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Study of Pollution of the River Ganga in the Mirzapur City (U.P. India)

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ABSTRACT

The River originates from the nature phenomenon of Water Cycles. It Originated from Glaciers and along his journey water bodies along with Rainfall contribute its flow in river Ganga. Civilization developed along this tributary, as water is basic need of human survival and establishing his civilization. Ganga is a lifeline for millions in India, yet it faces severe pollution challenges due to industrial waste, domestic sewage, and religious activities. This study focuses on assessing the pollution levels of the Ganga in the Mirzapur district, analyzing its sources, and evaluating the effectiveness of current remedial measures. Water samples from different locations were tested for key parameters such as pH, dissolved oxygen, biochemical oxygen demand (BOD), and heavy metal and Total Coliform, which are group of bacteria's which are mainly dissolved in water bodies from Human and Animal fecal are used as an indicator of potential fecal contamination in water bodies/river Ganga. Concentrations of pollutants define water quality of River Ganga. The quality of river water is essential for both ecological balance and human health, with biochemical oxygen demand (BOD)

Government initiatives such as the Namami Gange program and local efforts, including sewage treatment plants (STPs) and community awareness programs, have been implemented to mitigate pollution. However, challenges such as inefficient waste management and illegal industrial discharge persist. This study highlights the need for stricter regulations, improved waste treatment facilities, and active community participation for effective river restoration. The findings contribute to policy recommendations aimed at sustainable conservation of the Ganga in the Mirzapur district.

This study provides the current status of water quality of River Ganga in Mirzapur District of Uttar Pradesh State along with gap of treated sewage and efforts made by Governments and individual to clear River Ganga at Mirzapur Region of India.

CHAPTER 1
Introduction

The River Ganga, "**Aviral and Nirmal Dhara**" of water in India as, it originated from purest from the Purest serves as an essential source of water for millions of people, providing drinking water, irrigation, and supporting various cultural and religious practices. However, rapid urbanization, industrialization, and increasing population pressure have led to significant pollution, especially in the urban areas along its course. One such area is Mirzapur City, located in the state of Uttar Pradesh, India, where the Ganga River faces mounting pollution challenges.

One of most unique characteristic of River Ganga is self cleaning mechanism found in the River Gangs only.

In River higher diversity Bacteriophage (Natural virus found that target and kill Bacteria, which help to naturally purify the water by eliminating harmful bacteria. This self purification mechanism of river makes ribver ganga unique.

This Environmental Study is aimed to determine current status of water quality of River Ganga. Mainly in urban cities major sources which can deteriorate the water quality of river Gange are Domestic sewage, industrial Effluents & other devotional items which are discharged into river. Cities established near bank of rivers discharge the waste or sludge to nearby river through varies nallas/ drains, which are direct connected to river ganga or any other tributaries.

Since, Mirzapur city of district Mirzapur of State Uttar Pradesh is known for his textile industrial belt, which is famous with popular slogan kbnown as' Kallin'. Textile industries use colour, dyes and other chemical for dyeing og woolens. If these industrial effluents are dischege into water bodies without proper treatment througt ETP the composition of most of the residual waters of the textile industry there are relatively high levels of biochemical oxygen demand (BOD) and chemical oxygen demand (COD) (Setiadi, Andriani, & Erlania, 2006). The greater emphasis should be attributed to the large amount of non-biodegradable organic compounds, especially textile dyes.

In Mirzapur, a growing population coupled with inadequate sewage treatment facilities exacerbates the domestic BOD load on the river. This study aims to analyze and understand the impact of domestic BOD load on the Ganga River in Mirzapur, evaluating its sources, levels, and consequences. As of the 2011 census, Mirzapur-cum-Vindhyachal municipality had a population of 233,691 and the urban agglomeration had a population of 245,817. The findings will be crucial for informing policy decisions and enhancing efforts to restore and protect the Ganga's water quality, ensuring its sustainability for future generations. The state can be divided into two physiographic regions: the central plains of the Ganges (Ganga) River and its tributaries (part of the Indo-Gangetic Plain) and the southern uplands.

