Proposed Action Plan for Rejuvenation of Tapti River

(Polluted Stretch : Nepa Nagar to Burhanpur)

Burhanpur

Index

EXECUTIVE SUMMARY ON PROPOSED ACTION PLANS FOR REJUVENATION OF RIVER TAPTI FOR IDENTIFIED POLLUTED RIVER STRETCH (Nepa Nagar to Burhanpur)

S. No.	Description of Item		Details
1.	Name of the identified polluted river and its tributaries	:	River Tapti
2.	Is river is perennial and total length of the polluted river	:	Yes Length about 30 KM
3.	No of drains contributing to pollution and names of major drains	:	Total 09 drains or Nalla i.e. Nalla at Nepa Nagar: **1.** Masak Nalla **2.** Pandhar Nalla, Nalla at Burhanpur : **1.** Jaweri Nalla **2.** Nagjhiri Nalla **3.** Gandha Nalla **4.** Rajghat Nalla **5.** Rajpura Nalla **6.** Kadvissa Nalla **7.** Pandarol Nalla
4.	Whether 'River Rejuvenation Committee (RRC) constituted by the State Govt./UT Administration and If so, Date of constitution of 'RRC'	:	Yes , By M.P. Govt. Environment Dept. Order Dated 02/11/2017 & 29/06/2018
5.	Major Towns on the banks of the river with population	:	Nepa Nagar – Population : 29682 Burhanpur – Population : 215000 (Present)
	a. Total water consumption and sewage generation in MLD	:	Nepa Nagar: Water consumption- 4.5 MLD Sewage generation- 3.6 MLD Burhanpur: Water consumption- 13.94 MLD Sewage generation- 11.0 MLD
	b. Total no. of existing STPs and the total capacities in MLD	:	Burhanpur : STP No. 01 Capacity 06 MLD, Common Sewage cum Effluent Treatment Plant- 4.5 MLD.
	c. Gaps in sewage treatment in MLD and no. of towns not having STPs	:	Gap of 0.5 MLD. New STP- 21 MLD under construction.
	d. Total MSW generation in TPA	:	Nepa Nagar : MSW approx. 2920TPA (08 TPD) Burhanpur : MSW approx. 32120 TPA (88 TPD)

<table>
<tr><td></td><td>e. Existing treatment and disposal facilities and total capacity</td><td>:</td><td>New MSW processing facility required. Trenching grounds exist.</td></tr>
<tr><td>6.</td><td>Major industrial estates located with total no. of industries</td><td>:</td><td><table><tr><th>Industrial Estate</th><th>No. of Industries (Water Polluting Industries)</th></tr><tr><td>01 I/A for SSI & 02 L/M Industries in the catchment.</td><td>L/M – 02 Nos.
SSI- 15 Nos.</td></tr></table></td></tr>
<tr><td rowspan="6"></td><td>a. Total water consumption and total industrial effluent generation in MLD</td><td>:</td><td>Industrial effluent generation – WC-3802.90 KLD, WWG- 1155.40 KLD</td></tr>
<tr><td>b. No. of industries having captive ETPs and their treatment capacity in MLD</td><td>:</td><td>All the industries having ETPs for above waste water generation.</td></tr>
<tr><td>c. No of CETP’s and their treatment capacity</td><td>:</td><td>Newly constructed Sewage cum effluent treatment plant: 4.5 MLD.</td></tr>
<tr><td>d. Gaps in treatment of industrial effluent</td><td>:</td><td>NIL. However 03 industries have been directed to upgrade ETPs. M/s Nepa Ltd at Burhanpur is closed & in process to installed ETP- 12 MLD.</td></tr>
<tr><td>e. Total HW generation in TPA in the catchment area</td><td>:</td><td>Burhanpur : 11.255 MT/Year</td></tr>
<tr><td>f. Existing HW Treatment and Disposal Facilities and total capacity with life span</td><td>:</td><td>M.P. Waste Management Project Pithampur, Dhar</td></tr>
<tr><td>7.</td><td>Action plan includes mainly covering aspect such as (Proposal for utilization of sewage, ground water recharging or rain water harvesting, measures for regulating ground water use, protection and management of flood plain zone, maintaining minimum E-flows and water shed management, plantation on both sides of the river, setting up of bio-diversity parks etc., as per Hon’ble NGT Orders dated 20.09.2018 and 19.12.2018)</td><td>:</td><td>Yes</td></tr>
<tr><td>8.</td><td>Min. and Max. required time period for implementation of action plans</td><td></td><td>Min. 06 months,
Max 03 Years</td></tr>
<tr><td>9.</td><td>Total estimated budget in crores towards implementation of proposed action plans with break-up (e.g. No. of STPs, capacity, total cost; No of CETPs, total capacity, Cost towards interception and diversion of sewage/effluent to STPs/CETPs etc.,)</td><td>:</td><td>• Nepa Nagar: Project Rs. 36.83 Cr. proposal submitted to UADD for 01 STP (18 MLD) & Sewerage Network.
• Burhanpur :
Phase-I : Project Rs. 81.79 Cr. (STP-01, Sewer line, Sewerage System, Trapping of Sewage for Zone-III) under construction.
• Phase-II : Project estimated cost Rs. 72.31 Cr. keeping in view the</td></tr>
</table>

			expansion of city up to 2031 for STP-01 (17 MLD) & Sewer Line for Zone-I & II area. • Work to fulfill the gap in processing of MSW, MRF : Rs. 20 Cr. proposed by MCB. • Work to fulfill the gap in C&D waste management : Rs. 10 Cr. proposed by MCB.
10.	Responsible Organization (s) for implementation of proposed action plans (Please enclose details as annexure)	:	Organizations responsible for execution of the action plans are UADD/Municipal Corporation Burhanpur,Water Resource Department , District administration Central Ground Water Board, Forest Department, Agriculture Department and MPPCB.
11.	Proposed Mechanism for execution of action plans	:	• The district level monitoring committee under the Chairmanship of Collector Burhanpur will review the execution of action plan with various stake holders. 01 meeting held on dated 04-05-2019. • RRC at state level formed to review the progress on 06 monthly basis.
12.	Expected deliverables w. r. to achieving Goals	:	• The action plan for prevention and control of pollution in river Tapti has been drafted particularly to collect & treat the sewage of city Burhanpur & Nepa Nagar as per the directions given by Hon'ble National Green Tribunal with aim to maintain the water quality BOD level < 3mg/l of river Tapti.

1. BACKGROUND

1.1 NGT Case No. 673/2018:

Hon'ble National Green Tribunal Central Zonal Bench New Delhi, in the matter of original application no. 673/2018 *(News Item Published in the "Hindu" authored by Shri Jacob Koshy titled" More river stretches are now critically polluted: CPCB")* passed an order on 20/09/2018. The para 48, 49 and 50.3 of this order are relevant to comply. The para 48 states that *"it is absolutely necessary that Action Plans are prepared to restore the polluted river stretches to the prescribed standards"*. Para 49 states that *"Model Action Plan for Hindon River, already provided by CPCB, may also be taken into account"*

In para 50(i, ii, iii & vi) Hon'ble National Green Tribunal has issued following directions:-

i. All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i,e BOD < 3 mg/L and FC < 500 MPN /100 ml) within six months from the date of finalization of the action plans.

ii. The action plans may be prepared by four-member Committee comprising, Director, and Environment. Director, Urban Development. Director, Industries. Member Secretary, State Pollution Control Board of concerned state. This Committee will also be the monitoring Committee for execution of the action plan. The Committee may be called "River Rejuvenation Committee" (RRC). The RRC will function under the overall supervision and coordination of Principal Secretary, Environment of the concerned State/Union Territory.

iii. The action plan will include components like identification of polluting sources including functioning/ status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterization of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation

practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging maintaining minimum environmental flow of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the Sewage Treatment Plant (STP) and emphasis should be on utilization of treated sewage so as to minimize extraction of ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board/ Committee and out of Central Schemes.

vi. All States and the Union Territories are required to send a copy of Action Plan to CPCB especially w.r.t. Priority I & Priority II stretches for approval.

1.2 That MPPCB has prepared action plan w.r.t. Priority I & Priority II stretches of polluted rivers & the same have been approved by CPCB. The River Tapti, (stretch from "Nepa Nagar to Burhanpur") has been taken as priority IV, stretch on the basis of BOD range 4.6-8 mg/l on the basis of monitoring report submitted by CPCB. In-fact the monitoring reports of above stretch of Tapti River are based on the sample drawn before 2016. The available 05 years records of the water sample drawn from the River Tapti (River Stretch between Nepa Nagar to Burhanpur) reveal that only once or twice the BOD has exceeded the limit of 3 mg/L.

