-compliance in respect of the

STPs. The Tribunal directed remedial action including recovery of environmental compensation in view of repeated failures to comply with the directions by the Hon'ble Supreme Court and this Tribunal for the last 34 years. NMCG was to ensure compliance with regard to prevention and removal of encroachments, maintenance of e-flow, afforestation and setting up of bio-diversity parks, ground water regulation, sand mining regulation, stopping any camping on the banks of river Ganga or its tributaries. With regard to **Segment-B of Phase-I**, after noting that the industries were discharging untreated effluents in river Ganga, the Tribunal directed closure of all activities of the members of the dysfunctional CETPs, until the CETPs are compliant. It was further directed that only treated effluents may be discharged into the River Ganga and its tributaries. Further direction was that coercive measures be taken against officers of UPPCB and NMCG colluding in permitting continued operations of polluting activities. Direction was also given for remediation of chromium dumps at Kanpur Dehat, Khanpur and Rakhi Mandi in Uttar Pradesh and ensuring of proper e-flow from the Narora Barrage.

8. With regard to **Phase-II to IV**, NMCG, in co-ordination with State Governments of Uttarakhand, Bihar, Jharkhand, West Bengal and Uttar Pradesh, was to file Action Plans with firm timelines on the subjects of interception and diversion of drains, utilization of treated sewage, compliances by industries in the catchment area, ground water regulation, flood plain regulation, rain water harvesting and good irrigation practices for water conservation in the light of order of this Tribunal dated 13.07.2017. NMCG was to give information about

status of projects planned and executed between Kanpur to Ganga Sagar. Status of water quality in Uttarakhand, Bihar, Jharkhand, West Bengal and Uttar Pradesh was to be displayed on their respective websites. CPCB was also to indicate such status on its website. Flood plains were to be demarcated, encroachments removed, bio-diversity parks set up, afforestation works undertaken, guidelines for bio-diversity parks prepared by the CPCB and the MoEF&CC, flood plains were to be handed over to the State Forest Departments.

9. Vide order dated 29.05.2019, it was directed that Ganga pollution be monitored directly by the Chief Secretaries in view of such monitoring having already been directed in respect of 351 polluted river stretches in different States by the Chief Secretaries vide order dated 16.01.2019 in O.A. No. 606/2018[2] dealing with solid waste management and orders in O.A. No. 673/2018 dealing with polluted river stretches. No construction zone distance on flood plains was to be measured from the Highest Flood Line (HFL) in the last 25 years and flood plains were to be identified on longitude and latitude. Responsibility for plantations and administrative control of areas beyond HFL were to be handed over to the Forest Departments. UPSPCB was directed to prohibit industrial polluting activities and to revise compensation regime so as to recover the actual cost of restoration. State of UP was to provide funds for remediation of Chromium dumps. E-flow was to be maintained as earlier directed in order dated 29.11.2018. Encroachments were to be removed. Tapping

[2] Compliance of Municipal Solid Waste Management Rules, 2016

of remaining drains and prevention of pollution was to be expeditiously ensured. After noting the status of progress on sewage infrastructure projects in the Ganga Basin, the Chief Secretaries of Bihar, Jharkhand and West Bengal were directed to effectively monitor the progress. Timelines were directed to be reviewed and prepared. NMCG was to undertake progress on reduction of pollution load and improvement of water quality. Further road map, including identification of accountable persons and taking actions for the lapses was to be prepared.

IV. Monitoring by the Tribunal on last date of hearing i.e. 22.08.2019, fixing strict timelines with consequence of requiring payment of compensation by the defaulting States and NMCG and action against the erring officers:

10. Status of compliance was further considered vide order dated 22.08.2019 with reference to following specific issues:

i) Prevention of discharge of untreated industrial waste and sewage in the River Ganga and its tributaries, including tapping of drains and bio-remediation, as applicable;

ii) Installation of STPs, CETPs, and making existing CETPs functional (including at Jajmau, Banthar and Unnao) and enhance the capacities, so assessed and monitoring of the standards before discharge of water into Ganga River;

iii) Installation of Continuous Emission Monitoring System (CEMS) at appropriate locations and Online Monitoring System (OMS);

iv) Usage of treated waste water, of sludge manure and setting up of bio-digesters and septage management;

v) Preventing dumping of waste and scientific waste management including bio-medical wastes, plastic wastes and decentralizing waste processing, including waste generated from hotels, ashrams, etc.;

vi) Floodplains identification and zone demarcation with restrictions against any development/ construction /encroachment;

vii) Maintenance of E-flow as notified by Ministry of water Resources including releasing water by Hydel projects and barrages; and

viii) Other directions including displaying water quality data in public domain and at prominent places, development of bio-diversity parks, prohibition of river bed mining, remediation of chromium dumpsites in Uttar Pradesh, collection of compensation from violators and involvement of society including religious, charitable, social and educational institutions for preventing and remedying pollution of River Ganga.

11. The Tribunal considered the progress State-wise as follows:

"State of Uttarakhand (Phase-I, Segment-A)

15. Learned ASG appearing for the State of Uttarakhand has indicated progress on the subjects of STPs, use of treated water, action against polluting industries, compliance of norms by hydropower projects, water quality monitoring, e-flow, plantation in bio-diversity parks, action against violators and erring officers and contractors and bio-remediation of sewage. In short, the information furnished shows that out of 18 projects for setting up of STPs, 9 have been completed and the remaining will be completed upto February 2020. Water quality upto Rishikesh was 'A' class and downstream Rishikesh was 'B' class, which is fit for outdoor bathing as per the 'Designated Best Uses Criteria'[3]. Hydropower projects have to maintain e-flow of 15% of the average lean season flow. Closure order was passed against 32 non-compliant industries. Show cause notice was issued to 166 units from April to July 2019. Four hotels were found discharging sewage out of which two hotels were closed and the remaining two hotels were found to be complying later. Action was also taken for non-compliance of the Bio-Medical Waste Management Rules, 2016. Compensation was collected from the plastic users/violators and for illegal mining. Rafting camps have been removed, Bio-remediation started wherever required. The State Government along with NHAI will consider preparation or revision of Master Plan for Haridwar – Rishikesh designating 'no motor' zones in some areas, 'only electric vehicles' in some areas, widening of roads, green belts and beautification, Information Education Communication (IEC) activities by including religious, charitable, social and educational institutions, plantation in bio-diversity parks

[3] https://cpcb.nic.in/water-quality-criteria-2/

along river Ganga and its tributaries, including on the encroached land (after removing such encroachments).

16. *During the interaction, we have considered the remedial measures for expediting execution of the orders of this Tribunal having regard to long delay caused and importance of preventing and remedying the pollution of River Ganga. Since it has been stated that many industries were found operating without consent to operate under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981, action in accordance with the provision of law may be undertaken within three months after identifying such units. As already observed by this Tribunal including in the order dated 14.05.2019 that River Ganga being National River with distinct significance for the country, even a drop of pollution therein is a matter of concern. All the authorities have to be stringent and depict zero tolerance to the pollution of River Ganga. Wherever STPs are not operating, immediate bioremediation and/or phyto-remediation may be undertaken if feasible. To avoid procedural delay of tender processes, etc. specifications and norms for undertaking such activities may be specified in consultation with the CPCB as was earlier directed in our order dated 29.11.2018. Performance guarantees may be required to be furnished for ensuring timely performance. It needs to be ensured that setting up of STPs and sewerage network to be completed and carried out so as to avoid any idle capacities being created. Performance guarantees may be taken for preventing such defaults.*

17. *Wherever the work has not commenced, it is necessary that no untreated sewage is discharged into the River Ganga. Bioremediation and/or phytoremediation or any other remediation measures may start as an interim measure positively from 01.11.2019, failing which the State may be liable to pay compensation of Rs. 5 Lakhs per month per drain to be deposited with the CPCB. This however, is not to be taken as an excuse to delay the installation of STPs. For delay of the work, the Chief Secretary must identify the officers responsible and assign specific responsibilities. Wherever there are violations, adverse entries in the ACRs must be made in respect of such identified officers. For delay in setting up of STPs and sewerage network beyond prescribed timelines, State may be liable to pay Rs. 10 Lakhs per month per STP and its network. It will be open to the State to recover the said amount from the erring officers/contractors.*

18. *With regard to works under construction, after 01.07.2020, direction for payment of environmental compensation of Rs. 10 lakhs per month to CPCB for discharging untreated sewage in any drain connected to river Ganga or its*

tributaries and Rs. 10 lakhs per month to CPCB per incomplete STP and its sewerage network will apply. Further with regard to the sectors where STP and sewerage network works have not yet started, the State has to pay an Environmental Compensation of Rs. 10 lakhs per month after 31.12.2020. The NMCG will also be equally liable for its failure to the extent of 50% of the amount to be paid. Till such compliance, bioremediation or any other appropriate interim measure may start from 01.11.2019.

19. *There is need to evolve a tourism policy for permitting hotels, vehicles or other such activities consistent with the carrying capacity to avoid pollution of River Ganga. There is also need for proper planning in all the areas adjacent to the River Ganga to regulate traffic and orderly movement, avoiding vehicular pollution and having 'vehicle free' or only non-polluting vehicles, scientific disposal of solid waste dumps consistent with the orders of this Tribunal dated 17.07.2019 in O.A. No. 519/2019[4].*

20. *Learned Amicus pointed out that at Gaumukh, there was pollution of sewers and resultantly bacteriophage activity of River Ganges which gives it inherent ability to kill harmful bacteria is decreasing which is not good in terms of maintaining water quality of the River Ganga. There is need to issue guidelines by the MoEF&CC for setting up of biodiversity parks for handing over flood plains of the rivers in the country to the Forest Department, for the purpose, within four months in terms of Para 21. Guidelines for levying compensation for discharge of untreated sewage/effluents into the river in terms of Para 13 of the order dated 14.05.2019 also needs to be devised.*

21. *We do not consider it necessary to consider point-wise progress in the present order in view of pre-existing directions on each of the points. The State of Uttarakhand may take action under each head, accordingly.*

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apply to the State of Uttar Pradesh also with regard to the timelines and compensation.

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24. *Chromium dump has been stored since 1976 which is required to be shifted to TSDF. The State of Uttar Pradesh may undertake health survey of the area and ensure shifting of the Chromium dumps within three months failing which it would be liable to pay environmental compensation of Rs. 10 lakhs per month to CPCB besides furnishing performance guarantee of Rs. 1 Crore to CPCB.*

25. *Let the remedial measures be taken by the SPCB for effective monitoring by installing CCTV cameras or undertaking surveillance in any other manner with the help of local police.*

26. *As observed in the case of Uttarakhand above, we do not consider it necessary to consider point-wise progress in the present order in view of pre-existing directions on each of the points. The State of Uttar Pradesh may take action under each head, accordingly.*

State of Uttar Pradesh (Phase –II), State of Bihar, Jharkhand and West Bengal

27. *With regard to **Phase-II to IV**, it is pointed out that no specific timelines have been laid down in the order dated 13.07.2017. Needless to say that if no specific timelines have been laid down, the compliance has to be ensured within reasonable time. A period of two years has gone by which can be treated as a reasonable time. Even if further allowance is to be made with regard to works under construction, after 01.07.2020, direction for payment of environmental compensation of Rs. 10 lakhs per month to CPCB for discharging untreated sewage in any drain connected to river Ganga or its tributaries and Rs. 10 lakhs per month to CPCB per incomplete STP and its sewerage network will apply with regard to States of Uttar Pradesh, Jharkhand, Bihar and West Bengal falling in **Phase II to IV**. Further with regard to the sectors where STP and sewerage network works have not yet started, the States of UP, Jharkhand, Bihar and West Bengal have to pay an Environmental Compensation of Rs. 10 lakhs per month after 31.12.2020. The NMCG will also be equally liable for its failure to the extent of 50% of the amount to be paid. Till such compliance, bioremediation or any other appropriate interim measure may start from 01.11.2019. Directions for*

compensation for default in this regard will be on the same pattern as in the case of Uttarakhand and Uttar Pradesh as above.

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29. *As noted on an earlier order[5] in a study in respect of 97 Ganga towns, the sanitation status was found to be as follows:*

> *"19 towns had municipal solid waste (MSW) plant within the town; 47 towns had adequate litterbins around the ghat area; 41 towns had anti-littering messages/hoardings placed around the ghat area; 72 towns had old & legacy dumpsites as well as garbage vulnerable points (GVPs) in the vicinity of the ghats; 66 towns had at least one nullah draining into Ganga;34 towns had sweeping & cleaning arrangements at the ghat area; 33 towns had solid waste floating on at least one of the ghats of the town. Further, the report mentions "The output of the survey offers a comprehensive report on cleanliness to aid the Government take action on the identified gaps. It also helps in understanding the best practices being implemented in various towns and ghats and support in sharing of knowledge among the various stakeholders helping them to inculcate and tailor best actions according to the city's requirement."*

The concerned Chief Secretaries may ensure that the above deficiencies are addressed expeditiously.

30. The two Monitoring Committees for ***Segment-A Phase-I*** *and* ***Segment-B Phase-I*** *may submit their final reports by 31.10.2019. Thereafter the Chief Secretaries of States of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal Director General, Namami Gange and Secretary, Water Resources, Jal Shakti, Government of India may personally monitor the progress and report compliance to the Tribunal in terms of progress at every quarter in a tabular form as follows:*

[5] Order dated 11.03.2019 at para 15

Sr. No.	***Targets to be achieved as per orders dated 10.12.2015, 13.07.2017 and 22.08.2019 the timelines***	***Targets achieved and the reasons for delay in compliance***	***Targets not achieved and the revised timelines proposed****	***Action taken or suggested for violation of timelines or non-achieving of targets***

**subject to payment of compensation as mentioned above*

> *31. Let a further quarterly progress report be filed by the Chief Secretaries of Uttarakhand, UP, Bihar, Jharkhand, West Bengal, with an advance copy to Secretary, Water Resources, Jal Shakti, Government of India by 30.11.2019 by e-mail at judicial-ngt@gov.in. The Director General, Namami Gange may file a consolidated report before the nest date by e-mail at judicial-ngt@gov.in."*

12. Thus, it was made clear that no untreated sewage was to be discharged into the river and interim remediation measures were to positively start from 01.11.2019 failing which the defaulting States were to pay compensation of Rs. 5 lakhs per month per drain. The Chief Secretaries were to identify the officers responsible for delay and adverse entries were to be recorded in their ACRs. For delay in STPs and sewerage network beyond timeline of 30.06.2019 for ongoing works and 31.12.2020 for works which had not yet started, compensation is payable @ Rs. 10 lakh per month per STP which can be recovered from the erring officers/contractors. NMCG is liable to pay 50% of the amount.

V. Issue of shifting of Chromium dump in existence since 1976 affecting ground water at Rania, Kanpur Dehat/Rakhi Mandi, UP:

13. The Tribunal in its order dated 22.08.2019 also fixed the timeline for clearing Chromium dump in the State of UP within three months and in default to pay environmental compensation of Rs. 10 lakh per

month, besides performance guarantee of Rs. 1 crore. Thereafter, on receipt of a report from Justice Tandon Committee, the Tribunal vide orders dated 27.09.2019 and 15.11.2019 in *O.A. No. 985-6/2019* issued directions on the subject. The said matter is now being separately dealt with and is fixed for hearing on 07.02.2020.

VI. Final reports of Justice Tandon Committee for UP and Justice Dhyani Committee for Uttarakhand and progress reports filed by States/NMCG in the light of order dated 22.08.2019 and report of CPCB in terms of order dated 14.05.2019 on the subject of biodiversity parks:

14. Accordingly, 'final' reports have been filed by the Monitoring Committees. Quarterly progress reports have been filed by the States of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal and a consolidated report by the NMCG. CPCB has also filed its interim report on the subject of biodiversity parks in terms of order dated 14.05.2019.

15. We first refer to the final report furnished by Justice Dhyani Committee. The report gives the status of construction of STPs, status of operation, management and performance of STPs and status of upgradation of 7 STPs not meeting the prescribed parameters. Town-wise detains in respect of priority towns have also been given. The report further gives status of compliance by industries. Compliance status by hotels, ashrams, dharamshalas, compliance status in respect of flood plains, mining on river beds, biomedical waste, municipal solid waste, compliance of directions for recovery of compensation. The summary and recommendations of the report given in chapters 11 and 12 are as follows:

"Chapter 11

SUMMARY OF MONITORING COMMITTEE OBSERVATION

The years' work of the Committee in verification of compliance to Hon'ble NGT Order on OA No 200/2014 is summarized as under:

I. *Management of Drains polluting the river and its tributaries: Efforts have been made to intercept and divert the identified drains and work on 111 out of 136 identified drains have been completed. The intercepted waste water couldn't be completely treated as many of the STPs' are as yet under construction. As such an estimated 100 MLD of waste water still remains untreated, including the waste water from the Jagjeetpur and Lakkar Ghat STP that have less capacity as of now. Once the STPs' at Haridwar and Rishikesh are commissioned, near 98% interception, diversion and treatment will be achieved.*

The alternative methods of waste water treatment must be closely evaluated for their safety and effectiveness. Use of every such methodology must be monitored by at least one Professional Institute and also by CPCB mandatorily. In absence of a standardized protocol, these steps are essential to protect public safety and also public money.

II. *Building up of sewage treatment infrastructure: State of Uttrakhand is working upon 18 number of STPs 9 have been completed. The remaining STPs are targeted to complete and commence operation as per the schedule submitted. Committee has the following reservations in respect of the STP infrastructure.*

a. *Sixteen smaller STPs' of electrocoagulation seen on the upper reaches of the river are not in operation. The process used to award the contract itself is a serious deviation. The project has been awarded and then the technology and details are submitted for vetting by IIT/Delhi. The Institution has made material changes to the design and added further process and equipment. Looking at the quality and condition of plant it is very clear that the finances proposed do not provide for these changes. Basically the financial bid was for a design that has itself changed substantially. With such a major infraction, can the plant be actually built and operated at the same cost. The situation suggests that it can't and therefore the plants are not getting completed and quality has suffered. The plant output water is compliant since the input waste water is almost clean at this stage.*

b. *STP plant is made at higher levels than the development/ houses/ commercial establishment. The constructions lower than*

the sewage and closer to the river continue unabated. The sewage lines are not be able to tap sewage from these locations and they are directly discharging into the river. At some places sewage is being pumped against gravity and it requires continuous electricity which is not available. Unless sewage infrastructure and control in habitation activity are completely coordinated the infrastructure will fail to achieve its purpose and river at its inception will continue to get contaminated and at a much faster pace. The areas where the problem is very evident are Badrinath, Joshimath, Devprayag, Rudraprayag-basically the Dhams on upper reaches.

c. *Sludge disposal and its monitoring is the blind spot in the entire system. There is no assessment of sludge generation, testing and scientific disposal so as to ensure that the waste recovered from water is not added back to the environment nullifying the entire effort. It is noted that even the tender document doesn't give it a serious space and therefore actually no one is responsible for sludge. Some effort has now been made to keep records and do the necessary testing of the manure made out of it. A standard protocol is necessary for sludge management as well.*

d. *No solution is applied for remote hamlets so far. The problem may not look very severe in numbers but it is polluting the clear stream emanating from the mountains.*

e. *Septage management seems to have gained attention. Policy and guidelines have been issued. Continued and sustained efforts are required for the same which includes-efficient mechanism for collection/transport, technology inputs for remediation at STPs', remediation where STP is too far and a system of financing and monitoring the activity,*

f. *The present system of Project Planning and execution is confusing. DPR is made by an outsourced agency that hands-over the document to Client (NMCG in most cases) and its responsibility ends. The DPR forms basis of tender that is issued by another Agency (UK Pey Jal Nigam) which wasn't actually a part of making the DPR and holds no responsibility for it either. The tender is evaluated by this agency on its own. The bidder is completely responsible for its bid and is required to make its own assessment irrespective of the DPR (if the document is shared). The bidder makes the cost bids basis its own technology and design. Tendering Agency awards work to the lowest bidder. After the work is awarded, the bidder is supposed to get its design vetted by technical institute. Now the design is changed by the Institute for various reasons. The financial costing done by the bidder is changed and the work is still to be executed in the same money. The financing is by NMCG that appoints a third outsourced agency for project monitoring so the critical responsibility shifts to another external party. The project is monitored by State Government as well but responsibility actually rests with an external agency paid for the purpose. Basically, the mother of the project-DPR maker hands over the baton to another one who then passes it to another and so on. No*

one is responsible and all contribute to project cost, delay and confusion.

Much worse is that the Project aim is itself fractured-making STP or a pipeline, or house to house connection; it's not addressing a solution-Treat all waste water in a XYZ town.

III. *Industrial Effluent and CETP: The Industrial establishment in the state fall into two major categories in terms of geographical location- eg. Industrial Clusters such as SIDCUL, Pant Nagar, and standalone industries spread all over the state- eg. Sugar and Distillery in Laksar, India Glycol and Nandi Paper Mills in Kashipur.*

The industrial clusters have a possibility of CETP. The three industrial clusters have CETP however the exercise of connecting industries to CETP need deliberate and serious push by UEPPCB and also support by State Government. More needs to be done in this regard. Then there is linked and more serious issue of financing and operating the CETPs'. Committee notices serious gap in viable financing, technical skills of operating agency and effective monitoring of the CETP operations. As a result the systems either fails to meet the desired results or there is a tendency to avoid operating it or both. Department of Industries that creates the infrastructure takes no responsibility for concomitant pollution and has so far not been seriously enlisted as a stakeholder.

The standalone large industries operate under the monitoring of UEPPCB in terms of environment compliances. The organization has neither developed sufficient in house capability nor created a mechanism for effective outsourcing. It is still to start using technology seriously to aid in its working. With the weak champion for the cause of environment, the industries are free to care for environment to the extent that they can or wish to. CPCB has limited intervention and in most cases it cites its dependence on UEPPCB. The situation is not conducive to effective compliance and Committee noticed its impact in every visit. HUL at Haridwar and Venkateshwar Textiles at Kashipur are good corporate citizens and have taken effective measures for water utilization and waste water treatment. In contrast, Sugar Mills and Paper Mills and India Glycol needed monitoring which was inadequate resulting in unchecked environment pollution.

The online monitoring of ETP outlet needs further strengthening in many critical areas including- calibration of the equipment and its temper proofing, real-time data analysis and automatic triggers back to industry, consistency in use of data for prosecution, standardizing best ETP plant and processes, industry-wise, based on performance, crosscheck the data with the catchment drain/ water body and more. Aim should be

to ensure fidelity of the data and use it efficiently to secure no pollution by industries. Otherwise monies spent on creating the infrastructure is not sufficiently utilised.

IV. *Flood plain demarcation, protection and utilization plan is still a work in progress. The encroachment close to the river and even the dry river bed in lean season continues unabated. River Chandrabhaga is cited just as an example and the same situation is happening in others as well. There has to be a serious political and administrative will to stop it entirely. Less than that all the plans for protecting river will fall short. The action taken at Maya Kund should become the rule so as to protect the flood plains.*

V. *E-FLOW has become a very well-known concept and there is an effort to implement the regime. There are reservations and issues raised by existing Hydel Plants and the same need to be addressed appropriately so that the regime is adhered to.*

VI. *Sand Mining on river beds: State Government has made a policy under which licenses are granted. There is awareness about the penalty for illegal mining and it's not as blatant as before. The continued interventions have achieved the purpose of making the sand miners and the officers understand the risks involved and has been able to drill the import of word 'illegal' into all players in this domain. This is a positive development that has helped to minimize illegal sand mining of a commercial and mechanized scale.*

VII. *Biomedical Waste Management Regulations have gained wider publicity and there is visible impact on larger hospitals where the colored bins have appeared in the last one year, more so in last six months. The protocol and training for segregation at source are yet to be firmed up and hospitals are experimenting their methods. There is clear effort evident in private hospitals and Government hospitals have still to catch up.*

VIII. *The CBWTF design, operation and meeting of desired standards is yet to happen. More attention is required in this segment so that post segregation and collection the biomedical waste is actually safely disposed of. The current competition of 'as cheap as possible' is failing the requirement of 'desired quality'. We have yet to come across a well design and operating facility so far. The management of liquid waste from HCF is yet to start. In fact even the state level agencies lack the knowledge of its requirement including legal provisions. Committee has started the process of creating awareness. Capacity building followed by its implementation and monitoring are the next steps to be taken by State and Central Agencies.*

IX. *Basically the stat has still to complete its process of meeting the regulatory requirement on the issue.*

X. *Municipal solid waste management in Ganga Towns is observed as a huge gap and a serious situation. State Government has plans which are on table and need to be brought on ground. The facilities seen do not inspire confidence. Dehradun MSW Plant is the only credible plant in the state. The problem of current waste together with legacy waste is assuming alarming proportions. The Ban on Plastics is not appreciated as effective with plastic seen almost everywhere and in all dumps. The dumping of mixed waste close to the river and the slopes leading to the river hasn't been stopped despite all judicial pronouncements. State Government expresses its limitation in finding a space for its disposal. However, we also see an equal gap in use of technology for its disposal. The seriousness of the problem is compounded by the fact that it is impossible to check its growth with the growing cities, population and commercial development. While space is a constraint for Government, garbage continues to find its own space-it is accumulating at will and everywhere.*

XI. *Awareness of the issue-saving the rivers and water bodies- is very much evident and overall Committee notes with satisfaction that the issue of water pollution is well highlighted in Schools, Colleges, media and the public as well as private stakeholders. There has been efforts by Government at creating awareness and also a number of private entities. Large Industries have a fair perception that law shall be implemented and it is in their best interest to take necessary steps and be responsible for environment. The same is yet to percolate to smaller and unorganized segment. Yet there is no denying the facts that the old habit of cutting corners calls for concerted and discretion-less application of law. The message that environment safety is precursor to live industry must get drilled longer to make it a habit.*

XII. *Government system is working on some fronts and needs to co-ordinate its efforts that is widely dispersed over multiple departments making accountability difficult to recognize. The fractured system of DPR and tender coupled with Ll concept are compounding the project execution and further diluting the accountability.*

XIII. *Maintaining Biodiversity is an important measure and needs more actual support. While Forest Department has been assigned the responsibility, it has to be supported with finances and large scale, impactful projects must be executed in a time bound manner.*

Chapter 12

RECOMMENDATIONS OF MONITORING COMMITTEE

I. *The Project Planning has to improve so that the DPR, the execution and the final outcome remain one entity's*

responsibility. All elements must fall in place simultaneously to achieve the final result- eg. treat all waste water discharge from say ABC town. Current state of separate DPR for each element at different times fracture the very definition of project and despite the 'lowest cost tender' all monies put together and the failure to achieve results in time prove far more expensive. The Project must include the non-negotiable quality as the start point and poor quality must face stringent measures for the concerned officers mandatorily. One entity must carry the baton till finishing line. 'Simplify' is the only solution.

II. *Water Footprint Planning must come under one umbrella even in the States. The use and treatment of water has to be planned against its availability, all sources combined. Water is an essential resource that can't be compartmentalized if urban centers have to become sustainable. The upstream of one town is the downstream of another and therefore, the upper town's mis-doings are paid by the lower town and its people.*

III. *Rivers are sacred in Indian culture and the same has to be shown by actually respecting its purity. It's surprising to see religious institutions- Temples, Ashrams and Dharamshalas polluting the rivers. The same entities must be mobilized to rectify the situations themselves and also propagate the message amongst devotees who throng to rivers for religious reasons. Similar effort has to be made to keep our religious places in good state. The condition of Badrinath, Devprayag, Rudraprayag, Joshimath, and Uttarkashi- in fact all such places speaks poorly of their management. It's difficult to locate the shrines and reach river without walking through dirty congested lanes. The all-weather char dam road will increase this flow and further uncontrolled commercialization of these places. If State Government doesn't plan in advance, whatever we may say about protecting rivers, it is not likely to materialize.*

IV. *The message of environmental responsibility must be conveyed clearly to the Industries. In fact Industry Department should be the one holding this responsibility. As of now they are promoting industry without any accountability for environment and have no co-ordination with other stakeholders-Central Ground Water Authority, Urban Local Bodies, Water and Waste Water Departments. Environment protection must be non-negotiable for industrial growth and even urban growth. Water recovery, recycle and reuse must be planned simultaneous with planning an Industrial Estate.*

V. *E-Flow must get maintained. Simultaneously there should be a plan to capture excess water when it becomes available. We are*

a country where flood and draught occur with equal frequency and in the same geographical location.

VI. *State Government in Uttrakhand bears significant responsibility of carrying clean water and delivering the same at its border. This is the river that nurtures the entire Gangetic plain. Therefore, waste water treatment must be of highest quality in the state. Any compromise will cost the other states dearly and there is no financial saving likely at the end. Hon'ble NGT has insisted on the highest parameters for its treatment Plants and there can be no concession or deviation possible. In this light, the meticulous functioning of UK Pey Jal Nigam and UEPPCB is absolutely essential. Both organizations require high caliber professionals, continuous training and use of best technologies to ensure consistent performance. A lot needs to be done on this front.*

VII. *The online monitoring infrastructure is still in its infancy. As stated supra it needs to be udgraded and better utilised for the purpose of achieving environment protection.*

VIII. *Maintaining the ecological balance in this area is also essential to protect the water sources. Biodiversity is one aspect. Interventions in this regard must be concentrated, impactful and visible. Current strategy of patchy and scattered plantations need a serious re-look. The number of plants seeded is very high but the impact is visible only in Rasiyavad where there is concentrated effort and original flora and fauna have been revived. Similar effort on a large scale and with involvement of local population is urgently required. This is a state known for CHIPKO movement and it will not be a difficult task to have the communities involved in such projects.*

IX. *CBWTF are private enterprises and the entrepreneurs would need state support in running the business with good quality output. As of now given limited cooperation of users and very small fee that HCFs' are prepared to pay, no entrepreneur is bringing in the right technology and investment in this segment. It's a nascent sector where State Government and Central Agencies need to think through a viability framework. The current ones are facing fines and closures but new ones are not emerging. It is a worrisome situation. Given the performance of government in STP and related segments, one would not wish it to become Government venture. Al the same, it's a business that has to be rightly nurtured at this stage.*

X. *MSW has been a mounting problem and everyone agrees that it requires an urgent solution. This segment is also gravitating towards the same system of DPR, Tender and no responsibility. Government must have a clear view on do we own that technical competence to make the DPRs' and do a*

right project of managing 'unsegregated waste'. We have to first make the right 'Problem Statement'-"Manage the unsegregated municipal waste of ABC city in 2 hectares of land with minimum landfill to be accommodated in that land itself for say 15 years". The plan that we have seen so far, begins with segregated waste and ends with land requirement with no indication on how we derived it and what is the final target. If an Agency-nationally or globally, has the proven solution that can be executed, it may be brought in with a system for cost control instead of financial bidding. A credible entity is unlikely to give a financial bid in the current experimental status. A few such plants will provide the actual costs, experienced manpower, test and adaptation of technology and market will see a better and competitive response. As of now small monies are spent and more land is lost under the heap of garbage, not to mention its impact on environment and health of people. It's better to accept crisis and seek all that help that we can get."

16. We may now refer to 'final' Report of the Monitoring Committee for the State of UP dated 23.10.2019 which has been filed on 31.10.2019 for Segment 'B'. The report refers to the progress in terms of waste water treatment, tapping of drains, connecting of tapped drains to STP, compliance by Grossly Polluting Industries (GPIs), reduction in use of water by the industries, leading to reduction in waste water generation and pollution load, biomedical waste management. The Committee has given the status of STPs for which works have been awarded and which are at tender stage. Status of compliance by the existing STPs has also been mentioned. It has been specifically mentioned that STPs at Jajmau were not operational and those not fully operational. Reason for non-compliance by already constructed STPs are structural defects, absence of financial assistance or not receiving the required sewage quantity. The report also mentions illegal order of the Principal Secretary, UP dated 08.08.2019 permitting waste water to be discharged directly into river Ganga which is subject matter of OA 985/2019. Deficiency in working CETP

has also been mentioned. The report also gives the status of major drains. It is stated that the waste extracted from the drains has been heaped on the sides of the drains and not transported to designated place. Demarcation of flood plains has not been completed. E-flow has to be ensured. Green belt plantation direction has yet to be enforced. Mining has to be regulated. Ground water extraction is not being properly regulated. Chromium dump at Rania and Rakhi Mandi needs to be remediated. Primary Effluent Treatment Plants (PETPs) need to be compliant. Solid waste is not being treated. More than 1 lakh MT waste is lying at open in Meerut. 4 lakh MT waste is lying at Kanpur. Such waste is uncovered and lying in open and has a potential of hazard. Recommendations of the Committee are:

"RECOMMENDATIONS:

The Committee may make following recommendation for the purpose of prevention of pollution of River Ganga in light of the various reports and observations.

1. STP's, CETP'S and ETP'S

CCTV cameras with the provision of live feed through an app on mobile along with storage capacity of 30 days must be installed at all STPs. Access to app may be provided to the public at large so that they may verify at any point of time as to whether the STP is operational or not. OCEAMS must also be installed and linked to a central server for constant monitoring.

In the matter of working of STP quantification of the total sludge generated and to whom it is sold or the manner it is disposed of, must be recorded by the STP operator with verifiable data on day to day basis. The record must notice the total sludge generated, quantity of sludge sold/disposed of, along with name of the person with address to whom sold/provided free of cost.

In respect of CETP an identical provision for installation of CCTV cameras with live feed through an app on mobile must be made. The sludge generated at the CETP must be analysed, and it must be ascertained as to in what manner

the same is required to be disposed of. In case the sludge contains heavy metals, it must be directed to be transported to Hazardous Waste Disposal Plant and verifiable records must be maintained on day to day basis by the operator.

So far as the ETP installed by the industries are concerned, provision for installation of CCTV cameras with live feed must be provided which can be monitored through an app on mobile along with storage capacity of 30 days. The sludge generated must be directed to be quantified and recorded on day to day basis. The manner in which the sludge is disposed of/sold with specific details of the purchaser or the person to whom it is provided for disposal must specifically be mentioned.

Quantification of sludge generated at the STP, CETP and the ETP and the manner in which it is disposed of/sold would be a good indicator for assessing the performance of the plant.

The State Government may be asked to constitute a separate State Cadre Service for operation and maintenance of STP's and CETP's consisting of experts having knowledge of operation and maintenance of STPs/CETP's.

2. Modular STP's

In old city areas laying of sewer lines/sewer trunk lines not only requires huge amount of expenditure it also leads to inconvenience to the public at large for months together. Further construction of big STP not only requires large area of land which is in scarcity in big town. It also raises serious issue with regard to discharge of dirty water when the plant becomes nonoperational for maintenance or for other reasons. The Committee would recommend that State may resort to modular STP's to be installed at the tail of the drains which are already carrying sewage to the river/its tributaries.

***3. Extraction of underground water**.*

A study be undertaken industry-wise as to what quantity of underground water is actually required by the industry for its manufacturing purposes. Permission for extraction of underground water be revisited by the Central Ground Water Authority having regard to the aforesaid aspect of the matter, specifically in respect of industries which have become ZLD or partially ZLD. The rates for extraction of underground water in our opinion must be so fixed so as to ensure that larger the amount of water extracted, the higher the rates like in the case of electricity charges.

There must be specific directions for authentication and verification of the flow meters installed in the premises of each industry, on periodical basis.

The report in that regard must be submitted with the Central Ground Water Authority. Competent department for the purpose must also be identified.

4. ***Compliance of conditions mentioned in the order permitting to operate.***

District level officer of the pollution department be specifically made aware of the conditions mentioned in the permission order and they must ensure strict compliance thereof. Periodical reports must be submitted in respect of compliance of the conditions as mentioned in the permission order.

5. ***Fresh Joint Inspection of GPI's.-***

In view of the conclusions of the Committee that the joint inspection done in respect of GPI's is not comprehensive and does not take into consideration many issues which are relevant for avoiding pollution a fresh joint inspection of all the GPIs' be directed in light of what is observed in the report with the condition that in case a GPI is found to be violating the conditions contained in the permission to extract underground water heavy environmental compensation be imposed on day to day basis.

6. Notification of rates for transportation of spent chrome.-

Chief Secretary of State of Uttar Pradesh be directed to ensure that rates for transportation of spent chrome from the tanneries to the Hazardous Waste Management Plant at Kanpur are notified within 15 days and recovery from the tanneries is effected in terms of the order of the Hon'ble National Green Tribunal dated 13.07.2017 passed in O..A.No.200/2014.

7. Finalization of parameters for inlet and outlet of STPs.-

Under the notification of the Ministry of Environment dated 01.01.2016 each State has to notify the parameters for inlet and outlet of CETPs' .The State of Uttar Pradesh has not been able to do so. The Chief Secretary must be asked to notify the parameters in respect of discharge of CETP and the point from where samples are to be drawn for ascertaining as to whether CETP is compliant or not having regard to the fixed designed parameters.

8. Monitoring of E-flow

CWC must be directed to monitor e-flow of River Ganga specifically during lean season at various places specifically between Hardoi to Kanpur regularly. It must be ensured that

the quantity of water in the normal channel of the river is maintained equivalent to 20% on an average monthly basis during lean months of the River Ganga at Haridwar. CPCB shall continue to monitor the river water quality.

9. Installation of ETP at Hospitals.-

All hospitals of more than 100 bed capacity must be asked to install their ETP's in a time bound manner failing which action may be recommended and the Chief Medical Officer must be made responsible for ensuring the said compliance.

10. Resorting to Incineration of Waste.-

CPCB and UP PCB must ensure that where ever permission is granted to dispose of the sludge/industry waste through incineration, then such permission must accompany a detail scheme for disposal of the ash to be generated/collected because of incineration. In case it is not possible to dispose of the ash in the effective and safe manner such permission for incineration must not be granted.

11. Afforestation and Bio-diversity Park

All the land which become available due to the reduction in the storage capacity of the lagoons at distilleries/sugar factories/other industries in terms of the circular of CPCB, fixing the storage capacity equivalent to 30 days production must be directed to be utilized for thick plantation so as to act as a buffer against foul air of the industry and a source of fresh air to the residents of the localities.

NGT order had asked for framing of guidelines by CPCB and MOEF. The same is yet to be complied. CCA Projects/UP has already framed plans for Biodiversity Parks under guidance of Mr C R Babu, subject matter expert. All district DFOSs' have have been trained in the concept and 25 projects for establishment of Biodiversity parks have been submitted to State Mission for Clean Ganga on 18 October with a total approx. cost of 323.82 Cr. The same should be perused expeditiously for appropriate approvals.

In pursuance of NGT order, CPCB has also worked upon the plan for bio-diversity and has completed a study on river rejuvenation for Kali East. A draft has been prepared for action for this river.

12. No discharge of untreated dirty water in River Ganga at any point of time.-

The State must be asked to come up with a comprehensive plan so as to ensure that no sewer or dirty water enter into River Ganga even during the rainy season/during the period

the STPs are under maintenance/repair or otherwise. The State must resort to phyto-remediation, bio-remediation or any other technology where ever STP's are not in operation. The process used must be well evaluated and also documented as for its safety to the river ecosystem and its effectiveness in pollution abatement. CPCB shall be responsible for constant monitoring of the performance of any such project undertaken in the drains. It shall periodically submit its report to the State Authorities as well while taking appropriate action under law and NGT order. CPCB is entrusted with this important responsibility as custodian of environment, more specifically the Rivers in this case.