1.1 The River Ganga- City Mirzapur

Ganga River basin of Mirzapur, District of U.P. has normal rainfall from 60 cm to 190 centimeters in which more than 80 percent of the southwest monsoon occurs during the monsoon. Rain goes up from west to east and from south to north. The pattern of the same flood, the problem increases from west to east and from south to north. Apart from this, there is also the loss of human life. Flood management measures have been adopted till now. In Mirzapur, a growing population coupled with inadequate sewage treatment facilities exacerbates the domestic BOD load on the river. The discharge of untreated or partially treated domestic wastewater into the river significantly impacts the water quality, leading to ecological imbalances, deteriorating aquatic life, and health risks for communities relying on the river for their daily needs.

This study aims to analyze and understand the impact of domestic organic load on the Ganga River in Mirzapur, evaluating its sources, levels, and consequences. As of the 2011 census, Mirzapur-cum-

Vindhyachal municipality had a population of 233,691and the urban agglomeration had a population of 245,817. The findings will be crucial for informing policy decisions and enhancing efforts to restore and protect the Ganga's water quality, ensuring its sustainability for future generations. The state can be divided into two physiographic regions: the central plains of the Ganges (Ganga) River and its tributaries (part of the Indo-Gangetic Plain) and the southern uplands. The vast majority of Uttar Pradesh lies within the Gangetic Plain, which is composed of alluvial deposits brought down from the Himalayas to the north by the vast Ganges network.

Figure 1.1 District Map of Mirzapur

1.2 Ganga at Glance in Mirzapur City

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1.3 Geological and meteorological Status

Geological Status:

Mirzapur district lies in the Vindhyan mountain range and forms part of the Vindhyan Plateau. The region is geologically rich and primarily consists of:

Sedimentary rocks: Dominated by sandstone, shale, and limestone, mainly from the Vindhyan Supergroup.

Rock formations: Includes Kaimur, Rewa, and Bhander groups.

Soil types: Predominantly red and yellow soils derived from sandstone, with patches of black soil in low-lying areas.
Mineral Resources: The district is known for deposits of sandstone (used in building materials), granite, and minor minerals like silica and clay.
The terrain is generally hilly and undulating, especially in the southern and western parts, with flat fertile plains near the Ganges River in the north.
Seismicity:
Mirzapur falls under Seismic Zone III (moderate risk) as per the Bureau of Indian Standards (BIS), indicating a moderate potential for earthquakes.
Meteorological Status:
The climate of Mirzapur is classified as sub-tropical with three distinct seasons:
Summer (March to June): Hot and dry with temperatures often exceeding 45°C in May and June. Monsoon (July to September): Receives the majority of its annual rainfall (900–1100 mm), mainly from the southwest monsoon.
Winter (November to February): Mild and dry, with temperatures occasionally dropping to around 5°C in January. Humidity is high during the monsoon but low in summer and winter. The district occasionally experiences dust storms and heat waves in peak summer.

CHAPTER 2

Aim of Study

The River Ganga in Mirzapur District, Uttar Pradesh, faces significant pollution challenges due to various anthropogenic activities. Studies have highlighted the presence of heavy metals, untreated sewage discharge, and industrial effluents contributing to the river's degradation The aim of the project to study status of domestic and industrial effluent discharge in city, which deteriorates water quality of River Ganga. While our study we also monitor water quality of River Ganga between Upstream of Mirzapur i.e Vindhyachal, mid, D/s of Mirzapur i.e. Bisubderpur, mirzapur and part of Chunar, Mirzapur along the righ bank of river Ganga travel in mirzapur City, as compare to previous and current water quality . In this study we also carry out survey of domestic discharge or Industrial Effluent meet into River Ganga. This study is projected to find out or to evaluate pollution Load of Domestic sewage/ organic concentration in the River Ganga in Mirzapur City.

2.1 Scope Study

This study/ project focused on the domestic /organic load of pollutants discharged in river Ganga River Ganga in current year 2024-25. We also discuss the current scenario adopted in Mirzapur, for reducing pollutants flow in river ganga. We analyze the gap of untreated sewage discharged in water bodies. This project will help to guide further steps or action to be taken to required minimizing pollution load of river ganga and efforts made to ensure treated sewage discharged in river.
This study also discus current status of water quality of River Ganga in Mirzapur city, which can be further used as comparative parameters analyses of improvement in water quality of river Ganga in future aspects.
We also discuss current scenario of Pollution Control measures adopted in city Mirzapur to control River Ganga pollution. We discuss about the further action/steps to be taken by administration or Pollution Control Units i.e. Central Pollution Control Board along with Uttar Pradesh Pollution Control Board a statuary body to implement environmental law.