1.3 It is pertinent to mention here that, in Nepa Nagar there is only paper mill, Named M/s Nepa Ltd., Nepa Nagar (The Govt. of India Enterprise) operating in the upstream of Pandhar Nallas which joins River Tapti at Nepa Nagar. It was observed that the ETP of this Industry was not very effective & the discharge of the same joined River Tapti through Pandhar Nallas resulting increase in BOD level of River Tapti. The above only Industry located in upstream of River Tapti near Nepa Nagar is closed since 2017 hence at present there is no industrial effluent joining River Tapti. The water quality monitoring results of the River

Tapti at 100 meters d/s of confluence of Pandhar Nallas, conforming the BOD level less than 3 mg./l & MPN<2.

1.4 That MPPCB is monitoring River Tapti at 04 places between Nepa Nagar to Hathnoor (Inter State Boundary) namely: 1. Nepa Nagar (Navtha Intake Well) i.e. u/s of Nepa Nagar, Tapti River 2. River Tapti at Nepa Nagar 100 meter d/s after mixing Pandhar Nallas 3. River Tapti at Pipalghat, Burhanpur & 4. River Tapti at Hathnoor. The monitoring results for last 03 years are given in Annexure- I and the BOD level has been observed less than 3 mg./L Thus, as such no action plan is required to rejuvenate the above polluted stretch as per the para-(i) of point 48 of order passed by Hon'ble National Green Tribunal. However as directed by Hon'ble NGT the action plan for Tapti River considering stretch from Nepa Nagar to Hathnoor is prepared so that the pollution caused by the domestic sewage of Burhanpur City & the SSI units located in the area is taken care.

2. TAPTI RIVER

The Tapti River (or Tapi) is a river in central India between the Godavari and Narmada rivers. It flows westwards over a length of 724 km (449.9 miles) before draining through the Gulf of Khambhat into the Arabian Sea. Tapti River, the ancient original name Tapati River is a river in central India. It is one of only three rivers in Peninsular India that run from east to west - the others being the Narmada River and the Mahi River. Tapi River basin lies in the states of Maharashtra (51,504km²), Madhya Pradesh (9,804 km²) and Gujarat (3,837 km²). The Tapi River originates in the

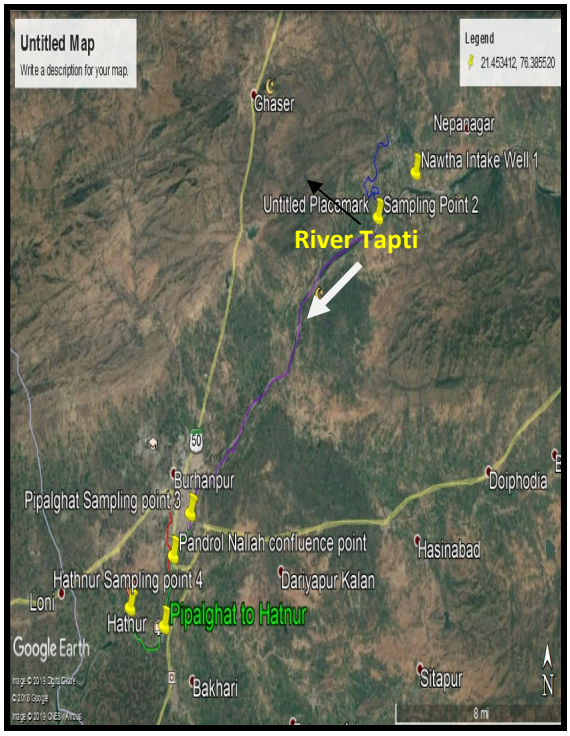

Fig.1: Map of River Tapti

Betul district from a place called Multai, in Madhya Pradesh state.

Tapti is the daughter of Surya, the Sun God and his wife, Chhaya. Tapti is also known as sister of Lord Shani. The river rises in the eastern Satpura Range of southern Madhya Pradesh state, and flows westward, draining Madhya Pradesh's Nimar region, Maharashtra's Kandesh and east Vidarbha regions in the northwest corner of the Deccan Plateau and south Gujarat, before emptying into the Gulf of Cambay of the Arabian Sea, in the Surat District of Gujarat. The history of this river is closely associated with the Anglo Portuguese history. The upper reaches of the river are now deserted, owing to silting at the outflow of the river. The waters of the Tapti are usually not used for irrigation.

The river and its tributaries make up the Tapti River basin. The Tapti river basin encompasses an area of 65,145 km², which is nearly two percent of the total area of India. The basin mostly lie in the northern and eastern districts Maharashtra state, including places like Amravati, Dhule, Akola, Washim, Buldhana, Nandurbar, Jalgaon and Nashik districts. However, the Betul and Burhanpur districts of Madhya Pradesh and the Surat district of Gujarat are the prime districts included in the Tapti River basin.

Fig. 2: River Tapti at Nepa Nagar near Navatha Intake Well

Fig. 3: River Tapti at Burhanpur

2.1 River Tapti Polluted Stretch (Nepa Nagar to Burhanpur) & Various Rivers/Nallas joining the Stretch:

The River Tapti, (stretch from "Nepa Nagar to Burhanpur") has been taken as priority IV, polluted stretch on the basis of monitoring report submitted by CPCB (BOD range 4.6-8 mg/l). As mentioned here in above, in Nepa Nagar, a paper mill named Nepa Ltd. is located and the same was in operation since 1956, which is now closed due to financial reasons. Industry had installed ETP for treatment of waste water but the treated/partially treated waste water used to join River Tapti through Pandhar Nallash. This effluent was the reason for increase in BOD level of water of River Tapti. The above industry is closed since 2017 hence no effluent is meeting to River Tapti. MPPCB is regularly collecting the sample of River Tapti at 100 meters d/s of confluence point of Pandhar Nallas. The quality of river water at this point is found to be BOD < 3 mg/l. The length of above identified polluted stretch is about 30 kms. this stretch lies between point of confluence of Pandhar Nallas to Tapti at Nepa Nagar to Pipalghat at Burhanpur. As per Hon'ble NGT order MPPCB has surveyed the area & observed that there are possibilities of meeting domestic effluent of Nepa Nagar & Burhanpur city to River Tapti through various Nallas/rivers. The details of

various rivers/Nallas are joining River Tapti along the length of identified polluted stretch (Nepa Nagar to Burhanpur) are given below:

1. Masak Nallas at Nepa Nagar
2. Pandhar Nallas at Nepa Nagar
3. Jaweri Nallas at Burhanpur
4. Nagjhiri Nallas at Burhanpur
5. Gandha Nallas at Burhanpur
6. Rajghat Nallas at Burhanpur
7. Rajpura Nallas at Burhanpur
8. Kadvissa Nallas at Burhanpur
9. Pandarol Nallas at Burhanpur

- **Masak Nallas at Nepa Nagar** – This Nallas originates from hills in the north of Nepa Nagar and flows towards south of Nepa Nagar and meets Tapti river at near Guru Mahal Farm. The 70% of the sewage (2.0 MLD) of Nepa Nagar town discharge into this Nallas which joins River Tapti after travelling about 5 kms.
- **Pandhar Nallas at Nepa Nagar** – This Nallas originates from the forest area in the north-west of Nepa Nagar and flows towards south of River Tapti adjacent the outer boundary of Nepa Nagar in west and meets Tapti river in the d/s of Tapti Bridge. The 30% of the sewage (1.5MLD) of Nepa Nagar & effluent of Nepa Ltd. if discharged takes way to river Tapti after travelling about 4 kms. length.
- **Jaweri Nallas at Burhanpur** – It originates from the area of Sindhipura gate at Burhanpur & flows towards Tapti for about 1.5 km. & joins Tapti river at u/s of Nagjhiri Ghat. Normally the sewage of the area about 2.5 MLD flows into it.
- **Nagjhiri Nallas at Burhanpur** – It originates from the area of Itwara Road (Near Post Office) & flows towards Tapti for about 0.5 km. & joins Tapti river at u/s of Pipal Ghat. Normally the sewage of the area about 0.6 MLD flows into it.