13. Removal of Chromium Dump at Rania, Kanpur Dehat and Rakhi Mandi, Kanpur.-

Chromium dump lying at Rania, Kanpur Dehat and Rakhi Mandi, Kanpur must be removed with promptness and due diligence. Effective measures in a time bound manner must be taken. Till such removal the dump must be covered so as to ensure that rain water does not come in contact with the chromium dump and leachates from dump is avoided as far as possible. Drinking water facilities for human beings and animals at both the places must be ensured by the State of Uttar Pradesh without fail. There must be a constant monitoring of the steps to be taken by the Government for permanent removal of chromium and responsibility must be fastened for the safe execution of the work upon the Chief Secretary of the State of Uttar Pradesh.

14. Solid Waste.-

The State must ensure fast and effective measures for disposal of solid waste both legacy and that generated on day to day basis in big cities like Meerut, Kanpur, Bareilly, Moradabad etc. Safe and hygienic method for disposal of the plastic bags must be a part of the mechanics for disposal of the solid waste. Hon'ble National Green Tribunal must monitor the action plan of the State Government in that regard on regular basis.

15. Restriction on use of plastic bag.-

Use of plastic bag for segregation of Bio-medical waste and other waste, both recyclable and food waste etc as well as other Municipal waste must be stopped immediately. State must come out with an alternative for such segregation and transportation of the Bio-medical waste, recyclable waste and other waste.

LASTLY

The Committee feels that levy of environmental compensation upon the polluting industries does act as a deterrent. But the same principle of levy of environmental compensation does not act as a deterrent qua the local body, local authority or departments of State of Uttar Pradesh for the simple reason that public money collected by the department/funds provided by the Government are used for payment of such compensation to the Pollution Department. Meaning thereby, that it is the public money which is used for payment of Environmental Compensation. The Hon'ble Tribunal may not only impose/levy environmental compensation in case of pollution norms being violated/ noncompliance of the directions issued by the Hon'ble Tribunal upon local bodies, local authorities and government departments it may also consider to recommend adverse action against the responsible officer, in a time bound manner and further a part of the environmental compensation be directed to be recovered from the salary of the officer concerned. The Committee would recommend that action be taken against the officers at the highest level.

The Committee also requests for appropriate orders on the non-operation of STP infrastructure in Allahabad, namely 29 MLD STP at Salori, 80 MLD STP at Naini, 60 MLD STP at Rajapur. Further, the Committee also submits that Geo-tubes have not been removed from the site nor the sludge entrapped properly managed. The report of UP PCB along with photographs is submitted alongwith.

Committee suggests that the following aspects of Ganga cleaning require continued monitoring.

1. *The ground water extraction, water utilization by major industries and ground water replenishment measures need constant monitoring for improvement. CGWA is clearly not proving sufficient to guard the ground water issues which are fairly serious in nature.*

2. *The accounting for safe disposal of sludge from CETP and STP requires a standard protocol and constant monitoring. As of now it is going unassessed by all the agencies.*

3. *Kanpur has seen much effort in last two years and continues to require more work to abate the pollution that it causes to River Ganga.*

4. *Rania Chromium dump is a serious problem whose solution is yet to start. Very close monitoring is called for to ensure that problem is actually solved.*

5. *Notification of Flood Plains is the starting point in protecting the River ecosystem. It is required to protect the flood plain zones and initiate the process of restoring the biodiversity*

along the river. The same is still pending with State Government.

6. *The well- coordinated creation of infrastructure for waste water treatment and its optimal operation and maintenance so as to ensure that no waste water enters river needs consistent watch. It tends to slip up at multiple points in the current multi-agency complex process. Stakeholders haven't envisaged a change in current process and therefore constant watch is the only option to ensure that public funds utilized achieve the purpose of clean river.*

7. *CPCB shall continue to monitor the waste water infrastructure and the Drains falling into river Ganga and its tributaries. It shall take appropriate action as per NGT order and under the prevailing legal provisions."*

17. We may now refer to the consolidated report filed by the NMCG on 11.12.2019. On the most significant of sewerage infrastructure projects, the chart filed is as on 30.07.2019 which has already been quoted in order dated 22.08.2019. During the hearing, the representative of NMCG stated that there is marginal progress but the timeline will be adhered to. On the subject of preventing pollution, installing Continuous Emission Monitoring System (CEMS), use of treated water, sludge, bio digesters and septage management, preventing dumping of waste and management thereof, flood plain identification, maintenance of e-flow and displaying water quality data, development of biodiversity parks, prohibiting river bed mining, recovery of compensation, involvement of civil society, status has not been clearly spelt out though a voluminous chart has been filed.

18. The Executive Director, NMCG, when asked about the latest status with regard to Sewage Infrastructure Projects in Ganga Basin (Downstream of Unano to Gangasagar), stated that out of the total 75 projects, 16 have been completed, 36 are ongoing and 2 are in the

category “tender to be floated”. This amply demonstrates that there is hardly any progress, in terms of achievement of setting up of STPs, after 30.04.2019 which was stated in a tabulated form in our order dated 22.08.2019. The NMCG needs to take action against the erring officers and file a report before the next date.

19. Brief summary of the reports received from the States of Uttarakhand, UP, Bihar, Jharkhand and West Bengal are as follows:

UTTARAKHAND

Setting up of STPs, Interception and Division (I&D) of drains and preventing untreated sewage and effluents in the River Ganga.

a. Out of 18 projects sanctioned under Namami Gange Programme, 10 projects have been completed, 5 projects are scheduled to be completed by December 2019, 2 projects to be completed by February 2020 and remaining 01 project relating to Construction of 2 STPs at Joshimath of which 01 STP has also been completed in June, 2019 and work of other STP is stopped which will be completed by June, 2020.

b. Under 18 projects, 30 STPs are proposed of which 21 STPs are completed, 06 STPs are to be completed by December 2019, 2 STPs will be completed by February 2020 and 01 STPs by June, 2020.

c. Under these projects, 59 drains are proposed to be intercepted and diverted to these STPs against which 43 drains have been intercepted, 9 drains are proposed to be intercepted by June, 2019, 4 drains by February 2020 and remaining 3 drains by June, 2020.

d. Bio-remediation on such 07 drains namely 1. Chandershwar drain (Consists of 3 drains merging together at one point-Shamshan Ghat, Dhalwala and Chandershwar), 2. Taulia drain, 3 Junior High School drain, 4. Kothiyalsain drain, 5. Baitarni drain, 6. Pokhari Bend drain and 7. Belni drain has commenced w.e.f. 01.11.2019 in compliance of the directions passed by this Hon'ble Tribunal on 22.08.2019. Thus, all the drains under the ongoing projects shall be intercepted and diverted to STPs for treatment' before 1st July 2020; and as an interim measure Bio-remediation facility has also been installed before 01.11.2019 on 07 drains which are likely to be intercepted and diverted after December, 2019.

Information in tabular form

Sl. No.	Targets to be achieved as per orders dated 10.12.2015, 13.07.2017 and 22.08.2019 the timelines	Targets achieved and the reasons for delay in compliance	Targets not achieved and the revised timelines proposed	Action taken or suggested for violation of timelines or non-achieving of targets.
1.	As per orderdated Gyansu and 40 M STP Haridwar which were sanctioned before 10.12.2015	As per the directions of Hon'ble NGT the targets were achieved in case of Tapovan, Devprayag and Gyansu. Regarding 40 MlD STP at Haridwar,it was A approval for 68 MlD STP on Hybrid Annuity PPP Model, as such work is now scheduled to be completed by February, 2020 well before the timeline (01.07.2020) set by order dated 22.08.2019 for ongoing works.	Not applicable	Not applicable
2	As per order d 22.08.2019following timelines have be set:- (a). The project~ under execution are to be completedby 01.07.2020	Out of 18 projects sanctioned during 2017-2019, so far 10 are completed, OS will be completed by December, 2019, 02 by February, 2020 and remaining 01 by June, 2020. Hence, targetis b		Though the projec ts will be Completed before 01.07.2020, liquidated Damage (LD) has been imposed on contractors who failed to achieve milestone during construction. Detail thereof is given under para 5.16 (6) of. This affidavit.

	(b). The projects where work has not commenced are to be completed by 31.12.2020.	01 project (STP & I&D Srikot) falls under this category.Work has	Not applicable	Not applicable

Action Taken by State Government on the Observations of the Monitoring Committee in reference to the Report dated 23.10.2019.

The State Government has clarified and provided action taken report in response to the report of the Monitoring Committee dated 23.10.2019 which inter alia relates to;

a. Interception of Pandeywala drains in Haridwar.
b. Functioning of 3 Mini STPs at Devprayag.
c. Functioning of STP of 50 KLD at Sangam road NandPrayag.
d. Functioning of STP of 1.08 MLD, STP at Pokhri, Joshimath town.
e. Functioning of STP at Badrinath.
f. Functioning of STP at Tehri Town.
g. Online Monitoring System for STP of 1 MLD at Rishikesh and other STPs at Haridwar, Tapovar, Swargasharam, Gyansu (Uttarkashi) and Srinagar.
h. Construction of Electro-Coagulation based technology for 16 small STPs.

Use of Treated Water

a. The treated water of 68 MLD from STP of Jagjeetpur will be use for irrigation by constructing a canal of 10 Km length and 20 Km offsets length having carrying capacity of 90MLD and this will be completed by December 2019.

. Treated water from Sarai STP of 32 MLD (18+14) will be used for irrigation.

a. With regard to STPs at Rishikesh and Munikireti the work is, to be undertaken for construction of a Canal of length of 20045 Km by Irrigation Department to use 5 MLD of treated water. However, **no timelines are given for completion.**

d. It has been mentioned that treated water will not be possible in hilly region as the discharge from such STPs is very less and not techno economically feasible and hence treated effluent as per described norms is being discharge into the river.

e. Therefore, **it is important all STPs should meet faecal coliform standards if it is discharged into the river.**

Use of sludge manure (Ref. 5.4 Page 16)

a. The sludge generated from STPs/septic tanks is utilized by the farmers as manure against production of estimated production of 10732 cubic meters sludge, 14924 cubic meters sludge has been distributed to the farmers. (Free of cost)

b. Sludge generated is found to be saved for application.

Status of Septage Management (Ref. 5.5 Page 17)

a. Protocol for Septage Management has been developed and 9 septage suction transport vehicles have been procured, however, **Timelines are not given Septage Management in other hilly towns where specific Septage Suction Vehicles are needed in these hilly towns.**

b. **Direction: In no cases Septage either solid or non slury form should be disposed in any stream leading to the river Ganga or its tributaries.**

c. **There is no clear cut Action Plan is emerging out with timelines for co-treatment of Septage with existing STPs.**

Compliance in relation to Industries (Ref. 5.6 Page 18)

a. It has been mentioned that out of 7080 industries in operation in the State, 5306 units are having valid consents and 204 applications are under consideration at various levels and remaining 1570 have been issued directions to show cause.

Functioning of CETPs

a. 3 CETPs are reported to be complying with standards.

. All the operational units in Sitarganj are connected with CETP. Out of 531 industries, 20 are not connected in CETP Haridwar and the conveyance system is under construction which will be completed by May, 2020.

a. In Pantnagar CETP, out of 499 industries, 254 industries are not connected with CETP because of non-availability of conveyance system. Further out of 254 now 61 industries are connected and remaining 193 industries will be connected within one year time.

b. Observations: can the industries which are not connected to CETP but having stand alone ETP must be complying with the prescribed norms and what is the mode of disposal of their effluent is not clear in the report. Till they are connected to

CETP, SPCB may take a view on their operations if such units are not found to be complying with the stricter standards.

. UKSPCB has to ensure that CETPs should meet with the prescribed norms and the treated water should be utilized instead of discharging effluents in any drain leading direct or indirectly to the river Ganga.

Rawali Mahdood Drain (Para 5 Page 20)

a. The action proposed to be taken for this drain has not been clearly mentioned.

Installation of STPs and Solid Waste Management in Hotels/Ashrams/Dharamshalas and Roadside Hotels.

a. UEPPCB should ensure that as per applicability, hotels/ashrams/dharamshalas should have their own STPs and no untreated water should go into river Ganga or any stream.

b. The roadside Dhabas, Hotels should not discharge their waste water down the hill/slopes contaminating the fresh water streams.

Other Issues

a. The report has given status on environmental flows, compliance of Solid Waste Management Rules, Disposal of Bio-medical Waste, Zoning of Flood Plains, Regulation of Mining Activities, Plantation of Biodiversity Parks and evolving the Tourism Policy.

b. With regard to Mining Activities, it is mentioned that River Bed Mining in the State of Uttarakhand is carried out in highly

regulated unscientific manner as per the provision of State Mining Policy and Uttarakhand Mining Mineral Rules, 2001.

c. However, it appears large number of illegal mining is taking place which is evidenced as per the statistics given under Para 5 indicating that in the last 5 years 10,167 cases have been reported in posing penalty of 57.71 crore (Para 5 Page 33).

Sl. No.	**Financial Year**	**Illegal Mining/Storage/ Transportation cases**	**Penalty (in Rs. Crore)**
1	2015-2016	1324	12.27
2	2016-2017	1424	4.41
3	2017-2018	3231	9.44
4	2018-2019	2649	26.99
5	2019-2020 (Up to October 2019)	1539	4.60
Total		10,167	57.71

River Water Quality (Para 5.8 Page 22)

a. The UEPPCB has provided water quality data of river Ganga at 29 locations (Annexure 11, Page 15854) which has indicating that at 11 locations the water of river Ganga is fit for direct drinking and it is worth appreciating that the sanctity and the glory of the Ganga is observed at such locations such as (>2): River Dhauli Ganga B/C Alaknanada at Vshnuprayag, River Alaknanda B/C River Nandakini at Nandprayag, River ALaknanda A/C Nandakini at Nandprayag, River ALaknand B/C River Pindar at Karanprayag, River Mandakini B/C Alaknanda Rudraprayag, River Alaknanda B/C mandakini Rudraprayag, River Alaaknanda A/C Mandakin Rudraprayag, River Alaknanda A/C Bhagirathi Devprayag, River Alaknanda B/C Bhagirathi Devprayag, River Alaknanda B/C Alaknanda Devprayag, River Mandakin D/S Agustmuni Rudraprayag.

b. Since it is achieving the water quality standards of >2 MPN/100 ML Faecal Coliform, however at other locations such as River Alaknanda B/C Dhauli Ganga at Vishnuprayag, River Akaknanda A/C Dhauli Ganga at Vishnuprayag, River Nandakini B/C Alaknanda at Nandprayag, River Pindar B/C Alaknanda at Karanprayag, River ALaknanda A/C Pindar at Karanprayag, River Bhagirathi D/S Uttarkashi, River Ganga U/S Lakshmanjhula Rishikesh, River Ganga U/S Riawala Dehradun, River Suswa at Mathurawala Dehradun, River Song D/S Near Birla Guest House Dehradun, River Ganga D/S Rishikesh, Upper Gnaga Cnal at Laltarao Bridge Haridwar, Upper Ganga Canla at Rishikul Bridge Haridwar, Upper Ganga Cnal D/S Roorkee, Upper Ganga Canal D/S Har Ki Pauri Haridwar, Upper Ganga Canla at Damkoti Haridwar. Where the water quality does not meet the drinking water quality standards of >2 MPN/100ML faecal Coliform. Which requires to be achieved.

Uttar Pradesh

The Chief Secretary has filed the Quarterly Progress Report dated 11.12.2019. The Report gives a Tabular Statement in respect of expected date of completion of projects and proposes revised timelines for Segment 'B' Phase I and for rest of the State. The report further indicates status of CETPs at Kanpur, utilization of Treated Sewage Water, Bio-remediation of 44-59 drains having sent the proposal/DPR amounting rupees 1796 crores to NMCG, sanitation status in Ganga towns, Solid Waste Management in-situ and safe disposal of chromium dumps at Khanchanpur, Rania and Kanpur Dehat.

It has been further informed that where CETPs are not working properly, Environment Compensation has been imposed. UPPCB is regularly monitoring the status of compliance of STPs and CETPs and during the quarter of September to November, 20 STPs have been found defaulting on which notices have been issued for imposing Environment Compensation of Rupees 39.04 crores. With regard to CETPs, it is stated that out of 07 CETPs, 02 CETPs have been found defaulting against which EC of rupees 45.60 lakhs has been imposed.

Further, Report on Environmental Flow has been filed along with Report of Irrigation and Water Resource Department. Demarcation of Flood Plain Zone of River Ganga in Segment 'B' has been completed and field verification has been done.

State of Bihar (Page 15526)

a. The report has been filed on 30.11.2019 by SPMG Bihar. The report indicates following towns on the bank of River Ganga

S.No	Name of the River	Name of Towns

1	Ganga	1. Patna A. (Phulwarishariff) 2. Maner 3. Danapur 4. Bakhtiyarpur 5. Barh 6. Mokam 7. Munger 8. Sultanganj 9. Bhagalpur 10. Buxar 11. Barahiya	12. Jamalpur 13. Kahalgaon 14. Chhapra 15. Sonepur 16. Hajipur 17. Begusarai 18. Khagaria 19. Naugachhiya 20. Dighwara 21. Teghra 22. Manihari

b. Liquid Waste Management

- A total 26 sewerage infrastructure projects sanctioned at a cost of Rs 5089.82 Crore which are at various stages of implementation in towns namely Patna (11 projects), Begusarai, Munger, Hajipur, Mokama, Sultanganj, Naugachia, Barh, Bhagalpur, Sonepur, Chhapra, Khagaria, Bakhtiyarpur, Maner, Danapur and Phulwarishariff. These projects will facilitate in treatment of 616.5 MLD of sewage through creation/rehabilitation of STPs, sewerage network and allied Interception and diversion works.
- 16 projects (Beur STP, Beur Sewerage Network, Saidpur STP & Adjoining Network, Saidpur Sewerage Network, Karmalichak STP, Karmalichak Sewerage Network, Pahari STP, Pahari Zone-IV A (South), Pahari Zone V, Sultanganj, Mokama, Sonepur, Barh, Naugachhiya, Bakhtiyarpur and Maner) are under implementation
- LOA has been issued for 2 projects (Digha, Kankarbagh) and 10 projects (Munger, Hajipur, Bhagalpur, Begusarai, Chhapra,

Khagaria, Munger and Fatua, Danapur, Phulwarishariff in one package) are under tendering stages.

- In addition, revised estimate of 1 project (Buxar) is under process
- Total 126 Nallas in the Ganga towns in which 124 Nallas has been screened. Rest 2 Nallas screening not required.

State of Jharkhand (P-15508 to 15512)

a. 2 STPs have been constructed by SMLP and 7 MLD capacity and the work is completed.

b. 1 STP of 3.5 MLD capacity is under construction and will be completed by June, 2020.

State of West Bengal (Page 15522-15524)

a. Report has been filed on 29.11.2019 by Programme Director WBSPMG. The quarterly report relates to details of STPs and target dates. According to the report, there will be overshooting of the dates/prescribed timelines given in the Order of the Tribunal dated 22.8.2019.

Report of CPCB on Biodiversity Parks

Though the issue has not been finalized, the proposal is to prepare guidelines giving structural components of biodiversity parks with reference to such parks already developed and functional. The report mentions as follows:

> *".....DDA has notified so far 7 Biodiversity Parks (the Yamuna, the Aravalli, the Neela Hauz, the Tilpath Valley, the Northern (Kamla nehru) Ridge, Tughalaqabad and South Delhi Biodiversity Parks, besides the recent order for setting up of Riverfront Biodiversity Parks by DDA. Of these 7 Biodiversity Parks, the Yamuna and Aravalli Biodiversity Parks are fully functional and have become Nature Reserves of Delhi. Both the Biodiversity Parks have become global models for conservation of natural heritage and environmental sustainability. The Yamuna Biodiversity Park model is an appropriate model for replication in the floodplains of the rivers across India."*

Conservation zone will have biological communities and forest communities as follows:

"Nature Conservation Zone

The Nature Conservation zone has biological communities interspersed with wetlands and grasslands. There are altogether 25-30 biological communities, some of which are given below:

(i) Mitragyna dominated communities (Figure I a)
(ii) Terminalia chebula dominated communities
(iii) Adina dominated community
(iv) Acacia catechu dominated community (Figure 1 b)
(v) Holoptelia dominated community (Figure 2b)
(vi) Teak dominated community
(vii) Terminalia tomentosa dominated community
(viii) Acacia nilotica dominated community
(ix) Dalbergia sisso dominated community
(x) D. lanceolata dominated community
(xi) Albizia dominated community (Figure 2a)
(xii) A. lebbeck dominated community
(xiii) Cordia dominated community
(xiv) Jamun dominated community (Figure 2c)
(xv) Amla dominated community
(xvi) Grasslands communities (that include short, intermediate and tall grasslands) (Figure 2b)
(xvii) Mixed deciduous forest (Figure 3a)
(xviii) Wetlands ecosystems (wetlands are fully functional and biologically rich and attract 1000s of migratory birds during winter months) (Figures 4a,b,c&d)

Communities have diversified food web and three trophic levels. These riparian forest communities provide a wide range of ecological services and harbour rich wildlife (Figure 7b, 8a&b).

These diversified riparian ecosystems: (a) buffer ambient temperature, (b) prevent evaporation by keeping the water cool, (c) provide detritus (organic matter) to the biota that live in the river water and purify the water more effectively than RO plants, (d) prevent erosion / gully formation on the flood plains, (e) enhance recharging potential of the flood plains, (f) serve as filter for both point and non point source air pollution, (g) act as shelter belt, (h) reduce the flood water velocity that ensure protection of infrastructure and communities in the downstream, and (i) harbour rich wildlife having three trophic levels.

The wetlands alone store flood water of several million gallons and recharge ground water and even provide lateral flow to the river during lean period, clean waste water if it enters into river system (treatment wetlands) through storm drains. The wetlands also serve as habitat for a wide range of animal species that form

a rich trophic life. These wetlands attract 1000s migratory birds during winter months."

A test case has been proposed to rejuvenate Kali river stretch of 200-300 km from Khatauli to the Aligarh-Diwai Railway Bridge (at Chhatari village) where the Kali river exits from Bulandshahr District.

20. We have heard Shri A.N.S. Nadkarni, learned ASG appearing for the State of Uttarakhand and learned Counsel for the States of Uttar Pradesh, Bihar, Jharkhand and NMCG. None appears for the State of West Bengal.

21. It is seen that except the State of Uttarakhand, no other report has been given in a tabular form as directed in terms of para 30 in the order dated 22.08.2019. With regard to State of Uttarakhand, progress has been indicated on the following subjects:

i. Setting up of STPs, Interception and Division (I&D) of drains and preventing untreated sewage and effluents in the River Ganga

ii. Use of treated water

iii. Use of sludge manure

iv. Status of septage management

v. Compliance in relation to industries

vi. Installation of STPs/treatment facilities in Hotels/Ashrams and Dharmshalas.

vii. Water quality monitoring of river Ganga and its tributaries.

viii. Maintenance of environmental flow in river Ganga.

ix. Disposal of Bio-medical waste.

x. Compliance of Solid Waste Management (SWM) Rules, 2016.

xi. Preparation of maps and zoning of flood plains.

xii. Mining activity under supervision of the concerned authorities.

xiii. Action against identified polluters, law violators and officers responsible for failure for vigorous monitoring.

22. It is stated that the work of STPs will be completed within the timeline laid down and bioremediation has been started on seven drains which have not yet been taped. The points raised by the Monitoring Committee have been addressed. Learned ASG, however, stated that more action was required for solid waste management for which CCTV cameras need to be installed, security guards posted and designated areas cordoned off. Legacy waste dump sites which are said to be atleast 12 in major towns need to be bio-remediated. Let such steps be taken expeditiously.

VII. Consideration:

23. The States of Uttarakhand, UP, Bihar, Jharkhand and West Bengal need to take further action in terms of orders of this Tribunal for preventing pollution and rejuvenation of Ganga and its tributaries as per timelines already given. The report filed by UPPCB shows that as of now lot of untreated sewage is entering into the River Ganga and its tributaries. Similar is the position in the States of Jharkhand, Bihar and West Bengal. Despite directions of this Tribunal, in-situ Sewage Treatment is not shown to have commenced for any of the drains except in the State of Uttarakhand. There is no information on water quality of river Ganga in the stretch falling in UP, Jharkhand, Bihar and West Bengal and information of regulation of Flood Plain Zone. The reports from the States other than Uttarakhand do not

describe the number of drains and a plan for their interception and diversion to the Sewage Treatment Plants.

As regards solid waste management, including legacy waste sites, this Tribunal has already issued directions in *O.A. No. 606/2018* as noted in para 10 of the order dated 22.08.2019 and in *O.A. No. 519/2019* as already observed in para 19 in the order dated 22.08.2019 to the effect that tender process can be avoided if other successful models and rates involved therein such as Indore model are to be followed. Directions have also been issued for installing CCTV cameras and undertaking surveillance in para 25 of the said order. Further directions are for ensuring that not even a drop of raw sewage should be discharged in river Ganga and where STPs are not operative, immediate bio-remediation and/or phytoremediation need to be undertaken and to avoid procedural delay of tender process etc., specifications and norms should be adopted in consultation with the CPCB. We may also note that vide order dated 18.10.2019 this Tribunal in *O.A. No. 606/2018* directed that rates for all such services and particulars of service providers should be standardized and specified on GeM portal. NMCG is a part of the Committee constituted by this Tribunal. Further, for setting up of STPs standard cost involved is said to be around Rs. 2 crore per MLD as per works allotted by NMCG. Cost of establishing sewerage networks, including setting up of pumping stations is said to be around Rs. 5 crores per MLD. Further direction on the subject may be issued by the NMCG/CPCB pending report of the Committee constituted by this Tribunal. All that this Tribunal can observe is that clearance of legacy

waste and sewage treatment being high priority areas, the authority should find ways and means to shorten the delays by avoiding DPRs/tender process which can be done if specifications and rates are standardized which may be explored by the concerned authorities.

24. The Tribunal has also directed that atleast interim measures of treatment of sewage by way of bio-remediation and/or phytoremediation or any other measures may start positively from 01.11.2019, failing which the defaulting States may be liable to pay compensation of Rs. 5 lakhs per month per drain and for such violations, adverse entries must be made in the ACRs of the identified officers.

We reiterate the said direction and since 01.11.2019 has already gone, wherever interim treatment of untreated sewage has not started in the manner earlier directed, the compensation be deposited with the CPCB which will be personal responsibility of the Chief Secretaries of the concerned States. The Chief Secretaries of concerned States are put to notice that in case of any default in compliance their salaries may be liable to be stopped and for enforcing the directions, further coercive measures including order of civil imprisonment may be liable to be passed personally against the Chief Secretaries.

25. We may also refer to the order of this Tribunal dated 03.12.2019 in *O.A. No. 425/2019, Vijay Kumar Vs. State of Himachal Pradesh,* to the

effect that Hydropower projects in hill States including Uttarakhand must ensure minimum specified e-flow.

We may also add that replenishment study of mining areas needs to be carried out, if not already done. This may be mentioned in the next report of the States.

26. As already mentioned, with regard to States of Uttar Pradesh, Bihar and Jharkhand, the status report is not in a tabular form as required. It is not clear whether the STPs are functional and meet the norms. Bio-remediation, phytoremediation or any other measures for treatment of sewage have not started where STPs are not functional, except that in respect of 14 drains in Kanpur interception and diversion works are said to have been undertaken/completed. Directions in para 23 above will also apply to the Chief Secretaries of the all concerned States. CPCB may monitor and give its report to this Tribunal.

VIII. Future Monitoring Mechanism after submission of final reports by the Committees constituted by the Tribunal earlier

27. As noted earlier in para 5 above, this Tribunal constituted Monitoring Committees headed by former High Court Judges in the States of Uttarakhand and UP. The Committees were meant to monitor the progress till further orders and vide order dated 22.08.2019, the said Committees were to furnish final reports which have since been furnished. There is thus need for further directions for effective monitoring mechanism. While the Chief Secretaries of the States are expected to monitor rejuvenation of Ganga on the pattern of

monitoring of rejuvenation of 351 polluted river stretches, which include Ganga and its tributaries, in terms of orders of this Tribunal in O.A. No. 673/2018 and O.A. No. 606/2018, on suggestion of State of UP, this Tribunal set up a Monitoring Committee for environmental issues in the State of UP vide order dated 21.10.2019 in O.A. No. 670/2018. The said Committee may henceforth monitor steps for prevention and control of pollution of Ganga also in the same manner as other issues are being monitored. In State of Uttarakhand Justice U.C. Dhyani is heading Monitoring Committee for solid waste management and certain other issues. Such Committee may also monitor prevention and control of pollution of Ganga in the State of Uttarkhand. It is not necessary to continue other members in terms of earlier orders in the present matter, unless the State so directs. It is open to the States of Jharkhand, Bihar and West Bengal to evolve or suggest any additional monitoring mechanism on the pattern of State of UP or otherwise. These directions will not affect in any manner working of any Committees or authorities under the provisions of NMCG or otherwise.

IX. Directions:

28. We may now sum up our directions as follows:

i. As already directed vide order dated 22.08.2019, timely completion of all projects relating to sewage treatment be ensured i.e. by 31.06.2020 in respect of ongoing projects and by 31.12.2020 in respect of others failing which compensation has to be paid in terms of the said order, apart from action against the erring officers. Till then, to avoid untreated sewage

being discharged directly into Ganga, interim remedial measures have to be adopted and for the default after 01.11.2019 compensation has to be deposited in terms of order dated 22.08.2019. CPCB may make necessary calculation within one month from today and raise demands with the Chief Secretaries of the concerned States which may be complied within one month from the date of such demand failing which accountability will be of the Chief Secretaries personally.

ii. NMCG and concerned States – Uttarakhand, UP, Jharkhand, Bihar and West Bengal may take further steps as per directions already issued for

a) Preventing discharge of industrial effluents in Ganga and its tributaries/drains by ensuring installation of proper functioning of ETPs/CETPs.

b) Utilization of treated sewage, use of sludge as a manure and septage management.

c) Demarcation of flood plain zones and preventing encroachments thereof.

d) Maintenance of e-flow.

e) Preventing dumping of solid and other waste in and around Ganga.

f) Clearing old legacy waste dump sites.

g) Preventing and regulating illegal sand mining.

h) Steps for conservation of groundwater particularly with reference to critical, semi-critical or over-exploited areas.

i) Restoration of water bodies.

j) Monitoring and displaying of water quality.

k) Taking action against polluters by way of recovering compensation for restoration of the damage to the environment.

l) Closing, till compliance, all establishments near river banks being run without necessary STPs and compliance of environmental norms.

m) Public awareness and involvement for prevention and control of pollution of Ganga.

n) Regulating activities on and around river Ganga including ghats and other establishments.

o) Afforestation and setting up of biodiversity parks.

p) CPCB and SPCBs may periodically undertake biological assessment of Ganga. NMCG and States concerned may depict biological diversity of Ganga in public domain.

q) Any other directions covered by earlier orders of this Tribunal.

iii. The State of UP may take steps for remediating Chromium dump at Rania and Khanchanpur Village near Kanpur, as directed earlier vide orders dated 22.08.2019 and 15.11.2019.

iv. CPCB may take further action to finalise and circulate Guidelines for Biodiversity parks expeditiously which may be complied with by the concerned States and status of compliance included in the reports to be filed before this Tribunal.

v. Apart from the Chief Secretaries, the progress may be monitored by the Monitoring Committee constituted in the State of UP vide order dated 21.10.2019 in O.A. No. 670/2018, by Justice U.C. Dhyani in the State of Uttarakhand and in such manner as may be laid down by the Chief Secretaries in the States of Jharkhand, Bihar and West Bengal in the light of discussion in para 27 above.

29. Let further quarterly progress report be filed by 31.03.2020 by e-mail at judicial-ngt@gov.in.

List for further consideration on 29.04.2020.

A copy of this order be forwarded to the Hon'ble Supreme Court in terms of directions of the Hon'ble Supreme Court vide order dated 29.10.2014, *(2015) 12 SCC 764* Para 20.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

Dr. Nagin Nanda, EM

December 18, 2019
Original Application No. 200/2014
DV

Minutes of the Meeting

Minutes of the meeting of the committee constituted for preparation of manual/ guidelines for setting up of Biodiversity Parks in the flood plain of the rivers of India including river Ganga held on 08.06.2020 at CPCB, Delhi.

A meeting of 3-member committee constituted by Hon'ble NGT vide order dated 14.05.2019 in OA No- 200/2014 in matter of M.C. Mehta Vs Union of India and Ors, comprising CPCB, representative of MoEF&CC and Prof C. R. Babu was held on 08.12.2020. The meeting was held to finalise **the guidelines for setting up of Biodiversity Parks in the flood plain of the rivers of India including river Ganga submitted by Prof C R Babu** after incorporating the observations received from the members.

The following members were physically present at CPCB

1. Member Secretary, CPCB
2. Prof CR Babu

and Dr A A Mao, Director, BSI, representative of MOEF&CC participated through V.C.

Dr A K Vidyarthi, Addl. Director & Divisional Head, WQM-II, welcomed the committee members and briefed about the purpose of the meeting that Hon'ble NGT in order, dated 14.05.2019 in OA No. - 200/2014, in a matter of M.C. Mehta Vs Union of India & Ors *directed that "CPCB along with MoEF&CC to develop a guideline for setting up of Biodiversity parks. The CPCB can take the services of an external expert who has successfully guided DDA to set up Biodiversity parks in Yamuna Flood plain near Delhi".* In compliance of Hon'ble NGT order, a meeting was held on 27.05.2019 at CPCB in which Prof. C.R. Babu Prof. Emeritus, CEMDE, University of Delhi agreed to prepare the guidelines for setting up of Biodiversity parks. MoEF&CC through letter dated 31.05.2019 nominated Director, BSI as its representative. Further two meetings to review the progress of the preparation of the guidelines were held on 27.09.2019 and 06.12.2020.

He informed that Hon'ble NGT in order dated 12.12.2020 in OA No -200/2014 directed that "*CPCB may take further action to finalize and circulate Guidelines for Biodiversity Parks expeditiously which may be complied with the concerned states and status of compliance included in the reports to be filed before this Tribunal".* In compliance to the above order, Prof C R Babu submitted the draft guidelines vide email dated 12.05.2020. Thereafter, the draft guidelines were uploaded on the CPCB website on 15.05.2020 for public comments. The draft guidelines were also sent separately to various experts viz, Director BSI, Kolkata; Chairman, National Biodiversity authority, Chennai; DG, Forest and Special

Secretary, MOEF&CC; DG, NMCG; Executive Engineer, Department of Irrigation, Govt of U.P for their comments. After receiving comments and suggestions the draft guidelines were amended by Prof C. R Babu. The revised draft guidelines were submitted vide email dated 02.06.2020.

In the meeting Prof Babu provided synoptic view of the draft guidelines and also the rationale behind. He told the meeting that Biodiversity park approach is a holistic approach for restoration and recreation of floodplain ecosystem. He suggested that the guidelines will be a ready reckoner for the stakeholders. He provided a luxuriant description of the chapters included in the guidelines. After detailed deliberations, the draft guidelines were approved by the committee and it was concluded that the guidelines may be filed in the Hon'ble NGT.

The meeting ended with thanks to the chair

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GUIDELINES FOR SETTING UP OF BIODIVERSITY PARKS IN FLOODPLAINS OF RIVERS OF INDIA, INCLUDING RIVER GANGA

Submitted to

National Green Tribunal
Principal Bench, New Delhi
(Order dated 14.05.2019 in O.A. No. 200/2014)

on

June 2020

Central Pollution Control Board
(Ministry of Environment, Forest & Climate Change, Government of India)
Paryavaran Bhawan, East Arjun Nagar
Delhi-110032

GUIDELINES FOR SETTING UP OF BIODIVERSITY PARKS IN FLOODPLAINS OF RIVERS OF INDIA, INCLUDING RIVER GANGA

By

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(Central Pollution Control Board, MoEF&CC, Delhi)

ACKNOWLEDGEMENTS

We are grateful to the Principal Bench of Hon'ble NGT, New Delhi, for taking the initiative and for passing the order of 14.05.2019 (in O.A. No. 200/2014) to bring out the Guidelines for Setting Up of Biodiversity Parks in Floodplains of Rivers of India, including River Ganga.

We thank the support and encouragement received from the Chairman and Member Secretary of the Central Pollution Control Board during the preparation of Guidelines. We are also thankful to the Authorities of the Forest Department of Haryana and Shri V. K. Jain, Conservator of Forest, Saharanpur Division, Uttar Pradesh State Forest Department and his field staff of Haiderpur Wetlands and Hastinapur Wildlife Sanctuary for extending help during field visits to Kalesar National Park, Haiderpur Wetlands and Hastinapur Wildlife Sanctuaries, respectively.

Delhi Development Authority and the Staff (Scientists, Technical and supporting Staff) of Yamuna Biodiversity Park are duly acknowledged for providing the photographs of Yamuna Biodiversity Park. Acknowledgement is also due to Professor Brij Gopal of National Institute of Ecology for giving the permission for inclusion of information on the river system from his published articles/ books.

Members of the Committee

PREFACE

Delhi Biodiversity Parks have become models for urban environmental sustainability and resilience, and render a wide range of ecological services. These ecological services include: mitigation of air pollution, recharging ground water, buffering local weather, imparting climate resilience to the city, and several other functions beneficial to humans.

The rivers of India, particularly major rivers used to harbour a wide range of ecosystems, which not only contributed to purification of river water (water quality) and stream flows, but also generated ecosystem services and goods. In fact, the human communities living along the rivers used to eke out their livelihoods from these ecosystems. Due to increasing urbanisation, habitat conversion, damming up of water in upstreams, and other anthropogenic mediated activities, the river ecosystems are highly degraded and the rivers have become open sewers particularly in urban stretches.

The judiciary has been concerned with the massive degradation of river ecosystems, and the urgent need for rejuvenation of rivers of India. Realising the role of Biodiversity Parks not only in bringing back the degraded river ecosystems to their natural states that contribute to rejuvenation of rivers but also to sustain their health, the Hon'ble NGT has been passing orders from time to time on matters related to rejuvenation of rivers. In one of the orders passed by Hon'ble NGT (14 May 2019 in O.A. No. 200/2014) states that the Biodiversity Parks should be developed along the major rivers of India including the river Ganga, and also directed that the Central Pollution Control Board along with a representative from the Ministry of Environment, Forest & Climate Change and one expert, who developed Yamuna Biodiversity Park, should bring out the guidelines for setting up of Biodiversity Parks in flood plains of rivers of India, including river Ganga.

The present "Guidelines for Setting Up of Biodiversity Parks in floodplains of the rivers of India, including River Ganga" provides not only theoretical knowledge but also practical information on the river system and its network of river ecosystems, and Biodiversity Parks in riverscapes so that the stakeholders can easily implement the Guidelines for Development and Management of Biodiversity Parks as a part of rejuvenation of rivers of India. The Guidelines also includes general information on river systems and their ecology, floodplains and their ecological significance, besides a brief background. The bulk of Guidelines cover different facets of Biodiversity Parks and the planning, designing, development and management of Biodiversity Parks in riverscapes; it also includes how to prepare DPRs? and also provides information on the Institutional Mechanism needed for the development, management and sustenance of Biodiversity Parks, and possible source of funding for implementation of DPR; a schematic layout of a typical Biodiversity Park in the riverscapes is also given. The last chapter deals with Yamuna Biodiversity Park as an environmental sustainability model for replication in the riverscapes.

I am sure that the Guidelines will be useful to all the stakeholders in planning, designing, developing and sustaining Biodiversity Parks in riverscapes of rivers of India, and also useful for policy makers and regulators in conservation of rivers.