2.2 Area to be study

In this project we study water quality of river Ganga and city pollution concentration discharge in ganga. In Mirzapur city ganga entered in Shivpurghat of Vindhyachal MIrzapur i.e D/s of the Mirzapur to Chunar, Mirzapur via Bisundarpur .i.e. U/s of Mirzapur, then after river from Chunar a Tehsil of Mirzapur District, river reach to Varanasi District.

As in Mirzapur major population of city is established along the right bank of the river. So, in this project we study major water polluting domestic sewage/industrial effluents, which are discharge in river Ganga along right bank of river Ganga. We also take a part of chunar tehsil as its is part of Mirzapur district and major population of city is also established in this city. So, we study a stretch of river of 02….KM i.e. from U/s of Mirzapur City, Vindhyachal to Chunar, Mirzapur, as thereafter river meet into Varanasi district.

In this project we brief discuss about details of Sewage discharged in River Ganga through varies Drain/Nallas of Mirzapur. We determine the concentration of varioura pollutants in drain which increased concentration of pollutants in river ganaga. First we discuss bout the draina identifies in Mirzapur which are of pollutants concentration in drains is to be done as per APHA 23rd Ed. 2017. We Study about water quality of River Ganga at various location of river stretch in Mirzapur. discharging domestic waste in river Ganga through nallas. Further, sampling, analysis

We discuss about the measures taken for treatment of Domestic sewage generated through STPs, FSTPs and bioremediation of drains. IN this study we find out the gap analysis of domestic waste treated as compared to total domestic discharge generated in district.

CHAPTER 3

Sampling

3.1 Sampling Methodology

Sampling location/ points are selected upstream, Mid stream and ,downstream of discharge points into River Ganga in Mirzapur. Key drains discharging into the river are identified and sampled at both inlet and outlet (before and after treatment, if applicable).

Objective of sampling is to collect a portion of material small enough in volume to be transported comfortably and yet large enough for analytical purposes while still representing the material being sampled. • It is to demonstrate whether continuing compliance with specific regulatory requirements has been achieved Selection of sample containers • Selection of sample container is utmost importance in sampling. Containers are generally made of glass or plastic. Selection of type of sampling:- Grab, Composite & Integrated type of sampling.

Grab Samples: Collected manually at a single time from the mid-stream of drains and the river.

Sampling Depth and Technique: Surface water samples are taken typically at 30 cm below the water surface using a sampler (e.g., a water bottle sampler or depth-specific water sampler).

Sampling equipment is pre-cleaned with distilled water and rinsed with the sample water before collection. *Frequency of Sampling:* Monthly /Daily/yearly basis or as per monitoring guidelines by CPCB (Central Pollution Control Board) or SPCB (State Pollution Control Board).

Additional samples may be taken after major rainfall or other hydrological events.

Preservation Techniques.

Containers Used is *Cleaned and sterilized polyethylene or glass bottles depending on the parameter to be analyzed. Amber glass bottles are used for light-sensitive parameters like BOD or organic compounds.*

Preservation Methods:

pH, Temperature, DO: Measured onsite immediately after sampling using portable probes. BOD (Biochemical Oxygen Demand): Samples are stored in airtight containers and kept at 4°C in iceboxes; analysis is done within 24 hours.COD (Chemical Oxygen Demand): Preserved by adding concentrated sulfuric acid to bring the pH below 2.

Transportation: Samples are stored in iceboxes during transportation to the laboratory.Chain of custody is maintained with proper. *Standard Guidelines Followed:* APHA (American Public Health Association) CPCB/ SPCB Guidelines.

3.2 Flow Measurements of Drains

Drain flow measurement refers to quantifying the volume or rate at which water (typically wastewater, storm water, or industrial discharge) moves through drainage systems. This flow is usually measured in Liters per second (L/s)/Cubic meters per second (m^3/s)/Gallons per minute (GPM).