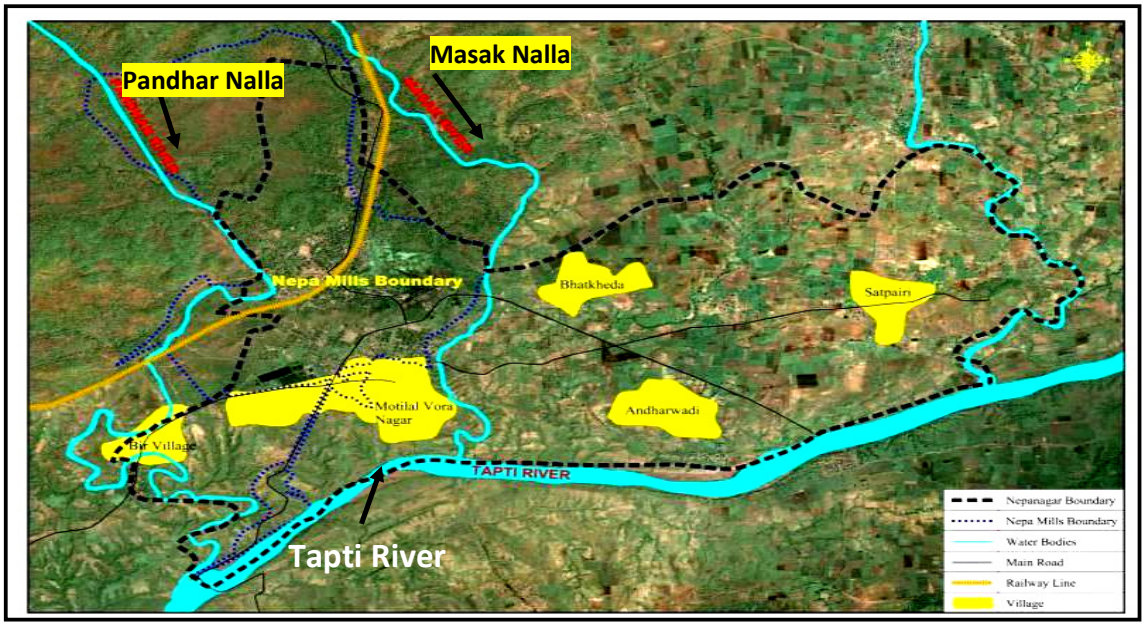

Fig. 4: Map showing Nallas confluence to the River Tapti at Nepa Nagar

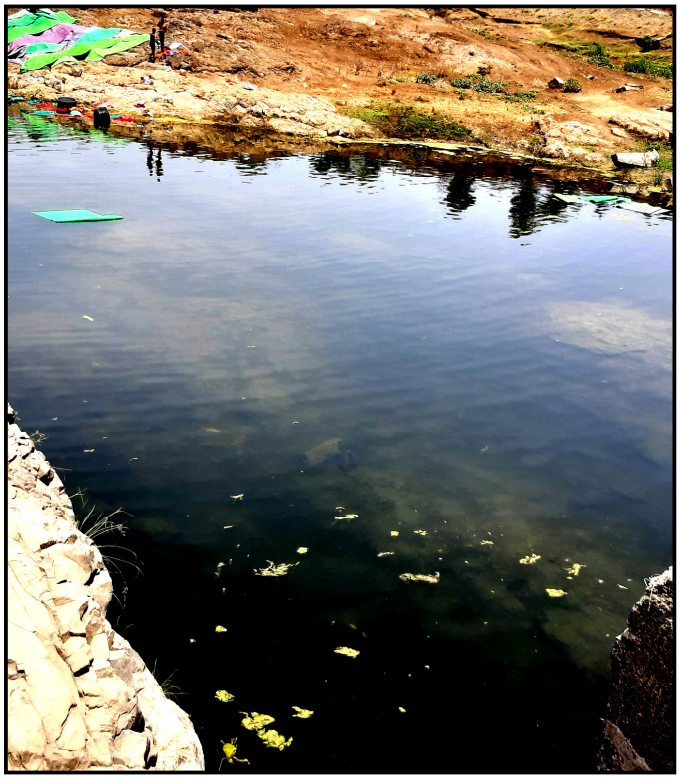

Fig.5: Masak River/Nalla at Nepa Nagar

- **<u>Ganda Nallas at Burhanpur</u>** – It originates from the area of Beri Maidan School & flows towards Tapti for about 01 km. & joins Tapti River at u/s of Raj Ghat. Normally the sewage of the area about 1.05 MLD flows into it.

- **Rajghat Nallas at Burhanpur** – It starts from the area of Shah Bazar Road & flows towards Tapti for about 01 km. & joins Tapti river at u/s of Raj Ghat. Normally the sewage of the area about 0.57 MLD flows into it.

- **Rajpura Nallas at Burhanpur** – It starts from West of Beri Maidan & flows towards Pandarol Nallas for about 1.5 km. & joins Pandarol Nallas near Rajpura. Normally the sewage of the area about 1.0 MLD flows into it.

- **Kadvissa Nallas at Burhanpur** – It starts from Tilak Hall & flows towards Pandarol Nallas for about 01 km. & joins Pandarol Nallas at d/s of Renuka Bridge. The sewage flow is estimated about 3.5 MLD.

- **Pandarol Nallas at Burhanpur** – It starts from Chinchawa area & travels through Lalbagh, Sindhi Basti, passes through Renuka Bridge & drain into Tapti in d/s of Tapti Bridge. The estimated sewage flow is about 4.0 MLD.

Fig.6 & 7: Sewage Pumping Station at Burhanpur

It is pertinent to mention here that there is no major town between Nepa Nagar to Burhanpur which is contributing domestic sewage flow in River Tapti, hence Action Plan includes the various measures to control the pollution from Nepa Nagar and Burhanpur City.

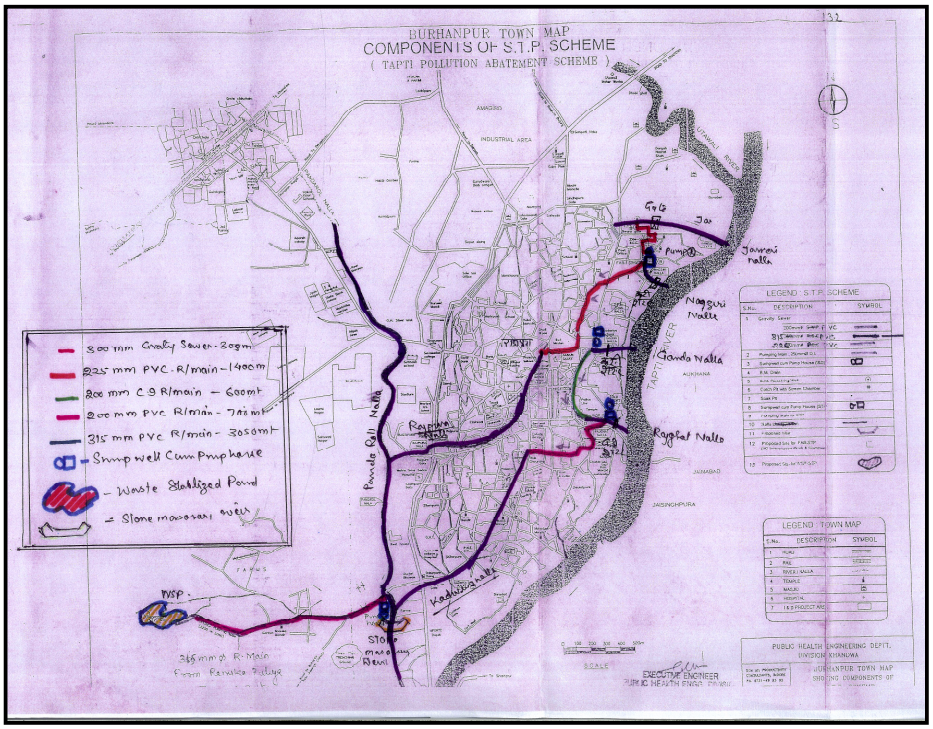

Fig.8: Map showing location Rivers and Nallas

3. WATER QUALITY GOAL

It is an important aspect for revival of river Tapti in context of its utility. The ultimate goal for beneficial use of river will determine the level of actions to be taken for maintaining the water quality. In the above application OA no. 673/2018, Hon'ble National Green Tribunal passed the order that "*All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i,e BOD < 3 mg/L and FC < 500 MPN /100 ml) within six months from the date of finalization of the action plans."* It is pertinent to mention here that the polluted river stretch is meeting the above stated desired norms however as per directions of Hon'ble NGT the action plan is prepared to further upgrade the water quality of the river. To achieve above goal, the various stake holders viz. Nagar Parishad, Nepa Nagar, Nagar Nigam Burhanpur, Water Resources Department etc. has been asked to submit the action plan considering the order of Hon'ble NGT as stated above.