C. R. Babu

CONTENTS

EXECUTIVE SUMMARY

The river system has a network of ecosystems that contribute to sustainability of flow of water and its quality in the rivers. The diverse river ecosystems – in-stream ecosystems, riparian ecosystems, floodplain ecosystems and adjacent upland ecosystems and even the ecosystems of catchments and watersheds – are highly degraded and some of them were extinct due to anthrogenically mediated activities. This degradation and loss of river ecosystems not only reduced flows in rivers but also deteriorated the quality of river water and ground water.

One way to rejuvenate rivers and sustain the quantity and quality of water in rivers is to set up Biodiversity Parks in the riverscape. The Biodiversity Park approach is a holistic approach for the rejuvenation of rivers, as it involves the restoration of degraded diverse river ecosystems in the riverscapes, bioremediation of wastewater that enters into rivers and use of natural floodplain wetlands for cleaning channel water and storage of floodwaters. Biodiversity Parks approach for rejuvenation of rivers is a proven approach and is exemplified by the DDA's Yamuna Biodiversity Park of Delhi.

Realising the importance of Biodiversity Parks in riverscapes for rejuvenation of rivers, the National Green Tribunal (Principal Bench, New Delhi) not only ordered for the establishment of Biodiversity Parks along some of the rivers in Uttar Pradesh but passed an order on 14th May 2019 in O.A. No. 200/2014 that "The CPCB along with MoEF&CC to develop Guidelines for Setting Up of Biodiversity Parks. The CPCB can take the services of an external expert who has successfully guided DDA to set up Biodiversity Park in Yamuna Floodplain near Delhi".

The present "Guidelines for Setting Up of Biodiversity Parks in Floodplains of Rivers of India, including River Ganga" contains introductory chapters on the river systems, floodplains of rivers and their ecological significance, and Biodiversity and Ecosystems, besides the key chapter on 'Biodiversity Parks: A holistic approach for rejuvenation of rivers of India' which forms the backbone of the Guidelines. These contents of the Guidelines make it a ready reckoner for stakeholders interested in setting up of Biodiversity Parks in riverscapes and landscapes as a part of rejuvenation of rivers.

The second chapter on the "Introduction to River Systems" explains: (i) how rivers are formed?, (ii) how rivers create diverse ecosystems as they pass through different landscapes?, (iii) how the five elements of the riverscape (physical structure, water quantity, water quality, Biodiversity and floodplain and riparian zone) interact and determine the structure and function of river ecosystems?, and (iv) how their interactions along with the geology, geomorphology and climate influence the water quality. The answers to these questions are given in simple text and also illustrated. The different riparian communities and their role in functioning of river ecosystems particularly with respect to water quality are explained.

The third chapter deals with the floodplains of rivers and their significance. It gives information on the different physical zones of the riverscape, definitions of floodplains, the kinds of floodplains and the diverse landforms of the floodplains. It also explains the functions of floodplains and diverse floodplain ecosystems such as wetlands, marshes, swamps, lakes, grasslands and floodplain forests. To make familiar with different river ecosystems, photographs of some stretches of riverscapes of river Ganga and Yamuna showing diverse ecosystems are given.

The fourth chapter on "Biodiversity Parks: A holistic approach for rejuvenation of rivers" has 9 sections. The first four sections explain the concept of Biodiversity Park with respect to riverscapes and landscapes, functions of Biodiversity Parks in riverscapes, the structural elements of Biodiversity Parks and size of Biodiversity Parks.

The section 5.4 on "Planning, Designing and Development of Biodiversity Parks in Riverscapes" gives all the details starting from the selection of site to the development of riverscape and landscape elements in different stretches of riverscape (headwaters, hilly tracts and plains). It also gives information how to restore the degraded river ecosystems and or recreate the lost ecosystems. Details on the development of in-stream ecosystems, riparian ecosystems, floodplain ecosystems including wetlands, marshes, swamps, lakes, grasslands and forests, upland grasslands and forest ecosystems and ecosystems of catchments and watersheds are provided.

This section also gives details on the development of other landscape elements such as Butterfly Park, Herbal Garden, Birding Area, Garden of fruit-yielding plants and NIC. The importance of Biodiversity Education and public awareness on River Conservation are also emphasized.

The details on: (i) development of constructed wetland system for treatment of wastewater that enters into rivers, (ii) channelization of river water through natural wetlands for cleaning river water, and (iii) restoration of channels that connect the natural wetland to river water for storage of floodwaters are also given.

To implement the Guidelines at ease by stakeholder, schematic layout of "Biodiversity Parks in the riverscape and schematic layout of a typical constructed wetland system" for the treatment of wastewater that enters into river are given".

The section on DPR explains how to prepare the Detailed Project Report and includes all the activities for which costs have to be estimated. The possible sources for funding to establish Biodiversity Parks in Riverscapes are suggested in Section 5.8.

The last section 5.9 includes suggestions on the possible management strategies involving Irrigation Department, Forest Department and local Government Agencies, which would get maximum benefits from Biodiversity Parks, for long term management and sustenance of Biodiversity Parks.

The Guidelines ends with the chapter on the well-established functional Yamuna Biodiversity Park as an environmental sustainability model for replication. Some of the structural components of Yamuna Biodiversity Park that are fully functional and rendering ecological services to the city and its citizens are illustrated.

Besides the above chapters, the Guidelines includes a Background Note, the Preface, the Foreword, Acknowledgments and References.

1.0 BACKGROUND

Delhi has lost its natural heritage which is critical for sustaining the environmental quality. To bring back the lost natural heritage of Delhi, the Delhi Development Authority in joint collaboration with the Centre for Environmental Management of Degraded Ecosystems, University of Delhi developed Biodiversity Parks for the first time in the world. The first Biodiversity Park established was Yamuna Biodiversity Park which harbour natural heritage of Yamuna river basin and include diverse river ecosystems that provide several ecological services.

The environmental degradation of river ecosystems along rivers of India is rampart leading to loss of their self purification systems and making them as open sewers, particularly in urban stretches. Urbanisation together with habitat conversion and construction of dams in the upstream are the prime causal factors of degradation of Indian river systems. The environmental degradation, particularly the pollution of water in Ganga and Yamuna has been taken up by the Supreme Court, High Courts and National Green Tribunal (NGT) through PILs and other legal cases filed by individuals. Mr. Mehta's PIL on Ganga (O.A. No. 200/2014) at Supreme Court and Manoj Misra's case (O.A. No. 06/2012) on Yamuna at NGT are well known and the judiciary has been passing various orders from time to time to rejuvenate the rivers Ganga and Yamuna and also other rivers of India.

Taking the cognizance of media coverage on the biodiversity Parks, the Hon'ble Chairpersons and some members visited Yamuna Biodiversity Park and Neela Hauz Biodiversity Park. Based on their visits and recommendations made in the Reports submitted by Hon'ble NGT constituted Expert Committees, the Hon'ble NGT took note of already developed functional Yamuna Biodiversity Park that harbour many river ecosystems of Yamuna. In its order of 14th May 2019 (in case of O.A. NO. 200/2014) NGT directs CPCB to formulate Guidelines for setting up of Biodiversity Parks in the floodplains of the Rivers of India including River Ganga with the Expert who was involved in the development of Yamuna Biodiversity Park, and also one member nominated by Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India.

Accordingly, the CPCB held a meeting where it was decided that Professor C. R. Babu, Centre for Environmental Management of Degraded Ecosystems (CEMDE), University of Delhi would prepare the Guidelines for setting up of Biodiversity Parks. Professor Babu asked for four months time to prepare the final Guidelines, as it involves taking of photographs from some riverscapes to illustrate representative river ecosystems in the Guidelines.

A meeting of the Committee was held on 27th September 2019 to discuss the progress achieved. Professor Babu explained the work done and outlined the chapters to be included in the proposed guidelines. Representative from CPCB pointed out that the guidelines should be self explanatory and should facilitate the stakeholders to develop Biodiversity Parks on the ground without much difficulty. It was suggested that the introductory paras of the Interim

Report should include the treatment of waste waters (including sewage and industrial effluents) and restoration of self purification systems of rivers. Director, Botanical Survey of India (BSI) – a nominee of MoEF&CC in the committee – was also present in the meeting and informed that BSI would extend any help that is needed for finalizing the Guidelines.

The Interim Report on the Guidelines was submitted to NGT by CPCB. There was a delay in making field visits due to COVID-19 pandemic, and subsequently there was a lockdown Nation-wide from 24th March 2020. The final Guidelines are presented in the present document.

2.0 INTRODUCTION TO RIVER SYSTEMS

The information presented in this Chapter is mostly taken from the Chapters on 'River Ecology, Conservation and Restoration: A Theoretical Framework' written by Professor Brij Gopal and published in the edited volume on 'Restoring River Yamuna' (eds, Martin, P, Gopal, B and Southey, C. 2007). National Institute of Ecology, New Delhi, and also based on the field knowledge.

A river is a system of natural watercourses and originates as trickles of glacier or snowmelt or surface run-off of the precipitation, and it is a link between the land and oceans; the primary, secondary and tertiary surface channels from different directions (surface run-off channels) merge together into a large river which may join another river or lake or ocean or any other large waterbody (Gopal, 2007). Springs also form streams in hills. Not all rivers, particularly seasonal rivers do not discharge their contents into oceans.

Rivers are natural ecosystems and are unique in the sense that they change their forms, flows and other biophysical attributes as they pass through large landscapes before joining the oceans. The different river ecosystems found along the course of a river are depicted in Figure 1.

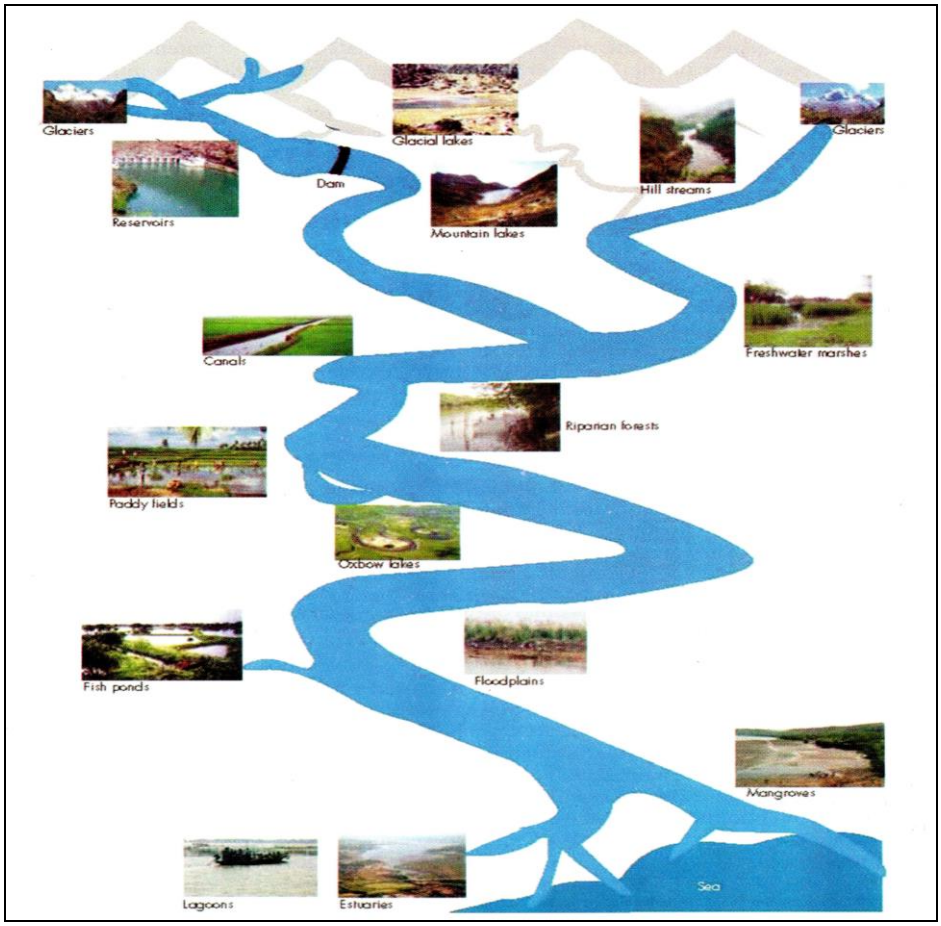


Figure 1: Different river ecosystems in the riverscape starting from the source of the river to its mouth at sea. *(Source: Gopal, 2013)*

River ecosystems form one of the major landforms of the planet Earth and are critical for sustenance of Biosphere. The rivers are part of earth that supports life. The river system or riverscape includes the watercourses (channels), the riparian zone (the riverbed and adjacent floodplains), the floodway on either side of the main watercourse (floodplains), and the embankments that hold flood waters and enclosed floodplains, and uplands adjoining embankments, together with entire stream network including interconnections with ground water flow pathways embedded in terrestrial setting.

The structure and function of river ecosystems is determined by physical structure of the riverscape, water quality, water quantity, biodiversity and floodplains including riparian zone. These five elements interact among themselves and any change in any one of them alters the structure and function of river ecosystems.

The interactions among these five elements are illustrated in Figure 2.

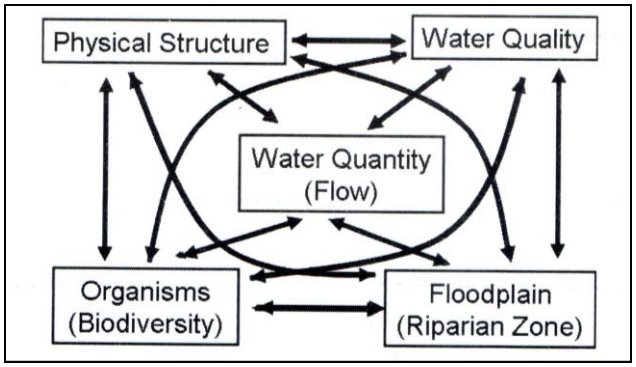
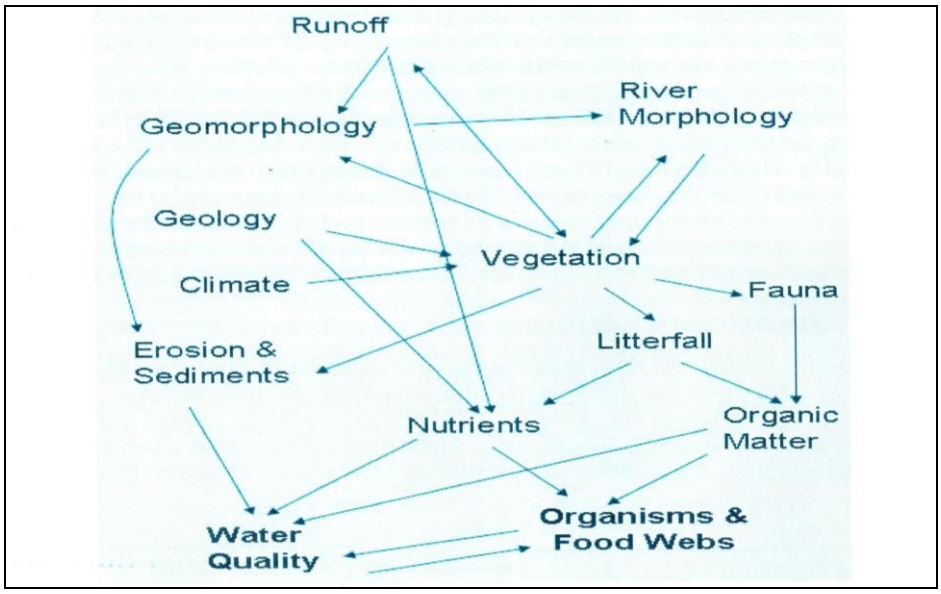


Figure 2: Five elements of the riverscape (river system) and interactions among them. *(Source: Gopal, 2007)*

Figure 3 illustrates how the interactions among five elements of riverscape together with the geology, geomorphology and climate influence the water quality.



Figures 3: Interactions among different components of the riverscape and geology, geomorphology and climate of the river basin that influence water quality. *(Source: Gopal, 2007)*

2.1 Physical Features of River System

The physical features of river system include: in-stream habitats such as substrate (rock/ sand/ silt), the geomorphic features (channel bars, pools, riffles), the depth and velocity of water, the in-stream vegetation and structures such as woody debris, pebbles and sandy patches. The habitat diversity changes along the river course from headwaters to the mouth. For example, the headwater streams are straight and meanders increase in downstream; mountain streams have fast and turbulent flows and are steep and unstable with bed composed of rocks or pebbles often with sandy patches; the channels in the flat plains are slow flowing, and beds of these channels are composed of sand and silt and meander over large areas; middle reaches are dominated by transfer of materials (sediment etc.), whereas the lower reaches are dominated by deposition of materials. These different stretches also differ in physical characteristics such as temperature and oxygen saturation. These diverse habitats are inhabitated by diverse plant and animal communities which contribute to self purification system of rivers. The communities of riverbed (not watercourse or channel) together with the adjacent communities of adjacent floodplain (marsh vegetation) constitute riparian ecosystems.

2.2 Flow of water

There is a substantial variation in the volume of water that flows among different rivers and depends upon the extent of catchments, annual rainfall, evaporation and infiltration. The size and frequency of flows, seasonal flow patterns, flow duration and the rate and rise of flow events also impact the habitat complexity and biotic communities. In some rivers, the stream flow has a component of base flow (ground water flow) into the stream which is critical in dry season for maintenance of in-stream and riparian ecosystems which in turn determine the quality of water (Gopal, 2007).

One of the features of the channel is the stream flow which is characterised in terms of quantity, quality and timing. There are two types of stream flows – one is storm flow which refers to flow resulting from precipitation that reaches to the channel over short time frame through overland and underground routes, and the second is base flow that refers to the flow resulting from the precipitation that percolates to the ground and reaches to the channel through substrate. The volume of water passing through channel per unit time is called the discharge and when it is represented graphically then the graphs are known as hydrographs. There are three categories of streams:

(i) Ephemeral streams are those that flow only less than 30 days in a year and flow during or immediately after period of precipitation;

(ii) Intermittent streams are those that flow for more than 30 days per year (seasonal flow) and flows only during certain times of the year; and

(iii) Perennial streams are those that flow continuously during both wet and dry periods (Gopal, 2007).

The stream flow determines the size and shape of channel (morphology). The variability in stream flow not only influences the diversity in biological communities but also maintain it in riparian ecosystems.

The hydrological features that influence the biotic communities through different ecological processes (interactions) are illustrated in Figure 4.

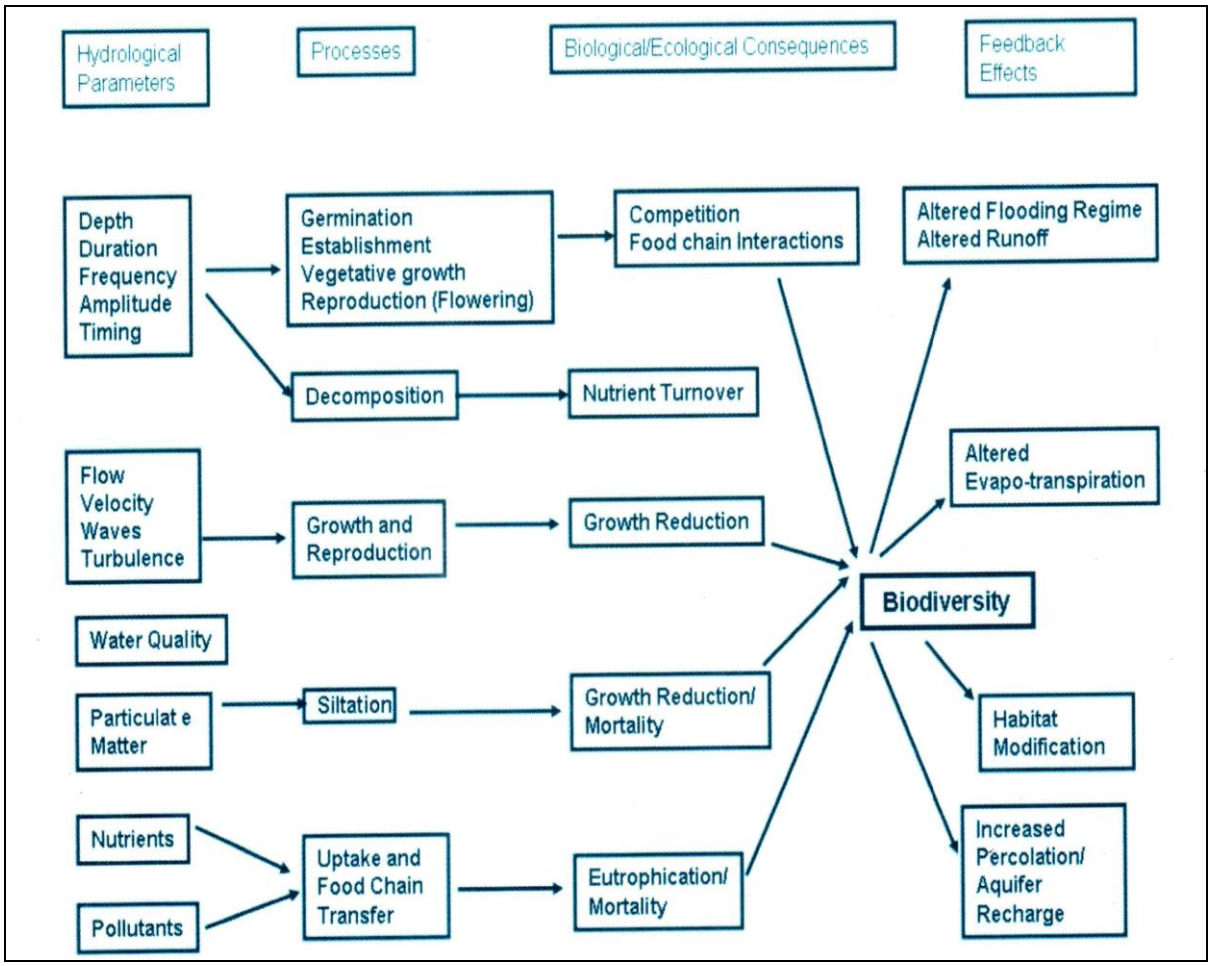


Figure 4: Different hydrogeological parameters (including water quality) of the river system and their impacts on biotic communities through ecological processes and the resulting feedback effects. *(Source: Gopal, 2007)*

2.3 Water Quality

The water quality changes along the course of the river and is governed by geological, geochemical and vegetational characteristics of the watershed. The concentration of nutrients increases gradually as variety of dissolved and particulate substances and plant litter enter the stream through runoff. Water temperature is critical for completion of the life cycles of aquatic and terrestrial invertebrates which are critical component of self purification system of rivers. Any change in water temperature results in significant changes in biotic

communities; loss of riparian vegetation results in marked changes in water temperature. The change in water temperature brings out change in DO levels, and nutrient concentration, etc.

The decline in water quality due to adjacent land use, the presence of livestock, the kind and characteristics of the riparian zone, sewage effluents, urban storm water pollution and discharge of industrial waste water adversely impacted the biodiversity – complete loss to replacement of sensitive species of ecological significance to more tolerant species.

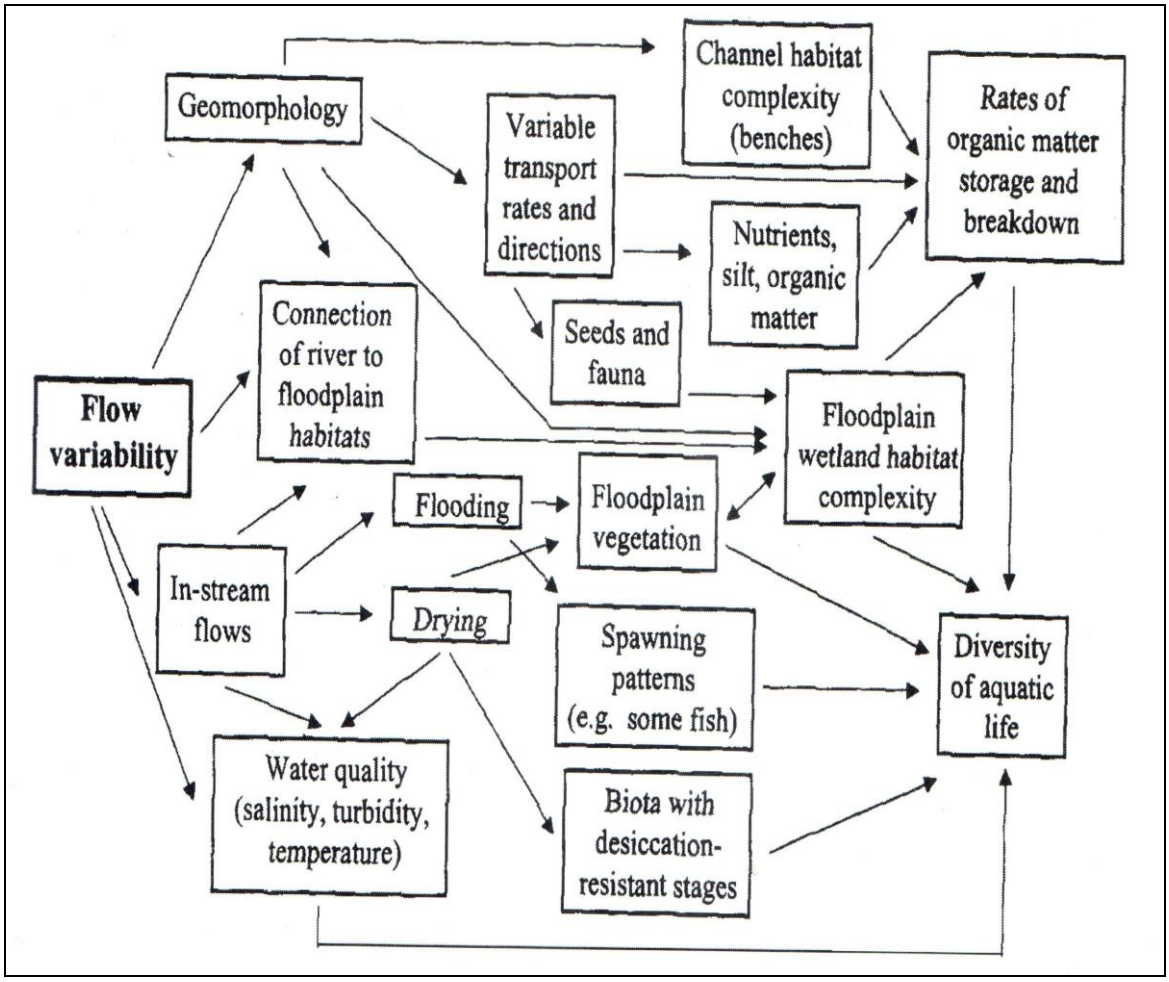


Figure 5: Impacts of flow variability on biodiversity of riverscape through ecological processes. *(Source: Gopal, 2007)*

The variability in flows regulates various ecological processes that influence the aquatic biodiversity. This is illustrated in Figure 5.

2.4 Biotic Communities

The habitat diversity influences the biotic communities which vary along the course of river. Most of the animals, which are not attached to the channel bed are drifted to the downstream, although fish and birds swim against flowing water currents in hilly areas.

Species rich communities are confined to shallow slow moving streams or to margins (shores) where flow velocity is low, shallow pools and riffles. In the upper reaches of the stream, where turbulence is high, the biodiversity is not rich and is represented by poor plankton community, benthic algae attached to boulders, higher plants restricted only to banks, and shredders (invertebrates which feed on freshly fallen litter) found under boulders and pebbles near edges (Gopal , 2007) .

The community inhabiting the channel edges is different from that of the middle channel.

In the downstream the leaf litter is fragmented and converted into fine particles and benthic invertebrates that feed on particulate detritus are very common. With the increase in nutrient enrichment and greater availability of food niches, planktonic communities and faunal diversity also increase.

With reduction in flow velocity and change in substratum, the development of macrophyte community takes place. These communities are highly diversified in the river stretches of plains and also show zonation. The riparian communities include: deep water flora with emergent (cattails) plants growing along banks and shallow water communities having dense patches of reeds and cattails; the elevated areas, which are flooded occasionally, have different types of communities and these differ from those that occur in frequently flooded zones. The aquatic flora and fauna together play a major role in purifying water.

Plants not only provide food and habitat to fish, birds and invertebrates but also stabilize sediments against erosion, reduce flow velocity and improve water quality. The animals include: invertebrates such as snails, worms, shrimps, insects, and vertebrates such as fish, amphibians, reptiles, birds and even mammals. The trophic structures include autotrophs such as algae and aquatic plants; the herbivores include scrapers that feed on algae; the decomposers are represented by fungi and bacteria; the consumers are represented by shredders consume plant leaves or dead plant material and detritus, and snails, fresh water crayfish and a variety of larvae of insects, all of which are predated by larger invertebrates and animals such as fish, frogs, lizards and birds. The plants and animals together form complex food webs with algae and aquatic plants form the basis of food web and contribute to water quality.

2.5 Riparian communities

The riparian zone includes the areas (riverbed and adjacent flood plain) on either side of the channel and are flooded during high flows and influenced by the river. In other words the riparian zone is the floodplain located at lower elevation close to the channel and is

contiguous with riverbed and is influenced by the river. Both riparian zone and floodplain are important riverine habitats and play a significant role in the ecology of the river environment. These are a critical link between terrestrial and aquatic ecosystems. Riparian vegetation includes the terrestrial vegetation (corridor vegetation) adjacent to the stream and as well as aquatic and semi-aquatic plants along the edge of the stream bank. The functions of riparian ecosystems include:

(i) sustain good stream habitat for fish;

(ii) serve as source of food in the form of leaves and branches and insects for aquatic animals;

(iii) provide sustainability to channel levees (banks) through root cohesion;

(iv) serve as filter for chemicals and nutrients entering into river from upslope sources

(v) provide large wood to the channel for maintaining the channel form and improving in-stream habitat complexity;

(vi) ensure the stability of channel form and in-stream habitat through the restriction of sediment input or slowing of sediment movement through river system; and

(vii) moderate downstream flood peaks through upstream storage of water (Gopal, 2007).

The biotic communities and the role of floodplains in water quality are highlighted in the next chapter.

To sum up, the five elements – physical structure (habitat diversity), water quality, biodiversity, riparian zone and floodplain and water quantity determine the structure and function of river ecosystems. All these five elements have been greatly altered through anthropogenically mediated activities. Consequently, most of the river systems have lost their life supporting potential and have become either dead and or open sewers.

3.0 FLOODPLAINS OF RIVERS AND THEIR ECOLOGICAL SIGNIFICANCE

As has been pointed out in the earlier chapter, the river system is highly complex and has the following major physical structure that support a complete network of ecosystems: (i) the channel (water course), (ii) the riparian zone (adjacent to the channel and includes river bed and channel banks), (iii) the floodplain, (iv) the river embankments, and (v) adjacent uplands. The physical structure of river systems in the alluvial plains is illustrated below:

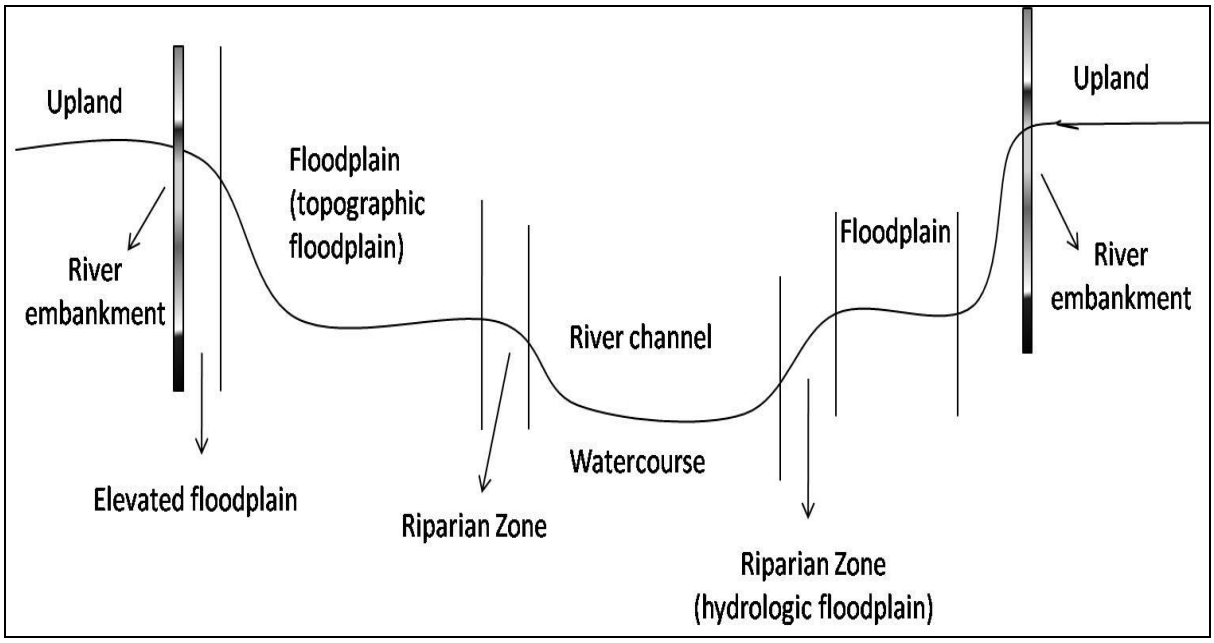


Figure 7: Different zones of a typical riverscape of the rivers in plains.

The flooding results in movement of sediments to the downstream as well as laterally. The flooding of the area on either side of the channel enclosed between two banks/ natural levees of the river constitute floodplain. The floodplain adjacent to channel and the dry channel bed (not watercourse constitutes riparian zone. The floodplain edges close to the channel are the levees of the channels, whereas the levees of river are the embankments of the river that enclose the floodplains. The functions of riparian zone have already been discussed.

In alluvial plains, the river migrates laterally across the valley floor and periodic flooding also causes movement of sediments both downstream and laterally. Both these two processes bring out changes in the floodplain continuously; there are two types of floodplains – the hydrologic floodplain that is the land adjacent to the base flow channel residing below the bankfull (water channel filled upto its levees) elevation, and this corresponds to riparian zone within the floodplain; the second type is the topographic floodplain that is the land adjacent to the channel and other bends upto the elevation where floodwaters of once in 100 years flood reaches, i.e. the river embankments.

The embankments are usually natural levees of the river but humans made into bund and bunds roads; guide bunds are made wherever bridges/ dams are constructed.

The floodplains provide temporary space for flood waters and sediment produced by water shed, and hence allows lag period between the peak run off caused by heavy rain fall and flood peak downstream (Gopal, 2007). If there is a reduction in floodplain, frequent and severe flooding and aggradation of the river channel take place.

Floodplains are a complex landforms within the riverscape and are formed by a complex interaction of fluvial processes; however the characteristics and evolution of floodplains are mainly the product of stream's ability to entrain and transport sediment (stream power – ability to do work or shear stress) and the resistance of channel boundary to erosion, i.e. erosion resistance of floodplain alluvium that forms the channel boundary (Nansion & Croke, 1992). The geomorphology of the channel and floodplains is determined by the amount and texture of the sediment load.

3.1 Definition of floodplain

Floodplains are defined in different ways: For hydrologists and engineers, floodplains are defined as the surface areas next to the channel of the river and are inundated once a given return period (i.e. once in 25 years or 100 years) irrespective of the nature of surface area whether it is alluvial or not (Ward, 1978). According to Nanson & Croke (1992), the genetic floodplain is "largely horizontally – bedded alluvial landform adjacent to a channel, separated from the channel by banks, and built of sediment transported by the present flow regime". This is a contemporary floodplain or landform formed under present hydro-climatic conditions in contrast to ancient alluvial deposits formed under previous flow regime (elevated floodplain). The river can transport only a fraction of the total alluvium of a river valley over decades or centuries, and bulk of it is stored in floodplains.

Soni et al (2019) discussed extensively the definitions of river floodplains in India. They also discussed the role of floodplains in maintaining good health of rivers and, hence the floodplains are often described as 'blue gold'. The floodplains of major rivers in India may store more than 20 times the volume of annual virgin flow in the river. These floodplains can be used to supply drinking water to several cities along the river annually. For example, the Palla well-field in the Yamuna floodplains of Delhi supplies drinking water worth of Rs. 7500 million per year. About 40% of sand volume is water and hence floodplains store huge amount of water from rain and during flooding, and release some of this water into rivers in the lean period.

Soni et al (loc. cit.) also suggested that the floodplain should be defined by its hydrogeomorphic character. In simple-terms, sand, silt and clay and the various geomorphic units associated with the depositional activity of the present day river should be used for demarcation of the floodplain.

The river Ganga (Rejuvenation, Protection and Management) Authorities Order (GOI, 2016) defines floodplain of river Ganga as 'such area of river Ganga or its tributaries which comes under water on either side of it due to floods corresponding to its greatest flow or with a flood of frequency once in hundred years'.

Hon'ble NGT in its order on 13 January 2015 in O.A. No. 6 of 2012 on the Yamuna floodplain of Delhi stated "..... the floodplain zoning should be taken with reference to the flood of once in 25 years, as against other suggested figures of more years". Similarly, NGT's judgement on 17 November 2017 in case of O.A. No. 171 of 2015, based on the findings of a Committee constituted for demarcation of floodplains of Krishna river near the city of Amravati (AP), stated that "Therefore it is evident that the flood from river Krishna does not cross the embankment/ bund cannot be called as floodplains".

The layman's definition of a floodplain is that it is an area on either side of the channel and form natural levees of the channel and enclosed between the river embankments and flooded atleast once in 100 years flood. Floodplains are constructed by rivers and a number of floodplain deposition processes have been identified and explained in detail by Nanson & Croke (1992).

3.2 Floodplain depositional processes and classification

According to some workers (Allen, 1965), floodplains are formed entirely from lateral accretion deposits. Three main processes of floodplain formation are recognized. The lateral point bar accretion results from the progressive deposition of point bars on the convex bank of a meander and produce a variety of floodplain morphologies with some having little surface relief and others with well-defined scroll patterns. The overbank vertical accretion results from the overbank deposition of sediment during floods and provide levees, crevasse splays and backswamp deposits. The braid channel accretion is the product of a combination of processes including: (i) the shifting of primary braid channels to another part of the Valley allowing the stabilization of previously active areas of braid-bars and riverbed, (ii) local aggradation and lateral channel incision resulting in the formation of abandoned braid-bars as partly erosional elevated features, and (iii) formation of extensive, elevated bars during a large flood forming a stable surface beyond the reach of regular flood events (Nanson & Croke, 1992). There are also three less common processes which also produce a variety of floodplain types. These include oblique accretion, counterpoint accretion and abandoned channel accretion. Island formation is a discrete process and is considered as the product of composite processes by involving the first two processes – later point-bar accretion and overbank vertical accretion.

Some of the floodplain types formed by depositional processes are illustrated in figure 6.