Methods of Measuring Drain Flow

In this study measurement of flow or discharge of drains has been done by Velocity-Area Method **i.e**. Measure water velocity and cross-sectional area of the drain and And Indirect Methods i.e. Use of float method (e.g., timing a floating object over a known distance)

Flow = Velocity × Area

Importance of Measuring Flow in Drains in Environmental Point of View

Prevents overflow of untreated sewage into natural water bodies also helps in monitoring pollutant loads in stormwater of domestic sewage and industrial effluents.

Flow or discharge of waste water is also considered for Regulatory Compliance as many governments require flow monitoring as part of wastewater discharge permits. Data is used to ensure that effluent flow does not exceed allowable limits.

CHAPTER 4

Monitoring of Drains

4.1 Sampling Points and location of drains.

Surface water i.e. Nalla/Drains, River Ganga points in Mirzapur has been collected and send to NABL Accredited lab for sample analysis. In Mirzapur-District Total 49 Nos. of Drains has been identified, which are discharging domestic effluent in river ganga, which are Untapped. Some drains are Tapped, which are treated through STPs established/ operational in District MIrzapur. In District- Mirzapur from Vihyachal, Bisundarpur to Chunar Mirzapur, total 49 Nos. of drains has been identified Palika Parishad, Mirzapur & NP Chunar, Mirzapur, and CPCB. Further, for treatment of Drains, STPs are established in Mirzapur By ULBs & Jal Nigam, Ganga Pollution Control Units.

Table 4.1: Details of Drains identified

Sl. No.	District	Name of Drains	Flow of Drain (MLD)
1.	Mirzapur	Bisundarpur Drain	1.58
2.	Mirzapur	Hanumanghat Drain	0.68

Sl. No.	District	Name of Drains	Flow of Drain (MLD)
3.	Mirzapur	Public club Drain	0.6
4.	Mirzapur	Barahmiliah Drain	0.39
5.	Mirzapur	District judge Drain	0.4
6.	Mirzapur	Lift cannal Drain	0.4
7.	Mirzapur	Irrigation colony Drain	0.03
8.	Mirzapur	MorchaGhar Drain	1.64
9.	Mirzapur	Ghoreshahid Drain	5
10.	Mirzapur	konia	0.02
11.	Mirzapur	Balaji temple	2.2
12.	Mirzapur	Chorawa	0.25
13.	Mirzapur	Kachari Drain	1.2
14.	Mirzapur	Oliyar	0.31
15.	Mirzapur	Sundar	0.24
16.	Mirzapur	Badali	0.39
17.	Mirzapur	Narghat	0.78
18.	Mirzapur	Khandawa	9.42
19.	Mirzapur	Basvariya Drain	1.13
20.	Mirzapur	DiwanGhat new Drain	0.02
21.	Mirzapur	BalughatKacha Drain	0.01
22.	Mirzapur	Malhaya Drain	0.27
23.	Mirzapur	Patengra (manasarovar) Drain	0.74
24.	Mirzapur	DiwanGhat old Drain	0.1
25.	Mirzapur	BalughatPakka Drain	0.17
26.	Mirzapur	Parasuram Drain	1.39
27.	Mirzapur	Gudara Drain	0.2
28.	Mirzapur	Tambalganj Drain	0.046
29.	Mirzapur	Dargahshareef Nalla	0.319
30.	Mirzapur	Bhairamganj East Drain	0.081
31.	Mirzapur	Bhairamganj West Drain	0.062
32.	Mirzapur	Tekaur Basti North Drain	0.099
33.	Mirzapur	Tekaur Basti South Drain	0.098
34.	Mirzapur	Santoshi mata mandir nala	0.125
35.	Mirzapur	Post office south drain	0.393
36.	Mirzapur	Post office north drain	0.335
37.	Mirzapur	Gangeshwar nishad park drain	0.088
38.	Mirzapur	Balughat drain	0.085
39.	Mirzapur	Belbeer ghat drain	0.042
40.	Mirzapur	Choura mata drain	0.125
41.	Mirzapur	Kashi ram awas drain	0.377