Also, the industrial effluents generated from the catchment of river Tapti which ultimately may join and contribute to the pollution load in river Tapti should be treated to meet the effluent discharge standards stipulated under Schedule-VI of the Environment (Protection) Rules, 1986 and to reuse the treated waste water for cooling/horticultures and other uses & maintain zero discharge at outlet.

Comparative suggested criteria for bathing in River Tapti is given in Table-1:

Table-1: Suggested criteria for outdoor bathing

Sl. No	Parameters	Class 'B' Water Quality Criteria –for Bathing (to be achieved)
1	pH	6.5 to 8.5
2	Dissolved Oxygen (DO)	≥ 5.0 mg/L
3	Bio Chemical Oxygen Demand (BOD)	< 3 mg/L
4	Total Coliforms Organism MPN/100 ml	< 500

4. THE BASIS OF PROPOSED ACTION PLAN FOR REJUVENATION OF RIVER TAPTI

River Tapti is Perennial River. As stated here in above the water quality of the river between identified stretches is found to be meeting bathing standards however during field survey it is found that the proper collection of sewage & installation of full fledged modern waste water treatment plant is necessary in both the towns viz. Nepa Nagar & Burhanpur so as to avoid any possibility of deterioration of water quality of River Tapti. Also it is observed that in Burhanpur city, non functioning of existing old sewage treatment system may lead to pollution in River Tapti. The quality of the river is maintained due to the dilution available with the river. However in Burhanpur the river is observed to be dry during summer. Thus it is essential that the domestic sewage at both the locations should be collected & treated properly before discharge into the River Tapti. Therefore, the action plan for prevention and control of pollution of river Tapti has been drafted based on the directions given by this Hon'ble National Green Tribunal as mentioned here in above.

5. FIELD SURVEY

5.1 Domestic waste water, Population, Water Supply, Domestic waste water & Existing treatment & Details of measure taken by Govt. agencies to control pollution in river Tapti

The field recon survey is carried out to see the pollution level and current status of Tapti River. The physical survey is conducted from Nepa Nagar to Hathnoor (Inter State Boundary). Hathnoor is a place of Inter State Boundary of M.P. & Maharashtra in the d/s of Burhanpur City and it is about 5 km. The length of River Tapti stretch from Nepa Nagar to Hathnoor (about 35 km.) has been considered to rejuvenate the water quality. During the field survey the following observations were made.

5.1.1 **Nepa Nagar :** The Nepa Nagar municipal council has a total area of 9 sq.km., which has been divided into 24 wards. The 50% of the area falls under the Nepa Nagar Industrial town. The remaining 50% of the area has 4 villages Bir, Bhatkheda, Satpaairi and Andharwadi along with agriculture land.

- **Population:** The population of town is 29682 (2011). Nepa Nagar has seen the reduction in population in last 02 decades due policy of liberalization resulting recession in Nepa Ltd. Industry & migration. The modernization Nepa Ltd. is being done hence it is expected that population will increase.

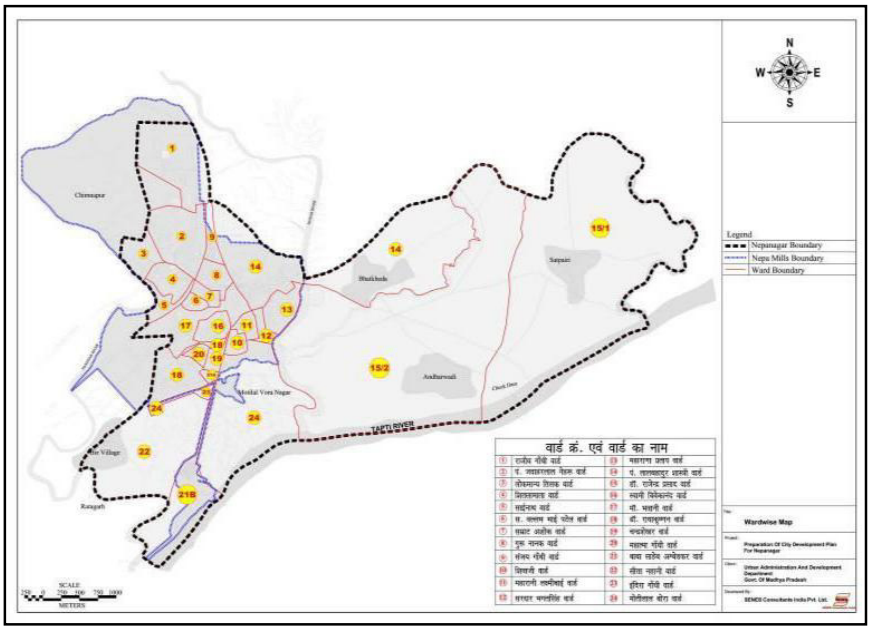

Fig.9: Map of Nepa Nagar showing ward wise distribution

- **Water Supply:** About 4.5 MLD drinking water is supplied by Nepa Ltd. through Municipal Council to the population. The water requirement may increase in next decade and expected to reach upto 6 MLD. This water is taken from Navtha Intake Well on River Tapti.

Fig. 10 & 11: Water intake point at River Tapti Navtha (Municipal Supply Source) **Water source at Sita Nahani**

- **Sewage Treatment:** Nepa Nagar town do not have a comprehensive sewerage system for treatment and safe disposal of sewage. The Nepa Mill Township has community septic tanks for about 2,400 houses. The overflow of these septic tanks flow into the Nalla. In the other areas there are individual septic tanks or sewerage generated directly flows through open drains and finally gets drained in the Masak River and Pandar Nalla. Masak River and Pandar Nallas meets Tapti River and may pollute the river. During survey it is observed that in summer the waste water does not reach to river Tapti. The present waste water generation is about 3.6 MLD however it may increase to 5.0 MLD upto 2031.
- **Solid Waste Management:** There is Absence of segregation, door–to-door collection system in the town. Waste management in the town not in accordance with the MSW Rules 2000; and there is absence of waste processing and scientific disposal facility.

The current generation of solid waste at Nepa Nagar Nagar Palika Parishad is approximately 8 tons per day (TPD). Approximately 63% of the total waste is being collected by the Nagar Palika. Infrastructure for waste management in the town comprise of 134 dustbins, 34 hand carts, 2 trolleys and 2 tractors and inadequate for the town.

For processing and disposal of waste, a new site towards west of Nepa mill township has been identified by the Nagar Palika.

- **Industrial Water Pollution:**


Fig.12: Nepa Ltd. Nepa Nagar

There is only 01 Industry named M/s. Nepa Ltd. which is paper manufacturing unit. This factory is closed since last 02 years hence at present there is no industrial effluent. However the factory is in the process of reviving its plant & machinery with the help of Govt. of India. The factory management has proposed ETP based on zero discharge system for treatment of industrial waste. Thus the installation of above treatment plants will help in rejuvenating the polluted stretch as mentioned here in above. The industry shall be allowed only after installing adequate treatment system.

5.1.2 **Burhanpur:** The city is governed Municipal Corporation. The population of the city as per census 2011 is 210886. There are 48 wards in the city. The Burhanpur Municipal Corporation has total administration over 38118 houses to which it supplies drinking water.