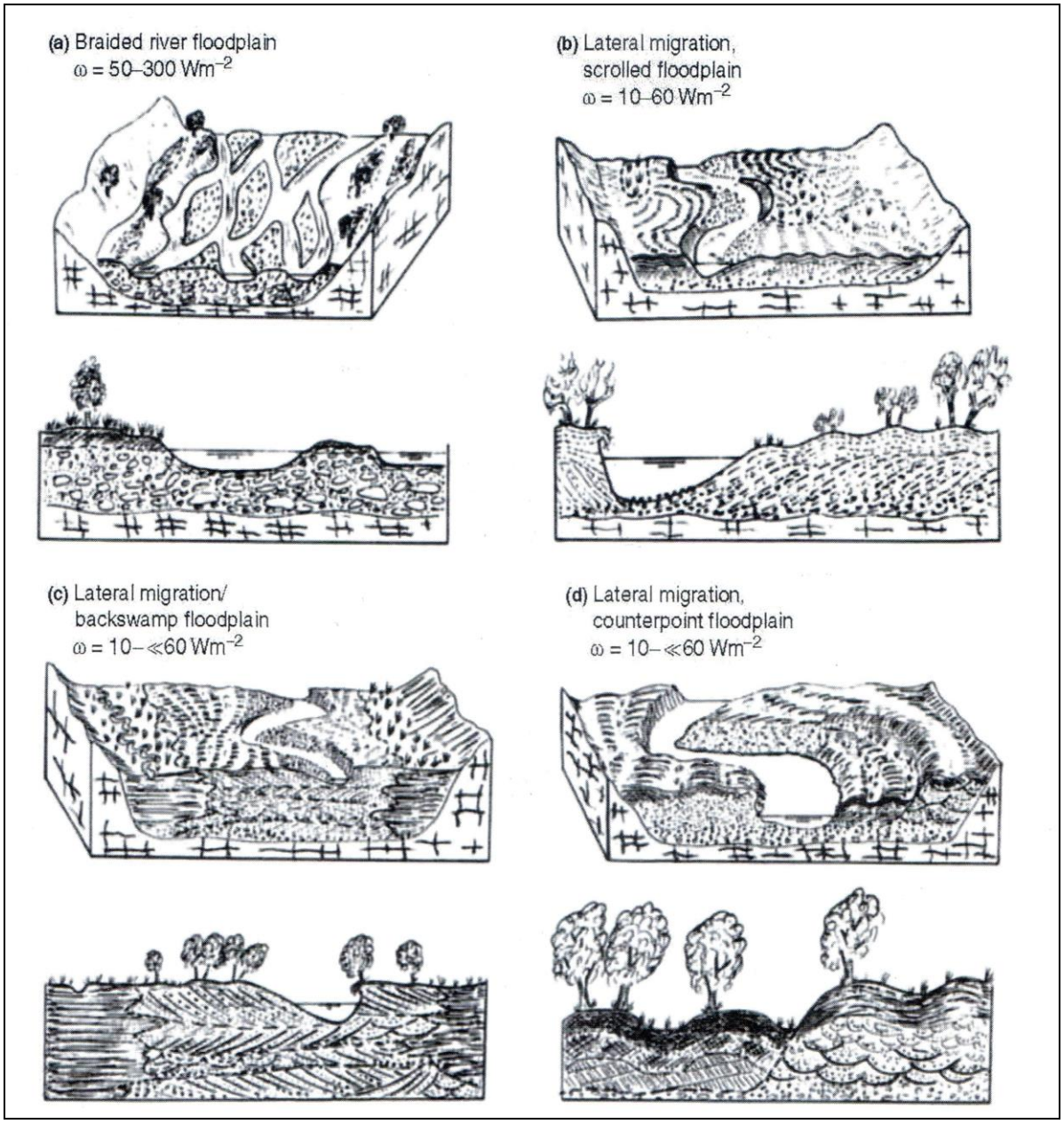


Figure 6: Some of the floodplain types resulting from floodplain depositional processes. *(Source: Nanson & Croke, 1992)*

There have been several classifications of floodplain types. These are broadly grouped under morphological, specific and genetic. These are extensively reviewed by Nanson & Croke (1992). They proposed the genetic classification of floodplains based on the interrelation between river processes and the floodplains they construct. The stream power or rate of doing work for unit length of channel (the power to erode and construct individual landforms) is used for classification of floodplain types. The erosive power/ resistance concept was used as the primary criteria in classifying river floodplains into classes. These classes were further subdivided into orders and suborders based on geomorphic factors. The three classes recognized are: (i) non-cohesive alluvium (gravel to fine sand), (ii) cohesive alluvium (silt and clay), and (iii) low-energy cohesive floodplains. The non-cohesive floodplains are

grouped under two categories – high energy and medium energy environment classes. They have given an excellent Table which summarizes the classification of floodplains and gives details on order/ suborder, class, type of floodplains, specific stream power, erosional and depositional processes, landforms, channel planforms, and environment.

Table 1 gives the order/ suborder, the type of floodplains, the sediment nature and the landforms.

Table 1: Floodplain types and characteristics of their sediments and landforms *(Source: Nanson & Croke, 1992).*

Order/ Suborder	Floodplain type	Sediment	Landforms
	Class A: High-Energy Non- Cohesive Floodplains		
A1	Confined coarse-textured floodplains	Poorly sorted boulders and gravel; buried soils	Boulder levees; sand and gravel splays; back channels, abandoned channels and scour holes
A2	Confined vertical accretion floodplains	Basal gravels and abundant sand with silty overburden	Large levees and deep back channels and scour holes
A3	Unconfined vertical accretion sandy floodplains	Sandy-strata inter-bedded muds	Flat floodplain surface
A4	Cut and fill floodplains	Sands, silts and organics	Flat floodplain surface; channel fills, swampy meadows
	Class B: Medium-Energy Non- Cohesive Floodplains		
B1	Braided-river floodplains	Gravels, sands and occasional silt	Undulating floodplain of abandoned channels and bars; backswamps
B2	Wandering gravel-bed river floodplains	Gravels, sands, silts and organics	Abandoned channels; sloughs; braid-bars; islands; back channels (see also figure 6)
B3	Meandering river, lateral-migration floodplains	Gravels, sands and silts	Flat to undulating floodplain surface; oxbows; backswamps (see also figure 6)
B3a	Lateral migration, non-scrolled floodplains	Gravels, sands and silts	Flat to undulating floodplain surface; oxbows; backswamps
B3b	Lateral migration, scrolled floodplains	Sands and minor gravels	Distinctly scrolled floodplains (see also figure 6)
B3c	Lateral migration/ backswamp floodplains	Sands, silts and organics	Central scrolled floodplain with flanking backswamps
B3d	Lateral migration, counterpoint floodplains	Sands with abundant silts and organics	Concave benches with scrolled floodplains (see also figure 6)
	Class C: Low-Energy Non- Cohesive floodplains		
C1	Laterally stable, single-channel floodplains	Abundant silts and clays with organics	Flat floodplains with low levees; backswamps
C2	Anastomosing-river floodplains	Gravel and sands with abundant silts and clays	Flat floodplains with extensive levees, islands and floodbasins crevasse-channels and splays
C2a	Anastomosing-river, organic rich floodplains	As for C2 with abundant organics and lacustrine deposits	As for C2 with lakes and peat swamps
C2b	Anastomosing-river, inorganic rich floodplains	As for C2 but with little or no organics	As for C2

Lateral migration of the stream channel creates a variety of topographic features on the floodplain.

Floodplains and river exchange the materials and energy through flooding forces. Such exchange is important for fisheries. For example, riverine fish migrate to floodplains for spawning and young larvae and fry feed on plankton, invertebrates and detritus; many animals complete their life cycles in different parts of floodplains.

Receding flood waters from the floodplains carry nutrients, organic matter and propagules and these influence the downstream communities – an important aspect of interaction between river and floodplains.

Different parts of the floodplain are subjected to differential flooding and vary from standing flood water (lentic) and flowing (lotic) with time. There is a spatial variation in hydrological pulses in the floodplains (geomorphic variation and topographic gradient), and as such there is a high diversity in biological communities inhabiting the floodplains.

Nutrient cycling within the floodplain (intracycling) is dominated by flooding from the river, runoff from upland forests or both. Vegetation exerts significant biotic control on intracycling of nutrients, seasonal patterns of growth and decay (Gopal, 2007).

Floodplains are links between rivers and upland, and the materials (water, sediments and nutrients) pass through floodplains before entering into the river. The biological communities of the floodplains control the fate of these substances. The water infiltrates through soil to the ground water or moves laterally to the stream; sediments are trapped and contribute to topographic changes in floodplains; organic matter get settled and decomposed and used by detritus feeding organisms. The nutrients undergo transformation and reduce their flux to the rivers. Many upland animals utilize the floodplains resources. Infact numerous insects of uplands pass their earlier stages of lifecycles in the floodplains.

Some aquatic animals like waterfowl depends upon the terrestrial landscape during some stages in the lifecycle. Consequently floodplains are considered as ecotones.

The most important functions of floodplains include:

(i) Regulation of river discharge by storing huge amounts of water derived from peak flow and storm run-off during the rainy season and subsequent releasing it to the stream gradually leading to uninterrupted stream flow for most of the year.

(ii) Recharge of ground water and improvement of its quality.

(iii) Production of valuable natural resources (timber, fuelwood, fodder and fish) beneficial to local communities.

(iv) Breeding and feeding habitat for fish and many other aquatic animals.

(v) Enhancement of water quality through retention and transportation of nutrients and other chemical substances. Natural floodplains have high rate of recycling of nutrients and usually accumulate nitrates and phosphates and other nutrients, and also sequester heavy metals and toxic compounds in anaerobic organic sediments. In this way floodplains have the capacity to process the wastewater flowing through them and regulate inputs of nutrients and organic matter to the river.

(vi) Reduce the velocity of runoff and traps sediments leading to reduction in siltation of river channels; the floodplains and its vegetation also check the soil erosion. The ecological processes in floodplains through which uplands interact with rivers are given in Figure 8.

The river basin is a landscape, and within which the rivers interact with floodplains, wetlands, and upland terrestrial ecosystems (Figure 8).

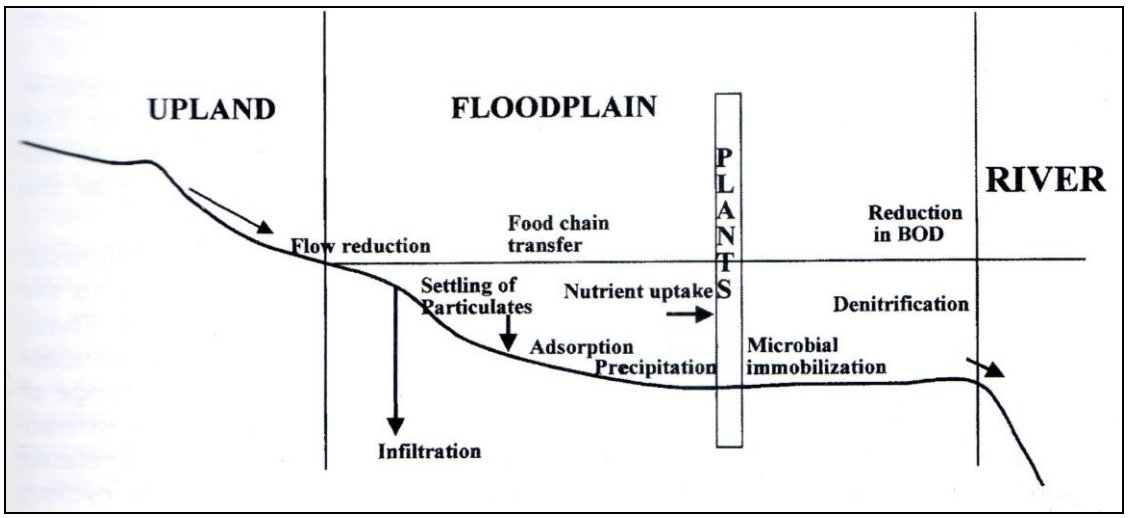


Figure 8: Interaction between uplands and river through ecological processes of the floodplains. *(Source: Gopal, 2007)*

It may be noted that major rivers in India form extensive floodplains during their course in plains, and these floodplains harbour a range of wetlands, swamps, marshes and even deep lakes, floodplain forests, and grasslands, all of which are integral part of the rivers. These different river ecosystems are critical in maintenance of ecological integrity of rivers and also ensure quality of water in the rivers.

3.3 Wetlands, marshes, swamps, lakes, forests and grasslands of floodplains

The natural landscape elements of the floodplains – wetlands, marshes, swamps, lakes, forests, grasslands – are river ecosystems and are integral part of floodplains of rivers. Wetlands are variously defined and the simplest practical definition of a wetland is that any natural lowlying area/ depression in the landscapes/ riverscapes that holds water atleast for some part of the year and has hydric soils with or without characteristic hydrophytes. Marshes are usually swampy areas and do not have hydric soils, and woody vegetation; it is

often difficult to distinguish from wetlands. The inland swamps are marshy areas with clayey substratum saturated with water more or less throughout the year and have woody vegetation, besides Cattails, *Phragmites* and reeds. Often marshes and swamps are also included under wetlands. Lakes are deep water bodies and have an inlet and outlet and are usually undergo thermal stratification. Sometimes the lakes are so shallow that there is no thermal stratification in tropics. In general lakes in humid tropics rarely undergo thermal stratification because of absence of steep temperature gradient.

The ecological significance of floodplain wetlands, marshes, swamps and lakes and the ecosystem services rendered by them have been extensively covered in many publications. Wetlands are critical to sustain life in the Biosphere and the services rendered by the wetlands include : (i) provide water and water related ecosystem services such as fish, prawn, rice and many other plant and animal products ; (ii) purify water, including wastewater/ sewage and industrial effluents; (iii) store flood water and recharge ground water (hydrological regulation of floods and drought);(iv) sequester carbon and climate regulation; (v)storm protection; (vi) erosion control (vii) provide cultural and recreation facilities and (viii) provide livelihoods to local communities.

The structure and ecological processes of wetland and the ecological services rendered by it are illustrated in figure 8a.

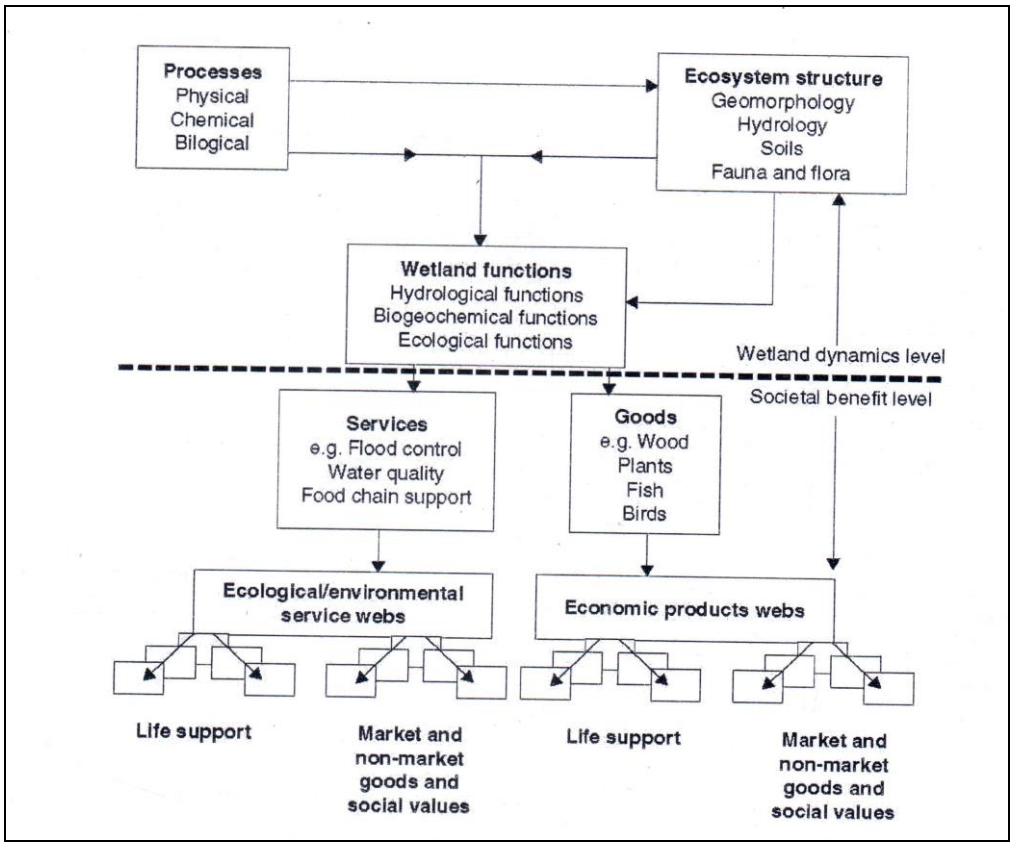


Figure 8a: Structure and function of wetlands and the ecological processes that generate goods and services. *(Source: Gopal, 2015)*

The floodplain forests and grassland are also critical components of biodiversity of river systems and regulate several ecological processes, besides generating economic products to local communities. For example, the vegetation stabilise sediments, prevent erosion, reduce flood velocity, maintain water tables, regulate nutrient levels, purify water, immobilize heavy metals and toxic compounds, serve as grazing ground for terrestrial wildlife and also as habitat for completing life cycles of many aquatic animals, enhance the recharging capacity of floodplain, serve as sink for CO_2 and other pollutants, and provide livelihoods to local communities.

The Ganga and Yamuna rivers, in plains of India, form extensive floodplains often spreading for more than 10 km in width; some of the elevated floodplains already encroached and human settlements were developed; some floodplains have been converted into agricultural fields and orchards. The extensive floodplain forests along river Yamuna at Kalesar National Park and wetlands, marshes, swamps, lakes, grasslands, floodplain forests in the upstream and downstream of Madhya Ganga Barrage over Ganga and massive wetlands of Haiderpur (Muzaffarnagar) spreading over 1221 hectares and floodplain forests covering over an area of 1432 hactares along river Ganga, and the massive wetlands of Hastinapur Wildlife Sanctuary along river Ganga are illustrated in Figure 9 to 26. It may be noted that the entire Hastinapur wildlife sanctuary is a wetland spreading over 11,000 ha of area and is covered with water during monsoon but becomes dry during winter and summer months and are converted into agricultural fields during dry period; there are also extensive marshes and swamps in both Haiderpur Wetlands and Hastinapur Wildlife Sanctuary.

The figures 9 to 26 are included in the Guidelines primarily with the objective to bring to the attention of stakeholders about the different river ecosystems that already exist in riverscapes and such ecosystems can be restored/ recreated in degraded stretches as a part of Biodiversity Parks in floodplains.

Figure 9: Overview of the riverscape of Yamuna river in the upstream of Hathni Kund reservoir at Kalesar National Park showing watercourses (channels), the riparian zone, the floodplain, and the islands.

Figure 10: Riverscape of river Yamuna showing floodplain forest with one of the dried channels of the river passing through it in the upstream of Hathni Kund Barrage at Kalesar National Park.

Figures 11: Riverscape of river Yamuna showing elevated floodplain that was converted into an Orchard in the upstream of Hathni Kund Barrage at Kalesar National Park.

Figures 12: Riverscape of river Yamuna showing floodplain grassland and forest in the upstream of Hathni Kund Barrage at Kalesar National Park.

Figures 13: Riverescape of river Yamuna showing in-stream habitat of the channel, riparian zone and floodplain forest in the upstream of Hathni Kund Barrage at Kalesar National Park.

Figures 14: Riverscape of the river Yamuna showing *Acacia catechu* dominated floodplain forest in the upstream of Hathni Kund Barrage at Kalesar National Park.

Figures 15: Riverscape of river Yamuna in the upstream of Hathni Kund Barrage at Kalesar National Park showing extensive riparian zone and floodplain forest.

Figures 16: Overview of the floodplain of river Ganga in the upstream of Madhya Ganga Barrage at Bijnor (Haiderpur Wetland) showing wetlands, marshes, swamps, grasslands, forest and connecting channels.

Figures 17: Floodplains of river Ganga in the upstream of Madhya Ganga Barrage at Bijnor (Haiderpur Wetalnds) showing luxuriant marshy vegetation, grasslands and floodplain forest.

Figures 18: Floodplain forest of river Ganga in the upstream of Madhya Ganga Barrage at Bijnor (Haiderpur Wetland).

Figures 19: Planted forest on the elevated floodplain of river Ganga in the upstream of Madhya Ganga Barrage at Bijnor (Haiderpur Wetland).

Figure 20: Floodplain of river Ganga in the downstream of Madhya Ganga Barrage at Bijnor (Haiderpur Wetlands) showing lake ecosystem.

Figures 21: Floodplain of river Ganga at Hastinapur Wildlife Sanctuary showing marshy grasslands.

Figures 22: Floodplain of river Ganga at Hastinapur Wildlife Sanctuary showing conversion of wetlands, marshes and swamps into seasonal agriculture.

Figures 23: Floodplain of river Ganga at Hastinapur Wildlife Sanctuary showing wetlands and marshes with rich aquatic flora.

Figures 24: Riverscape of river Ganga at Hastinapur Wildlife Sanctuary showing grasslands and marshes with a flock of Goose feeding in the floodplain grassland.

Figures 25: Riverscape of river Ganga showing in-stream habitat and riparian zone occupied by agricultural fields (wheat fields) at Hastinapur Wildlife Sanctuary.

Figures 26: Riverscape of river Ganga at Hastinapur Wildlife Sanctuary showing floodplain swamp with reeds, cattails and woody vegetation.

4.0 BIODIVERSITY AND ECOSYSTEMS

Biodiversity is critical for the existence of life on the planet Earth. The different gross landforms that include mountains, plains, rivers and oceans together with their rich ecological diversity support a myriad of life forms. The life forms and their environments together with interactions among life forms and between life forms and their environments constitute Biodiversity. Biodiversity is also often referred to as Biological Diversity (Diversity at all levels of Biological organization).

According to the Convention on Biological Diversity (CBD, 1992), Biological Diversity refers to "the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".

The Biodiversity is broadly classified into three categories - (i) the genetic diversity (ii) the species diversity, and (iii) Ecosystem diversity; cultural diversity evolved by humans is also often considered as a component of Biodiversity. The genetic diversity includes diversity from gene level to population level; the species diversity includes the kinds and number of species at species level; and the ecosystem diversity encompass diversity at community and ecosystem levels of biological organisation.

In simple terms Biodiversity or biological diversity refers to diversity at all levels of biological organisation ranging from genes to Biosphere.

The role of Biodiversity in the structure and function of river system has been discussed in the earlier chapters. The Biodiversity of river systems include plants, animals and microbes. The plants are represented by microphytes which include microscopic photosynthetic organisms such as algae and phytoplankton, and macrophytes that include macroscopic plants of aquatic environments which may be floating, submerged or rooted in sediments and emergents with rooting in the sediment. Terrestrial forest communities are also found on embankments, uplands and floodplains.

The animals include zooplankton, benthic fauna (macro-invertebrates) and dominant vertebrate groups such as fishes, birds, reptiles and amphibians. In the forest communities many animals belonging to diverse taxonomic groups are well-represented.

The microbial communities include protozoans, fungi, bacteria and viruses. The terrestrial communities have many soil borne microbes, including arbuscular mycorrhizae.

The relationships of hydrological features with the Biodiversity through different ecological processes (interactions) are illustrated in Figure 4.

4.1 Ecosystems and Ecological Services

Water, soil/ rock, air and living organisms constitute environment. These four components of environment are also known as environmental resources or natural resources. These four

environmental components interact within and between them in a given area/location and form a complex, self-sustaining, dynamic, functional natural system known as ecosystem. Ecosystem is the basic unit of ecological organisation in Nature. Ecosystem has many attributes and the most important ones are that: (i) ecosystem exists in more than one state, and (ii) the ecosystems have resilience. For example, natural forest is a natural state of ecosystem and when it is continuously grazed it becomes a shrubland and the shrubland becomes grassland if grazing is continued. There are three states of the ecosystem – the natural forest ecosystem, the degraded shrubland ecosystem and the degraded grassland ecosystem.

Resilience of the ecosystem refers to its ability to go back to its natural state if the disturbance regime (grazing) is within its threshold limits. If the disturbance regime crosses threshold limits, the ecosystem losses its resilience and convert from one state to another state. For example, if there is an intermediate grazing, the forest ecosystem goes back to original state, i.e. natural forest ecosystem because of resilience; but if there is an intense grazing, the forest ecosystem loses its resilience and degrades to a shrubland ecosystem.

The ecological processes resulting from interactions among four components generate a wide range of services and goods known as ecological services or ecosystem services.

The different ecological services rendered by ecosystems are classified into four categories: (i) the provisioning services that include the food that we take, the water that we drink, the shelter where we live in, the clothes that we wear and the drugs that we take for curing our diseases, all of which are derived from ecosystems; (ii) life supporting services like nutrient cycling, soil formation and primary productivity; (iii) regulatory services that include climate regulation, flood and drought regulation, disease control and water purification; and (iv) cultural services that include aesthetic, spiritual, educational and recreation values. All these services contribute to human well-being.

The different functions of river ecosystems, which have been discussed extensively in the earlier chapters, represent direct and indirect ecological services and goods belonging to above mentioned categories.

To illustrate the ecological services and goods provided by ecosystems, the ecosystem services rendered by Australia's tropical river systems are given in Table 2.

Table 2: Different ecological services with examples of goods, activities and benefits rendered by Australia's tropical river system. *(Source: Gopal, 2007)*

Ecosystem services	**Examples of goods, activities and benefits provided**
Provisioning	
Food	Production of fish, other aquatic terrestrial species, fruit, and grains for recreational and subsistence hunting and gathering
Fresh water	Storage and retention of water for domestic, ecological, aquaculture, mining, fishing, and agricultural use
Fibre and fuel	Production of logs, fuelwood, and fodder for building, cooking, and warmth
Biochemical	Production of biochemicals and medicines and industrial products
Genetic materials	Production of genetic material (genetic resource)
Regulating	
Climate regulation	Source of and sink for greenhouse gases; influence local and regional temperature, precipitation, and other climatic processes
Water regulation (hydrological flows)	Groundwater recharge/ discharge; hydrological regime is key driver of ecosystem processes and food-web structure
Water purification and waste generation	Retention, recovery, and removal of excess nutrients and other pollutants
Erosion regulation	Retention of soils and sediments
Natural hazard regulation	Flood control, storm protection
Biological control	Control of pests and diseases
Cultural	
Spiritual and inspirational	Source of inspiration for well-being and art; spiritual benefit; specific and unique indigenous spiritual and cultural values
Recreational	Opportunities for recreational activities and tourism
Heritage and sense of place	Cultural heritage and identity
Aesthetic	Many people find beauty or aesthetic value in aspects of wetland ecosystems
Educational	Opportunities for formal and informal education and training
Supporting	
Soil formation	Sediment retention and accumulation of organic matter
Habitat provision	Provision of habitat for wildlife feeding, shelter, and reproduction
Nutrient cycling	Storage, recycling, processing, and acquisition of nutrients

4.2 Changes in Ecosystems and their Degradation

Humans have been changing the ecosystems, and human induced changes that took place in ecosystems during the last 50 years exceeded all those changes that took place in the entire human civilization. Some changes (food production systems) benefited humans but most of the changes have adverse effects on ecosystems and manifested into 21st century environmental challenges. Loss of biodiversity is the major 21st environmental challenge and is threatening human survival and existence of Biosphere. The River systems form the lifeline of human societies evolved over centuries, and today these life supporting systems are threatened with extinction. About 87 percent of wetlands were extinct due to land degradation. 100s of springs were dried up. Many Indian 3rd order tributaries were either vanished or become sewers or filled with solid waste. In fact, many rivers in urban stretches

have become open sewers and lost their self purification abilities due to absence of microbial, algal, phyto and zooplankton, macrophytic and benthic faunal communities, all of which were extinct due to heavy pollution load. The loss of floodplains and their wetlands and riparian ecosystems also led to degradation of river ecosystems and deterioration of water quality.

Human activities that led to degradation of river ecosystems include: (i) damming up of water leading to diversion of river flows to agricultural, industry and domestic use; (ii) diversion of river flows for generation of hydropower; (iii) channelization by constructing embankments, bunds and bund roads for preventing flood waters entering into encroached human settlements on the floodplains; (iv) intensive sand and gravel mining from in-stream, riparian zone, floodplains and earthen embankments; (v) conversion of floodplains into agricultural fields; (vi) conversion of wetlands into paddy fields; (vii) loss of biodiversity along embankments, uplands, catchments and watersheds; (viii) dumping of solid waste into wetlands; (ix) filling up wetlands for human settlements; (x) dumping of solid wastes on the floodplains for human settlements; (xi) discharge of wastewater (domestic sewage and industrial effluents) into rivers and wetlands leading to death of riparian ecosystems; (xii) excess withdrawal of groundwater from the areas close to floodplain; (xiii) intensive grazing; (xiv) invasion of invasive alien species; (xv) excessive nutrient loading due to agricultural runoff; (xvi) contamination of water with pesticides and other chemicals used in agricultural and dairy farms, etc. The challenge is how to rejuvenate dying rivers?

5.0 BIODIVERSITY PARKS: A HOLISTIC APPROACH FOR REJUVENATION OF RIVERS

The river ecosystems across the country are highly degraded, and the pollution loads are so high that the water in most of the rivers, particularly in urban stretches are unsuitable even for irrigation. The challenge is how to rejuvenate river ecosystems which are highly complex. To achieve this goal, there is a need for holistic approach. One such approach is the establishment of Biodiversity Parks along the floodplains of rivers of India. The Biodiversity Park approach involves restoration of degraded river ecosystems and recreation of lost ecosystems, biological treatment of waste waters that enter into river, and use of natural wetlands for cleaning channel water and storage of flood water. The Biodiversity Park approach is detailed in the following pages:

5.1 Concept of Biodiversity Parks

Biodiversity Parks are unique landscapes/ riverscapes of wilderness where ecological assemblages of native species are recreated over marginal/ degraded landscapes/ riverscapes. Biodiversity Parks are based on the ecological restoration principle and the underlying principle is to establish self sustaining ecosystems that have biodiversity and function that generate ecological services that contribute to well being of humans.

Biodiversity Parks in riverscapes include restored/ recreated river ecosystems along degraded stretches of rivers for their rejuvenation.

The Biodiversity Parks of floodplains of rivers include the restoration/ recreation of diverse landscape elements of floodplains such as wetlands, marshes, swamps, lakes, forests and grasslands, besides riparian ecosystems and in-stream communities. It also includes the development of greenways along embankments, forest communities on adjacent uplands and treatment wetlands for cleaning river water and constructed wetlands for treatment of sewage and industrial effluents that enter into rivers.

The Biodiversity Park concept ensures the original ecological integrity of the landscape/ riverscape and prevents introduction of any external element in the landscape/ riverscape that might affect native flora and fauna.

The Biodiversity Park approach is innovative approach or model for recreation of lost biodiversity or natural heritage and it is a conservation approach. It involves conservation of ecosystems, communities, species, populations, and simulate National Parks/ Wildlife Sanctuaries/ Nature Reserves/ Wilderness.

5.2 Functions of Biodiversity Parks

Biodiversity Parks have wide range of functions and encompass almost all the four categories of ecosystem services rendered by ecosystems, and include: (i) enrich human microbiome as the parks harbour rich environmental microbiome, and this in turn reduces the human health

risks and public health burden; (ii) serve as filters for point and nonpoint source of air pollutants; (iii) store flood water and recharge ground water; (iv) prevent soil erosion and stabilize floodplains; (v) reduce flood water velocity; (vi) serve as hub for conservation, educational and cultural activities; (vii) promote ecotourism; (viii) connect the city and its citizens to nature and biodiversity; (ix) provide livelihoods to local communities; (x) serve as living museum for understanding ecosystem processes and function; (xi) sequester CO_2 and impart climate resilience, buffer local weather and even cause local precipitation; and (xii) serve as habitat for vanishing flora and fauna (xiii) purify water, (xiv) enhance biological productivity , (xv) sustain river ecosystem and (xvi) rejuvenate rivers.

Biodiversity Parks of riverscapes have many other functions such as:

(i) contribute to self purification system of river water;

(ii) regulation of stream flows;

(iii) prevention of channel bank erosion;

(iv) uniform distribution of sediments;

(v) stabilization of floodplains;

(vi) trapping of sediments;

(vii) reducing flood water velocity;

(viii) immobilization of heavy metals and nutrients such as nitrogen and phosphates, including heavy metals;

(ix) regulation of nutrient cycle leading to enhanced water quality;

(x) storage of flood water;

(xi) recharge of groundwater and enhancement of base flow for sustained riverflow;

(xii) filtration of surface runoff from upland, embankments and watersheds;

(xiii) sink for CO_2 and buffer local weather;

(xiv) reduction in loss of water from surface evaporation;

(xv) provide diverse products to and livelihoods of local communities;

(xvi) provide recreation to the public;

(xvii) preservation and sustenance of diverse river ecosystems and the flora and fauna;

(xviii) promote ecotourism;

(xix) habitat for RET (Rare, Endemic and Threatened) aquatic and terrestrial plant and animal species;

(xx) regulate water temperature leading to enhanced water quality;

(xxi) bioremediate wastewaters that enter into river system; and

(xxii) cleaning of river water through treatment wetlands (natural).

These functions of Biodiversity Parks in riverscapes have been discussed extensively in Chapters 2 and 3.

5.3 Structural Components of Biodiversity Parks

A Biodiversity Park can have wide range of landscape/ riverscape elements, and it depends upon the space availability, nature of the ecosystems that used to exist before degradation, topography of the area and what the local communities need, besides the main goal of bringing back the lost pristine glory of the landscape/ riverscape and rejuvenation of rivers. An ideal Biodiversity Park has two zones – (i) the Nature conservation zone and (ii) the visitor zone. The nature conservation zone consists of terrestrial and aquatic ecosystems of the area where the natural forest ecosystems, floodplain wetlands, forests and grasslands, river channels and their interconnections with wetlands of floodplains are located. The visitor zone will have a number of elements such as representative ecosystems of the area, a herbal garden, an aquatic garden to preserve the aquatic resources, wetlands, butterfly conservatory, green ways along the embankment, diverse wetlands that attract diverse group of birds, NIC, constructed wetlands for treatment of wastewater, natural bathing sites for local community on specific festivals and Recreational Parks.

The Biodiversity Parks of riverscapes can have the following structural components:

(i) Forest communities along the river embankment and adjacent upland.

(ii) Greenways with walkways and cycleways long the river embankment/ bunds. The greenways have 3-storeyed native forest communities.

(iii) Greenways with Recreational Parks, where human settlements are located close to the river.

(iv) Floodplain forests and grasslands, marshes, wetlands and lakes on floodplains.

(v) A butterfly conservatory, an herbal garden, a recreational park and forest communities on elevated floodplains.

(vi) An NIC on the elevated floodplains/ embankment/ upland

(vii) Representative riparian ecosystems along the channel banks and riverbeds.

(viii) Natural bathing sites for local communities.

(ix) Natural treatment wetlands for cleaning of river water.

(x) Constructed wetlands for treatment of wastewater that enters into river.

(xi) An aquatic garden for conservation of aquatic flora.

(xii) Infrastructures for promoting awareness, education and training on the conservation of river ecosystems.

5.4 Size of Biodiversity Parks

The size of Biodiversity a Park depends upon the amount of land/ the stretch of riverscape available. The minimum land required for biodiversity park is 100 acres, but 50 acres patch can also be developed into a Biodiversity Park. 10 patches of 10 acres each that are located in a cluster can also be used for development of Biodiversity Park. The Biodiversity Parks can be developed in linear fashion along Highways or rivers with stretches of 0.5-5.0 km wide. The upper limit of Biodiversity Park is similar to that of National Park, i.e. few hundred km^2.

The size of Biodiversity Parks in riverscapes depends upon the stretch (length) of the river available, the extent of floodplain width and the riparian zone, presence of wetlands and the extent of upland area. The stretch can be 1 km to 100 km long and 0.5 - 5 km or more wide on either side of channel. The Biodiversity Parks in riverscapes should be developed in linear fashion. Some of the major rivers of India, in the plains, have floodplains extending several 100 km stretch and include vast tracts of elevated floodplain forests.

5.5 Planning, Designing and Development of Biodiversity Parks in Riverscapes

Step-wise procedures involved in planning, designing and developing Biodiversity Parks in Riverscapes are outlined below:

1. Selection of the riverscape.

   Identify the stretch of river that is at least 1km long (the length may be anywhere between 1 and 100 km) that has lesser gradient, extensive floodplains (anywhere between 0.5 km – 5 km wide or more on either side of the water channel and the embankment/ bund) and an upland area of the size anywhere between 50 m and 500 m wide strip along the embankment/ bund.

   Stretches having threats, connectivity, services offered and potential of enhancing the integrity of the ecosystem considered and the potential of demonstrating an integrated approach for restoration may be preferred.

   The river stretch with high conservation values and under anthropogenic pressure should be identified for the Biodiversity Park. So that conservation of inhabiting species (e.g. Freshwater turtles) could be ensured through community engagement.

There is a need to undertake the assessment of ecosystems, flora and fauna in the past and present at the site and its upstream and downstream areas. The past information can be obtained from the previous published information including floras and faunas and scientific papers, if any. The present information in the form of biodiversity mapping can be done by floristic and faunastic surveys. These surveys include the listing of kinds of species of plants and animals found, the vegetation types, the phytosociological features (dominance, abundance and frequency distribution of plants and birds), invasive species if found, and use of plant and animal species found in the area. This information is useful in selecting the species for community and ecosystem development.

Proper environmental and ecological assessment of the proposed site taking into account the needs of local communities and participation of Panchayati Raj institutions should also be carried out.

Regional Offices of Botanical Survey of India (BSI) and Zoological Survey of India (ZSI) may be approach for identification of plants and animals found in the area/ region. Both BSI and ZSI also have databases of the plants and animals of the area/ region and these databases are useful in Biodiversity mapping.

Note: Please select the stretch where there is no agriculture in floodplains and human settlements on embankments and presence of a strip of upland close to the embankments. Location and design should not interfere with the hydrological, geomorphological and ecological connectivity. Biodiversity Park should follow all existing rules and regulations including those related to social and environmental impacts.

At higher elevations (headwaters zone), the Biodiversity Parks may include the restoration/ recreation of in-stream communities, riparian ecosystems and also adjacent upland ecosystems besides the ecosystems of catchments and watersheds. In these areas, the floodplain is either narrow or absent. In hilly areas, where the riverscapes have extremely narrow floodplains, Biodiversity Parks of such sites include restoration/ recreation of in-stream ecosystems, riparian ecosystems, adjacent upland ecosystems and ecosystems of catchments and watersheds.

2. Secure the area by fencing along the embankment/ upland area and the boundaries of floodplains at the upstream and downstream of the stretch selected.

It may be noted that identification of wetlands and demarcation of land for interventions should be done based on the study of natural drainage patterns and connectivity analysis along with consultations with the local communities, keeping in view their existing rights and privileges. Restoration of wetlands should be done on the principles of wise use concept.

Note: No fencing should be done along the water channel front.

3. Survey the vegetation of uplands located in the neighbourhood of the site selected for selection of plant species of trees, shrubs, herbs, and grasses that will be used for the development of terrestrial communities on uplands, embankments and elevated floodplains.

   Note: The propagules of the species selected (seedlings, seeds and ramets/ root slips of grasses) should be collected and raised and multiplied in a Nursery.

4. Development of a Nursery in 2 to 5 acre plot located in embankment/ upland area (depending on the size of Biodiversity Park) for the maintenance of saplings and multiplication of saplings.

5. Development of forest plant communities on elevated floodplains, flat floodplains, embankments and uplands:

   (a) Development of grasslands, to start with, on the upland, embankments and floodplains.

   (b) Plantation of saplings of top canopy tree species.

   (c) After 2-3 years of top canopy species plantation, plantation of underwood species should be done.

   (d) After 4-5 years of plant community development, plantation of herbaceous plants should be done.

   Note: The vegetation developed will prevent erosion / reduce sedimentation load, enrich nutrients in the aquatic ecosystems and improve the water quality. All plantation activities should be done using native plants only.

6. Survey of floodplains for location of the wetlands, marshes, swamps, lakes, grasslands and forests. A GIS based map of the area may also be developed for planning.

   (a) The elevated areas in floodplains should be developed into floodplain forest communities. The shallow and undulating depressions should be used for grasslands.