Sl. No.	District	Name of Drains	Flow of Drain (MLD)
42.	Mirzapur	Nagarpur	0.091
43.	Mirzapur	Teakaur nagarpur	0.100
44.	Mirzapur	Bharatpur kabristan	0.154
45.	Mirzapur	Bharatpur trimohani	0.134
46.	Mirzapur	Baddupur naipurwa	0.960
47.	Mirzapur	Pashu chikitsalaya	0.126
48.	Mirzapur	Nagar palika	0.224
49.	Mirzapur	Parade ground	0.300

Above tabular data enumerating each drains in Mirzapur (both River Ganga and its tributary i.e. Ojhala). The table include the quantity of sewage discharge in MLD.In above listed Drains Some Drains are tapped, which are connected to STPs for treatment and some drains are Untapped or partially tapped.

4.2 Status of Domestic Sewage flow or Sewage discharging in River Ganga

Table 4.2: Domestic Sewage flow observed in River Ganga

Sl.No.	District	Total No. of Drains	Flow of Drain (MLD)
1	Mirzapur	49 Nos.	33.924

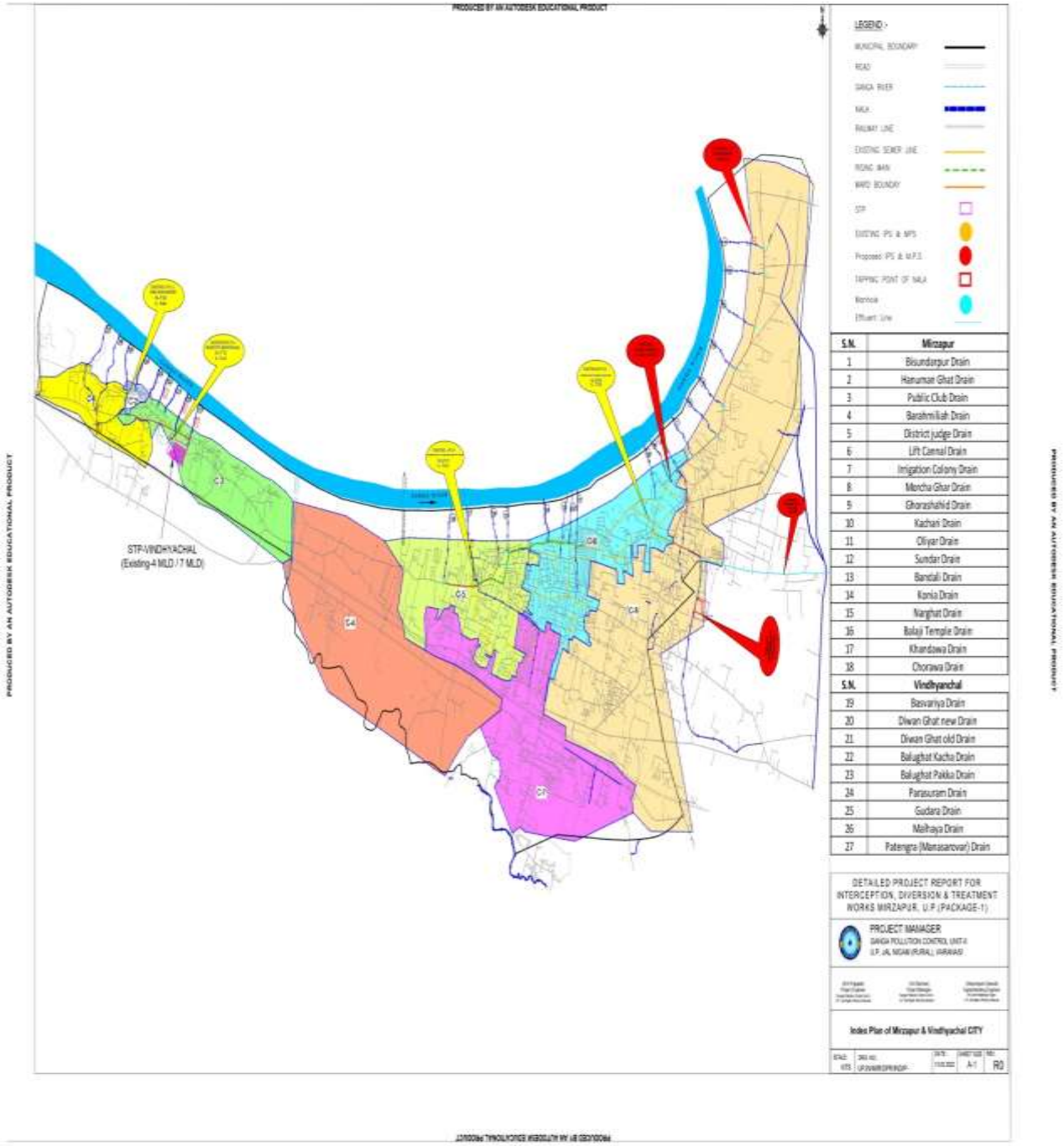

Figure 4.1 Location of Drains on Map identified by Jal Nigam MIrzapur

CHAPTER 5

Organic load of Drains in the Ganga Region

5.1 Definition of BOD

BOD (Biochemical Oxygen Demand) is the amount of dissolved oxygen needed byaerobic biological organisms to break down organic matter in a given water sample at a certain temperature over a specific period of time (usually 5 days at 20°C).

BOD concentration help to determine DOB load discharged by individual drain in River Ganga. BOD indicates the level of organic pollution in water, high BOD suggests a large amount of biodegradable material, which can deplete oxygen and harm aquatic life. BOD Is Measured with a water sample is sealed and incubated for 5 days at 20°C.

The oxygen level before and after incubation is measured.

BOD = Initial DO – Final DO

5.2 BOD Load of Drain in River Ganga

BOD load and BOD Concentration are both crucial for understanding and managing the impact of organic pollutants in wastewater and natural water bodies.BOD load has been calculated in below table as per formula define below:-