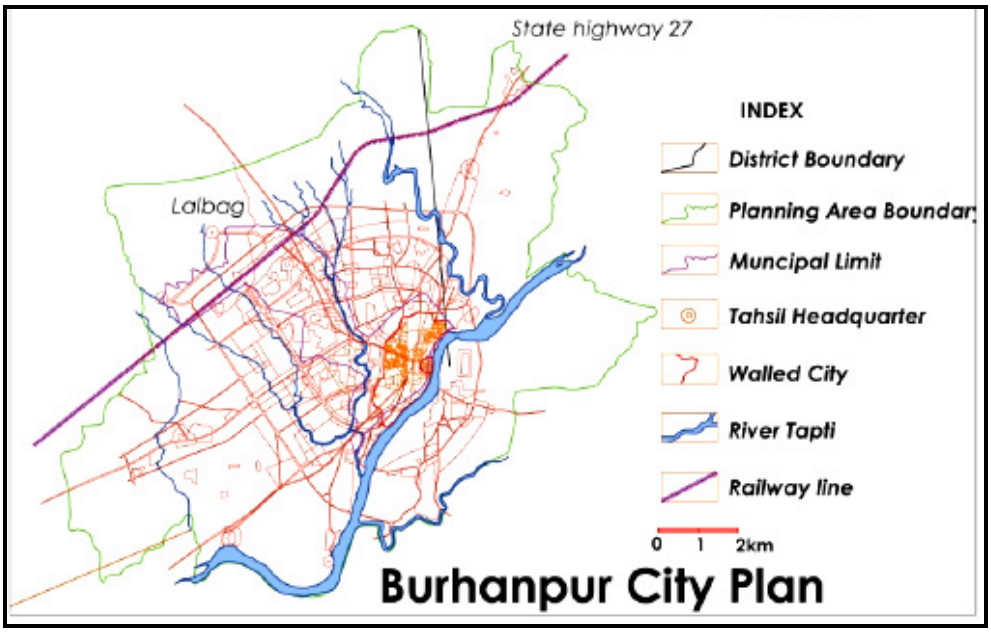

Fig. 13: Burhanpur City Map

- **Population:** The projected population of Burhanpur city is as under:

Table-2: Projected population of Burhanpur

Year	2011	2019	2021	2031
Population	210886	215000	233143	257653

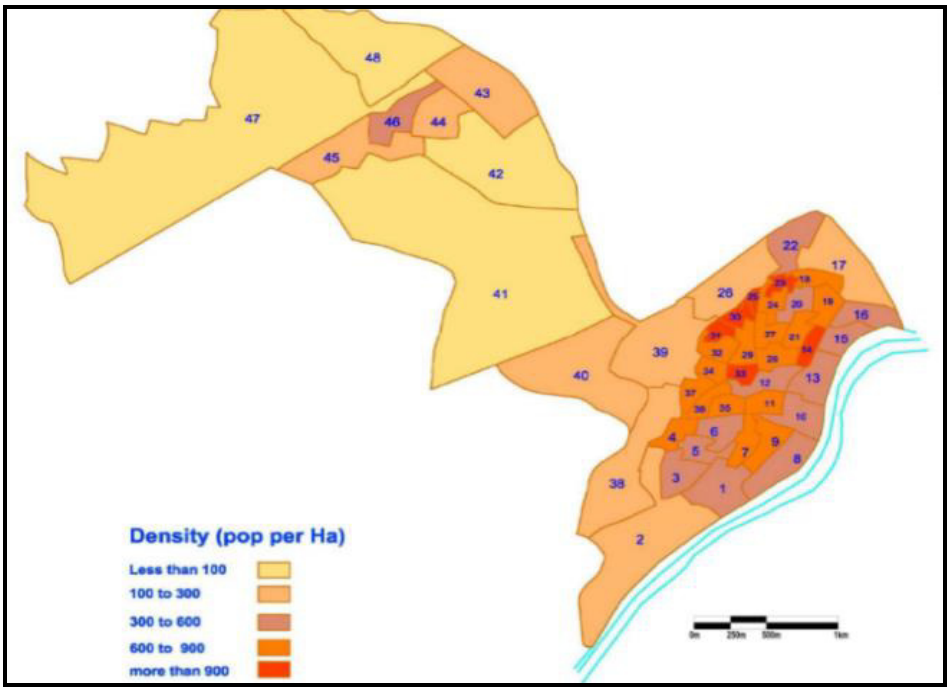

Fig.14: Population Density Map of Burhanpur

- **Water Supply:** The existing water supply of the city is based on 222 nos. tube wells/ wells about 13.94 MLD water is supplied to the town. The requirement of the town is 31.72 MLD at the rate of 135 LPCD.
- **Sewage Treatment:** The houses are having septic tank & soak pits for treatment of domestic waste. However the overflow of domestic waste flows in various Nallas of the city as mentioned here in above. The waste water quantity is estimate about 11.0 MLD based on the water supply. All the Nallas of the area ultimately join River Tapti at various locations. To abate the pollution in River Tapti, a pollution abatement scheme has been implemented by public health engineering department Burhanpur in the year 2008 under National River Conservation Plan (NRCP). The details are as below:
- **NRCP Scheme :** In this scheme, the city has been divided into 03 zones based on flow pattern. The scheme is based on interception & diversion of

various Nallas as stated here in above which are carrying city sewage. The capacity of the scheme is 6.0 MLD.

Zone-1: It includes interception of Jhaveri Nallas & Nagjhiri Nallas. Sump is made near Nagjhiri Nallas along with pumping station. Jhaveri Nallas has been intercepted by using iron moving gate & through sewer line (315 mm), the discharge taken to Nagjhiri Nallas. The Kadi Shutter made on Nagjhiri Nallas to intercept the sewage & divert to sump well. Pumping is done to Rajpura Nallas, which joins Pandarol Nallas at Amaravati pulia. Rajpura Nallas is not in scheme zone as it is meeting to Pandarol Nallas by gravity.

Zone-2: The sump well with pumping arrangement made near Gandha Nallas at Kherati Bazar the flow is diverted through pumping to Rajghat Nallas. The Kadi Shutter is installed at Rajghat and sump well with pumping arrangement made. The waste water is pumped to Kadvissa Nallas, which by gravity joins Pandarol Nallas.

Zone-3: Stone machinery weir is made on d/s of junction point of Pandarol Nallas & Kadvissa Nallas. The sump well with screen is made along with pumping arrangement near Renuka Bridge. The sewage is pumped to sewage treatment plant behind micro vision school for treatment.

- **Details of existing Sewage Treatment Plants:**

1. Sewage treatment plant based on stabilization ponds (06 MLD): Grit Chamber, Anaerobic Pond, Facultative ponds, Maturation ponds.
2. Sewage treatment cum effluent treatment plant (CSETP): CSETP of 4.5 MLD capacity has been recently completed behind Sindhi Basti Shamshan Ghat. This CSETP will handle about 1.0 MLD industrial pre-treated effluent and 3.5 MLD domestic sewage. A weir has been made to intercept Pandarol Nallas near flyover & the waste water is taken this treatment plant.


Fig.15 & 16: Nalla interception & Pumping Station

Anaerobic Pond



Fig.17, 18 & 19: 4.5 MLD CSTP at Burhanpur

- **Ongoing measures/proposed domestic waste water treatment measures taken by Govt. agencies to control pollution in Tapti :**

1. The scheme of 81.79 Cr. under AMRUT Project for sewer lines & STP

are in progress. The Laying of Sewer lines in the Municipal area of Burhanpur (Zone 3: 17 wards completely and 17 wards partly covered) is being done. About 72 km. sewer line laid out of 95.8 km. Distribution line of 200 km. work in progress. Out of which 45 km. laid.

2. STP near (Renukamata Temple Road, Nagar Palika Nigam Burhanpur) - 21 MLD- 30% civil work completed.

   As stated here in above, Municipal Corporation Burhanpur is doing the work of laying of sewer lines to collect the sewage & the 01 STPs to treat the waste water apart from the existing 02 STPs. The above work of collection & treatment of sewage has already been started. The interception of sewage & treatment through STP will be helpful in rejuvenating the water quality of River Tapti.

- **Industrial Water Pollution:**

  Burhanpur is best known for its textile industry. It is the largest hub for the power loom industry in the State. There are 02 Large/Medium Scale industries in the area. One of them is Sugar Mill, which is seasonal industry. Industry is covered under 17 types of water polluting industries. This industry has installed full fledged waste water treatment plant. Another industry is textile processing unit. This industry has also installed ETP. The industry is under process of up-gradation of ETP based on zero discharge system. There is 01 industrial area named Udhyog nagar for small scale industries. There are about 12 small scale textile processing units which are water polluting in nature. The above processing industries have installed ETP for treatment of waste water however the condition of zero discharge is not maintained due to small size of the industrial plots on which these industries are working. As per order of Hon'ble Supreme Court of India in WP No. 375/2012, Nagar Nigam Burhanpur is in the process of completing Common Sewage & Effluent Treatment Plant (CSETP) for further treatment of effluent of the industries located in above industrial area. After fully commissioning of above CETP, problem of pollution due to effluent of the industries will not be there. 03 Small

Scale Industries are located in surrounding area. All these industries are having ETP.