   (b) Different grassland communities should be developed based on the moisture gradient. The grass species required may be collected from already existing floodplain grasslands on undisturbed stretches of river close to the selected site.

   Note: Propagules of some grass species may also be collected from upland grasslands located in the neighbourhood of the selected site.

   (c) If there are already existing wetlands, marshes, swamps and lakes, these ecosystems should be restored. The first step in the restoration is desilting (in case of marshes and swamps desilting should be done less than 1 m depth; in case of

wetland, desilting should be done upto a depth varying from 1 to 3 m; and in case of lakes, the desilting can be done upto a depth of 3 to 5 m). The silted material can be used for landscaping around the waterbodies. These landscaped areas should be grassed with native floodplain grassland species.

After desilting, introduce phytoplankton, zooplankton, benthic fauna, and fishes into the restored floodplain wetland ecosystems. The other vertebrates colonize these ecosystems on their own soon.

(d) If wetlands, marshes and swamps and lakes were vanished at the site, these have to be recreated on the sites where some hydrophytes such as Cattail and *Phargmites* exist.

(e) To provide seed material of animal communities, two nursery ponds should be developed in the elevated floodplains zone/ upland area.

(f) If there are silted connecting channels between water channel and the wetlands and lakes, these silted channels should be desilted upto a depth of 1 m or so and the excavated material should be used for landscaping. The channel should be lined with reeds and cattails.

(g) If channels were vanished, these channels have to be created. These channels should be shallow (4-8 m wide and 1-2 m deep). These channels should be lined with reeds and cattail plants.

(h) If there are habitats that support riparian communities and the habitats are degraded, restore them and introduce the planktonic, benthic and other plant and animal communities characteristic of riparian communities.

(i) If the riparian ecosystems were vanished, the ecosystems have to be recreated in the riparian zone. If such zones cannot be created along the channel, simulated riparian ecosystems have to be developed in the floodplains close to the water channel, using boulders, stones and pebbles.

(j) If the water in the channel has lost in-stream biotic communities, these have to be introduced.

(k) If the water quality is low due to discharge of sewage and industrial effluents, the water from the channel has to be treated by passing it through treatment wetlands to be developed in the floodplains and channels have to be created in a way that channel water pass through these wetlands from the upstream and then enters into the downstream. In fact such treated wetlands and channelization of water all along the river in floodplains may rejuvenate the rivers.

(j) If storm drains carrying sewage is passing through the floodplains, the treatment wetlands have to be developed for in-situ biological remediation of sewage before it is discharged into river.

(m) If natural wetlands do not exist for the treatment of storm drain sewage, constructed wetland system has to be developed. The constructed wetland system has the following units:

(i) One or two oxidation zones / ponds/ units separated by mini weirs of 1 m or 1.5 m high; this is connected to (ii) physical filter zone/pond/ unit that have 5 to 10 gabions of 1m high, 2' wide with boulders of 2' size embedded in iron mesh, and this unit is connected to (iii) constructed wetland unit consisting of 8-15 ridges and furrows; the ridges are 1 m high and 2’ wide and made of stones/ pebbles of 180-200 mm; the furrows are used for plantation. The length and width of each unit depends upon the length and width of drain, hydrological features such flow rate, volume and organic load of sewage.

(n) Aided regeneration/ plantation of native species to develop and support native ecology will be undertaken wherever it is necessary.

(o) While designing the restoration/ recreation of wetlands, it is necessary to keep in view the wetland functions so that activities such as development of embankments and other topographic changes should not alter the natural flux of water, sediments and species.

7. Development of Butterfly Park

This should be developed on upland/ embankment, and suitably landscaped. About 70-100 host plants for larvae and 70-100 flowering native herbs, shrubs and trees that produce nectar bearing flowers seasonally and serve as host plants for adult butterflies should be planted. About 50-100 species of butterfly will be attracted to the Butterfly Park. The area required for development of Butterfly Park is about 2 to 5 acres.

There should be 2-3 small shallow waterbodies scattered over the area. Each waterbody should be 10 m X 10 m and 1 m depth. This is needed for maintaining relative humidity.

There should be shelter belt around the periphery of Butterfly Park with 1 or 2 rows of bamboo.

8. Development of Herbal Garden

An area of 5-8 acres in the upland/ elevated floodplains can be developed into a herbal garden for the conservation of native medicinal plants. Plants that can be used in home remedies can be grown and can be provided to local communities. About 100-150 species of local plants of medicinal value can be grown. The cultivation practices, medicinal properties of plants grown should be provided on signages and should be also displayed in the Nature Interpretation Centre.

The area should be suitably landscaped depending on the site characteristics.

9. Fruit Yielding Garden (Orchard)

A fruit yielding plant garden can also be developed along embankment/ upland. About 25-30 acres can be used for the development of local varieties of popular fruit yielding species in the region.

10. Birding Area

Besides cultivated fruit bearing plant garden, wild shrubs and trees bearing fresh fruits should also be planted to attract birds. This should be designated as Birding Area. This should be located over an area of 25 -30 acres in upland / elevated floodplains.

11. A Nature Interpretation Centre (NIC) is critical in a Biodiversity Park for promoting awareness among public and students on the need for river conservation and sustenance of river ecosystems to sustain water quantity and quality. It also serves as a platform for undertaking other activities related to Biodiversity Education and training.

A modest building (aesthetically designed with built up area of 10,000-15,000 sq. ft.) is adequate enough. It should have Toilets and a small Seminar Room where visitors can sit to discuss the issues relating to river ecology and management. An office complex of 5000 sq. ft. and a minor laboratory of 5000 sq. ft. may be attached to NIC. This complex should be developed in the upland area.

The Biodiversity Parks, once established, provide opportunities to people to learn from the Park itself. To achieve this objective, the Biodiversity Parks should include the following provisions:

(i) Guided tours;
(ii) Awareness education on Biodiversity and environment among students and people;
(iii) Preparation of leaflets and training modules for different target groups;
(iv) Popular talks by experts; and

(v) Linkages with research centres in local Colleges and Universities, and also with BSI and ZSI.

12. A recreational garden should be developed in and around NIC without interfering with the hydrological and ecological connectivity of the riverscape, landscape or wetlands. The area required will be 1 to 2 acres. The area should be suitably landscaped.

13. A network of trails connecting different structural elements of Biodiversity Park should be developed. The width of major trails should be 8’ wide and secondary trails connecting major trails should be 6' wide and tertiary trails that connect secondary trails should be 4’ wide. This network of trails should pass criss-cross way across the riverscape. No concretization of trails should be permitted; No paver blocks should be used.

14. A field vehicle, a tractor and a golf cart are essential for the Park.

15. A recreational park on 5 acres of upland/ embankment/ elevated floodplains should be developed.

16. Use of nature based solutions for water and waste management including composting of aquatic weeds/ leaf litter and floating reed beds and floating fountains for treatment of water should also be integral part of the Biodiversity Park.

17. A weather station may also be installed in the Biodiversity Park and also information on hydrology should also be collected.

18. The Biodiversity Parks should have a provision for conservation of local fish species, and their importance in ecology and culture should also be displayed in the NIC.

19. The Guidelines is also applicable for the development of Biodiversity Parks in river reaches which are not embanked.

20. Various climatological challenges are facing should be factored in while preparing the project proposal for Biodiversity Parks.

21. Only eco-friendly construction materials should be used in developing the Biodiversity Parks.

5.6 Schematic Layout of a Typical Biodiversity Park in Riverscape and a Constructed Wetland

To facilitate how to implement the design of Biodiversity Park planned in the riverscape without any difficulty to the stakeholders, a schematic layout of a typical Biodiversity Park in the riverscape showing different structural elements is provided (Figure 27). A schematic layout of a typical constructed wetland for in-situ biological remediation of sewage that enters into the river is also given (Figure 28).

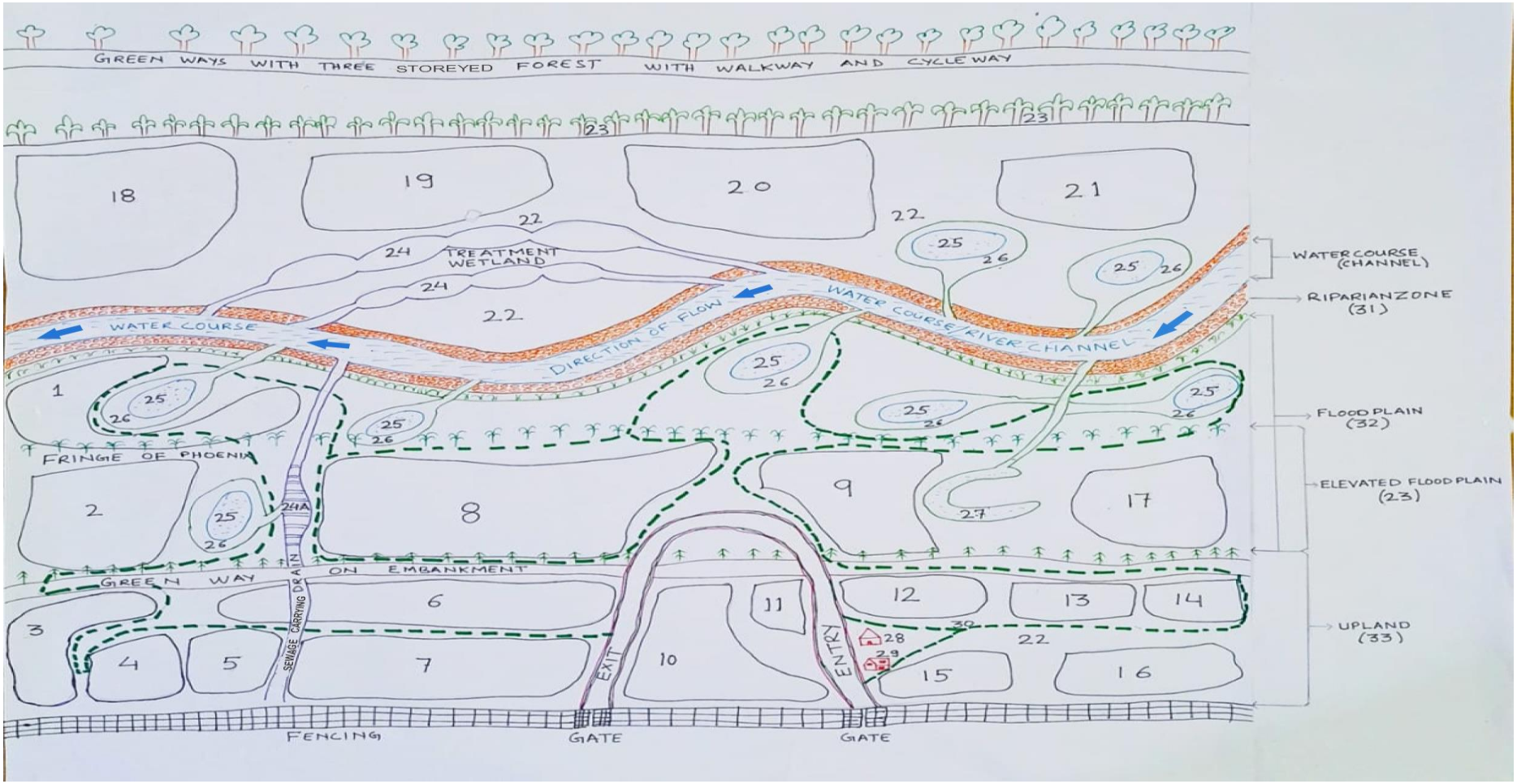


Figure 27: Schematic layout of a typical Biodiversity Park of the riverscape showing different structural components.

1 – Floodplain forest on the elevated ridge; 2 – Floodplain forest with *Acacia catechu*, *Bombax* and Ber, 3 – Wild fruit-bearing shrubs and trees (Birding Area), 4 – *Phoenix* groove, 5 – Shrubland, 6 – Orchard, 7 – Bamboo thickets, 8 – Grassland with scattered trees, 9 – Aquatic garden, 10 – Recreational Park, 11 – Butterfly Park, 12 – Herbal Garden, 13 – Nursery, 14 – *Sterculia* dominated community, 15 – *Butea* dominated community, 16 – *Holoptelea* dominated community, 17 – *Terminalia arjuna* dominated community, 18 to 21 – Different floodplain forest communities, 22 – Grasslands and marshes, 23 – Elevated floodplain, 24 – Treatment wetlands (natural), 24A – Constructed wetland, 25 – Catchment wetlands, 26 – Marsh, 27 – Oxbow lake, 28 – Nature Interpretation Centre, 29 – Office Campus, 30 – Dotted line (----) indicates trails, 31 – Riparian zone, 32 – Floodplain, 33 – Upland

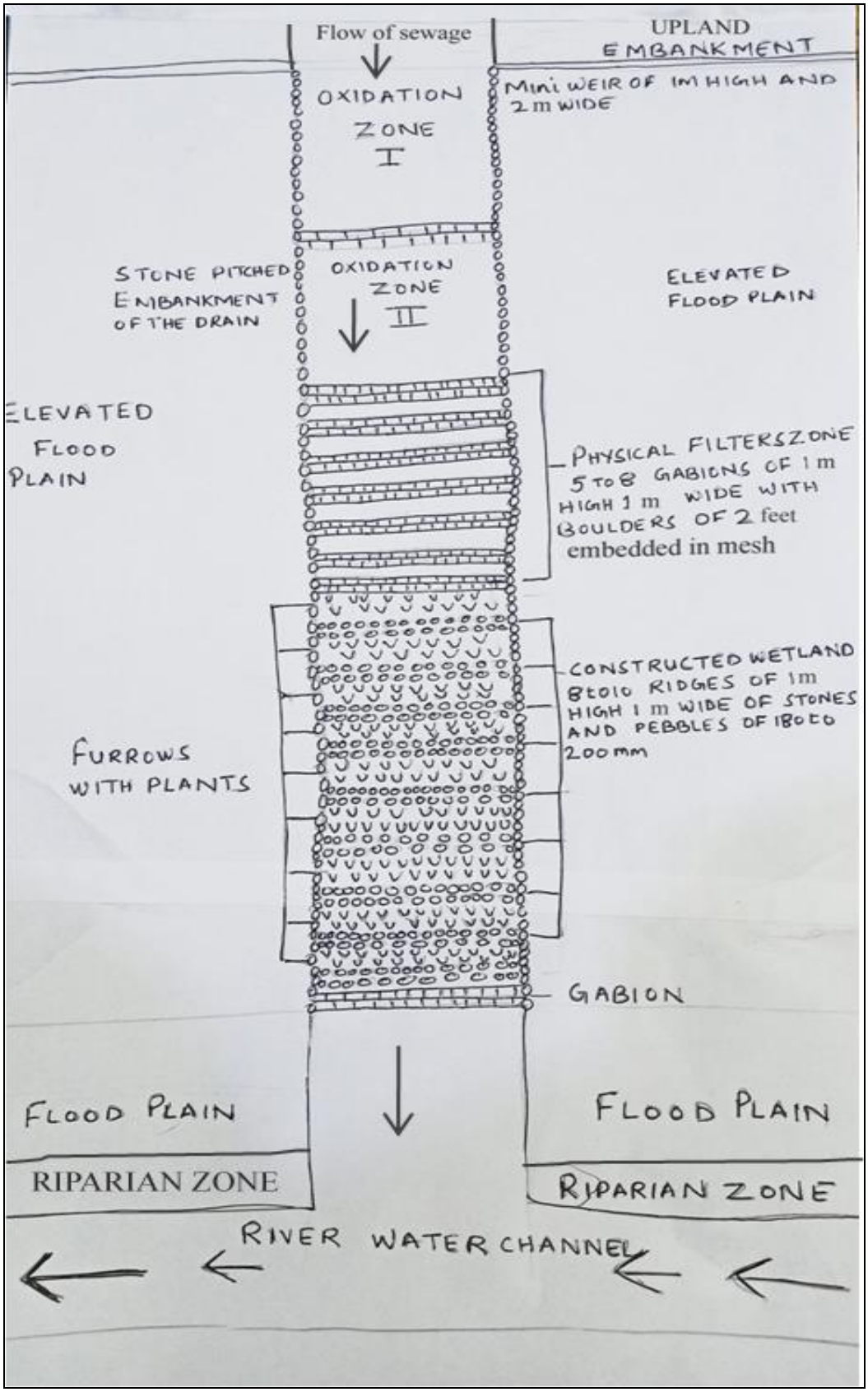


Figure 28: Schematic layout of a typical Constructed Wetland System for in-situ remediation of sewage/ industrial effluent of the drain that pass through Upland Elevated Floodplain of the riverscape.

5.7 Preparation of Detailed Project Report (DPR) for the Development of Biodiversity Parks in Riverscapes

After knowing the detailed procedural steps for planning, designing and developing of Biodiversity Parks in Riverscapes, it is important to know how to prepare DPR for approval of the Project by the Competent Authorities and for implementation.

The DPR should have the following details:

(1) A brief introduction to the Project. This should contain the background on the ecological issues of the stretch of river selected, and how Biodiversity Park would address the issues leading to the rejuvenation of the river stretch, and the benefits that the project can deliver to local communities. It should also include geomorphology and the hydrology of the river reach, in particular inflows and outflows.

(2) Contour Map of the selected stretch with details in the upstream and downstream and upland area on either side of river banks; latitude and longitude, and topography of the selected site; demarcation of the area for Biodiversity Park on contour and also on Google Earth maps should be given.

(3) Description of site characteristics including the flora and fauna of upland area and embankment, details of floodplain landscape elements, riparian zone, in-stream characteristics such as flow rate, volume of water, depth of water, water quality, extent of fishing, aquatic flora and fauna, number of storm drains that carry sewage that enters into wetlands/ rivers, presence of wetlands/ swamps/ marshes/ lakes, and if present details of their vegetation and ecology, and land use of the site should be provided.

It should also include information related to: (i) its historical and cultural significance of the riverscape/ landscape/wetland and of that particular site; (ii) its environmental significance in terms of maintaining the balance of a healthy ecosystem; (iii) its ecological significance in terms of dependence of different life forms & abiotic components (the aquatic life, the terrestrial life, riverine flora) on this river and its resources; (iv) its subsistence livelihood dependencies; (v) various climatological challenges the river is facing; (vi) various man-made challenges the river is facing).

Regional Offices of BSI and ZSI can be approached for floristic and faunistic databases.

(4) Estimates for development of Nursery, which include costs of polythene bags, earthen pots, garden implements, a bore well, a polyhouse and fencing etc and porta-cabin, should be given.

(5) Estimates for desilting or creation of wetlands/ marshes/lakes/swamps and use of desilted material for landscaping around the wetland /marshes/lakes/swamps (no transportation cost except in cases where it will be needed) should be provided.

The depth of wetlands /marshes/ swamps /lakes have already been specified in the earlier chapter; the width and length depends upon the existing wetlands/ marshes/ lakes or patches where hydrophytes (Cattails and *Phargmites*) are found.

(6) Estimation of costs for desilting of channels that connect the river /stream channel with wetland and lakes should be provided. The depth and width have already specified; the length depends upon the distance between the stream channel and the wetland/lake.

(7) Estimation of the cost of fencing as specified in the earlier chapters should be provided.

(8) Estimates for the restoration/ recreation of riparian ecosystems, will involve the cost of stones and pebbles to be used in the area for diversification of habitat of the riverbed if the riverbed is not alluvial in nature, and desiltation, should be given.

(9) Estimation for the channelization and creation of treatment wetlands for treating stream water should be given. This depends upon the availability of area which cannot be submerged during low floods. The channelization should be atleast of 500m long and pass through a series of treatment wetlands.

(10) Estimates for the development of constructed wetland system for in-situ remediation of sewage that enters into channel through floodplains should be provided.

(11) Estimates for developing network of trails without concretization and paver blocks but lining on either side with stones should be provided.

(12) Cost of purchase of saplings from Forest Department nurseries and government nurseries for plantation should be given.

(13) Approximate cost of procurement of fish fingerlings of native fish species should be provided.

(14) Wages of atleast 20 Multi-Tasking Staff (MTS) as per the state government wages should be calculated.

(15) Salaries of 4 Scientists at the level of Scientist 'B' (one plant taxonomist, one animal taxonomist, one ecologist and one limnologist) should be included. Atleast 3 Field Supervisors at the level of Technical Assistant and one Administrative officer-cum-Accountant and one Office Assistant are required to develop and manage Biodiversity Parks. The salaries of these staff should be included in the annual recurring expenditure. The Biodiversity Park can hire a hydrologist as a consultant whenever his services are needed.

(16) Contingency and consumables are recurring grants, and these grants are also needed for day to day work and should be included in the budget.

(17) Costs of construction of NIC, toilets, office complex, and laboratory have to be estimated. Specifications have already been given in the earlier chapter.

(18) One Tractor with Accessories (about Rs. 8 lakhs), one field vehicle (about Rs. 4 lakhs) and one Motorbike (about Rs. 1 lakh) will be essential and should be included in the budget.

(19) Equipment for monitoring water quality will be required. This will cost about Rs. 5 lakhs.

(20) Estimates of one or two polyhouses of 20 m long and 10 m wide with exhaust fans should be provided.

(21) Depending upon the size of Biodiversity Parks, atleast 6-9 security staff will be required. The budget for engaging security staff should be provided.

(22) The duration of the project should be initially for 5 years.

(23) The DPRs should also include annual Operational and Maintenance (O&M) costs.

5.8 Source of Funding for Development of Biodiversity Parks in Riverscapes

The implementation of DPR of the Biodiversity Park depends upon the funds available. The major source of funding for development of Biodiversity Parks in riverscapes for rejuvenation of rivers should be from the National Mission on Clean Ganga (NMCG) for river Ganga and its basin which includes river Yamuna; and another primary source of funding is Ministry of Environment, Forest and Climate Change, Government of India. The other sources of funding for development of Biodiversity Parks in riverscapes for rejuvenation of rivers include:

(i) Smart City Funds; (ii) Municipal Corporation; (iii) Village Panchayat; (iv) State Irrigation Department; (v) State Tourism Department; (vi) State Pollution Control Board; (vii) CSIR grants from PSUs and Public Sector Banks; (viii) Public and Private Sector Corporations; (ix) world bank and UNDP; (x) donations from individuals/ charitable trusts; (xi) International Agencies; (xii) Ministry of Housing and Urban Affairs, Government of India; and (xiii) Departments of Urban Planning of State Governments; and (xiv) Minsitry of Jal Shakti, Government of India.

5.9 Management and Sustenance of Biodiversity Parks in Riverscapes

Riverscapes are dynamic systems and hence development, management and sustenance of river ecosystems require expertise, and continuous monitoring is a necessity. It is also important to document the lessons learned from the establishment of Biodiversity Parks.

About 4 scientists, 3 supervisors and 20 MTS are essential for the development of Biodiversity Parks in riverscapes. Atleast 6-9 security staff are required. One Administrative

Officer-cum-Accountant, one Office Attendant and one Documentation Officer are also needed.

An officer at the rank of Executive Engineer of Irrigation Department of the area or Divisional Forest Officer of the concerned Forest Division of the State Forest Department or a Special Officer on duty of the Municipal Corporation of the neighbouring town or urban centre should be the Incharge of the Biodiversity Park, and he/she will be responsible for the development and management of Biodiversity Parks. All the staff working in the Biodiversity Park will be reporting to him /her. A Technical Advisory Committee may be constituted with locally available experts (University/ College, BSI and ZSI) for providing technical help from time to time during the development of Biodiversity Parks.

Since the rivers and drains are under the control of State Irrigation Department, the management of Biodiversity Parks should be entrusted to state Irrigation department. Alternatively, the upland areas are mostly forest areas and belong to State Forest Department which has fairly large resources, and hence the state forest department jointly with Irrigation department should manage the Biodiversity Parks.

The State Pollution Control Board and CPCB should also be involved, as the Biodiversity Parks have role in improving the water quality and also in situ remediation of sewage that enters into rivers besides cleaning of river water through treatment wetlands.

A management committee consisting of senior representatives of Irrigation Department (Chief Engineer), Forest Department (Conservator of Forest of the concerned Division), Department of Fisheries (senior officer), Department of Tourism (senior officer), State Pollution Control Board (regional officer) and representative from the Municipal Corporation/ Village Panchayat should be constituted to oversee the development of Biodiversity Parks.

The Chief Engineer of the Irrigation Department or Conservator of the concerned Forest Division will be the Chairman of the committee and EE or DFO (Incharge of Biodiversity Park) will be the member secretary of the Management Committee. The committee should be empowered one and should take all the decisions on the development and management of Biodiversity Parks.

It may be noted that any institutional arrangement to manage the Biodiversity Parks should involve local communities and the stakeholders in the riverscape and landscape because community driver participatory management of Biodiversity Park will link community livelihoods with the sustenance of the Park.

Periodical appraisal of developed Biodiversity Parks should be done to ascertain their effectiveness.

The management should also evolve a financial mechanism to meet the annual O&M costs.

6.0 YAMUNA BIODIVERSITY PARK AS ENVIRONMENTAL SUSTAINABILITY MODEL FOR REPLICATION IN RIVERSCAPES

The concept of Biodiversity Park was successfully implemented for the first time in the world by Delhi Development Authority (DDA) in joint collaboration with the Centre for Environmental Management of Degraded Ecosystems (University of Delhi). DDA has notified so far 7 Biodiversity Parks (the Yamuna, the Aravalli, the Neela Hauz, the Tilpath Valley, the Northern (Kamla nehru) Ridge, Tughalaqabad and South Delhi Biodiversity Parks, besides the recent order for setting up of Riverfront Biodiversity Parks by DDA. Of these 7 Biodiversity Parks, the Yamuna and Aravalli Biodiversity Parks are fully functional and have become Nature Reserves of Delhi. Both the Biodiversity Parks have become global models for conservation of natural heritage and environmental sustainability. The Yamuna Biodiversity Park model is an appropriate model for replication in the floodplains of the rivers across India for rejuvenation of rivers.

6.1 Yamuna Biodiversity Park

The Yamuna Biodiversity Park is located over an area of 457 acres in the upstream of Wazirabad reservoir across Yamuna, and has inactive and active floodplains. The Biodiversity Park includes wetlands, marshes, flat active flood plains, salt bushlands, and elevated inactive flood plains .These different landscapes are interconnected by trails and support some 1200 species of plants that thrive in 30-35 communities and have three trophic levels including secondary carnivore (Leopard). The visitor area has several different landscape elements.

The Yamuna Biodiversity Park has two zones – the Nature Conservation Zone and the Visitors Zone.

6.2 Nature Conservation Zone

The Nature Conservation zone has forest communities interspersed with wetlands and grasslands on the elevated inactive floodplains which never receive floodwaters due to marginal bund.

There are altogether 25-30 forest communities, some of which are given below:

(i) *Mitragyna* dominated community

(ii) *Terminalia chebula* dominated community

(iii) *Adina* dominated community

(iv) *Acacia catechu* dominated community

(v) *Holoptelia* dominated community

(vi) Teak dominated community

(vii) *Terminalia tomentosa* dominated community

(viii) *Acacia nilotica* dominated community

(ix) *Dalbergia sisso* dominated community

(x) *D. lanceolata* dominated community

(xi) *Albizia* dominated community

(xii) *A. lebbeck* dominated community

(xiii) *Cordia* dominated community

(xiv) Jamun dominated community

(xv) Amla dominated community

(xvi) Grasslands (that include short, intermediate and tall grasslands)

(xvii) Mixed deciduous forest

(xviii) Wetland ecosystems (wetlands are fully functional and biologically rich and attract 1000s of migratory birds during winter months).

These communities have diversified food web and three trophic levels. These riverine forest communities provide a wide range of ecological services and harbour rich wildlife.

These diversified river ecosystems have been: (a) buffering ambient temperature, (b) preventing evaporation by keeping the air cool, (c) providing detritus (organic matter) to the biota that live in the river water and purify the water more effectively than RO plants, (d) preventing erosion/ gully formation on the floodplains, (e) enhancing recharging potential of the floodplains, (f) serving as filter for both point and non point source air pollution, (g) acting as shelter belt, (h) reducing the flood water velocity that ensures protection of infrastructure and communities in the downstream, and (i) harbouring rich wildlife having three trophic levels.

The wetlands are alone storing flood water of several million gallons annually, recharging ground water and even providing lateral flow to the river during lean period, clean waste water if it enters into the river system through storm drains. The wetlands are also serving as habitat for a wide range of animal species that form a rich trophic structure. These wetlands have been attracting 1000s migratory birds during winter months (Figure 29a,b,c&d).

Figure 29a: Wetland of Yamuna Biodiversity Park Phase-I.

Figure 29b: Floodplain wetland of Yamuna Biodiversity Park Phase-II.

Figure 29c: Floodplain wetland showing impounded flood water.

Figure 29d: Floodplain wetland showing aquatic vegetation.

6.3 Visitors Zone

The purpose of Visitor Zone in the Biodiversity Park is to connect rivers to the people by walk through different river ecosystems and make them familiar with the services rendered by biodiversity to the people and the city. A butterfly Garden (Figure 30), a herbal garden (Figure 31), representative river ecosystems (Figure 32), a small ponds showing characteristic aquatic fauna and flora (Figure 33a,b,c&d), threatened plants conservatory, amphitheatre, a Nature Interpretation Centre, a field gene bank, and a fruit yielding plant conservatory (Figure 34) and recreational park were developed on the inactive flood plain. About 0.2 million students visit the visitors zone every year as a part of environmental education curriculum. Several 100s of visitors from India and outside India visit the Park every year. Many Judges from different countries also visit the Park. A greenway with walkways and cycleway was also developed.

Figure 30: Butterfly Garden at Yamuna Biodiversity Park.

Figure 31: Herbal Garden at Yamuna Biodiversity Park.

Figure 32: Overview of river ecosystems at Yamuna Biodiversity Park.

Figure 33a: Water lily pond at Yamuna Biodiversity Park Phase-I.

Small Indian Civet

Wild Boar

Jungle Cat

Indian Hare

Figure 33b: Mammals of Yamuna Biodiversity Park.

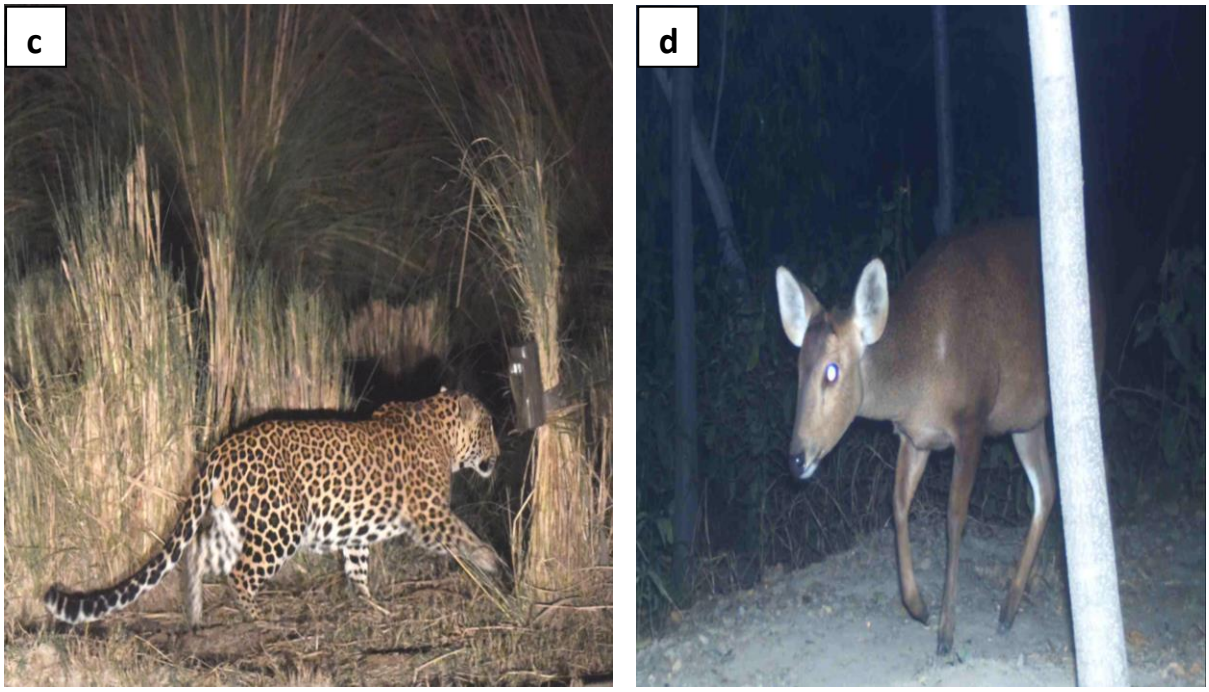


Figure 33c&d: Carnivores and Herbivores in Yamuna Biodiversity Park.

Figure 34: Fruit yielding conservatory.

The model of Yamuna Biodiversity Park can be replicated along the floodplains of rivers in India. In some hilly areas and river valleys, the rivers may not have extensive floodplains, and for such river stretches, the Biodiversity Parks can be developed in the riparian zone, embankments and outside embankments and even in catchments and watersheds located close to the rivers.

7.0 REFERNCES

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Annexure – V

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केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20/12128 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Uttar Pradesh,
1st Floor, Room No. 110 Lalbahadur Shastri Bhawan,
Uttar Pradesh Secretariat,
Lucknow, Uttar Pradesh - 226 001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by State Mission for Clean Ganga and Uttar Pradesh Pollution Control Board, status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Encl.: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निगम.....
दिनांक.....05/02/2020

Yours faithfully,

(**Prashant Gargava**)
Member Secretary

Annexure-1

SUMMARY OF UTTAR PRADESH DRAINS, EC TO BE CALCULATED

10.	**Drains Discharging into River Ganga monitored by CPCB**	:	**54**
11.	**Additional drain list provided by RO, Varanasi, SPCB which are not monitored by CPCB**	:	**98**
12.	**Drains Tapped**	:	**08**
13.	**Partially Tapped (tapped overflow)**	:	**12**
14.	**Interim Measures not required (Dry/Stagnant)**	:	**02**
15.	**Interim Measures not feasible (BOD <40mg/l)**	:	**22**
16.	**Interim Measures required**	:	**22**
17.	**Interim Measures taken**	:	**Nil**
18.	**No. of drains for EC to be calculate**	:	**22+98 = 120**
19.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**120 x 5x 3 = 1800**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Uttar Pradesh

s. No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP Operational/ Under construction/ Planned	Capacity of STP	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of commissioning of Interim measure	Capacity of Remediation	EC to be calculated (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
1	Hemraj Drain	Bijnor	Ganga	Untapped	NA	NA	NA	Not measurable due to Eutophication	6	No	NA	NA	No	Not feasible BOD <40 mg/l
2	Chhoiya Drain	Bijnor	Ganga	Untapped	NA	NA	NA	333.6	13	No	NA	NA	No	Not feasible BOD <40 mg/l
3	Bagad River	Gajrola	Ganga	Untapped	NA	NA	NA	Dry	NA	No	NA	NA	No	Not required due to Dry
4	Garh Drain	Garh	Ganga	Tapped	Garhmukteshwar STP	Operational	3.4 MLD	28.5	7	No	NA	NA	No	Although flow is more than STP Capacity but Not feasible BOD <10 mg/l.
5	Fuldhera Drain	Garh	Ganga	Untapped	NA	NA	NA	Dry	NA	No	NA	NA	No	Not required due to Dry
6	Anupshahar STP Drain-1	Anupshahar	Ganga	STP Outfall	NA	NA	5	2.35	6	No	NA	NA	No	Not feasible BOD <40 mg/l
7	Anupshahar STP Drain-2	Anupshahar	Ganga	STP Outfall	NA	NA		2.75	10	No	NA	NA	No	Not feasible BOD <40 mg/l
8	Bhairoghat drain/Tokaghat Nala	Farrukhabad	Ganga	Untapped	NA	NA	NA	25	14.33	No	NA	NA	No	Not feasible BOD <40 mg/l
9	Dhinapur drain	Farrukhabad	Ganga	Untapped	NA	NA	NA	1.7	46	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
10	Hathikhana Nala-Fatehgarh	Farrukhabad	Ganga	Untapped	NA	NA	NA	13.05	30.5	No	NA	NA	No	Not feasible BOD <40 mg/l
11	Bargadiya Ghat drain	Farrukhabad	Ganga	Untapped	NA	NA	NA	6.85	23.1	No	NA	NA	No	Not feasible BOD <40 mg/l
12	Cantt Nalla	Farrukhabad	Ganga	Untapped	NA	NA	NA	4.03	33.5	No	NA	NA	No	Not feasible BOD <40 mg/l
13	Permiya Nala	Kanpur	Ganga	Tapped	INA	-	-	188.6	9.08	No	NA	NA	No	Partially tapped & Not feasible BOD <40 mg/l
14	Ranighat drain	Kanpur	Ganga	Tapped	INA	-	-	1.6	166	No	NA	NA	Yes	Partially tapped & BOD >40 mg/l
15	Sisamau Nala	Kanpur	Ganga	Tapped	INA	-	-	98.61	114	No	NA	NA	Yes	Partially tapped & BOD >40 mg/l
16	Parmath drain	Kanpur	Ganga	Tapped	INA	-	-	-	-	No	NA	NA	No	Tapped
17	Muir drain	Kanpur	Ganga	Tapped	INA	-	-	18.14	147	No	NA	NA	Yes	Partially tapped & BOD >40 mg/l
18	Jail drain	Kanpur	Ganga	Tapped	INA	-	-	-	-	No	NA	NA	No	Tapped
19	Golaghat Nala	Kanpur	Ganga	Tapped	INA	-	-	1.39	166	No	NA	NA	Yes	Partially tapped & BOD >40 mg/l

s. No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP Operational/ Under construction/ Planned	Capacity of STP	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of commissioning of Interim measure	Capacity of Remediation	EC to be calculated (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
20	Bhagwatdas Nala/ Guptarghat Nala	Kanpur	Ganga	Tapped	INA	-	-	4.79	48.8	No	NA	NA	Yes	Partially Tapped & BOD > 40 mg/l
21	Satti Chaura	Kanpur	Ganga	Tapped	INA	-	-	0.3	111	No	NA	NA	Yes	Partially tapped & BOD > 40 mg/l
22	Dabka Nalla-1	Kanpur	Ganga	Tapped	INA	-	-	21.99	84.3	No	NA	NA	Yes	Partially tapped & BOD >40 mg/l
23	Dabka Nalla-2	Kanpur	Ganga	Tapped	INA	-	-	-	-	No	NA	NA	No	Tapped
24	Dabka Nalla-3	Kanpur	Ganga	Untapped	NA	NA	NA	8.23	92	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
25	Shetla Bazar	Kanpur	Ganga	Untapped	NA	NA	NA	11.27	191	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
26	Wazidpur Nalla	Kanpur	Ganga	Tapped	INA	-	-	17.95	151	No	NA	NA	Yes	Partially tapped & BOD > 40 mg/l
27	Airforce Nala	Kanpur	Ganga	Tapped	INA	-	-	-	-	No	NA	NA	No	Tapped
28	City Jail/Dakary Drain	Unnao	Ganga	Untapped	NA	NA	NA	19.33	109	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
29	Loni Drain	Unnao	Ganga	Untapped	NA	NA	NA	stagnant	12.6	No	NA	NA	No	Not feasible BOD <40 mg/l
30	Ahiyari/ NTPC drain	Prayagraj	Ganga	Untapped	NA	NA	NA	36.45	19.6	No	NA	NA	No	Not feasible BOD <40 mg/l
31	Rasulabad Drain-1	Prayagraj	Ganga	Tapped	INA	-	-	-	-	No	NA	NA	No	Tapped
32	Rasulabad Drain-2	Prayagraj	Ganga	Tapped	INA	-	-	-		No	NA	NA	No	Tapped
33	Rasulabad Drain-3	Prayagraj	Ganga	Tapped	INA	-	-	7.6	59	No	NA	NA	Yes	Partially tapped & BOD > 40 mg/l
34	Rasulabad Drain-4	Prayagraj	Ganga	Untapped	NA	NA	NA	67.9	20	No	NA	NA	No	Not feasible BOD <40 mg/l
35	Sadananda Ashram Drain	Prayagraj	Ganga	Untapped	NA	NA	NA	0.97	29.6	No	NA	NA	No	Not feasible BOD <40 mg/l
36	Nehru Drain	Prayagraj	Ganga	Untapped	NA	NA	NA	14.74	8.5	No	NA	NA	No	Not feasible BOD <40 mg/l
37	Kodra Drain	Prayagraj	Ganga	Tapped	kodra STP	operational	25	14.06	70.9	No	NA	NA	Yes	Partially tapped & BOD > 40 mg/l
38	Pongaghat Drain	Prayagraj	Ganga	Tapped	Ponghat STP	operational	10	-	-	No	NA	NA	No	Tapped

s. No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP Operational/ Under construction/ Planned	Capacity of STP	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of commissioning of Interim measure	Capacity of Remediation	EC to be calculated (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
39	Solari Drain	Prayagraj	Ganga	Untapped	NA	NA	NA	97	31.4	No	NA	NA	No	Not feasible BOD <40 mg/l
40	Mavaiya Drain	Prayagraj	Ganga	Untapped	NA	NA	NA	49.59	26.5	No	NA	NA	No	Not feasible BOD <40 mg/l
41	Chuhara Mandir Drain-1	Prayagraj	Ganga	Untapped	NA	NA	NA	8.66	82	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
42	Chuhara Mandir Drain-2	Prayagraj	Ganga	Untapped	NA	NA	NA	1.22	41.1	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
43	Mannaiya/Muglaha Drain	Prayagraj	Ganga	Untapped	NA	NA	NA	4.61	37.1	No	NA	NA	No	Not feasible BOD <40 mg/l
44	Ghore Saheed Drain	Mirzapur	Ganga	Untapped	NA	NA	NA	10.52	37.2	No	NA	NA	No	Not feasible BOD <40 mg/l
45	Khandwa Drain	Mirzapur	Ganga	Untapped	NA	NA	NA	20.34	53.5	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
46	Chorwa Drain	Mirzapur	Ganga	Untapped	NA	NA	NA	1	124	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
47	Chunar Tikaur Drain	Chunar	Ganga	Untapped	NA	NA	NA	1	74.9	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
48	Nagwa/ Asi Drain	Varanasi	Ganga	Untapped	NA	NA	NA	115.64	81.7	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
49	Ramnagar Drain	Varanasi	Ganga	Untapped	NA	NA	NA	13.5	65.4	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
50	Varuna Drain	Varanasi	Ganga	Untapped	NA	NA	NA	870.91	24.9	No	NA	NA	No	Not feasible BOD <40 mg/l
51	Shivala Drain	Varanasi	Ganga	Tapped	Dinapur	operational	80	-	-	No	NA	NA	No	Tapped
52	Khirkiya/ Rajghat Nala	Varanasi	Ganga	Untapped	NA	NA	NA	107.83	74.6	No	NA	NA	Yes	Untapped & BOD > 40 mg/l
53	Mugal Sari/ Local/ Ganda Nala	Chandauli	Ganga	Untapped	NA	NA	NA	13	30	No	NA	NA	No	Not feasible BOD <40 mg/l
54	Industrial Drain	Ghazipur	Ganga	Untapped	NA	NA	NA	6.28	20.2	No	NA	NA	No	Not feasible BOD <40 mg/l

NA: Not Applicable

INA: Information not available

Overflow in 12 tapped drains and considered as partially tapped. Out of 12 drains, 10 are feasible for interim remedial measures and hence considered for EC calculations.