BOD Load = BOD Concentration × Flow Rate × Conversion Factor

BOD Load(TPD) =(BOD*flow rate)/1000.

Remark:-BOD (mg/l), flow rate (MLD).

$$\text{Organic Loading Rate, kg } BOD_5/\text{day}/m^3 = \frac{\text{Organic Load, kg } BOD_5/\text{day}}{\text{Volume, } m^3}$$

Figure 5.1Figure showing formulae of Organic Load rate

Table 5.1 BOD Load of Drains

Sl no	Name of Drain	District/ Town	Drain Tapped/ Untapped Status	BOD (mg/L)	BOD LOAD (TPD)
1	Bisundarpur Drain	Mirzapur, Nagar Palika Parishad	Untapped	48	0.076
2	Hanumanghat Drain	Mirzapur, Nagar Palika Parishad	Untapped	56	0.038
3	Public club Drain	Mirzapur, Nagar Palika Parishad	Tapped		
4	Barahmiliah Drain	Mirzapur, Nagar Palika Parishad	Tapped		
5	District judge Drain	Mirzapur, Nagar Palika Parishad	Tapped		
6	Lift cannal Drain	Mirzapur, Nagar Palika Parishad	Tapped		

Sl no	Name of Drain	District/ Town	Drain Tapped/ Untapped Status	BOD (mg/L)	BOD LOAD (TPD)
7	Irrigation colony Drain	Mirzapur, Nagar Palika Parishad	Tapped		
8	MorchaGhar Drain	Mirzapur, Nagar Palika Parishad	Tapped		
9	Ghoreshahid Drain	Mirzapur, Nagar Palika Parishad	Tapped		
10	konia	Mirzapur, Nagar Palika Parishad	Tapped		
11	Balaji temple	Mirzapur, Nagar Palika Parishad	Untapped	50	0.110
12	Chorawa	Mirzapur, Nagar Palika Parishad	Untapped	48	0.012
13	Kachari Drain	Mirzapur, Nagar Palika Parishad	Tapped		
14	Oliyar	Mirzapur, Nagar Palika Parishad	Tapped		
15	Sundar	Mirzapur, Nagar Palika Parishad	Tapped		
16	Badali	Mirzapur, Nagar Palika Parishad	Tapped		
17	Narghat	Mirzapur, Nagar Palika Parishad	Tapped		
18	Khandawa	Mirzapur, Nagar Palika Parishad	Tapped		
19	Basvariya Drain	Mirzapur, Nagar Palika Parishad	Tapping not required	56	0.063
20	DiwanGhat new Drain	Mirzapur, Nagar Palika Parishad	Tapping not required	58	0.001