5.2 Characteristic of the River, major drains & Ground water:

5.2.1 Water Characteristics of river Tapti & various Nallas :

1. **Tapti River:** River Tapti quality in u/s of Nepa Nagar at Navtha water intake well is Class-A as per IS 2296- 1982. The quality of the river is found to be between Class-A to Class-B during the monitoring work conducted by MPPCB for last 03 years. The comparative chart of water quality of river Tapti is as below :

Table 3: Water Quality of River Tapti from Nepa Nagar to Burhanpur

S. No.	Location of sample	Date	pH	BOD in mg/L	COD in mg/L	TDS in mg/L	Total Coliform
1	River Tapti at Navtha, Nepa Nagar	03.05.2019	8.52	1.2	20	340	49
2	River Tapti at 100 m D/s of Pandhar Nalla, Nepa Nagar	03.05.2019	8.6	1.4	28	360	58
3	River Tapti at Pipal Ghat, Burhanpur	04.05.2019	8.4	5.0	60	578	94
4	River Tapti at 100 m D/s of Pandarol Nalla, Burhanpur	04.05.2019	8.6	1.8	29.64	464	110
5	River Tapti at Hathnoor	04.05.2019	8.75	2.0	40	606	70

2. **Major drains**: Water Characteristics of various Nallas joining river Tapti (Polluted stretch Nepa Nagar to Burhanpur) : The water flow and water quality of various Nallas are given as under. The flow is based on the water supply in the catchment of various Nallas.

Table 4: Flow and Water characteristics of various Nallas joining River Tapti

S. No.	Nallas	Flow in MLD	pH	BOD	COD	TDS
1	Masak Nalla at Nepa Nagar	2.0	7.96	2.0	18.62	577
2	Pandhar Nalla at Nepa Nagar	1.5	8.53	1.6	17.64	371

S. No.	Nallas	Flow in MLD	pH	BOD	COD	TDS
3	Jaweri Nalla at Burhanpur	2.5	8.3	52	118.56	804
4	Nagjhiri Nalla at Burhanpur	0.5	7.84	18	69.16	785
5	Ganda Nalla at Burhanpur	1.0	8.42	68	167.96	1288
6	Rajghat Nalla at Burhanpur	0.5	8.02	60	128.44	1073
7	Rajpura Nalla at Burhanpur	1.0	8.36	72	177.84	1438
8	Kadvissa Nalla at Burhanpur	2.5	7.96	64	167.96	1103
9	Pandarol Nalla at Burhanpur	3.0	8.13	68	158.08	1402

5.3 Status of water quality of Ground water in the study area

Along the polluted stretch of river Tapti (Nepa Nagar to Burhanpur) & its catchment, MPPCB Indore has collected 15 nos. ground water samples from 15 sampling locations during field survey on 03.05.2019 to 04.05.2019. 03 samples are collected from Nepa Nagar and 12 samples from Burhanpur area. Water sampling locations are located in Nepa Nagar & Burhanpur Municipal Councils respectively. The ground water samples collected from afore-said locations have been analyzed for parameters such as Sulphates (SO_4), Fluoride (F) and as well as heavy metals such as Cadmium (Cd), Copper (Cu), Lead (Pb), Iron (Fe), Nickel (Ni), Zinc (Zn) and Manganese (Mn) in Regional Laboratory, MPPCB, Indore. Water Quality Monitoring Results of ground water samples collected by the teams is given in the **Table-5.**

Table-5: Min. & Max. Concentration of SO_4, Fluoride and Heavy metals in Ground Water samples & its compliance

S. No.	Details	Analysis results of Ground Water Samples for General Parameters and Heavy Metals in mg/L.									
		SO_4	F	Cd	Cu	Pb	Fe	Ni	Zn	Mn	Total Cr
1	Minimum (in mg/l)	9.307	0.36	ND*	ND	ND	ND	ND	ND	ND	ND
2	Maximum (in mg/l)	79.88	0.89	ND	ND	0.005	ND	0.004	ND	0.008	ND
3	No. of locations exceeding the limit	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
IS 10500-2012 Drinking Water Specifications-Acceptable Limit		**200**	**1.0**	**0.003**	**0.05**	**0.01**	**0.3**	**0.02**	**5**	**0.1**	**0.05**

**ND= Not Detectable*

Analysis results of the ground water samples collected from 15 sampling locations near the polluted stretch of River Tapti have been found conforming with the IS 10500-2012 drinking water specifications (acceptable limits), as amended.

6. HEALTH STATUS OF THE PUBLIC IN THE CATCHMENT OF POLLUTED RIVER STRETCH

6.1 The health related (Water Born Diseases) data has been collected Chief Medical & Health Officer (CMHO) Burhanpur. The status for last 03 years are given as below :

Table-6: Health Status of District Burhanpur

Name of Disease	District Nehru Hospital Burhanpur		
	2016-17	2017-18	2018-19
Gastro entities	45	78	32
Diarrhea	1172	1248	1271
Renal (Kidney) Mal functioning	24	36	39
Cancer	104	91	113

6.2 CMHO Burhanpur has reported that Municipal Council is supplying the safe drinking water with proper treatment to the citizen. Hence the problem of water born disease cannot be co-related with the polluted river stretch & Ground water pollution.

7. COMPONENTS OF ACTION PLAN

The main Sources of Pollution in River stretch of Tapti are as under :

- Domestic waste water of city Burhanpur & Nepa Nagar Town meeting river Tapti through various Nalla draining into river Tapti.
- Industrial waste water of Nepa Ltd. Nepa Nagar.
- Industrial waste water/domestic waste from industries at Udhyog Nagar Burhanpur & Industries located in nearby area.
- Municipal Solid Waste, Construction & Demolition waste, Bio Medical Waste & Industrial Hazardous waste.

8. MEASURES TAKEN BY GOVT. AGENCIES TO ABATE POLLUTION IN TAPTI RIVER

As stated here in above, various measures already being implemented by municipal corporation Burhanpur, Nepa Ltd., District Administration, MPPCB and other government agencies to abate the pollution in River Tapti.

8.1 Work taken up so far & work proposed, in order to rejuvenate the Tapti River

8.1.1 Industrial Pollution Control:

- As stated here in above there is 01 industry namely M/s. Nepa Ltd. located at Nepa Nagar. It is a paper industry and covered under 17 types of polluting industries. It is a Govt. of India Enterprise. The industry has proposed modernization of manufacturing process & pollution control systems. Industry has obtained environmental clearance under EIA notification 2006 for above modernization. The industry closed for last 02 years. The work of up-gradation was started however it is closed for non availability of the fund. Industry has included the installation of ETP based on zero discharge & also the STP for colony waste and domestic waste has been proposed. There will not be discharge of effluent after implementation of the above system of pollution control.
- There is 01 industrial areas namely Udhyog Nagar at Burhanpur . Also some of the industries are located in surrounding area in the catchment of River Tapti. There are 15 water polluting SSI Industries existing in the catchment of River Tapti. There are 02 water polluting Large/Medium industries in Burhanpur. Both the industries are having full fledged ETPs. The small scale water polluting industries have also installed ETP. It is pertinent to mention here that most of the small scale water polluting units is located in Udhyog nagar. Municipal Corporation Burhanpur has constructed CSETP of 4.5 MLD capacity for the above small scale industries. The CSETP is likely to be started soon. All the water polluting industries would be the member of CSETP & shall be sending their treated effluent for further treatment to

CSETP. The capacity of the CSETP is sufficient to take care the total quantity generating in the area. Thus there will be no gap. The information of the water polluting industries (Large/Medium/Small Scale) which are operational in above areas in the catchment of River Tapti as given as below

Table 7: Information of the water polluting industries in the catchment of River Tapti

S. No.	No. of Red/Water polluting industries	Con-sent Status	Water Consumption (KLD)	Waste water genera-tion (KLD)	Status of ETP	No. of Industries against which action taken u/s 33'A' of water Act for violation or filed Court Case under water act	Remark
1	L/M-02	Yes	2931	750	All the Industries having adequate ETPs	NA	M/s. Burhanpur Textile Ltd. is up-grading ETP based on zero discharge.
2	SSI-15	Yes	871.90	405.40	All the industries are having ETP. Also Nagar Nigam Burhanpur has provided is in the process of completing CSETP for the industries of the area.	NA	
3	Non Consented/ Non Authorized	NIL	NA	NA	NA	NA	NA

- As a regular regulatory work, MPPCB is inspecting the industries of the area and as & when the non compliance is observed, the action is taken under Water Act 1974, against the industries. So for 03 court cases have been filed and 10 closure orders had been issued U/s 33'A' of Water Act 1974.

8.1.2 Status of OCEMS Installation:

There are 02 red category industries (Sugar- 01, namely M/s Naval Singh Sahakari Shakkar Karkhana, Burhanpur and Paper Mill-01, M/s Nepa Ltd., Nepa Nagar) in the catchment of polluted river stretch. Sugar mill has

installed OCEMS as per directives of CPCB. The connectivity of above OCEMS has been given to server of CPCB & MPPCB. M/s. Nepa Ltd. is closed however it has proposed required OCEMS. The industry shall be started only after installation of OCEMS. Thus at present there is no gap identified.