LIST OF DRAINS PROVIDED BY REGIONAL OFFICE UTTAR PRADESH POLLUTION CONTROL BOARD, VARANASI

(OTHER THAN CPCB LIST)

S.N.	District	City	River Name	Drain Name	Frequency	Latitude	Longtitude
1	Mirzapur	Mirzapur	Ganga River	Bisundarpur Drain	Weekly	25.175851	82.597439
2		Mirzapur	Ganga River	Hanuman Ghat Drain	Weekly	25.175263	82.597428
3		Mirzapur	Ganga River	Public Club Drain	Weekly	25.167796	82.595015
4		Mirzapur	Ganga River	Lift Cannal Drain	Weekly	25.165406	82.593672
5		Mirzapur	Ganga River	Morchaghar Drain	Weekly	25.160625	82.588179
6		Mirzapur	Ganga River	Kachahari	Weekly	25.156788	82.581359
7		Mirzapur	Ganga River	Oliyar	Weekly	25.153416	82.571129
8		Mirzapur	Ganga River	Sunder Ghat	Weekly	25.152888	82.569272
9		Mirzapur	Ganga River	Koniya Ghat Drain	Weekly	25.152029	82.564697
10		Mirzapur	Ganga River	Narghat	Weekly	25.151823	82.560877
11		Mirzapur	Ganga River	Khandwa Nala	Weekly	25.151439	82.55466
12		Mirzapur	Ganga River	Chorwa Nala	Weekly	25.151382	82.551253
13		Mirzapur	Ganga River	Barahmiliah Drain	Weekly	25.10000	82.35408
14		Mirzapur	Ganga River	Baswariya Nala	Weekly	25.16316	82.513522
15		Mirzapur	Ganga River	Diwan ghat New	Weekly	25.16443	82.510189
16		Mirzapur	Ganga River	Balughat Kachcha	Weekly	25.165285	82.508145
17		Mirzapur	Ganga River	Balughat Pakka	Weekly	25.166078	82.506557
18		Mirzapur	Ganga River	Diwan Ghat Old	Weekly	25.164939	82.50922
19		Mirzapur	Ganga River	Parshuram Ghat	Weekly	25.166444	82.505585
20		Mirzapur	Ganga River	Malahia Drain	Weekly	25.167535	82.502804
21		Mirzapur	Ganga River	Patenga Nala	Weekly	25.168234	82.501549
22		Mirzapur	Ganga River	District Judge Drain	Weekly	25.09551	82.35375
23		Mirzapur	Ganga River	Irrigation Colony Drain	Weekly	25.09551	82.35375
24		Mirzapur	Ganga River	Gudara Drain	Weekly	25.166611	82.504961
25		Chunar	Ganga River	Kashi Ram Awas Drain, Chunar, Mirzapur	Weekly	25.133819	82.883198
26		Chunar	Ganga River	Choura Mata Drain, Chunar, Mirzapur	Weekly	25.130657	82.87865
27		Chunar	Ganga River	Belbeer Ghat Drain, Chunar, Mirzapur	Weekly	25.130657	82.878832
28		Chunar	Ganga River	Balughat Drain, Chunar, Mirzapur	Weekly	25.128358	82.877956
29		Chunar	Ganga River	Gangeshwar Nishad Park Drain, Chunar	Weekly	25.128358	82.87795
30		Chunar	Ganga River	Post Office South Drain, Chunar, Mirzapur	Weekly	25.12722	82.877312
31		Chunar	Ganga River	Post Office North Drain, Chunar, Mirzapur	Weekly	25.127408	82.877372
32		Chunar	Ganga River	Santoshi Mata Mandir Nala, Chunar, Mirzapur	Weekly	25.126849	82.877524
33		Chunar	Ganga River	Tekaur Basti North Drain, Chunar, Mirzapur	Weekly	25.141902	82.870757

70		Ghazipur	Ganga River	Naupura Drain, Ghazipur	Weekly	25.572456	83.573154
1		Ghazipur	Ganga River	Dadri Ghat Drain, Ghazipur	Weekly	25.574321	83.577381
72		Ghazipur	Ganga River	Collecter Ghat Drain, Ghazipur	Weekly	25.577401	83.584091
73		Ghazipur	Ganga River	Maksud Ghat Drain, Ghazipur	Weekly	25.579145	83.587749
74		Ghazipur	Ganga River	Gola Ghat Drain, Ghazipur	Weekly	25.580119	83.588731
75		Ghazipur	Ganga River	Stimer Ghat Drain, Ghazipur	Weekly	25.580799	83.59118
76		Ghazipur	Ganga River	Chetnat Ghat Drain, Ghazipur	Weekly	25.580931	83.591478
77		Ghazipur	Ganga River	Anzahi Ghat Drain, Ghazipur	Weekly	25.581997	83.593948
78		Ghazipur	Ganga River	Khirki Ghat Drain, Ghazipur	Weekly	25.566704	83.563817
79		Ghazipur	Ganga River	Theri Bazar Drain, Ghazipur	Weekly	25.582799	83.594922
80		Ghazipur	Ganga River	Posta Ghat Drain, Ghazipur	Weekly	25.584181	83.597712
81		Ghazipur	Ganga River	Mugal Pura Drain, Ghazipur	Weekly	25.584268	83.597683
82		Ghazipur	Ganga River	Budhava Mahadeva Drain, Ghazipur	Weekly	25.584903	83.598691
83		Ghazipur	Ganga River	Rui Mandi Drain, Ghazipur	Weekly	25.585216	83.600188
84		Ghazipur	Ganga River	Samshan Ghat Drain, Ghazipur	Weekly	25.58626	83.602059
85		Ghazipur	Ganga River	Harizan Basti Drain, Ghazipur	Weekly	25.586867	83.603076
86		Ghazipur	Ganga River	Afim Factory Colony Drain	Weekly	25.569527	83.568489
87		Saidpur	Ganga River	Kot Ghat Drain, Saidpur	Weekly	25.53267	83.22535
88		Saidpur	Ganga River	Budenath Mahadew Ghat Drain, Saidpur	Weekly	25.533102	83.223324
89		Saidpur	Ganga River	Pakka Ghat Drain, Saidpur	Weekly	25.533866	83.220768
90		Saidpur	Ganga River	Sangat Ghat Drain, Saidpur	Weekly	25.53387	83.219634
91		Saidpur	Ganga River	Mahaveer Ghat Drain, Saidpur	Weekly	25.53431	83.218385
92		Saidpur	Ganga River	Ward No. 15 Malhiya Basti Drain, Saidpur	Weekly	25.534673	83.216833
93		Saidpur	Ganga River	Rangmahal Ghat Drain, Saidpur	Weekly	25.535785	83.212006
94		Saidpur	Ganga River	Jauhargaj Drain, Saidpur	Weekly	25.537021	83.203243
95		Jamaniya	Ganga River	Gorwa Drain, Jamania	Weekly	25.421526	83.55216
96		Jamaniya	Ganga River	Kankarwa Drain, Jamania	Weekly	25.417152	83.552759
97		Jamaniya	Ganga River	Karpurimai Ghat Drain, Jamania	Weekly	25.41489	83.553408
98	Ballia	Ballia	Ganga River	Kathal Nala Before conflence Ganga river, Ballia	Weekly	–	–

Note: Tapping/In-situ remediation status is not available for these drains.

Annexure – VI 347

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20/ 12134 Dated: 03.02.2020

To,
The Chief Secretary,
Government of West Bengal,
Nabanna, 13th Floor, 325, Sarat Chatterjee Road,
Mandirtala Shibpur, Howrah, West Bengal - 711102

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by West Bengal State Pollution Control Board, Kolkata Metropolitan Development Authority (KMDA), Kolkata Municipal Corporation, Public Health Engineering Department (PHED) and State Project Management Group (SPMG), status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Encl.: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निगम ...
दिनांक 05/02/2020

Yours faithfully,

(**Prashant Gargava**)
Member Secretary

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Annexure-1

SUMMARY OF WEST BENGAL DRAINS, EC TO BE CALCULATED

37.	**Drains Discharging into River Ganga monitored by CPCB**	:	**56**
38.	**Drains Tapped**	:	**03**
39.	**Interim Measures not required (Tidal impact/ Dry/ Stagnant)**	:	**22**
40.	**Interim Measures not feasible (BOD <40mg/l)**	:	**23**
41.	**Interim Measures required**	:	**08**
42.	**Interim Measures taken**	:	**Nil**
43.	**No. of drains for EC to be calculate**	:	**08**
44.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**8 x 5x 3 = 120**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

West Bengal

New Sl.No	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped / Untapped	STP Catering Drain	Status of STP Operational/ Under construction/Planned	Capacity of STP (MLD)	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of Commissioning of Interi measure	Capacity of Remediation (MLD)	EC to be calculate (Yes/ No)	Reason
								Flow of drain (MLD)	BOD (mg/L)					
1	Kamarhati Drain @ Jute Mill	Baranagar	Ganga	Untapped	It is included in the present scope of work of construction of new STP at Kamarhati - Baranagar under HAM Model. The work has started and is expected to be completed by March 2022. This drain is under heavy tidal impact. The efficiency of Bio-remedial measures under such tidal situation is questionable and earlier such an attempt taken by the Irrigation Department , GOWB on the Tolly Nullah could not yeald the desired result. It may be noted that KMDA has already taken Pilot project in certain selected stretches. Based on the results expected to be evident by May 2020, the decision regarding the use of BIO/Phyto-remediation in other pilot project drains as interim measures will be taken.	Under construction	60.00	25.92	378	No	Apr-20	25.9 MLD	Yes	Untapped & BOD >40mg/l
2	Bhatpara Drain	Bhatpara	Ganga	Untapped	This drain has been considered under the pilot study of the Bio/Phyto-remediation since connection to STP is not found to be technically feasible. Moreover this drain is also having tidal Impact.	NA	NA	3.12	198	No	Apr-20	3.1 MLD	Yes	Untapped & BOD >40mg/l
3	Dhankheti/ PB Ghat Khal	Khidderpore	Ganga	Untapped	This khal is having tidal impact. Presently Bio/Phyto-remediation would be done on a pilot basis to check the feasibility of this approach in the context of high tidal flow scenerio of lower Ganjetic region. Based on the success of this model,thiss approach may be followed as interim measures in other drains also. Draft DPR for I & D has been submitted to NMCG for approval on 30 / 03/ 2019. Approval Awaited.	Planned	25.00	80.90	146	No	Apr-20	NA	No	Not feasible due to Tidal Impact
4	Barrackpore Drain (S. P. Banglow)	North Barrackpore	Ganga	Untapped	This drain is having tidal impact. Presently Bio/Phyto-remediation would be done on a pilot basis to check the feasibility of this approach in the context of high tidal flow scenerio of lower Ganjetic region. Based on the success of this model,thiss approach may be followed as interim measures in other drains also. In long term this will be connected to the (presently defunct) STP at Manirampur for which the DPR work is in progress.	Planned	DPR for renovation under preparation	43.20	144	No	Apr-20	43.2 MLD	No	Not feasible due to Tidal Impact
5	Pratapnagar-Rajbari Drain	Bhatpara	Ganga	Untapped	40 MLD STP at Bhatpara is operational. This drain is expected to be connected to the STP by May 2020.	Operational	16.00	2.60	130	No	Apr-20	2.6 MLD	Yes	Untapped & BOD >40mg/l
6	Shibpur Burning ghat Drain	Shibpur-Howrah	Ganga	Untapped	This drain is having tidal impact. Connected to the Arupara STP for which the work has started for the construction of the 60 MLD new STP, presently undertaken under HAM model. In the interim period, considering the high BOD level the Bio -phyto remediation measures may be taken up in future depending on the outcome of the Bio/phyto-remediation work in Pilot project taken in selected stretches.	Under construction	65.00	5.40	122	No		5.4 MLD	No	Not feasible due to Tidal Impact
7	Alliance Mill Drain	Jagatddal	Ganga	Untapped	This drain is having tidal impact. This drain will be connected to the existing lifting station and finally connected to the Jagatdal STP by April 2020.	Operational		5.16	116	No			No	Not feasible due to Tidal Impact
8	Hasting Ghat Drain	Rishra	Ganga	Tapped	This drain is having tidal impact. Connected to the Konnagar STP which is operational, tender process is ongoing for the upgradation of the pumping station.	Operational	22.00	29.00	100	No	Apr-20		No	Tapped

New Sl.No	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped / Untapped	STP Catering Drain	Status of STP Operational/ Under construction/ Planned	Capacity of STP (MLD)	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of Commissioning of Interi measure	Capacity of Remediation (MLD)	EC to be calculate (Yes/ No)	Reason
								Flow of drain (MLD)	BOD (mg/L)					
19	Majl[illegible]r Khal	Kalyani	Ganga	NA	This drain is the final outlet of Kalyani STP, the unit was non-functional due to power failure at the time of monitoring, however the plant is presently fully functional.	Operational	21.00	29.50	60	No	NA	29.5 MLD	No	STP outfall
20	Imambara Khal	Hooghly	Ganga	Tapping provision existing	Connected to the Chandannagar STP which is operational. Pump house under renovation to enhance the capacity.	Under rejuvenation	22.00	13.00	57	No	Apr-20	13.0 MLD	Yes	Untapped & BOD >40mg/l
21	Champdany Ferry Ghat / Paolghat Drain	Hooghly	Ganga	Untapped	No STP is feasible, hence Bio/Phyto - remediation is proposed to be taken up shortly.	NA		3.90	52	No	Apr-20		Yes	Untapped & BOD >40mg/l
22	Khardah Khal	Khardah	Ganga	Partially Tapped	This Khal is having tidal impact. The Bio/phyto-remediation work is already been taken up and is expected to be operational by March 2020. The small drains with outfall into the Khardah Khal are included in the I & D with Bandipur STP.	NA	NA	271.54	49	Yes, Bio/Phyto or in-situ remedial measures	06.01.2020		No	Not feasible due to Tidal Impact
23	N.C. Pal Khal	Sankrail	Ganga	Untapped	The Khal is having tidal impact. The khal passes totally through Gram Panchayat area carrying mostly agricultural and surface run-off, the detail survey work has already started to explore the feasibility of setting up of new STP. Bio/Phyto-remediation shall be taken up until a feasible long term solution is achieved.	NA	NA	10.70	47	No			No	Not feasible due to Tidal Impact
24	Telkal Ghat Drain	Howrah	Ganga	Untapped	This drain is having tidal impact. Connected to the Arupara STP for which the work has started for the construction of the 60 MLD new STP, presently undertaken under HAM model. In the interim period, considering the high BOD level the Bio -phyto remediation measures may be taken up in future depending on the outcome of the Bio/phyto-remediation work in Pilot project taken in selected stretches	Under construction	65.00	13.80	44	No	Apr-20		No	Not feasible due to Tidal Impact
25	Ramkrishna Ghat Drain	Howrah	Ganga	Untapped	This drain is having tidal impact. Connected to the Arupara STP for which the work has started for the construction of the 60 MLD new STP, presently undertaken under HAM model. In the interim period, considering the high BOD level the Bio -phyto remediation measures may be taken up in future depending on the outcome of the Bio/phyto-remediation work in Pilot project taken in selected stretches	Under construction	65.00	0.20	44	No	Apr-20		No	Not feasible due to Tidal Impact
26	101,Foreshore Road Drain	Howrah	Ganga	Untapped	This drain is having tidal impact. Connected to the Arupara STP for which the work has started for the construction of the 60 MLD new STP, presently undertaken under HAM model. In the interim period, considering the high BOD level the Bio -phyto remediation measures may be taken up in future depending on the outcome of the Bio/phyto-remediation work in Pilot project taken in selected stretches	Under construction	65.00	8.20	42	No	Apr-20		No	Not feasible due to Tidal Impact
27	Dewangazi Ghat Drain	Bally	Ganga	Untapped	This drain is having tidal impact. Connected to the Kona STP (Bally) for which the work has started for the construction of the 62 MLD new STP, presently undertaken under HAM model. In the interim period, considering the high BOD level the Bio -phyto remediation measures may be taken up in future depending on the outcome of the Bio/phyto-remediation work in Pilot project taken in selected stretches	Under construction	60.00	7.62	40	No	Apr-20		No	Not feasible due to Tidal Impact

New Sl.No	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped / Untapped	STP Catering Drain	Status of STP Operational/ Under construction/ Planned	Capacity of STP (MLD)	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of Commissioning of Interi measure	Capacity of Remediation (MLD)	EC to be calculate (Yes/ No)	Reason
								Flow of drain (MLD)	BOD (mg/L)					
39	Chandannagar Drain	Chandannagar	Ganga	Untapped	This particular drain is having regular tidal impact, however the Bio -phyto remediation measures may be taken up in future considering the performance of the Bio/phyto-remediation work in Pilot project taken in selected stretches;	NA	NA	0.40	28	No	Apr-20	0.4 MLD	No	Tidal Impact & BOD <40mg/l
40	Gandhi Ghat Drain	Barrackpore	Ganga	Untapped	This drain is connected to the 6 MLD STP located at Latbagan in Barrackpore, expected to be commissioned by June 2020	Under construction	6.00	4.80	26	No			No	BOD <40mg/l
41	Rosbara Khal	Bandel	Ganga	Tapping provision existing	Connected to the Chandannagar STP	Under rejuvenation	22.00	168.32	26	No	Apr-20		No	BOD <40mg/l
42	Nazerganj Khal	Sankrail	Ganga		This particular drain is having regular tidal impact, BOD is less than 30 mg/l but bio-phyto remediation measures has been initiated as a pilot project.	NA	NA	1075.20	21	Yes, Bio/Phyto or in-situ remedial measures	06.01.2020		No	Tidal Impact, Remediation measured & BOD <40mg/l
43	ITC Triveni Drain	Hooghly	Ganga	Untapped	It is a industrial drain close to to a GPI and complying the effluent discharge standard. No action required.	NA	NA	0.51	19	No	Apr-20	0.5 MLD	No	BOD <40mg/l
44	Akhra Food Ghat drain (New Muni Khali Khal)	Mahestala	Ganga	Untapped	This drain falls within the tidal impact and the BOD is well within the permissible Limit.	NA	NA	362.90	19	No		362.9 MLD	No	Tidal Impact & BOD <40mg/l
45	DVC Canal	Champdani	Ganga	Partially Tapped	This canal is used mainly for irrigation purpose and flood management and the BOD concentration is well within the permissible limit;	Non-operational	1.00	353.60	18	No	Apr-20	353.6 MLD	No	BOD <40mg/l
46	Bagher Khal	Kancharapara	Ganga		The BOD is well within the permissible limit, however this will be connected to the new STP under construction at Kanchrapara.	Under construction	18.00	134.80	17	No			No	BOD <40mg/l
47	Chinsurah-Majir Rasta Drain	Hooghly	Ganga	Tapping provision existing	The BOD is well within the permissible limit, however this is connected to the STP at Chandannagar under rejuvenation.	Under rejuvenation	22.00	88.08	16	No	Apr-20	88.1 MLD	No	BOD <40mg/l
48	Bazarpara-Garighat Drain / Sharenga drain	Sankrail/ Sarenga	Ganga	Untapped	The BOD is well within the permissible limit. However the drain passes totally through Gram Panchayat area carrying mostly agricultural and surface run-off, the detail survey work has already started to explore the feasibility of setting up of new STP.	NA	NA	185.90	15	No			No	BOD <40mg/l
49	Dhobi Ghat Drain	Barrackpore	Ganga	Untapped	The BOD is well within the permissible limit, however this will be connected to the (presently defunct) STP at Manirampur for which the DPR work is in progress.	Planned	NA	1.20	12	No	Apr-20		No	BOD <40mg/l
50	Baidyabati Drain	Baidyabati	Ganga	Untapped	The BOD is well within the permissible limit, order complied	Operational	6.00	576.00	10	Yes, Bio/Phyto or in-situ remedial measures	06.01.2020	576.0 MLD	No	Remediation measured & BOD <40mg/l
51	Serampore/ Bhagirathi Drain	Serampore	Ganga	Tapping provision existing	The BOD is within the permissible limit, however it is connected to the Sreramporе STP which is under rejuvenation.	Under rejuvenation	18.60	14.56	10	No	Apr-20	14.6 MLD	No	BOD <40mg/l
52	Bally Khal	Bally	Ganga		The BOD is well within the permissible limit, order complied	NA	NA	4860.00	10	No			No	BOD <40mg/l
53	Chitpur Ghat Khal/ Circular Canal	Chitpur	Ganga		The BOD is well within the permissible limit, order complied	Operational	52.00	458.64	9	No	NA		No	BOD <40mg/l
54	Old Muni Khali Khal	Mahestala	Ganga	Untapped	The BOD is well within the permissible limit, order complied	NA	NA	6.90	8	No	Dec-19		No	BOD <40mg/l
55	Singhi More Khal	Sankrail	Ganga	Untapped	The BOD is well within the permissible limit, order complied	NA	NA	0.90	5	No			No	BOD <40mg/l
56	BTPS Out fall Drain-I	Hooghly	Ganga	Untapped	The BOD is well within the permissible limit, order complied	NA	NA	5.90	2.5	No	Apr-20	5.9 MLD	No	BOD <40mg/l

Annexure – VII

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Uttarakhand
#4, Subhash Road, Uttarakhand Secretariat,
Dehradun, Uttarakhand – 248001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Pay Jal Nigam and Jal Sansthan, Uttarakhand, status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Yours faithfully,

Encl.: As above

(**Prashant Gargava**)
Member Secretary

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
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दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Annexure-1

SUMMARY OF UTTARAKHAND DRAINS, EC TO BE CALCULATED

1.	**Drains Discharging into River Ganga monitored by CPCB**	:	**17**
2.	**Additional drain list provided by Pay Jal Nigam, Uttarakhand which are not monitored by CPCB**	:	**125**
3.	**Drains Tapped**	:	**10 + 108 = 118**
4.	**Interim Measures not required (Dry/Stagnant)**	:	**04 + 01 = 05**
5.	**Interim Measures not feasible (BOD <40mg/l)**	:	**01 + 07 = 08**
6.	**Interim Measures required**	:	**02**
7.	**Interim Measures taken**	:	**09**
8.	**No. of drains for EC to be calculate**	:	**02**
9.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**2 x 5x 3 = 30**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 5327020500000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Uttarakhand

Status of drains as per CPCB list (monitored by CPCB as priority drains)

Sl No.	Name of drain	Important town in catchment of drain	Receipient River	Status of Drain Tapped/ Untapped	STP Catering the Drain	Status of STP (Operational/ under construction/ Planned)	Capacity of STP (MLD)	Post-monsoon 2019 monitoring		Interim remediation measures adopted (Yes/No) and technology	Date of Commissioning of Interim Measure	Capacity of remediation	EC to be Calculated- (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
1	Tiloth Nalla	Uttarkashi	Ganga	Tapped	Gyansu STP	Operational	2 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
2	Tambakhani drain	Uttarkashi	Ganga	Tapped	Gyansu STP	Operational	2 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
3	Collectorate drain	Uttarkashi	Ganga	Tapped	Gyansu STP	Operational	2 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
4	Valmiki basti drain	Uttarkashi	Ganga	Tapped	Gyansu STP	Operational	2 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
5	Kailash Ashram drain	Uttarkashi	Ganga	Untapped	Not Applicable	Not Applicable	Not Applicable	Not available	4 mg/l	No	Not applicable	Not applicable	No	Not feasible BOD <40 mg/l
6	Tiwari Mohalla drain	Srinagar	Ganga	Tapped	Srinagar Old Bus stand STP (3.5 MLD)	Operational	3.5 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
7	Shanta Nalla	Devprayag	Ganga	Tapped	Shanti Bazar STP	Operational	0.075 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
8	Koudiyala Nalla	Koudiyala	Ganga	Dry	Not applicable	Not applicable	Not applicable	Dry	Not applicable	No	Not applicable	Not applicable	No	Not required due to Dry
9	Triveni drain (Saraswati Nallah)	Rishikesh	Ganga	Tapped	Lakkarghat STP	Operational	Not applicable	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
10	Lakkar Ghat STP drain	Rishikesh	Ganga	STP outfall	Lakkarghat STP (6MLD)	Operational	Old 06 MLD (a new 25 MLD STP is under construction)	22.68	42 mg/l	No	Not applicable	Not applicable	Yes	STP outfall and BOD >40 mg/l
11	Swarg Ashram drain	Rishikesh	Ganga	Dry	Not applicable	Not applicable	Not applicable	Dry	Not applicable	No	Not applicable	Not applicable	No	Not required due to Dry
12	IDPL drain	Rishikesh	Ganga	STP outfall	IDPL STP - under capacity	Operational	14 MLD operates on 1 MLD approx.	Dry	Not applicable	No	Not applicable	Not applicable	No	STP outfall and dry
13	Jagjeetpur STP drain	Haridwar	Ganga	Partially tapped with STP outfall	Jagjeetpur STP (18+27 MLD)	operational	45 MLD (27+18) operational and 68 MLD under construction	166.41	54	No	Not applicable	Not applicable	Yes	Partially tapped and BOD >40 mg/l
14	Kassavan drain	Haridwar	Ganga	Tapped	Sarai STP	Operational	18 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
15	Pandey Wala drain	Haridwar	Ganga	Tapped	Sarai STP	Operational	18 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
16	Matra Sadan drain	Haridwar	Ganga	Tapped	Jagjeetpur STP	Operational	18 MLD	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Tapped
17	Rawlirao Drain	Haridwar	Sukhi river	Dry	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No	Not applicable	Not applicable	No	Not required due to Dry and discharge route to Sukhi river

1. Jagjeetpur STP drain receives treated sewage from 27+18 MLD STPs in Jagjeetpur, EC is calculated for Jagjeetpur STP drain as BOD was 54 mg/l and flow was found to be 166.41 MLD in Post monsoon 2019 indicating excess sewage from the STP is being discharged into river Ganga and as submitted by Uttarakhand Pay Jal Nigam that, the 68 MLD STP is under trail and testing and excess flow is being diverted to 68 MLD STP, was not found true because in December 2019 visit by CPCB the 68 MLD STP at Jagjeetpur was found under commissioing/construction stage and not under testing.
2. Lakkargaht STP drain receives treated sewage from 6 MLD Lakkarghat STP with excess flow as STP is receving overcapacity sewage. As per Post-monsoon 2019 monitoring data the BOD=42 mg/l in and flow of drain is 22 MLD.
3.Rawli Rao is a mixed drain and pertains to SIIDCUL (as per UKPJN). This drain discharges into Sukhi river and not directly to river Ganga.

List of untapped drains where interim measures have been started/not started as by UKPJN as per submitted list out of 135 drains in 16 Ganga front towns

Sl No	Name of drain	Important town in catchment of drain	Receipient River	Status of Drain Tapped/ Untapped	STP Catering the Drain	Status of STP (Operational/ under construction/ Planned) (likely date of completion)	Capacity of STP (MLD)	Post monsoon, 2019 monitoring		Flow of drain (MLD) as per UKPJN	Interim Remediation measures adopted (Yes/No) and Technology	Date of Commissioning of Interim Measure	Capacity of remediation	EC to be Calculated (Yes/No)	Reason
								BOD (mg/l)	Flow of drain (MLD)						
1	Tehsil drain	Joshimath	Alaknanda	Untapped	Marwari STP	Under construction (June 2020)	2.7 MLD	Not available	Not available	0.699	No	Not applicable	Not applicable	No	Not Feasible BOD <40 mg/l
2	Dronagiri drain	Joshimath	Alaknanda	Untapped	Marwari STP	Under construction (June , 2020)	2.7 MLD	Not available	Not available	0.42	No	Not applicable	Not applicable	No	Not Feasible BOD <40 mg/l
3	Kamet lodge drain	Joshimath	Alaknanda	Untapped	Marwari STP	Under construction (June, 2020)	2.7 MLD	Not available	Not available	1.08	No	Not applicable	Not applicable	No	Not Feasible BOD <40 mg/l
4	Swarg Ashram town/Sant seva ashram	Swarg ashram	Ganga	Untapped	Not Any	Not applicable	Not applicable	Not available	Not available	0.057	No	Not applicable	Not applicable	No	Not Feasible BOD <40 mg/l
5	Srikot drains (03 drains)	Srikot	Alaknanda	Untapped	Not Any	Not Applicable	Not applicable	Not available	Not available	NA	No	Not applicable	Not applicable	No	Not Feasible BOD <40 mg/l
6	Pokhari bend drain	Chamoli - Gopeshwar	Balkhila	Untapped	Pokhari bend STP	Under construction (February 2020)	Pochari Bend - 1.25	Not available	Not available	1.039	Yes; Insitu bioremediation	Nov, 2019	1.040	No	Bio remediation started from Nov, 2019
7	Kothiyalsain drain	Chamoli - Gopeshwar	Alaknanda	Untapped	Chamoli STP	Operational, drain connection pending	Chamoli STP-0.75	Not available	Not available	0.05	Yes; Insitu bioremediation	Nov, 2019	0.050	No	Bio remediation started from Nov, 2019
8	Water tank drain	Nandprayag	Nandakini	Untapped	Forest office STP	Operational - drain connection pending	Forest Office STP - 0.10 MLD	Not available	Not available	0.025	Yes; Insitu bioremediation	31-Dec-19	0.025	No	Bio remediation started from 31 Dec, 2019 and BOD <40 mg/l
9	Beleni Nala	Rudraprayag	Alaknanda	Untapped	Beleni STP	Under construction (Febraury, 2020)	0.5 MLD STP	Not available	Not available	0.025	Yes; Insitu bioremediation	Nov, 2019	0.050	No	Bio remediation started from Nov, 2019
10	Taulia Nala	Srikot	Alaknanda	Untapped	Taulia STP	Under construction (November, 2020)	0.050 MLD	Not available	Not available	0.042	Yes; Insitu bioremediation	Nov, 2019	0.0420	No	Bio remediation started from Nov, 2019
11	Junior high school nala	Srikot	Alaknanda	Untapped	Junior high school STP	Under construction (November, 2020)	0.075 MLD	Not available	Not available	0.065	Yes; Insitu bioremediation	Nov, 2019	0.0650	No	Bio remediation started from Nov, 2019
12	Chandreshwar nala	Muni ki reti	Ganga	Untapped	Dhalwala STP	Under construction (February, 2020)	STP at Dhalwala (Chandeshwar) - 7.5 MLD	Not available	Not available	Combined assessed flow by UKPJN for the three drains is approx. 7.5 MLD	Yes; Insitu bioremediation	Nov, 2019	7.5 MLD of 03 combined drains	No	Bio remediation work in progress
13	Shamshan ghat nala	Muni ki reti	Ganga	Untapped	Dhalwala STP	Under construction (February 2020)		Not available	Not available		Yes; Insitu bioremediation	Nov, 2019		No	Bio remediation work in progress
14	Dhalwala nala	Muni ki reti	Ganga	Untapped	Dhalwala STP	Under construction (February, 2020)		Not available	Not available		Yes; Insitu bioremediation	Nov, 2019		No	Bio remediation work in progress
15	Rwali Mahdood drain	Haridwar	Sukhi	Untapped	As informed by UKPJN the drain is under SIIDCUL					Not available	No	Not applicable	Not applicable	No	The drain discharges into Sukhi river

1. As per the details provided by Uttarkhand Pay Jal Nigam a total of 135 drains from 16 Ganga front towns have their discharge to river Ganga out of which 123 have their direct discharge gradient into river Alaknanda/Bhagirathi and 12 drains having gradient towards the other tributaries Balkhila/Nandakini/Pinder.
2. Out of the 135 drains 118 drains are completely tapped.
3. Out of remaining 17 drains, STPs are under construction for 12 drains an out of these 09 drains are having interim bioremediation measures have been started since November-December 2019 and work has been awarded for the same in October 2019. For the remaining 05 drains in Joshimath town where STPS are also under construction are having very low BOD and FC value, bioremediation of these drains not proposed. Water Quality of these 03 drains are under monitoring.
4. Out of 17 drains not tapped , 04 drains (03 drains at Srikot town and 01 drain at Swargashram town) water samples shows BOD<15 mg/l and FC<50 MPN/100 ml therefore theses drains have been excluded for I&D.
5. Uttakhand Pay Jal Nigam has submitted that the Rawli Mahdood is industrial drain and pertains to SIIDCUL Haridwar. As per latest report drain is not tapped but it discharges into river Sukhi and not into Ganga directly.