Sl no	Name of Drain	District/ Town	Drain Tapped/ Untapped Status	BOD (mg/L)	BOD LOAD (TPD)
21	BalughatKacha Drain	Mirzapur, Nagar Palika Parishad	Tapping not required	52	0.001
22	Malhaya Drain	Mirzapur, Nagar Palika Parishad	Tapping not required	56	0.015
23	Patengra (manasarovar) Drain	Mirzapur, Nagar Palika Parishad	Tapping not required	52	0.038
24	DiwanGhat old Drain	Mirzapur, Nagar Palika Parishad	Tapped	NA	NA
25	BalughatPakka Drain	Mirzapur, Nagar Palika Parishad	Tapped	NA	NA
26	Parasuram Drain	Mirzapur, Nagar Palika Parishad	Tapped	50	NA
27	Gudara Drain	Mirzapur, Nagar Palika Parishad	Tapped	NA	NA
28	Tambalganj nala	Nagar Palika Parishad, Chunar	Untapped	50	0.046
29	Dargahshareef nala	Nagar Palika Parishad, Chunar	Untapped	56	0.319
30	Bhairamganj east nala	Nagar Palika Parishad, Chunar	Untapped	Drain Dry	
31	Bhairamganj west nala	Nagar Palika Parishad, Chunar	Untapped	52	0.003
32	Tekaur basti north	Nagar Palika Parishad, Chunar	Untapped	Drain Dry	
33	Tekaur basti south	Nagar Palika Parishad, Chunar	Untapped	50	0.005
34	Santoshi mata mandir nala	Nagar Palika Parishad, Chunar	Untapped	52	0.006

Sl no	Name of Drain	District/ Town	Drain Tapped/ Untapped Status	BOD (mg/L)	BOD LOAD (TPD)
35	Post office south drain	Nagar Palika Parishad, Chunar	Untapped	Drain Dry	
36	Post office north drain	Nagar Palika Parishad, Chunar	Untapped	48	0.016
37	Gangeshwar nishad park drain	Nagar Palika Parishad, Chunar	Untapped	44	0.004
38	Balughat drain	Nagar Palika Parishad, Chunar	Untapped	52	0.004
39	Belbeer ghat drain	Nagar Palika Parishad, Chunar	Untapped	Drain Dry	
40	Choura mata drain	Nagar Palika Parishad, Chunar	Untapped	46	0.006
41	Kashi ram awas drain	Nagar Palika Parishad, Chunar	Untapped	52	0.020
42	Nagarpur	Nagar Palika Parishad, Chunar	Untapped	-	-
43	Teakaur nagarpur	Nagar Palika Parishad, Chunar	Untapped	28.3	0.035
44	Bharatpur kabristan	Nagar Palika Parishad, Chunar	Untapped	-	-
45	Bharatpur trimohani	Nagar Palika Parishad, Chunar	Untapped	134	0.259
46	Saddupur naipurwa	Nagar Palika Parishad, Chunar	Untapped	229	1.782
47	Pashu chikitsalaya	Nagar Palika Parishad, Chunar	Untapped	47.7	-
48	Nagar palika	Nagar Palika Parishad, Chunar	Untapped	-	-

Sl no	Name of Drain	District/ Town	Drain Tapped/ Untapped Status	BOD (mg/L)	BOD LOAD (TPD)
49	Parade ground	Nagar Palika Parishad, Chunar	Untapped	21.8	0.043

5.3 Treatment of Tapped drains and untapped drain

In district Mirzapur for treatment of Domestic sewage 04 Nos. of STPs are established in Mirzapur City. Further, in untapped drain treatment is done through Bioremediation process. Details of STPs are mentioned below:-

Table 5.2 Details of STPs operational in STPs

Sl.No.	Name and address of STPs (location & capacity)	Capacity (operational) (MLD)
1.	8.5 MLD STP at Pakka Pokhara, Mirzapur	STP Operational (8.5)
2.	8.5 MLD STP at Visundarpur, Mirzaour.	STP Operational (8.5)
3.	14 MLD STP Pakka Pokhara, Mirzapur	STP Operational (14)
4.	07 MLD Vindhychal, Mirzapur	STP Operational (07)

CHAPTER 6

6.1 Summary of tapping status of Drains

During monitoring we have observed that some trains are connected STPs operation ain District for treat,emt of domestic sewage collected from drains and trated effluent ia discharge from STPs Below is a summarized overview of the nos. of Drains, their tapping status and total sewage generated and treated and total BOD load of drains in River Ganga.