8.1.3 Treatment of Sewage & Solid Waste Management in the polluted river stretch (Nepa Nagar to Burhanpur):

Nepa Nagar: Municipal Council Nepa Nagar is supplying 4.5 MLD surface drinking water from river Tapti. The estimated sewage generation is 3.6 MLD. Nepa Nagar town do not have a comprehensive sewerage system for treatment and safe disposal of sewage. The Nepa mill township has community septic tanks for about 2,400 houses. The overflow of these septic tanks flow into the Nallah. In the other areas there are individual septic tanks or sewerage generated directly flows through open drains and finally gets drained in the Masak River and Pandar Nallah. Masak River and Pandar Nallah meets Tapti River and may pollute the river. During survey it is observed that in summer the waste water does not reach to river Tapti. The compressive domestic waste water system is being proposed in the action plan.

Burhanpur: Municipal Corporation Burhanpur is supplying MLD surface drinking water taken from river Tapti & Tubewells after proper treatment to the citizen of Burhanpur. The estimated sewage generation is about 11.0 MLD. The sewage treatment plants of sufficient capacities are existing however municipal corporation has proposed a sewage treatment plant of 21.0 MLD capacity (taking into consideration the future) and the same is under construction. The details of various ETPs/ CETP are given as below:

Table. 8: Details of STPs

S.No.	Name & Location of STP	Capacity in MLD	Status : Existing/ Operational/ Proposed	Technology
1	Behind Sindhi Basti near Shamshan Ghat	4.5 MLD	Existing (Recently Constructed). Proposed to be used as CSETP	Based on Trickling Filter
2	Behind Macro Vision School	6.0 MLD	Existing under NRCP	Based on stabilization pond
3	Renukamata Temple Road, Nagar Palika Nigam Burhanpur	21.0 MLD	Under Construction (STP work 32% completed)	SBR

- The Nalla which are meeting Tapti River mainly carry the domestic waste water generating from city Burhanpur. The collection of sewage & its treatment is included in the Action Plan. The main component of the action plan includes laying of sewerage network, trapping of sewage outlets, completion of conveyance system, interception & diversion of sewage flowing into various Nalla along with construction of proposed STPs as stated here in above.
- The work is already in progress.

8.1.4 Septage Management: Regarding septage management, it is submitted that there is no sewer line existing in the city Burhanpur. The houses are using septic tanks & soak pits for treatment of domestic waste water. The quantity of the septage of the septic tank is calculated to be about 100 KLD. As such at present there is no practice of treatment of the same is followed however, Municipal Corporation has proposed to treat the same using waste stabilization ponds/CSETP of 4.5 MLD. Thus the problem of septage management will be overcome.

8.1.4.1 Status of Municipal Solid Waste, Construction & Demolition waste, Bio Medical Waste & Industrial Hazardous waste management:

- Burhanpur Municipal Corporation has taken various required measures for collection, transportation, treatment & disposal of Municipal Solid waste & Construction & Demolition wastes. However further improvements is required to be done as per the gap observed. The status

of details of different types of wastes & their management is submitted as below :-

Table.9: Status of MSW, C&D waste, BMW & Industrial Hazardous waste management (Annexure-3)

S. No.	Type of Waste	Estimated Quantity	Details of Collection, Transportation, Treatment & Disposal	Details of Agency, Capacity & Technology used	Status of Compliance
1	**Nepa Nagar:-** Municipal Solid Waste	08 TPD	• 60 % door to door collection. • Partial segregation in dry & wet form. • 60 % primary & secondary transportation • Transfer station-01 nos. • Wet waste processing not done.	• Gap observed in collection, segregation transportation & treatment. The up-gradation of MSW treatment is included in action plan.	• Partially complied.
2	**Burhanpur:-** Municipal Solid Waste	88 TPD	• 60 % door to door collection. • Partial segregation in dry & wet form. • 60 % primary & secondary transportation. • Transfer station-01 nos. • Wet waste processing not done.	• Gap observed in collection, segregation transportation & treatment. The up-gradation of MSW treatment is included in action plan.	• Partially complied.
3	**Burhanpur** : - Construction & Demolition Waste	10 TPD	No arrangement.	01 collection center proposed by BMC. Consultation with paver block unit being done to utilize C&D waste. The MOU is drafted to utilize the paver blocks by BMC its self. Proposal included in Plan.	Not Complying.

4	**Nepa Nagar :-** Bio Medical Waste	276 Kg/Annum	• All the HCFs have taken membership of CBWTF. • 100% collection in covered vehicles. • 100% transportation to CBWTF at Sanwer Road I/A Indore • No gap observed in collection, transportation & treatment.	Hoswin Incinerator Pvt. Ltd. • Incinerator of 350 kg/hr. installed. • Auto clave of 400 lit./batch capacity installed. • 06 nos. shredders. • OCEMS installed.	Complying.
5	**Burhanpur :-** Bio Medical Waste	0.123 TPD	• All the HCFs have taken membership of CBWTF. • 100% collection in covered vehicles. • 100% transportation to CBWTF at Sanwer Road I/A Indore • No gap observed in collection, transportation & treatment.	Hoswin Incinerator Pvt. Ltd. • Incinerator of 350 kg/hr. installed. • Auto clave of 400 lit./batch capacity installed. • 06 nos. shredders. • OCEMS installed.	Complying.
6	**Nepa Nagar-** Industrial Hazardous Waste	NIL	NIL	NIL	NIL
7	**Burhanpur:-** Industrial Hazardous Waste	11.255 MT/Year	• All the industries have taken membership of TSDF. • 100% collection in authorized vehicles. • Stored in covered shed. • No gap observed in collection, transportation & treatment.	M.P. Waste Management Project, Pithampur has installed TSDF. Also incinerator has been installed.	Complying.

8.1.5 Ground Water Quality:

- The main issue relates to contamination of Tube wells / Hand pumps affecting the health of the public leaving in catchment of Tapti River (Polluted Stretch from Nepa Nagar to Burhanpur). MPPCB conducted the study of ground water quality of various Tube wells & Hand pumps existing in the catchment. The summery of study report is submitted in section 5.3.
- Analysis results of the ground water samples collected from15 sampling locations near the polluted stretch have been found conforming with the IS 10500-2012 drinking water specifications (acceptable limits), as amended. As such no action plan is required.

8.1.6 Flood Plain Zone:

Following activities are to be carried for protection of Flood Plain Zone (FPZ) :

(i) Plantation in Flood Plain Zone (FPZ)- By State Forest Department

(ii) Checking of encroachments- By District/Local Administration

(iii) Prohibition of Disposal of Municipal & Bio Medical Waste Particularly in Drains – By Local Administration.

(iv) Notification of FPZ- by Water Resource Department, within 06 months.

Following works have already been done to protect FPZ:-

8.1.6.1 Plantation including fencing along the bank of rivers

- There is a proposal for thick plantation all along the river bank and catchment by various species plants in order to improve the environment and to prevent encroachment along the bank and to reduce the soil erosion. At so many places fencing is also being done in order to save the plants from animals. Plantation is has been proposed by Municipal Councils for next three years :

Table- 10 Proposed Plantation

Year	No. of Plants
2019-20	10000 nos.
2020-21	10000 nos.
2021-22	10000 nos.

8.1.6.2 Rain Water Harvesting:

Municipal Corporation Burhanpur (MCB) has framed the bylaws related to rain water harvesting. The condition of Rain water harvesting is imposed in every building permission issued having area more than 140 sq.meter. The MCB charges rain/roof water harvesting fees & also water harvesting commitment charges. MCB has taken commitment of rain water harvesting from permission seekers & the details are as follows –

Table-11: Details of Rain Water Harvesting

Period	No. of commitments	Details of commitments fee deposited
2016	38	Rs. 3.47 Lakh
2017	38	Rs. 3.46 Lakh
2018	25	Rs. 2.00 Lakh

The security deposit is given back only after completion of rain water harvesting system. The various buildings of the city have already done rain water harvesting. The work of rain water harvesting is very important & being done as a continuous process, hence no Action Plan is required.