Details of tapped drains out of 125 drains which are not in CPCB list

Sl. No	City/Town	Tapped Drains				
		Name of Drain	Discharge capacity of drain in MLD	Discharge of drain into river/water body and route of discharge	Wheather drain is tapped to STP (Yes/No); if yes name of STP and Capacity in MLD	State Govt. agency responsiple for maintenace/ treatment of drain
1	Uttarkashi	Nagar Palika Nala	0.03	0	Yes Tapped	U.J.S.
2	Haridwar	Loknath Nala	2.80	0	Yes, STPs Jagjeetpur	UJS
3		Saptsarovar Nala	0.10			
4		Bheemgoda Nala	0.97			
5		Karoli Nala	0.05			
6		Railway Nala	0.05			
7		Karnwal Nala	0.05			
8		Kangra Mandir Nala	0.13			
9		Nai Sota Nala	0.05			
10		Nagerkhil Haweli Nala	0.05			
11		Kushaghat Nala	0.04			
12		Laltaroa Nala	0.39			
13		Mayapur Nala	0.26			
14		PWD Nala & Tanki No.-6 Nala	3.30			
15		Devpura Nala	1.00			
16		Awas Vikas Nala	0.75			
17		Lal Mandir Nala	0.70			
18		Ramrakha Park Nala	0.70		Sarai STP	
19		Latowali Nala	0.40		Jagjeetpur STP	UJS
20	Badrinath	Manav Kalyan Ashram Drain	0.35	0	Yes 1 MLD STP Near Bamani Suspension Bridge	UKPJN
21		Iron Bridge to Mandir Drain	0.04			
22		BSNL Drain	0.069			
23		Raturi Drain	0.060			
24		Pindadaan Ghaat Drain	0.01			
25		Bamani Drain	0.02	0	Yes 0.026 MLD STP	
26	Joshimath	Nav Ganga Drain	0.91	0	Yes, Pokhari STP-1.08 MLD	UKPJN

Details of tapped drains out of 125 drains which are not in CPCB list

Sl. No	City/Town	Tapped Drains: Name of Drain	Discharge capacity of drain in MLD	Discharge of drain into river/water body and route of discharge	Wheather drain is tapped to STP (Yes/No); if yes name of STP and Capacity in MLD	State Govt. agency responsiple for maintenace/ treatment of drain
27		Gandhi Nagar Drain	0.04			
28	Chamoli-Gopeshwar	Chamoli Bazar Drain	0.03	0	Yes, Chamoli STP-0.76	UKPJN
29		Chamoli Alaknanda Ghaat Drain	0.02			
30		Chamoli Bridge Drain	0.02			
31		Chamoli Old Suspension Bridge Drain	0.03		Yes, Chamoli old Suspension Bridge STP-0.05	
32		Baitarni Drain	0.39		Baitarni - 1.12	
33	Nandprayag	Sangam Road Drain	0.025	0	Yes, Sangam Road 0.06	UKPJN
34		Forest Office Drain	0.025		Yes, Forest Office 0.10	
35	Karanprayag	Police Chowki Drain	0.025	0	Yes, Police Chowki STP - 0.05	UKPJN
36		SBI ATM Drain	0.029		Yes, Purana Pul (PWD) STP-0.10	
37		Saraswati Shishu Mandir Drain	0.032			
38		Subhash Nagar Drain	0.025		Yes, Subhash Nagar STP-0.05	
39		Ward No. 1 Drain	0.03		Yes, Ward No. 1&3 STP-0.10	
40		Ward No. 3 Drain	0.033			
41		Naya Pul Drain	0.024		Naya Pul (BRO) STP-0.05	
42	Kirtinagar	Near new Bridge Drain	0.022	0	Yes 0.05 MLD STP	UKPJN
43		Near main Market Temple Drain	0.007		Yes 0.01 MLD STP	
44	Srinagar	Kothar Nala	0.700	0	Yes: Bus Stand STP 3.50	UKPJN
45		New Bus Station Nala	0.308			
46		Convent School Drain	0.039			
47		Keshav Rai Math Drain	0.098			

Details of tapped drains out of 125 drains which are not in CPCB list

	City/Town	Tapped Drains				
Sl. No		Name of Drain	Discharge capacity of drain in MLD	Discharge of drain into river/water body and route of discharge	Wheather drain is tapped to STP (Yes/No); if yes name of STP and Capacity in MLD	State Govt. agency responsiple for maintenace/ treatment of drain
48		Police Station Drain	0.046			
49		Balmiki Temple Nala	0.204			
50		Dam Colony Drain	0.022			
51		SSB Drain	0.108			
52		Kedar Ghat Drain	0.017			
53		Pragati Vihar Drain	0.060			
54		Hanuman Mandir Drain	0.040			
55		Jal Colony Drain	0.101			
56		Irrigation Colony Nala	0.022			
57		Mahadev Temple Drain	0.202			
58		Gas Godown Drain	0.070	0	Yes: Near ITI STP 1.0	
59		Bhakiyana Nala	0.094			
60	Rudraprayag	Anoop Negi Nala	0.047	0	Yes: Near Anoop Negi STP 0.075	UKPJN
61		Rudra complex Nala	0.073		Yes: Near Rudra complex STP 0.100	
62		Bus Stand Nala	0.044		Yes: Bus Stand STP, 0.075 MLD	
63		State Bank Nala	0.027		Yes: Near State Bank/ Masjid STP 0.010	
64		Masjid Nala	0.023			
65		Steel Bridge Nala	0.084		Yes: Near Steel Bridge STP 0.125	
66		Syndicate Bank Nala	0.015			
67	Devprayag	Bah Bazar	0.029	0	Yes: Bah bazar STP, 1.40	UKPJN
68		Sangam Bazar 1	0.017		Yes: Sangam bazar STP 0.150	
69		Sangam Bazar 2	0.027			

Details of tapped drains out of 125 drains which are not in CPCB list

Sl. No	City/Town	Tapped Drains				
		Name of Drain	Discharge capacity of drain in MLD	Discharge of drain into river/water body and route of discharge	Wheather drain is tapped to STP (Yes/No); if yes name of STP and Capacity in MLD	State Govt. agency responsiple for maintenace/ treatment of drain
70	Tapovan	Kothari Tirath Niwas nala	0.014	0	Yes, 3.50 mld at Tapovan	UJS
71		Sri Ram Ashram nala	0.014			
72		Lupin herbal center nala	0.028			
73		Sachha dham nala	0.288			
74		Kailashanand nala	0.042			
75	Swargasrham	Vanprasath Ashram nala	0.036	0	Yes, 3.0 mld at Swargashram	UJS
76		Near milan telecome nala	0.028			
77		Near Geeta Bhawan, Gali no-3 nala	0.022			
78		Near Kirmola village	0.057			
79		Near Parmarth niketan nala	0.029			
80		Near Shanta Bhawan nala	0.058			
81		Near Geeta bhawan PNB	0.058			
82		Near Handicraft emporium	0.072			
83		Near Geeta bhawan Gali no.-1	0.086			
84		Near Ravi Daily Needs nala	0.086			
85		Near Ganga Hair dresser nala	0.014			
86		Near Laxman Jhula SPS nala	0.014			
87		Back side of Choti wala hotel nala	0.072			
88		Near Shumani Bhawan nala	0.072			
89		Near Chouhan hotel nala	0.057			
90		Near Baraha manjil Bhawan nala	0.043			
91		Near Laxaman Jhula nala	0.021			
92		Near Narayan Kunj nala	0.021			
93		Near Laxman Jhula PO nala	0.028			
94	Muni Ki Reti	Darshan Maha Vidhalya Nala	0.036	0	Yes, 5.00 mld at Chorpani, Muni Ki reti	UJS / UJN
95		Pracheen Hanuman Mandir nala	0.036			
96		Sarwajanik Sochalya nala	0.036			
97		Asian Gems and Handicraft	0.022			
98		Police Guest House nala	0.038			

Details of tapped drains out of 125 drains which are not in CPCB list

	City/Town	Tapped Drains				
Sl. No		Name of Drain	Discharge capacity of drain in MLD	Discharge of drain into river/water body and route of discharge	Wheather drain is tapped to STP (Yes/No); if yes name of STP and Capacity in MLD	State Govt. agency responsiple for maintenace/ treatment of drain
99		Shivanand Bhawan nala	0.072			
100		PWD Guest House nala	0.086			
101		Nav Ghat nala	0.002			
102		Omkaranand public Ghat nala	0.043			
103		Khara sroat nala (Monsoon nala)	0.144			
104		Ganga resort nala	0.144			
105		Muni Ki Reti parking nala	0.216			
106	Rishikesh	PWD nala	2.01	0	Yes, 6.00 mld at Lakkarghat, Rishikesh a new 26 MLD under construction	UJS/UJN
107		Bangali Basti Nala	2.16			
108		Sai Ghat Nala	0.007			

Annexure - VIII 353

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20/12129 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Bihar,
Main Secretariat,
Patna, Bihar - 800015

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Bihar Urban Infrastructure Development Corporation Ltd (BUIDCO), Urban Development & Housing Department (UD & HD) and State Mission for Clean Ganga, status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Yours faithfully,

Encl.: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत...
दिनांक... 05/02/2020

(Prashant Gargava)
Member Secretary

O/c

Annexure-1

SUMMARY OF BIHAR DRAINS, EC TO BE CALCULATED

20.	**Drains Discharging into River Ganga monitored by CPCB**	:	**19**
21.	**Drains Tapped**	:	**Nil**
22.	**Interim Measures not required (Dry/Stagnant)**	:	**01**
23.	**Interim Measures not feasible (BOD <40mg/l)**	:	**08**
24.	**Interim Measures required**	:	**10**
25.	**Interim Measures taken**	:	**02**
26.	**No. of drains for EC to be calculate**	:	**08**
27.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**8 x 5x 3 = 120**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Bihar

s. No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP Operational/ Under construction/Planned	Capacity of STP (MLD)	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of Commissioning of Interi measure	Capacity of Remediation (MLD)	EC to be calculate/ not	Reason
								Flow of drain (MLD)	BOD (mg/l)					
1	Sidnath Drain	Buxer	Ganga	Untapped	Not Applicable	STP proposed 16 MLD STP with sewarage network approved by NMCG	16	1.71	28	No, Bioremediation measure also proposed, will be completed by Oct 2020.	Not Applicable	Not Applicable	No	BOD <40 mg/l
2	Nath Baba Drain	Buxer	Ganga	Untapped				12.46	14		Not Applicable	Not Applicable	No	BOD <40 mg/l
3	Tadka Drain	Buxer	Ganga	Untapped				7.98	40		Not Applicable	Not Applicable	Yes	Untapped & BOD = 40mg/l
4	Sariupur Drain	Buxer	Ganga	Untapped				2.52	10		Not Applicable	Not Applicable	No	BOD <40 mg/l
5	Danapur Cantt Drain	Buxer	Ganga	Untapped	Not Applicable	STP proposed (Beur-43, Saidpur-60, Karmalichak-37, & Pahadi Zone-60, Digha-100, Kankarbaag-50) 350 MLD STP with sewarage network approved by NMCG,	350	23.04	17	Yes, J.M. Enviro Technologist Pvt. Ltd. (Cost/MLD is $ 24362866) At Outlet Ph= 7.25, TSS= 47, BOD=19.7,COD=45.6	09.12.2019	90 MLD	No	Remediation measured & BOD <40 mg/l
6	Digha Ghat Drain	Patna	Ganga	Untapped				37.26	26	No, Bioremediation measure also proposed, will be completed by Oct	Not Applicable	Not Applicable	No	BOD <40 mg/l
7	Kurzi Drain	Patna	Ganga	Untapped				97.2	39		Not Applicable	Not Applicable	No	BOD <40 mg/l
8	Rajapur Drain	Patna	Ganga	Untapped				324	66	Yes, Enviroway Bioscience Pvt. Ltd. (Cost/MLD is $ 7300000) At Outlet Ph= 7.44, TSS= 55.3, BOD=18.2,COD=37.5	16.12.2019	3 MLD	No	Remediation measured
9	Bans Ghat Drain	Patna	Ganga	Untapped				56.77	50	No, Bioremediation measure also proposed, will be completed by Oct 2020.	Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
10	Collectriate Ghat Drain	Patna	Ganga	Untapped				18.43	52		Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
11	Mittan Ghat Drain	Patna	Ganga	Untapped				11.23	117		Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
12	ITC Drain	Munger	Ganga	Untapped	Not Applicable	STP proposed *No information rovided on ITC drain. This drain has been dry always. 30 MLD STP with sewerage network approved by NMCG. Once STP with network system will be completed no sewage dischare	30	-	-	No	Not Applicable	Not Applicable	No	Not feasible due to dry
13	Lal Darwaja drain	Munger	Ganga	Untapped				5.34	32		Not Applicable	Not Applicable	No	BOD <40 mg/l
14	Sarkikal Drain	Bhagalpur	Ganga	Untapped	Not Applicable	STP approved	45	21.6	126	Tender for Bioremeadation	Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
15	Saklichand Drain	Bhagalpur	Ganga	Untapped				6.34	72		Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
	Barari Ghat Drain	Bhagalpur	Ganga	Untapped				6.91	26		Not Applicable	Not Applicable	No	BOD <40 mg/l

s. No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP Operational/ Under construction/Planned	Capacity of STP (MLD)	Post-monsoon, 2019		Interim Remediation measure adopted (Yes/No) and Technology	Date of Commissioning of Interi measure	Capacity of Remediation (MLD)	EC to be calculate/ not	Reason
								Flow of drain (MLD)	BOD (mg/l)					
17	DN Singh Drain	Bhagalpur	Ganga	Untapped				7.41	66		Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
18	Koyal Ghat Drain	Bhagalpur	Ganga	Untapped				12.34	150		Not Applicable	Not Applicable	Yes	Untapped & BOD > 40mg/l
19	Kowa Drain	Kahalgaon	Ganga	Untapped	Not Applicable	6 MLD Interception & diversion STP approved by NMCG.	6	155.52	15	Tender for Bioremeadation	Not Applicable	Not Applicable	No	BOD <40 mg/l

Annexure – IX

350

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20/12130 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Jharkhand,
1st Floor, Project Building,
Dhurwa, Ranchi, Jharkhand - 834004

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Jharkhand Urban Infrastructure Development Corporation Ltd (JUIDCO), status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Encl.: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत
दिनांक 05/02/2020

Yours faithfully,

(**Prashant Gargava**)
Member Secretary

O/C

Annexure-1

SUMMARY OF JHARKHAND DRAINS, EC TO BE CALCULATED

28.	**Drains Discharging into River Ganga monitored by CPCB**	:	**02**
29.	**Additional drain list provided by UDHD, Jharkhand which are not monitored by CPCB**	:	**04**
30.	**Drains Tapped**	:	**02**
31.	**Interim Measures not required (Dry/Stagnant)**	:	**Nil**
32.	**Interim Measures not feasible (BOD <40mg/l)**	:	**Nil**
33.	**Interim Measures required**	:	**04**
34.	**Interim Measures taken**	:	**Nil**
35.	**No. of drains for EC to be calculate**	:	**04**
36.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**4 x 5x 3 = 60**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Jharkhand

Sl No.	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of STP (Operational/ Under construction/ Planned)	Capacity of STP (MLD)	As monitored by Joint team (CPCB & SPCB) during Post-monsoon, 2019		Interim Remediation measure adopted (Yes/ No) and Technology	Date of Commissioning of Interim measure	Capacity of Remediation (MLD)	EC Calculated (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
1	Gopal Pull Nallah	Sahebganj	Ganga	Tapped	Ghromarapul STP	Operational	5	9.32	7	No	NA	NA	No	Flow is more than STP Capacity. Hoever, BOD < 40 mg/l
2	Jharna Nallah	Sahebganj	Ganga	Tapped	Kabutarkhopi STP	Operational	7	7.13	11	No	NA	NA	No	Complete Tapped
3	Mahajan Toli Drain	Rajmahal	Ganga	Untapped	Benduđi STP About 58% construction has bee achieved. Further process for diversion/ interception of the drain to STP in progress.	Under Construction	3.5	NA	NA	No	NA	NA	Yes	Untapped
4	Neel Kothi Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
5	Kasim Bazar Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
6	Ferry Ghat Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped

Dr. Prashant Gargava
Member Secretary
डॉ. प्रशांत गार्गव
सदस्य सचिव

सत्यमेव जयते

Annexure - X

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 16.06.2020

To,

The Chief Secretary,
Government of Uttar Pradesh,
1st Floor, Room No. 110 Lalbahadur Shastri Bhawan,
Uttar Pradesh Secretariat,
Lucknow, Uttar Pradesh - 226 001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 and CPCB letter dated 03.02.2020 (Copy enclosed). Environmental Compensation (EC) of Rupees 1800 lacs has been levied in respect of 120 drains where interim measures for treatment of wastewater have not been taken. EC has not been deposited till date.

Your personal attention is requested so that concerned agencies deposit EC as per NGT order.

Yours faithfully,

(**Prashant Gargava**)
Member Secretary

Encl.: As above

'परिवेश भवन', सी.बी.डी.-कम-ऑफिस कॉम्पलैक्स, पूर्वी अर्जुन नगर, दिल्ली-110 032
'PARIVESH BHAWAN', C.B.D.-CUM-OFFICE COMPLEX, EAST ARJUN NAGAR, DELHI-110 032
PHONE: 011-22303655 TEL./FAX: 91-11-22307078, e-mail : prashant.cpcb@gov.in | mscb.cpcb@gov.in

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20/12128 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Uttar Pradesh,
1st Floor, Room No. 110 Lalbahadur Shastri Bhawan,
Uttar Pradesh Secretariat,
Lucknow, Uttar Pradesh - 226 001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by State Mission for Clean Ganga and Uttar Pradesh Pollution Control Board, status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Encl.: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत.....Rhol.....
दिनांक.....05/02/2020

Yours faithfully,

(**Prashant Gargava**)
Member Secretary

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Annexure – XI

Dr. Prashant Gargava
Member Secretary
डॉ. प्रशांत गार्गव
सदस्य सचिव

सत्यमेव जयते

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20

Dated: 16.06.2020

To,

The Chief Secretary,
Government of Uttarakhand
#4, Subhash Road, Uttarakhand Secretariat,
Dehradun, Uttarakhand – 248001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 and CPCB letter dated 03.02.2020 (Copy enclosed). Environmental Compensation (EC) of Rupees 30 lacs has been levied in respect of two drains where interim measures for treatment of wastewater have not been taken. EC has not been deposited till date.

Your personal attention is requested so that concerned agencies deposit EC as per NGT order.

Yours faithfully,

Encl.: As above

(**Prashant Gargava**)
Member Secretary

'परिवेश भवन', सी.बी.डी.-कम-ऑफिस कॉम्पलैक्स, पूर्वी अर्जुन नगर, दिल्ली-110 032
'PARIVESH BHAWAN', C.B.D.-CUM-OFFICE COMPLEX, EAST ARJUN NAGAR, DELHI-110 032
PHONE: 011-22303655 TEL./FAX: 91-11-22307078, e-mail : prashant.cpcb@gov.in | mscb.cpcb@gov.in

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/ E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Uttarakhand
#4, Subhash Road, Uttarakhand Secretariat,
Dehradun, Uttarakhand – 248001

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Pay Jal Nigam and Jal Sansthan, Uttarakhand, status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Yours faithfully,

Encl.: As above

(Prashant Gargava)
Member Secretary

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Letter No.: SMCG/UD&HD/NGT/2019/17/...559

Govt. of Jharkhand

Urban Development & Housing Department

From,

Ajoy Kumar Singh (IAS)
Principal Secretary
UD&HD, 4th Floor
Project Building, Dhurwa, Ranchi-834004

To,

Shri Prashant Gargava
Member Secretary
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
New Delhi-110032

Ranchi/Date..15/02/2020

Sub: Regarding Environmental Compensation for Drains in compliance of Hon'ble NGT Order dated 12.12.2019 in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors.

Ref: CPCB letter no. 190153/NGT/WQM-II/CPCB/2019-20 dated 03.02.2020 and our letter no. 236 dated 20.01.2020 by JUIDCO.

Sir,

With reference to the above subject and letter under reference, it is to bring your kind attention that all the directions issued by Hon'ble NGT in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors. order dated 07.08.2019 (uploaded on 22.08.2019) and order dated 12.12.2019 (uploaded on 18.12.2019) has been complied by the Jharkhand State on proactive basis and you would also appreciate that the Interception & Diversion (I&D) at two Drains that are the only drains monitored by CPCB at Jharkhand (i.e. Gopalpul Nallah and Jharna Nallah) has been completed before the order dated 07.08.2019 i.e. well within the timeline of 01.11.2019 as directed by Hon'ble NGT Court.

It is for your kind submission that, in the above reference letter of CPCB, the 4 nos. of drains that are considered as untapped at Rajmahal are actually the monsoon drains in which during non-monsoon season only minimal flow can be seen and hence may be considered under Dry/Stagnant drains. Whereas, in compliance of Hon'ble NGT Court order dated 07.08.2019 the screening arrangements with Natural & Biological treatment by in-situ manual chemical methods are already put in place as an interim measure in all four drains of Rajmahal and the same has been duly communicated vide letter no. 236 of JUIDCO to CPCB by email at akvidyarthi@gmail.com on dated 20.01.2020 and the treated effluent from the interim measure adopted at 4 drains are monitored on regular basis.

P.T.O.

405

It is also to be noted that, as a long-term solution to stop the discharge of untreated sewage into the River Ganga, the work of Rajmahal Municipal Sewage Scheme under which a 3.5 MLD capacity of Sewage Treatment Plant and sewerage network at Rajmahal town is under progress and till date around 60% physical progress has been achieved.

Therefore, considering our proactive approach in compliance of all the directions issued by Hon'ble NGT Court well within the timeline, it is requested to kindly reconsider the Environmental Compensation calculated for the State of Jharkhand and waive off the same.

Further, it is also requested to kindly send the technical team of CPCB at Rajmahal, if it required, to verify and evaluate the performance standard of the interim measure adopted at these drains and share your valuable comments with the UD&HD team, so that any further improvement, if required, can be adopted.

Enclosure: A/A

Yours faithfully,

14/2/20

(Ajoy Kumar Singh)
Principal Secretary

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

Addl. Chief Secy. Forest
Pr. Secy UDD

F.No. B-190153/NGT/WQM-II/CPCB/2019-20 Dated: 03.02.2020

383(711)

To,
The Chief Secretary,
Government of Jharkhand,
1st Floor, Project Building,
Dhurwa, Ranchi, Jharkhand - 834004

Chief Secretary
Jharkhand, Ranchi

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Jharkhand Urban Infrastructure Development Corporation Ltd (JUIDCO), status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Yours faithfully,

Encl.: As above

(Prashant Gargava)
Member Secretary

मुख्य सचिव कार्यालय
झारखण्ड, राँची
गै.स.प्रे.सं.....706.....
तिथि...05/02/2020.....

Annexure-1

SUMMARY OF JHARKHAND DRAINS, EC TO BE CALCULATED

28.	Drains Discharging into River Ganga monitored by CPCB	: 02
29.	Additional drain list provided by UDHD, Jharkhand which are not monitored by CPCB	: 04
30.	Drains Tapped	: 02
31.	Interim Measures not required (Dry/Stagnant)	: Nil
32.	Interim Measures not feasible (BOD <40mg/l)	: Nil
33.	Interim Measures required	: 04
34.	Interim Measures taken	: Nil
35.	No. of drains for EC to be calculate	: 04
36.	Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)	: 4 x 5x 3 = 60

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Jharkhand

Sl.No	Name of drain	Important Town in Catchment of Drain	Recipient River	Status of Drain Tapped/ Untapped	STP Catering Drain	Status of S.T.P. (Operational/ Under construction/ Planned)	Capacity of STP (MLD)	As monitored by Jharkhand teams (JSPCB & SPCB) during Post-monsoon 2019		Interim Remediation measure adopted (Yes/ No) and technology	Date of Commissioning of interim measure	Capacity of remediation (MLD)	EC Calculated (Yes/No)	Reason
								Flow of drain (MLD)	BOD (mg/l)					
1	Gopal Pull Nallah	Sahebganj	Ganga	Tapped	Ghromaraput STP	Operational	5	9.52	7	No	NA	NA	No	Flow is more than STP Capacity. Hoever, BOD < 40 mg/l
2	Jhama Nallah	Sahebganj	Ganga	Tapped	Kabutarkhopi STP	Operational	7	7.13	11	No	NA	NA	No	Compete Tapped
3	Mahajan Toli Drain	Rajmahal	Ganga	Untapped	Berdaur STP About 58% construction has bee achieved. Further process for diversion/ interception of the drain to STP in progress	Under Construction	3.5	NA	NA	No	NA	NA	Yes	Untapped
4	Neel Kothi Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
5	Kasim Bazar Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
6	Ferry Ghat Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped

401
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Letter No.: SMCG/UD&HD/NGT/2019/17/10-236
Govt. of Jharkhand
Urban Development & Housing Department

Ferr
Gha

From,

Shashi Ranjan, IAS
Project Director, SMCG,
UD & HD, 4th Floor, Project Building,
Dhurwa, Ranchi-834004

To,

Shri A.K. Vidyarthi,
Additional Director & Divisional Head, WQM-II
Central Pollution Control Board,
Parivesh Bhawan, East Arjun Nagar,
New Delhi-110032

Ranchi/Date. 20/01/2020

Subject: Regarding Arrangement on prevention of untreated discharge of Municipal Nallah in the River Ganga in Sahibganj and Rajmahal town of Jharkhand State.

Sir,

In reference to above subject, this is to state that, In Jharkhand state, mainly two urban cities named Sahibganj and Rajmahal are situated on the bank of River Ganges.

In Sahibganj town, mainly two major nallah, named, Jharna Nallah and Gopalpul Nallah, which are flowing through the heart of the town, had been discharging untreated waste water directly into River Ganges in Past. Presently, under the Namami Gange Scheme, these two nallah have been trapped based on Interception & Diversion Concept all waste water there of are diverted (based on gravity with zero operation cost) to nearest Pumping stations and onwards to STPs of 12 MLD Capacity. So at present there is no direct discharge of waste water in river Ganges through these two municipal nallah in Sahibganj Town.

In Rajmahal Town, mainly four nallah named Mahajan Toli Nallah(0.78 MLD), Neel Kothi Nallah(0.59 MLD), Kasim Bazar Nallah(0.55 MLD) and Ferry Ghat Nallah(0.71 MLD) are flowing through different parts of the town. Various

Screening arrangements are made to prevent the entry of floating matter in River Ganges. Some natural and biological treatment with in-situ manual chemical methods are being put into place, as an interim measure, to reduce the effect/toxicity of waste water flowing through these municipal nallah. However under Namami Gange Scheme, Construction of 3.5mld STP is in progress and targeted to be operational by June 2020. Once, Operation of STP commences, these nallahs will also be trapped based on Interception & diversion Concept and will be diverted to STP.

In view of the above enumeration we sought the relief as may deem fit.

This is for your kind information records pl

Yours faithfully,

16/01/20

(Shashi Ranjan)
Project Director

Annexure – XIII 398

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20

Dated: 17.03.2020

To,

Principal Secretary,
Urban Development & Housing Department,
4th Floor, Project Building,
Dhurwa, Ranchi, Jharkhand 834004

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Ref. UD & HD letter no. SMCG/UD&UD/NGT/2019/17/559 dated 15/02/2020 and CPCB letter dated 03/02/2020.

Sir,

I am directed to refer to the meeting held on 07.01.2020 to review alternative remediation actions adopted in the drains in Jharkhand. On the basis of the information provided, Environmental Compensation for the defaulting drains was calculated and intimated vide CPCB letter dated 3.02.2020.

Considering the updated information received vide letter dated 15.02.2020, it is requested that the details of the interim remediation measures taken, including work order issued, analysis results of the drain after and before interim measures etc for the drains namely Mahajantoli, Neel Kothi, Kasi Bazar and Ferry Ghat may kindly be provided for making necessary changes in the calculations.It is also requested to provide the information of the date of start of interim measures, the flow of the drains and the flow of the drains considered for interim measures.

Requisite documents and information may kindly be provided through email at ngrba.cpcb@gmail.com to CPCB at the earliest for further necessary action.

Yours faithfully,

17/3/20

(A.K. Vidyarthi)
Additional Director & I/c WQM-II

Annexure – XIV

Letter No.: JUIDCO/NIT/SBGJ/STP/2014-16/173/Part-VIII/2018-1391

Govt. of Jharkhand

Urban Development & Housing Department

From,

Vinay Kumar Choubey (IAS)
Secretary, UD&HD,
4th Floor, Project Building, Dhurwa, Ranchi-834004

To,

Shri A.K. Vidyarthi,
Additional Director & I/c WQM – II,
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
New Delhi-110032

Ranchi/Date: 22/05/2020

Sub: Regarding Environmental Compensation for Drains in compliance of Hon'ble NGT Order dated 12.12.2019 in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors.

Ref: CPCB letter no. 190153/NGT/WQM-II/CPCB/2019-20 dated 17.03.2020, UD&HD letter no. 559 dated 15.02.2020

Sir,

With reference to the above subject and letter under reference, it is to bring to your kind attention that all the directions issued by Hon'ble NGT in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors. order dated 07.08.2019 (uploaded on 22.08.2019) and order dated 12.12.2019 (uploaded on 18.12.2019) has been complied with by the Jharkhand State on proactive basis.

It is for your kind submission that, the 4 nos. of drains i.e. Mahajantoli, Neel Kothi, Kasim Bazar and Ferry Ghat, which are considered as untapped at Rajmahal are actually the monsoon drains in which during non-monsoon season only minimal flow can be seen and hence may be considered under Dry/Stagnant drains category.

Whereas, the information required by the CPCB vide letter dated 17.03.2020, regarding interim measures adopted, work order issued, analysis report of the drain, date of start of interim measure, flow of drains and the flow considered for interim measures are hereby enclosed with this letter for your kind consideration and records.

It is also for your kind information that, as a long-term solution to stop the discharge of untreated sewage into the River Ganga, the work of Rajmahal Municipal Sewage Scheme under which a 3.5 MLD capacity of Sewage Treatment Plant and sewerage network at Rajmahal town is under progress and till date around 65% physical progress has been achieved.

Therefore, considering our proactive approach in compliance of all the directions issued by Hon'ble NGT Court well within the timeline, it is requested to kindly reconsider the Environmental Compensation calculated for the State of Jharkhand and waive off the same.

Enclosure: A/A

Yours faithfully,

19/3/2020

(Vinay Kumar Choubey)
Secretary

Details regarding interim measure adopted at Mahajantoli, Neel Kothi, Kasim Bazar and Ferry Ghat drains at Rajmahal.

Sr. No.	Information required by CPCB	Action taken by UD&HD
1	Details of the interim remediation measure taken at Mahajantoli, Neel Kothi, Kasim Bazar and ferry Ghat drains	In compliance of Hon'ble NGT court directions dated 07.08.2019, for the 4 separate in-situ interim remediation measure at Mahajantoli, Neel Kothi, Kasim Bazar and Ferry Ghat drains at Rajmahal have been made under which following treatment mechanism is adopted: 1. Screening Arrangement: Screening arrangements have been installed at the entry point of the sedimentation tank to stop the flow of floating solid into the sedimentation tank and ultimately into the river. 2. Sedimentation tank: Brick walled Sedimentation tank have been constructed at drains and the sewage through drains after passing through screens enters into the sedimentation tank, where sewage gets detained for the time of minimum 8 hours, and dosing of lime/alum is done at the sedimentation tank for flocculation. 3. Treatment tank: After the detention period the sewage from sedimentation tank flow to the treatment tank through gravity where chlorination is being done through bleaching powder. After chlorination, the treated flow gets ultimately discharged into the river.
2	Work Order issued	• The work order for Rajmahal Municipal Sewerage System scheme has been issued to M/s Annu Infra Construct India Pvt. Ltd. on dated 02.07.2018, under which provision of construction of 3.5 MLD capacity of Sewage Treatment Plant of SBR Technology, laying of underground sewerage network of 34.21 km and Nallah restoration work and channelization of drains to the STPs have been already made. • Under the current scope of the existing Executing Agency, the construction of interim measure has been done by the Agency under the supervision of JUIDCO.

		• JUIDCO is currently maintaining the interim remediation measure with the support of Rajmahal Nagar Panchayat. • The wok order is enclosed at Annexure-1.
3	Analysis report of the drain before and after interim measure	The analysis report of the Mahajan toli drain, from the common point of Neel Kothi & ferry ghat drain before it get separated into two drains and Kasim Bazar drain is enclosed at Annexure – 2.
4	Date of start of interim measure	The construction of interim measure at drains under the current scope of work of the executing agency appointed for Rajmahal Sewerage scheme had started at the mid of September 2019 and the same have been completed by the end of October 2019.

Flow of the drains and the flow of the drains considered for interim measures

Sr. No.	Name of Drain	Approx. flow of drains	Approx. flow considered for interim measure
1	Mahajantoli drain	0.78 MLD	0.80 MLD
2	Neel Kothi drain	0.59 MLD	0.60 MLD
3	Kasim Bazar drain	0.55 MLD	0.60 MLD
4	Ferry Ghat Drain	0.71 MLD	0.70 MLD

JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED
(Govt. of Jharkhand Undertaking)
3rd floor, Pragati Sadan, Kutchery Road, Ranchi-834001, Jharkhand.
e-mail id-juidcolimited@gmail.com; judi.juidco@gmail.com
CIN: U45200JH2013SGC001752, Ph No.: +91-651-2225878

Letter No.: JUIDCO/RAJMAHAL/RFD/1174/2017- 2883 Date: 02.07.2018

Work Order

To,

M/s Annu Infra Construct India Pvt Ltd
(In JV with M/s Vinod Mutha-Noble Construction Co JV)
B-7/5077, Vasant Kunj
New Delhi-110070
Email: info@annuinfra.com / aicipi@gmail.com

Sub: I. Design and build one Sewage Treatment Plant of installed capacity 3.5 MLD and all appurtenant structures and allied works;

II. Survey, review the designs, redesign where necessary, and build new underground sewerage network of about 34.21 km length including survey, design, build, operation of 04 nos. pumping stations (one main pumping station and three intermediate pumping stations) and all appurtenant structures and allied works; and

III. For operation & maintenance of the complete works of sewage treatment plant, sewerage network and pumping stations for a period of 10 years in Rajmahal town, District Sahibganj, State of Jharkhand, India.

Ref: Contract no.- 283 - (JUIDCO), dated 02.07.2018 in respect of aforementioned work at Rajmahal, Jharkhand.

Sir,

With reference to above, we are pleased to place this Work Order for the project cited above whose contract amount is Rs. 52,97,09,224/- (Rupees Fifty Two Crores Ninety Seven Lakhs Nine Thousand Two Hundred Twenty Four) only, which has been duly approved by the competent authority, on term listed below:

1. The approved rate is inclusive of all taxes, GST, royalty, labour cess as per applicable laws.
2. You shall open a site office within 15 days from the date of Contract and the address of the site office needs to be communicated by you to JUIDCO Ltd. Ranchi.
3. You shall deploy technical manpower and other staff in time as mentioned in Bid Document and the list of deployed staff be submitted to JUIDCO Ltd. Ranchi.
4. Mobilization advance will be paid on request as per the terms mentioned in the bid document.
5. The work will be supervised and monitored by JUIDCO Ltd.
6. Payment for the work will be made by JUIDCO Ltd. Ranchi as per terms and payment schedule given in the Bid Document. The R/A bills have to be submitted by the operator (i.e. yourself) to Project-in-charge (i.e. Engineer-in-Charge)of the work.

1

7. The total completion time for the execution work is 21 months from the date of Contract which will be followed by 10(ten) years period of Operation & Maintenance (O&M). After completion of O&M period the whole project will be handed over to the concerned ULB/JUIDCO Ltd. and the same with be informed to you by the Employer.

8. The work will be carried out as per proposal/specifications as mentioned in the tender document and clarified in pre-bid meeting by Departmental Tender Committee. Progressive work has to be ascertained as per Bid Document.

9. The work is to be completed as per the approved terms, conditions and specifications. All the works has to the executed as per department specification, CPHEEO manual and relevant IS codes.

10. All the necessary designs and drawings which are in the scope of operator are to be approved as per site conditions before execution of the work by JUIDCO, Ranchi. The design and drawing has to be submitted by the Operator to JUIDCO Ltd. The design and drawing will be checked by the concerned officials and will be finally approved by JUIDCO Ltd.

11. The Bid Document, Proceedings of pre-bid meetings and all other related tender documents shall be the part of the Contract.

12. Quality of work has to be ensured by the Operator.

13. Within 15 days from issue of Work Order, the Operator shall submit a component wise work execution plan and the same will be approved by JUIDCO Ltd.

14. The expenditure should be restricted to the Contract value and in case any deviation is expected, the same should be brought to the notice of the undersigned/JUIDCO Ltd.

Please acknowledge receipt of this order with your confirmation of its acceptance and the additional copy enclosed may be returned with your signature in token of your acceptance.

Enclosure: As stated above.

Yours faithfully,

(S.K. Sahu)
Project Director (Technical)

Water Test Report of Mahajan Toli Drain at Rajmahal Nagar Panchayat

1.	Name of Drain	Mahajan Toli Drain
2.	Flow in MLD(approx)	0.78 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	23.11.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	24-11-2019
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.7	19.6	IS 3025 (P-9)	-
2.	pH Value	7.64	7.68	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	312	175	IS 3025 (P-58)	250
4.	BOD (mg/l)	98	26.4	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	812	768	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Neel kothi & Ferry Gaht Drains at Rajmahal Nagar Panchayat

1.	Name of Drain	Neel kothi & Ferry Ghat Drains
2.	Flow in MLD(approx)	1.30 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	23.11.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	24-11-2019
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	Permissible Limit *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.8	19.5	IS 3025 (P-9)	-
2.	pH Value	7.17	7.20	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	368	166	IS 3025 (P-58)	250
4.	BOD (mg/l)	84	22.6	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	880	749	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Kasimbazar Drain at Rajmahal NagarPanchayat

1.	Name of Drain	Kasimbazar Drain
2.	Flow in MLD(approx)	0.55 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	23.11.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	24-11-2019
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.5	19.2	IS 3025 (P-9)	-
2.	pH Value	7.41	7.47	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	340	173	IS 3025 (P-58)	250
4.	BOD w(mg/l)	168	29.1	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	996	747	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Mahajan Toli Drain at Rajmahal Nagar Panchayat

1.	Name of Drain	Mahajan Toli Drain
2.	Flow in MLD(approx)	0.78 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	14.12.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	15-12-2019
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.5	19.3	IS 3025 (P-9)	-
2.	pH Value	7.82	7.69	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	342	164	IS 3025 (P-58)	250
4.	BOD (mg/l)	130	28.1	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	1230	1150	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Neel kothi & Ferry Ghat Drains at Rajmahal Nagar Panchayat

1.	Name of Drain	Neel kothi & Ferry Ghat Drains
2.	Flow in MLD(approx)	1.30 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	14.12.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	15-12-2019
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	20.4	20.1	IS 3025 (P-9)	-
2.	pH Value	7.11	7.15	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	475	178	IS 3025 (P-58)	250
4.	BOD (mg/l)	96	29.6	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	974	839	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Kasim bazar Drain at Rajmahal NagarPanchayat

1.	Name of Drain	Kasim bazar Drain
2.	Flow in MLD(approx)	0.55 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	14.12.2019
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	15-12-2019
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.6	19.5	IS 3025 (P-9)	-
2.	pH Value	7.36	7.39	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	420	168	IS 3025 (P-58)	250
4.	BOD (mg/l)	149	23.6	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	848	694	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Mahajan Toli Drain at Rajmahal NagarPanchayat

1.	Name of Drain	Mahajan Toli Drain
2.	Flow in MLD(approx)	0.78 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	12.01.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	13-01-2020
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	20.2	19.8	IS 3025 (P-9)	-
2.	pH Value	7.59	7.57	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	368	171	IS 3025 (P-58)	250
4.	BOD (mg/l)	154	21.4	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	940	892	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Neel kothi & Ferry Ghat Drains at Rajmahal Nagar Panchayat

1.	Name of Drain	Neel kothi & Ferry Ghat Drains
2.	Flow in MLD(approx)	1.30 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	12.01.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	13-01-2020
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.7	19.4	IS 3025 (P-9)	-
2.	pH Value	7.48	7.43	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	480	174	IS 3025 (P-58)	250
4.	BOD (mg/l)	74	19.1	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	937	886	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Kasimbazar Drain at Rajmahal NagarPanchayat

1.	Name of Drain	Kasimbazar Drain
2.	Flow in MLD(approx)	0.55 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	12.01.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	13-01-2020
7.	Laboratory Address	In house laboratory at 5 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.5	19.4	IS 3025 (P-9)	-
2.	pH Value	7.43	7.44	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	374	181	IS 3025 (P-58)	250
4.	BOD (mg/l)	119	18.9	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	1020	889	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Mahajan Toli Drain at Rajmahal Nagar Panchayat

1.	Name of Drain	Mahajan Toli Drain
2.	Flow in MLD(approx)	0.78 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	08.02.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	09-02-2020
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.7	19.4	IS 3025 (P-9)	-
2.	pH Value	7.57	7.61	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	412	179	IS 3025 (P-58)	250
4.	BOD (mg/l)	144	27.6	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	937	814	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Neel Kothi & Ferry Ghat Drains at Rajmahal Nagar Panchayat

1.	Name of Drain	Neel kothi & Ferry Ghat Drains
2.	Flow in MLD (approx)	1.30 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	08.02.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	09-02-2020
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	Permissible Limit *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.5	19.2	IS 3025 (P-9)	-
2.	pH Value	7.35	7.39	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	367	169	IS 3025 (P-58)	250
4.	BOD (mg/l)	142	20.4	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	869	746	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Water Test Report of Kasimbazar Drain at Rajmahal Nagar Panchayat

1.	Name of Drain	Kasimbazar Drain
2.	Flow in MLD(approx)	0.55 MLD
3.	Volume of Sample Taken	1000 ml
4.	Date of sampling	08.02.2020
5.	No. of sample taken	1, sealed in plastic bottle
6.	Date of Testing	09-02-2020
7.	Laboratory Address	In house laboratory at 7 MLD STP at Sahibganj

Test Result

Sl. No.	Parameter	Sample 1		Method Name	**Permissible Limit** *(Inland Surface Waters Indian Standards 2490:1974)*
		At Inlet Point	At Outlet Point		
1.	Temperature (°c)	19.7	19.8	IS 3025 (P-9)	-
2.	pH Value	7.40	7.40	IS 3025 (P-11)	5.5-9.0
3.	COD (mg/l)	330	174	IS 3025 (P-58)	250
4.	BOD (mg/l)	192	20.7	IS 3025 (P-44)	30
5.	Total Dissolved Solid (mg/l)	890	742	IS 3025 (P-16)	2100

**All parameters are within the Permissible Limit (Inland Surface Waters Indian Standards 2490:1974)*

(LAB CHEMIST) (PLANT INCHARGE) (JUIDCO Ltd.)