Table 6.1 Summary Status of Drains

Total	Tapped	Untapped	Total Generated (MLD)	Total Treated (MLD)	Total Sewage (MLD)	BOD (TPD)
49 Nos. Drains	18	31	33.92	27.04	6.88	2.902

From above we observe that out of 49 drains 18 Nos. of drains leading to the river Ganga in Mirzapur are tapped. For treatment of Untapped drains 10 KLD FSTP are operational and functional, also bioremediation is done..

We can conclude that toal 2.92 TPD of BOD load is discharge in river ganga,

6.2 Efforts to be made to reduce untreated sewage discharge in River Ganga

1. Establishment of additional STPs in Mirzapur for treatment of domestic sewage generated from house hold.
2. Connectivity of drains to STPs for treatment of Domestic sewage.
3. STPS must be strictly achieve discharge norms made by CPCB.
4. UPPCB are need to check compliance Status of STPs.
5. Open defecation must be ban along the river side of River Ganga.
6. Cleaning of River Ganga Ghats should be regularly done.

6.3 Efforts made to reduce industrial effluents discharge in river ganga

District Mirzapur major water polluting industries are dying units, as the are using chemicals and dyes for dying of wollen yarn.

1. Al Units have installed ETPs for treatment of industrial effluents generated from industries process.
2. Industries are compiled to ensure treated effluents must br reuse/recycled and also to achive ZLD.
3. UPPCB is a statuary body to monitor compliance status of environmental Laws at district level.
4. If industries are non-complying norms, action may be taken against them

CHAPTER 7

Conclusion

We observed from above data that in district Mirzapur major discharged drain are tapped. Further Low discharge drains are need to be tapped. So, approx. 40% of drains are tappedout of total drains identified in district Mirzapur. Further, approx. 80% of of total sewage generated are treated from STPs, Only 6.89 MLD Sewage is untreated.

We observe that major drains are Balaji and Khandawa drains, which flow is very high, they are need to tapped. Further efforts need to be made by District administrative for complete treatment of Domestic Sewage generated from Households.

The BOD Concentation of only 02 Nos. of untapped drains are within Norms i.e. below 30 mg/l, left untapped drains BOD value is beyond prescribed norms i.e. *General Standards from Discharge of Environmental Pollutants Part-A:* ***Effluents-Environment Protection Rules, 1986.***

REFERENCES

Case Study

1. Compliance Report on behalf of CPCB in compliance to Hon'ble NGT order dated 13.09.2024 in the matter of M.C. Mehta vs Union of India & Ors., O.A. No. 200/2014.
   See the following link for guidance:
   https://greentribunal.gov.in/sites/default/files/news_updates/Compliance%20Report%20by%20CPCB%20in%20OA%20No%20200%20of%202014%20(M.C.Mehta%20Vs.%20UOI%20&%20Ors.)_0.pdf

2. Compliance status by District Magistrate Mirzapur, U.P. in compliance to the order dated 20.01.2025 in the matter of Original Application no. 200/2014 in (IA No 340/2022, ma no 872/2018, ma no 875/2014, MA No. 480/2018) M. C. Mehta.
3. See the following link for guidance: https://greentribunal.gov.in/sites/default/files/news_updates/Affidavit%20on%20behalf%20of%20DM,%20Mirzapur%20in%20OA%20No%20200%20of%202014%20(M.C.Mehta%20Vs.%20UOI%20&%20Ors.).pdf
4. The Environment (Protection) Rules, 1986 545 1 [SCHEDULE – VI] (See rule 3A) GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A : EFFLUENTS References are to be ordered based on the order that they appear in this manuscript.