Letter No.: SMCG/UD&HD/NGT/2019/17/...559

Govt. of Jharkhand

Urban Development & Housing Department

From,

Ajoy Kumar Singh (IAS)
Principal Secretary
UD&HD, 4th Floor
Project Building. Dhurwa, Ranchi-834004

To,

Shri Prashant Gargava
Member Secretary
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
New Delhi-110032

Ranchi/Date..15/02/2020

Sub: Regarding Environmental Compensation for Drains in compliance of Hon'ble NGT Order dated 12.12.2019 in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors.

Ref: CPCB letter no. 190153/NGT/WQM-II/CPCB/2019-20 dated 03.02.2020 and our letter no. 236 dated 20.01.2020 by JUIDCO.

Sir,

With reference to the above subject and letter under reference, it is to bring your kind attention that all the directions issued by Hon'ble NGT in the matter OA No. 200/2014 of M.C. Mehta Vs Union of India & Ors. order dated 07.08.2019 (uploaded on 22.08.2019) and order dated 12.12.2019 (uploaded on 18.12.2019) has been complied by the Jharkhand State on proactive basis and you would also appreciate that the Interception & Diversion (I&D) at two Drains that are the only drains monitored by CPCB at Jharkhand (i.e. Gopalpul Nallah and Jharna Nallah) has been completed before the order dated 07.08.2019 i.e. well within the timeline of 01.11.2019 as directed by Hon'ble NGT Court.

It is for your kind submission that, in the above reference letter of CPCB, the 4 nos. of drains that are considered as untapped at Rajmahal are actually the monsoon drains in which during non-monsoon season only minimal flow can be seen and hence may be considered under Dry/Stagnant drains. Whereas, in compliance of Hon'ble NGT Court order dated 07.08.2019 the screening arrangements with Natural & Biological treatment by in-situ manual chemical methods are already put in place as an interim measure in all four drains of Rajmahal and the same has been duly communicated vide letter no. 236 of JUIDCO to CPCB by email at akvidyarthi@gmail.com on dated 20.01.2020 and the treated effluent from the interim measure adopted at 4 drains are monitored on regular basis.

P.T.O.

It is also to be noted that, as a long-term solution to stop the discharge of untreated sewage into the River Ganga, the work of Rajmahal Municipal Sewage Scheme under which a 3.5 MLD capacity of Sewage Treatment Plant and sewerage network at Rajmahal town is under progress and till date around 60% physical progress has been achieved.

Therefore, considering our proactive approach in compliance of all the directions issued by Hon'ble NGT Court well within the timeline, it is requested to kindly reconsider the Environmental Compensation calculated for the State of Jharkhand and waive off the same.

Further, it is also requested to kindly send the technical team of CPCB at Rajmahal, if it required, to verify and evaluate the performance standard of the interim measure adopted at these drains and share your valuable comments with the UD&HD team, so that any further improvement, if required, can be adopted.

Enclosure: A/A

Yours faithfully,

(Ajoy Kumar Singh)
Principal Secretary

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

Addl. Chief Secy. Forest
Pr. Secy. UDD

F.No. B-29016/53/NGT/WQM-II/CPCB/2019-20 Dated: 03.02.2020

383 (7)

To,
The Chief Secretary,
Government of Jharkhand,
1st Floor, Project Building,
Dhurwa, Ranchi, Jharkhand - 834004

06 FEB 2020

382

Chief Secretary
Jharkhand, Ranchi

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned above, the drains discharging directly into river Ganga were required either to be tapped or interim remedial measures adopted by 1.11.2019 in compliance to Hon'ble NGT order dated 22.08.2019 failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Jharkhand Urban Infrastructure Development Corporation Ltd (JUIDCO), status is prepared and EC for the defaulting drains calculated. Details are enclosed at **Annexure-I**.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Yours faithfully,

Encl.: As above

(Prashant Gargava)
Member Secretary

मुख्य सचिव कार्यालय
झारखण्ड, राँची
गो.स.प्रे.सं. ....406....
तिथि...05/02/2020...

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Annexure-I

SUMMARY OF JHARKHAND DRAINS, EC TO BE CALCULATED

28.	Drains Discharging into River Ganga monitored by CPCB	: 02
29.	Additional drain list provided by UDHD, Jharkhand which are not monitored by CPCB	: 04
30.	Drains Tapped	: 02
31.	Interim Measures not required (Dry/Staguant)	: Nil
32.	Interim Measures not feasible (BOD <40mg/l)	: Nil
33.	Interim Measures required	: 04
34.	Interim Measures taken	: Nil
35.	No. of drains for EC to be calculate	: 04
36.	Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)	: 4 x 5x 3 = 60

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Jharkhand

Sl. No.	Name of Drain	Important Town/Catchment of Drain	Recipient River	Status of Drain (Tapped/Untapped)	STP Catering Drain	Status of STP (Operational/Under construction/Planned)	Capacity of STP (MLD)	Flow of drain (MLD)	BOD (mg/l)	[illegible]	[illegible]	[illegible]	[illegible] (Yes/No)	[illegible]
1	Gopal Pull Nallah	Sahebganj	Ganga	Tapped	Ghoramapur STP	Operational	5	3.52	7	No	NA	NA	No	Flow is more than STP Capacity. Hoever, BOD < 40 mg/l
2	Jhama Nallah	Sahebganj	Ganga	Tapped	Kalutarkhapi STP	Operational	7	7.13	11	No	NA	NA	No	Complete Tapped
3	Mahajan Toll Drain	Rajmahal	Ganga	Untapped	[illegible] STP About 58% construction has bee achieved. Further process for diversion/ Interception of the drain to STP in progress	Under Construction	3.5	NA	NA	No	NA	NA	Yes	Untapped
4	Neel Kothi Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
5	Karim Bazar Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped
6	Ferry Ghat Drain	Rajmahal	Ganga	Untapped				NA	NA		NA	NA	Yes	Untapped

Letter No.: SMCG/UD&HD/NGT/2019/17/10-236

Govt. of Jharkhand

Urban Development & Housing Department

From,

Shashi Ranjan, IAS
Project Director, SMCG,
UD & HD, 4th Floor, Project Building,
Dhurwa, Ranchi-834004

To,

Shri A.K. Vidyarthi,
Additional Director & Divisional Head, WQM-II
Central Pollution Control Board,
Parivesh Bhawan, East Arjun Nagar,
New Delhi-110032

Ranchi/Date 20/01/2020

Subject: Regarding Arrangement on prevention of untreated discharge of Municipal Nallah in the River Ganga in Sahibganj and Rajmahal town of Jharkhand State.

Sir,

In reference to above subject, this is to state that, In Jharkhand state, mainly two urban cities named Sahibganj and Rajmahal are situated on the bank of River Ganges.

In Sahibganj town, mainly two major nallah, named, Jharna Nallah and Gopalpul Nallah, which are flowing through the heart of the town, had been discharging untreated waste water directly into River Ganges in Past. Presently, under the Namami Gange Scheme, these two nallah have been trapped based on Interception & Diversion Concept all waste water there of are diverted (based on gravity with zero operation cost) to nearest Pumping stations and onwards to STPs of 12 MLD Capacity. So at present there is no direct discharge of waste water in river Ganges through these two municipal nallah in Sahibganj Town.

In Rajmahal Town, mainly four nallah named Mahajan Toli Nallah(0.78 MLD), Neel Kothi Nallah(0.59 MLD), Kasim Bazar Nallah(0.55 MLD) and Ferry Ghat Nallah(0.71 MLD) are flowing through different parts of the town. Various

Screening arrangements are made to prevent the entry of floating matter in River Ganges. Some natural and biological treatment with in-situ manual chemical methods are being put into place, as an interim measure, to reduce the effect/toxicity of waste water flowing through these municipal nallah. However under Namami Gange Scheme, Construction of 3.5mld STP is in progress and targeted to be operational by June 2020. Once, Operation of STP commences, these nallahs will also be trapped based on Interception & diversion Concept and will be diverted to STP.

In view of the above enumeration we sought the relief as may deem fit.

This is for your kind information records pl

Yours faithfully,

16/01/20

(Shashi Ranjan)
Project Director

Annexure – XV

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 16.06.2020

To,

Principal Secretary,
Urban Development & Housing Department,
Government of Jharkhand,
4th Floor, Project Building,
Dhurwa, Ranchi, Jharkhand - 834004

Subject: Interim remediation measures that may be adopted in the defaulting drains as per Hon'ble NGT order – reg.

Sir,

This has reference to your letter-dated 22.05.2020 (Copy enclosed) in response to CPCB letter dated 17.03.2020 (Copy enclosed) wherein CPCB has requested to provide the details of the interim remediation measures taken for the defaulting drains. It is for your kind information that on the basis of the reply received, Environmental Compensation levied for the defaulting drains have been waived off.

Yours faithfully,

Avyarthi
16/06/20

(**A.K. Vidyarthi**)
Scientist É' and In-charge WQM-II

Encl.: As above

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

SPEED POST Annexure – XVI 411

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Government of West Bengal)
Paribesh Bhawan
Bldg. No. 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106
Tel: 2335-9088 / 5076 / 5079 / 8861 / 7428 / 8211
Fax: (0091) (033) 2335-2813 / 8073 / 5272
Website: www.wbpcb.gov.in

Memo No: 0683 -NGT OA No. 200/2014/PB Date: 25.02.2020

fyi 3/3/20
MS
WQM-II

To
The Member Secretary
Central Pollution Control Board
Parivesh Bhawan
East Arjun Nagar, Delhi-110032

149793/MS 3/3/20

Sub: Environmental Conpensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M. C. Mehta vs. Union of India, OA No. 200/2014 – reg.

Ref: Your letter F. No. B-190153/NGT/WQM-II/CPCB/2019-20 dated 03.02.2020 addressed to the Chief Secretary, Government of West Bengal

Sir,

Attached please find the response from Kolkata Metropolitan Development Authority in this respect.

It may be mentioned that as per the order of the Hon'ble NGT dated 12.12.2019, the completion time of sewage treatment is 30.06.2020 in respect of ongoing projects and by 31.12.2020 in respect of others. Till then, to avoid untreated sewage being discharged directly into Ganga, interim remedial measures have to be adopted and for the default after 01.11.2019 compensation has to be deposited in terms of order dated 22.08.2019.

As mentioned by KMDA, out of the eight (8) nos. of drains discharging wastewater into the river Ganga, seven (7) drains are within the tidal zone. The letter from Kolkata Port Trust dated 13.01.2020 regarding tidal limit of river Hooghly (Ganga) is attached for your ready reference. As a result, bio/phyto remediation measures are not feasible in these seven (7) drains.

You are therefore, requested to reconsider the environmental compensation on these seven (7) drains which are within the tidal zone.

Yours faithfully,

25/2/2020

(Dr. Rajesh Kumar)
Member Secretary

Encl.: 1. Letter from KMDA vide No. 577/CE/W&S/GAP/KMDA/NGT-08/19 dated 19.02.2020
2. Letter from KPT vide No. Hyd/12029/KMDA/2019/14 dated 13.01.2020

05/03/20
3/3/20
SEE
RA(JS)
DSRP(SM)

410 (21)

KMDA

MS/1087 20/2/20

Kolkata Metropolitan Development Authority

West Bengal Pollution Control Board

No. : 577 /CE/W&S/GAP/KMDA/NGT/08/19.

Diary No. 1623 C
Date 20.2.20
Referred to : Sr Sct (DG)
Remarks :

21/2/2020
Member Secretary

Dated : 19.02.2020

To
The Member Secretary,
West Bengal Pollution Control Board
Paribesh Bhavan, 10A, Block-L.A., Sector III,
Salt Lake City, Calcutta - 700 106.

Sub: **Environmental Compensation for Drains in Compliance of Hon'ble NGT Order Dated 12.12.2019 in the matter of M. C. Mehta Vs. Union of India, O. A. No. 200/2014.**

Ref.: **F.No. B – 190153/NGT/WQM-II/CPCB/2019-20 dated 03.02.2020 from the Member Secretary, Central Pollution Control Board Addressed to the Chief Secretary, Government of West Bengal.**

Sir,

I am directed to kindly refer the above mentioned letter regarding the subject matter, wherein 8 (Eight) nos. of drains as stated below having BOD more than 40 mg./l discharging directly into river Ganga have been considered for environmental compensation amounting to Rs. 120.00 Lakh (since 01.11.2019 till 31.01.2020) as defaulting drains in terms of not undertaking interim remedial measures by 01.011.2019 in compliance of Hon'ble NGT Order dated 22.08.2019.

(1) Kamarhati Drain @ Jute Mill (Baranagar)
(2) Bhatpara Drain (Bhatpara)
(3) Pratapnagar – Rajbari Drain (Bhatpara)
(4) Garifa Drain North (Garulia)
(5) Jangipur Drain (Jangipur)
(6) Titagarh Drain (BIshalaxmi Ghat) (Titagarh)
(7) Immambara Khal (Hooghly)
(8) Champdani Ferry Ghat / Paolghat Drain (Hooghly)

In this context, it is observed that in Sl. No.–39 of Annexure–I of the above referred CPCB letter that interim remedial measures for 22 (Twenty Two) nos. of drains are not required as these are having tidal impact. Accordingly, it may be stated that out of the above 8 nos. of drains excepting Jangipur drain, all 7 nos. of drains are having tidal effect, therefore, bio / phyto remedial measures are not feasible.

In view of the above, CPCB may be requested not to consider these 7 Nos. of drains as default drains for imposition of environmental compensation.

Regarding Jangipur drain, work for construction of new STP has already started and the aforesaid drain will be tapped in the new STP. However, in-situ treatment for this drain will be taken up as interim measures shortly.

Yours faithfully,

19/2/2020
Secretary, KMDA

409

Kolkata Metropolitan Development Authority

No.: /1(4)/CE/W&S/GAP/KMDA/NGT-08/19. Dated : 19.02.2020

Copy for information and necessary action please:

1. The Chief Executive Officer, KMDA and the Program Director, WBSPMG.
2. The Chief Engineer, GAP Wing, W & S Sector, KMDA.
3. The PS to Principal Secretary, UD & MA Department, Govt. of West Bengal.
4. The PS to Principal Secretary, Environment Department, Govt. of West Bengal.

19/2/2020
Secretary, KMDA

KOLKATA PORT TRUST
Hydraulic Study Department
20,Garden Reach Road
Kolkata-700043

No. Hyd/ 12029 / KMDA / 2019 / 14 Dated. 13.01.2020

The Chief Executive Officer,
KMDA,UnnayanBhavan,
Block-C, 3rd floor,DJ-11, Sector-II,
Salt Lake,Kolkata -700091.

(Kind Attn: Smt. Antara Acharya, IAS)

Sub: Tidal Limit of River Hooghly.

Madam,

This has reference to the discussion the undersigned had with you today on the subject.

2. As desired,this is to certify that the Tidal Limit of River Hooghlyis observed uptoSwarupgunj (Latitude: 23°24'51" N., Longitude: 88°23'15.10" E), which is about 290 Km upstream of Sagar Light House.

Yours faithfully,
13/01/2020
(Debasish Guha),
Chief Hydraulic Engineer,
Kolkata Port Trust.

Annexure – XVII

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 12.05.2020

To,

Member Secretary,
West Bengal Pollution Control Board,
Department of Environment, Government of West Bengal,
Bldg. No. 10A, Block-LA, Sector-III,
Bidhnnagar, Kolkata-7000106

Subject: **Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.**

Ref. **Letter dated 25.02.2020 from MS, WBPCB with Memo No. 0683-NGT OA No. 200/2014/PB enclosing letter dated 19.02.2020 from KMDA vide No. 577/CE/W&S/GAP/KMDA/NGT-08/19.**

Sir,

I am directed to refer to the meetings held on 07.01.2020 at CPCB, Delhi and on 10.01.2020 at WBPCB, Kolkata to review alternative remediation actions adopted in the drains in West Bengal. On the basis of the information provided during the meetings, environmental compensation for the defaulting drains was calculated and inti.mated vide CPCB letter of even no. dated 3.02.2020.

Reference is also invited to letter of WBPCB dated 25.02.2020 wherein it has been requested to exclude 07 drains due to tidal effect on the drains. Based on the same, environmental compensation has been reconsidered, recalculated and 07 drains have been exempted from list of defaulting drains. Only Jangipur drain is now considered for levying environmental compensation. Details of calculations of Environmental Compensation are enclosed at **Annexure-I**.

It is, therefore, requested to arrange deposit of the revised Environment Compensation in favour of CPCB, at the earliest as per Hon'ble NGT order.

Yours faithfully,

Encl.: As above

(A.K. Vidyarthi)
Additional Director & I/c WQM-II

Copy for kind information to:

Chief Secretary, Government of West Bengal, Nabanna, 13th Floor, 325, Sarat Chatterjee Road, Mandirtala Shibpur, Howrah, West Bengal-711102

12/05/20

(A.K. Vidyarthi)
Additional Director & I/c WQM-II

Annexure-1

SUMMARY OF WEST BENGAL DRAINS, EC CALCULATED

1.	**Drains Discharging into River Ganga monitored by CPCB**	:	**56**
2.	**Drains Tapped**	:	**03**
3.	**Interim Measures not required (Tidal impact/ Dry/ Stagnant)**	:	**29**
4.	**Interim Measures not feasible (BOD <40mg/l)**	:	**23**
5.	**Interim Measures required**	:	**01 (Jangipur Drain)**
6.	**Interim Measures taken**	:	**Nil**
7.	**No. of drains for EC to be calculate**	:	**01**
8.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**1 x 5x 3 = 15**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Dr. Prashant Gargava
Member Secretary
डॉ. प्रशांत गार्गव
सदस्य सचिव

Annexure – XVIII

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

सत्यमेव जयते

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 16.06.2020

To,

The Chief Secretary,
Government of West Bengal,
Nabanna, 13th Floor, 325, Sarat Chatterjee Road,
Mandirtala Shibpur, Howrah, West Bengal - 711102

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 and CPCB letter dated 12.05.2020 (Copy enclosed). Environmental Compensation (EC) of Rupees 20 lacs has been levied in respect of one drain where interim measures for treatment of wastewater have not been taken. EC has not been deposited till date.

Your personal attention is requested so that concerned agencies deposit EC as per NGT order.

Yours faithfully,

Encl.: As above

(**Prashant Gargava**)
Member Secretary

'परिवेश भवन', सी.बी.डी.-कम-ऑफिस कॉम्पलैक्स, पूर्वी अर्जुन नगर, दिल्ली-110 032
'PARIVESH BHAWAN', C.B.D.-CUM-OFFICE COMPLEX, EAST ARJUN NAGAR, DELHI-110 032
PHONE: 011-22303655 TEL./FAX: 91-11-22307078, e-mail : prashant.cpcb@gov.in | mscb.cpcb@gov.in

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 12.05.2020

To,

Member Secretary,
West Bengal Pollution Control Board,
Department of Environment, Government of West Bengal,
Bldg. No. 10A, Block-LA, Sector-III,
Bidhnnagar, Kolkata-7000106

Subject: **Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.**

Ref. **Letter dated 25.02.2020 from MS, WBPCB with Memo No. 0683-NGT OA No. 200/2014/PB enclosing letter dated 19.02.2020 from KMDA vide No. 577/CE/W&S/GAP/KMDA/NGT-08/19.**

Sir,

I am directed to refer to the meetings held on 07.01.2020 at CPCB, Delhi and on 10.01.2020 at WBPCB, Kolkata to review alternative remediation actions adopted in the drains in West Bengal. On the basis of the information provided during the meetings, environmental compensation for the defaulting drains was calculated and inti.mated vide CPCB letter of even no. dated 3.02.2020.

Reference is also invited to letter of WBPCB dated 25.02.2020 wherein it has been requested to exclude 07 drains due to tidal effect on the drains. Based on the same, environmental compensation has been reconsidered, recalculated and 07 drains have been exempted from list of defaulting drains. Only Jangipur drain is now considered for levying environmental compensation. Details of calculations of Environmental Compensation are enclosed at **Annexure-I.**

It is, therefore, requested to arrange deposit of the revised Environment Compensation in favour of CPCB, at the earliest as per Hon'ble NGT order.

Yours faithfully,

Encl.: As above

(A.K. Vidyarthi)
Additional Director & I/c WQM-II

Copy **for kind information to:**
Chief Secretary, Government of West Bengal, Nabanna, 13th Floor, 325, Sarat Chatterjee Road, Mandirtala Shibpur, Howrah, West Bengal-711102

12/05/20
(A.K. Vidyarthi)
Additional Director & I/c WQM-II

Annexure-1

SUMMARY OF WEST BENGAL DRAINS, EC CALCULATED

1.	**Drains Discharging into River Ganga monitored by CPCB**	:	**56**
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5.	**Interim Measures required**	:	**01 (Jangipur Drain)**
6.	**Interim Measures taken**	:	**Nil**
7.	**No. of drains for EC to be calculate**	:	**01**
8.	**Calculated EC = No. of drains X @5 lakhs/month/drain (Since 01.11.2019 till 31.01.2020)**	:	**1 x 5x 3 = 15**

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, I.P. Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Annexure - XIX

पत्रांक—BGCMS/2017/Action Plan NGT/21/Part (II)......145......न.वि. एवं आ.वि.

बिहार सरकार

नगर विकास एवं आवास विभाग

बिहार राज्य गंगा नदी संरक्षण कार्यक्रम प्रबंधन सोसाइटी (BGCMS)

प्रेषक,

सचिव,
नगर विकास एवं आवास विभाग,
—सह—
परियोजना निदेशक,
राज्य परियोजना प्रबंधक समूह, बिहार।

सेवा में,

सदस्य सचिव,
केन्द्रीय प्रदूषण नियंत्रण बोर्ड,
नई दिल्ली।

1829
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

पटना, दिनांक— 13/3/20

विषयः— **गंगा नदी में प्रवाहित होने वाले नालों के Bio-remediation उपचार संबंधित अधिकरोपित पर्यावर्णीय क्षतिपूर्ति दंड से मुक्त करने एवं सीवरेज योजनाओं को पूर्ण करने के लिए समय विस्तार के संबंध में।**

प्रसंगः— **1. O.A No. 200/2014 M.C Mehta Vs Union of India & Ors. मामले में माननीय NGT द्वारा दिनांक 22.08.2019 को पारित आदेश।**

2. CPCB नई दिल्ली का पत्रांक 12129 दिनांक 03.02.2020

महाशय,

उपर्युक्त विषयक प्रासंगिक आदेशों के संदर्भ में सादर अनुरोधपूर्वक कहना है कि माननीय NGT के O.A No. —200/2014 M.C Mehta Vs Union of India मामले में दिनांक 22.08.2019 को पारित आदेश में सिवरेज योजनाओं के संबंध में निम्न निदेश दिए गए थे :—

i. क्रियान्वित एस.टी.पी. एवं सिवरेज योजनाओं के मामले में दिनांक 30.06.2020 तक पूर्ण नहीं होने की स्थिति में दिनांक 01/07/2020 से 10 लाख रू0 प्रति योजना प्रतिमाह के दर से CPCB में पर्यावर्णीय क्षतिपूर्ति के रूप में जमा करना होगा।

ii. प्रस्तावित एस.टी.पी. एवं सीवरेज योजनाओं के 31.12.2020 तक पूर्ण नहीं होने की स्थिति में रू0 10 लाख प्रति योजना प्रतिमाह के दर से CPCB में पर्यावर्णीय क्षतिपूर्ति के रूप में जमा करना होगा।

iii. उपर्युक्त परियोजनाओं के पूर्ण होने तक Bio-remediation and/or Phytoremediation or any other remediation measure द्वारा नालों (Drains) में प्रवाहित Sewage का शोधन 01.11.2019 तक प्रारम्भ नहीं किये जाने की स्थिति में पर्यावर्णीय क्षतिपूर्ति के रूप में रू0 5 लाख प्रति नाला (Drain) प्रतिमाह की दर से CPCB में जमा करना होगा।

2. उक्त आदेश के अनुपालन हेतु बिहार सरकार द्वारा संबंधित 07 CSIRs एवं 02 IITs संस्थानों से गंगा नदी में प्रवाहित होने वाले नालों (Drains) के प्रवाह का Best possible treatment के संबंध में क्रियान्वयन हेतु सुझाव मांगा गया जिसके आलोक में **प्रोफेसर एस. के. बारिक, निदेशक, CSIR-NBRI, Lucknow** ने पत्र द्वारा सूचित किया कि " Phytoremediation is suitable for use at very large open field sites (minimum size of $50x5\ m^2$) where other methods of remediation are not cost- effective or practicable or at sites with low concentrations of contaminants.

— Discussed with ... on 19/5/20
Pls do the needful as discussed.

There are limitations to this technology that need to be considered carefully before it is selected for site remediation. This includes long duration of time required for pollution remediation, potential contamination of the vegetation and food chain, and difficulty in establishing and maintaining vegetation at waste sites. **This technology is not successful in fast flowing water.** We know that volume of Sewage flowing into river Ganga is very large, that is why phytoremediation technology alone will not be suitable for this problem. In view of above impediments, it would not be possible for CSIR-NBRI to take up this work."

इसी प्रकार **IIT Kanpur के डॉ0 विनोद तारे, (Professor and founding Head of cGanga which is Knowledge Partner to NMCG)** ने ई–मेल द्वारा सूचित किया कि :–

Bio-remediation generally needs considerable retention time and the process may not give good results were flow rates are variable, partly because the material dosed may get washed out rapidly from drains during high flow pulses. Moreover, domestic wastewater also sometimes gets mixed with small scale or household level industries which carry inorganic pollutants. Bio-remediation generally does not treat such inorganic contaminants or every organic compound in wastewater.

Thus, while bioremediation/phytoremediation may be considered as viable technologies for sewage treatment, if applied on raw sewage they may not work efficiently. Hence primary or even secondary treatment of raw sewage may be desirable before in-situ bioremediation/ phytoremediation.

उपरोक्त CSIR-NBRI, Lucknow के निदेशक, प्रोफेसर एस.के. बारिक तथा IIT Kanpur के प्रो0 डॉ0 विनोद तारे, से प्राप्त सुझाव के आलोक में BGCMS के पत्रांक– 958 दिनांक– 25.11.2019 द्वारा अवगत कराते हुए आवश्यक निदेश की मांग की गई है जो अब तक अप्राप्त है।

3. उपरोक्त के अतिरिक्त सभी क्रियान्वित एवं प्रस्तावित सीवरेज योजनाओं को ससमय पूर्ण कराने का निदेश कार्यकारी एजेन्सी बुडको को दिया गया है। साथ ही उक्त परियोजनाओं के पूर्ण होने तक की अवधि के लिए माननीय NGT के आदेशानुसार Bio-remediation and/or Phytoremediation or any other remediation measure द्वारा नालों (Drains) में प्रवाहित Sewage का शोधन प्रारम्भ करने का भी निदेश दिया गया है।

4. बुडको द्वारा Bio-remediation and/or Phytoremediation or any other remediation measure द्वारा शोधन हेतु दिनांक 14.10.2019 को निविदा (NIT No. – BUIDCo/40-1390/19-73) प्रकाशित किया गया। उक्त निविदा में किसी भी Bidder के Qualify नहीं करने के कारण पुनः दिनांक 30.12.2019 को Retender किया गया है जिसके निष्पादन के उपरान्त शोधन सम्बन्धी प्रक्रिया प्रारंभ कर दी जाएगी।

5. वर्तमान में आपके पत्रांक-- 12129 दिनांक– 03.02.2020 द्वारा बिहार राज्य में गंगा नदी में प्रवाहित होने वाले 08 Untreated नालों के प्रवाह के लिए मो0 1.20 करोड़ रू0 पर्यावर्णीय क्षतिपूर्ति शुल्क के रूप में जमा करने की मांग की गई है।

मा0 NGT के दिनांक 22.08.2019 के निर्णय में निर्धारित Timeline के अन्तर्गत सीवरेज योजनायें पूरी नहीं होने के लिए निम्न तथ्यों पर सहानुभूतिपूर्वक विचार करने का अनुरोध है :–

i. नमामि गंगे कार्यक्रम के अन्तर्गत बिहार में सीवरेज योजनायें फेज-III में प्रारम्भ की गयी है।

ii. सीवरेज योजनाओं के क्रियान्वयन के लिए बिहार में योग्य संवेदक के नहीं होने तथा बाहरी संवेदक के बिहार में कार्य करने के लिए इच्छुक नहीं होने के कारण पुनर्निविदा आमंत्रण की

6. उपर्युक्त तथ्यों से स्पष्ट है कि योजना स्वीकृति से निविदा प्राप्ति तक औसतन करीब 12 18 माह का समय लग जाता है। सामान्य रूप से कार्यावंटन के उपरान्त छोटी आई. एण्ड. डी. योजनाओं में 18 से 24 माह तथा बड़ी एस.टी.पी. एवं सीवरेज योजनाओं में 30 माह से 36 माह का समय योजना पूर्ण करने में लगता है जबकि माननीय NGT द्वारा उक्त मान्य अवधि से काफी कम समय दिया गया है।

7. अतः उपरोक्त तथ्यों के परिपेक्ष्य में अनुरोध है कि :-

i. कार्यान्वित एवं प्रस्तावित सीवरेज योजनाओं का पूर्व निर्धारित समय सीमा को **Annexure-I** के अनुसार समय विस्तार देने तथा नालों के प्रवाह के Bio-remediation and/or Phytoremediation or any other remediation measure से उपचार संबंधी दी गई समय सीमा को जून 2020 तक की अवधि तक विस्तारित किये जाने की स्वीकृति देने की कृपा की जाय।

ii. माननीय NGT के O.A No. 200/2014 दिनांक 18.12.2019 द्वारा पारित आदेश के आलोक मेंआपके द्वारा बिहार से मांगी गई पर्यावर्णीय क्षतिपूर्ति शुल्कसे बिहार सरकार को मुक्त करने की कृपा की जाय।

अनुलग्नक–यथोक्त।

विश्वासभाजन

सचिव,
नगर विकास एवं आवास विभाग,
–सह–
परियोजना निदेशक,
राज्य परियोजना प्रबंधक समूह, बिहार।

Annexure-1

Status of STPs and Its Timelines

S.No	Action Point	Terms	Action Taken	Project completion date as per plan	Amendment in timeline, If any	Total Cost in Cr.
1.	**Patna:**					
(a)	Pahari STP	Physical Progress- 49.00%	Ongoing	As per agreement date of completion 9/11/2020	Target date of completion Dec, 2020	147.65
(b)	Pahari Sewerage Network Zone IV_A(S)	Physical Progress- 65.00%	Ongoing	As per agreement date of completion 28/02/2021	Target date of completion Dec, 2020	167.84
(c)	Pahari Sewerage Network Zone V	Physical Progress- 37.00%	Ongoing	As per agreement date of completion 25/04/2021	Target date of completion Dec, 2020	364.9
(d)	Beur STP	Physical Progress- 99.00%	Ongoing	As per agreement date of completion 5/10/2019	Proposal for completion March, 2020	77.85
(e)	Beur Sewerage Network	Physical Progress- 64.79%	Ongoing	As per agreement date of completion 5/4/2020	Target date of completion Dec, 2020	398.4
(f)	Karmalichak STP	Physical Progress- 100%	Completed	As per agreement date of completion 5/10/2019	-	73.61
(g)	Karmalichak Sewerage Network	Physical Progress- 42%	Ongoing	As per agreement date of completion 20/05/2021	Target date of completion Dec, 2020	253.98
(h)	Saidpur STP & Adjoining Network	Physical Progress- 90.20%	Ongoing	As per agreement date of completion 5/4/2020	Target date of completion June, 2020	188.18
(i)	Saidpur Sewerage Network	Physical Progress- 41.00%	Ongoing	As per agreement date of completion 29/01/2021	Target date of completion Dec, 2020	431.21
(j)	Digha STP and Sewerage Scheme	Survey work in progress	Ongoing	Agreement Executed on 30.12.2019, Target date of completion Dec, 2022	-	1187.86
(k)	Kankarbagh STP and Sewerage Scheme	Survey work in progress	Ongoing	Agreement Executed on 30.12.2019, Target date of completion Dec, 2022	-	
(l)	Phulwarisharif I&D and STP	Financial evaluation done. BUIDCo Board approval to be obtained.	Tendered	Target date of completion Dec, 2021	-	46.25 (Sanctioned)
2	Sultanganj I&D and STP	Physical Progress- 22.25%	Ongoing	As per agreement date of completion Dec, 2019	Proposal for completion Dec, 2020	63.51
3.	Barh I&D and STP	Physical Progress- 20.00%	Ongoing	As per agreement date of completion January, 2020	Proposal for completion Dec, 2020	53.9
4.	Naugachhia I&D and STP	Physical Progress- 3.00%	Ongoing	As per agreement date of completion January, 2020	Proposal for completion Dec, 2020	61.89
5.	Mokama I&D and STP	Agreement done. Survey work completed, Design work is final Stage. Site development and Boundary wall work & Site Development in progress.	Ongoing	As per agreement date of completion June, 2020	Proposal for completion Dec, 2020	59.17
6	Sonepur I&D and STP	Survey work & BEP is under process.	Ongoing	As per agreement date of completion Feb, 2020	Proposal for completion Dec, 2020	29.35
7.	Maner I&D and STP	Agreement executed with successful bidder.	Ongoing	As per agreement date of completion Dec, 2020	-	40.83
8	Bakhtiyarpur I&D and STP	Agreement executed with successful bidder	Ongoing	As per agreement date of completion Dec, 2020	-	36.04

Status of STPs and Its Timelines

S.No	Action Point	Terms	Action Taken	Project completion date as per plan	Amendment in timeline, If any	Total Cost in Cr.
9.	Bhagalpur I&D and STP	Tendered. Two bids received. Financial evaluation submitted to NMCG on 30.09.2019. Some observation has been received on 11.09.19 and there compliances has been sent to NMCG	Tendered	Target date of completion June, 2022	-	254.13 (Sanctioned)
10.	Hajipur STP and Sewer Network	Two Bid received. Technical evaluation under process	Tendered, Two bid received on 25.10.2019	Target date of completion June, 2022	-	305.19 (Sanctioned)
11.	Chhapra I&D and STP	Agreement executed on 04.02.2020	Ongoing	Target date of completion June, 2021		236.15 (Sanctioned)
12.	Buxar STP and Sewer Network	Revised AA&ES issued by NMCG on 31.12.2019	Revised AA&ES amounting Rs 128.14 Cr obtained from NMCG. Tender to be floated	Target date of completion Dec, 2022	-	164.23 (Sanctioned)
13.	Begusarai STP and Sewer Network	Agreement executed on 04.02.2020	Ongoing	Target date of completion Dec, 2021		230.06 (Sanctioned)
14.	Danapur I&D and STP	Financial evaluation done. BUIDCo Board approval to be obtained	Tendered	Target date of completion June, 2021	Target date of completion Dec, 2021	103.27 (Sanctioned)
15.	Khagaria I&D and STP	Retender publish soon	Tendered	Target date of completion June, 2021	Target date of completion Dec, 2021	21.00 (Sanctioned)
16.	Munger STP and Sewer Network	4 Bids received on 07.01.2020. Bid evaluation is under progress	Tendered, 4 Bids received on 07.01.2020	Target date of completion Dec, 2022	-	294.02 (Sanctioned)
17.	Barahiya I&D and STP	Revised AA&ES issued by NMCG on 31.12.2019	AA&ES received on 31.12.2019	Target date of completion Dec, 2021	-	27.00 (Sanctioned)
18.	Kahalgaon I&D and STP	Request was sent to NMCG for providing clarity wrt MPS and project cost vide email dated 13.01.2020. The same is under scrutiny at NMCG	AA&ES received on 30.12.2019	Target date of completion Dec, 2021	-	25.77 (Sanctioned)

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन [illegible] जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

<u>**Speed-post/E-mail**</u>

[illegible] 53-NGT WOM II/CPCB/2019-20/12129 Dated: 03.02.2020

To,
The Chief Secretary,
Government of Bihar,
Main Secretariat,
Patna, Bihar - 800015

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 - reg.

This has reference to Hon'ble NGT order dated 12.12.2019 on the subject mentioned [illegible] the drains discharging directly into river Ganga were required either to be tapped or [illegible] by 1.11.2019 in compliance to Hon'ble NGT order dated [illegible] failing which CPCB was directed to calculate Environmental Compensation (EC) and raise demands.

A meeting to review the status was held on 07.01.2020 at CPCB, Delhi. Based on the information provided by Bihar Urban Infrastructure Development Corporation Ltd (BUIDCO), Urban Development & Housing Department (UD & HD) and State Mission for Clean Ganga, status is prepared and EC for the defaulting drains calculated. Details are enclosed at Annexure-I.

It is requested that status of these drains may kindly be got re-confirmed and discrepancies, if any, communicated to CPCB within seven days.

Encl.: As above

Yours faithfully,

(Prashant Gargava)
Member Secretary

परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Annexure-1

SUMMARY OF BIHAR DRAINS, EC TO BE CALCULATED

20	Drains Discharging into River Ganga monitored by CPCB	:	19
21.	Drains Tapped	:	Nil
22.	Interim Measures not required (Dry/Stagnant)	:	01
23.	Interim Measures not feasible (BOD <40mg/l)	:	08
24.	Interim Measures required	:	10
25.	Interim Measures taken	:	02
26.	No. of drains for EC to be calculate	:	08
27.	Calculated EC = No. of drains X @5 lakhs/month/dram (Since 01.11.2019 till 31.01.2020)	:	8 x 5x 3 = 120

Note:

a) Relevant lists of drains are enclosed.

b) EC may be deposited in favour of CPCB, Account no. 532702050000164 (Bank: Union of India, LP Extension Branch, Vikas Marg Extension, Delhi, IFSC; UBIN0553271) within one month from the date of issue of this letter as per Hon'ble NGT order.

Annexure – XX

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

Speed-post/E-mail

F.No. B- 190153/NGT/WQM-II/CPCB/2019-20 Dated: 16.06.2020

To,

Secretary & Project Director,
Urban Development and Housing Department
State Mission for Clean Ganga
Government of Bihar,
Main Secretariat,
Patna, Bihar - 800015

Subject: Environmental Compensation for Drains in Compliance of Hon'ble NGT order dated 12.12.2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014 – reg.

Sir,

This has reference to your letter dated 13th March, 2020 requesting to waive off the EC levied for the defaulting drains as per the order of NGT dated 12th December, 2019 in the matter of M.C. Mehta Vs Union of India, O.A. No. 200/2014. Vide the said letter it is informed that Bihar government has approached two institutes CSIR-NBI, Lucknow and IIT, Kanpur regarding bio remediation / phytoremediation to be adopted in the drains which have not been tapped and both the institutes have provided their comments regarding adoption of interim measured in the defaulting drains.

It is for your kind information that in Compliance to Hon'ble NGT Direction in the matter of Manoj Mishra Vs Union of India & Ors., OA No. 06/2012, CPCB in February, 2020 submitted a report on " **Alternative Treatment Technologies For Wastewater Treatment In Drains**" wherein 15 models for bioremediation have been suggested which may be considered while choosing alternative technology depending upon the type of drain for implementation of bioremediation/ phytoremediation on the drains.The Copy of the report is available at : https://cpcb.nic.in/archive_latest_cpcb.php

Also, you may approach/request Hon'ble NGT for any changes in the timeline. It is, therefore, requested that Environmental Compensation till date for the defaulting drains may kindly be deposited with the CPCB at the earliest.

Yours faithfully,

16/06/20

(**A.K. Vidyarthi**)
Scientist É' and In-charge WQM-II