8.1.7 Checking of Encroachments:

Removal of encroachment: Municipal Council Burhanpur has informed that Tapti river is well away from municipal limit & as such encroachments have not been observed. Time to Time action are taken to remove the same if any**.**

8.1.8 Prohibition of Disposal of Municipal & Bio Medical Waste Particularly in drains:

1. The status of Municipal Solid Waste Management has been described in section 7.1.4.1 the gap has been observed. The action plan includes about the up-gradation in MSW management.
2. The status of Bio Medical Waste Management given in section 7.1.4.1 there is no gap observed hence action plan is not needed.

8.1.9 Environmental Flow (E-Flow) & Irrigation Practices:

i. River Tapti is Perennial River. The flow is observed round the year except some months of summer. Hence specific action plan for E-Flow is not required however the rejuvenation and Catchment improvement of various Nalla joining river Tapti will improve E-Flow.

ii. To conserve water & good irrigation practices to be adopted by the farmers for which mass awareness programmes through media shall be done in vernacular languages to the farmers by the water resource & agriculture department of Govt. of M.P.

8.1.10 Monitoring of Action Plan:

i. It is proposed that action plan for Tapti River shall be monitored by RRC on 06 monthly bases whereas, at district magistrate level, district monitoring committee will monitor on monthly basis.

ii. Monitoring Committee has been formed under the Chairmanship of District Collector Burhanpur vide letter dated 04.05.2019 including various stakeholders & experts. So for 01 meeting has been conducted on 04.05.2019 to formulate action plan & further review of its implementation.

8.1.11 Regulatory measures

8.1.11.1 Banning of use of Polythene Carry bags

Govt. of M.P. has issued order vide dated 24.05.2017 for banning of use, sale, manufacturing and storage of polythene bags. In compliance of this order Burhanpur Municipal Corporation & Nagar Parishad Nepa Nagar has also banned the polythene carry bags above local bodies with the help of MPPCB has conducted many raids on the polythene manufacturers and sellers and also traders. This action has resulted the pollution control in the catchment of river Tapti.

8.1.11.2 BMC has issued orders for imposing the fines on open defecation, littering of MSW, open urination and spiting in public places and movement of cattle in public places.

Based on the above survey & data collected, MPPCB has asked various stakeholders like Nagar Parishad Nepa Nagar, Nepa Ltd., Nagar Nigam Burhanpur, Industries association to submit action plan for rejuvenating the polluted stretch of River Tapti. Thus Based on the information received as mentioned here in above, the action plan has been prepared & submitted in following sections.

9.0 PROPOSED ACTION PLAN AND THE IDENTIFIED AUTHORITIES FOR INITIATING ACTIONS AND THE TIME LIMITS FOR ENSURING COMPLIANCE

The action plans and the implementing agencies responsible for execution of the action plans and the time limits are given in table as below:-**Annexure-2**

Table-12: Proposed Action Plan for Rejuvenation of River Tapti

S. No.	Action plan for rejuvenation of river Tapti	Organization/Agency Responsible for Execution of the Action Plan	Time Target & Cost (For Preparation of Scheme)	Present Status
I.	**Industrial Pollution Control**			
	A-Nepa Nagar			
	(a) Installation/Up-gradation & Modification of upto tertiary treatment level ETP based on zero discharge in Nepa Ltd. Industry (12 MLD ETP and Sludge Handling System).	Nepa Ltd., Nepa Nagar	22.5 Cr., Time Target – 02 Years or before restart of industry.	Industry is closed for last 02 years.
	(b) Interception & Diversion of sewage generating from colony of Nepa Ltd. & factory premise & Installation of STP.	Nepa Ltd., Nepa Nagar	Before restart of Industry.	Proposal to be made in 06 month & implementation in 02 years after sanction (before restart of industry).
	B-Burhanpur			
	(a) CETP (Common Effluent Treatment Plant) for Udhyog Nagar Industrial Area, Burhanpur	BMC Burhanpur	Scheme recently completed. Commissioning to be done in 03 months	CETP already constructed however the proper Commissioning shall be done in 03 months.

	(b) Construction of Effluent Conveyance System	BMC Burhanpur	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Presently the waste shall be taken through tankers.
	(c) Up- gradation of CETP : Installation of MGF & ACF.	BMC Burhanpur	01 Year	Proposal to be prepared in 06 months & Implementation in 01 Years after sanction.
	(d) Ensuring automobiles service station and Hotels/Restaurants/Dairy particularly located on road side should have a treatment system and levy of fine case found violations.	MPPCB/ Municipal Council Burhanpur and District Administration	06 months	
2	(a) Inventorisation of the industries in the catchment area of River Tapti covering assessment on aspects relating to Status of Consents under Water & Air Acts and Authorisation Effluent Generation. ETP capacities and final mode of effluent discharges	MPPCB and MPSIDC	Completed. 03 industries are required to up-grade their ETPs	Time Target 30.09.2019 (1. Burhanpur Textile Ltd., Basad, 2. Rehmaniya Textile Burhanpur. 3. Samrat Processing, Near Railway Station, Burhanpur
	(b) Actions against the Identified industries in operation without Consents under Water & Air Acts/Authorisation under the H & OW (M & TM) Rules 2016 as amended.	MPPCB/CPCB	Completed	Routine regulatory work.
	(c) Action against the red category industries for installation of OCEMS and not transferring data in CPCB and MPPCB	MPPCB	Completed	
	(d) Prohibition of Burning of any kind of waste including agro-residues	State Govt./District and Local authorities	Regularly	Govt. of M.P. has already issued prohibitory orders.

2	**Sewage Treatment & Disposal Plan**			
1.	**Nepa Nagar : Interception of Sewage going into various Nalla of Nepa Nagar joining River Tapti : Conveyance System for City Sewage & STP**			
	(a) Laying of Sewer lines of 50 km. in the Municipal area of Nepa Nagar, Lift station & Terminal Sewage pumping station for 18 MLD sewage considering flow of 2047.	UADD/NP Nepa Nagar	3 Years	Project. DPR of Rs. 36.83 Cr. Submitted to govt. of M.P., UADD considering estimation of waste up to 2047. After receiving sanction & funds the work will be completed in 03 years.
	(b) Sewage Treatment Plant - 18 MLD	UADD/NP Nepa Nagar	3 Years	
	(c) To ensure rain water harvesting by the industrial commercial and other institutions and groundwater recharging with only clean water be encouraged by CGWB/CGWA	NP Nepa Nagar	Already under implementation	The condition of Rain Water Harvesting is given in building permission. So far 03 building owners have been directed to install above system.
3.	**Burhanpur : Interception of Sewage going into various Nalla of Burhanpur joining River Tapti : Conveyance System for City Sewage & STP**			
	(a) Laying of Sewer lines in the Municipal area of Burhanpur (Zone 3 : 17 wards completely and 17 wards partly covered).	UADD/BMC Burhanpur	16.02.2020	Work in progress. About 72 km. sewer line laid out of 95.8 km. Distribution line of 200 km. work in progress. Out of which 45 km. laid. Total Cost of the project is Rs. 81.79 Cr, Sanctioned under AMRUT Project.
	(b) STP near (Renukamata Temple Road, Nagar Palika Nigam Burhanpur) - 21 MLD	UADD/BMC Burhanpur	16.02.2020 (STP work 32% completed)	
	(c) Laying of the Sewer line in rest of the remaining wards (Zone 1 : 95.614 km, Zone 2 : 8.42 km. &Augmentation of STP capacity for 17 MLD.	UADD/BMC Burhanpur	2 Years	DPR of Rs. 154 Cr. Submitted to govt. of M.P. under AMRUT project for over all sewerage network considering estimation of waste up to 2033. Out of above, sanction of Rs. 81.79 Cr. received. After receiving Rs. 72.31 Cr, The work will be completed in 02 years.

	(d) Estimation of area wise sewage generation for 20 villages which are proposed to be included in limit of municipal corporation, assessment of existing treatment capacities, quantum of disposal of sewage presently through drains and the gaps in sewage treatment capacity.	UADD/BMC Burhanpur	2 Years	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction.
III	**Ground water quality:** The Ground Water near polluted stretch not found contaminated in survey, hence action plan is not required. However the continuous watch is proposed for Nepa Nagar & Burhanpur.			
	(a) Carrying assessment of ground water survey for quality and to identify over exploited and critical blocks.	CGWB/M.P. Ground Water Department/ MPPCB	02 Year	
	(b) All the industry should be directed to obtain NOC from the CGWB and action against the units in Operation without obtaining of NOC from CGWA	CGWB/CGWA and M.P. Ground Water Department	01 Year	
	(d) To ensure rain water harvesting by the industrial commercial and other institutions and groundwater recharging with only clean water be encouraged by CGWB/CGWA	CGWA/M.P. Ground Water Department/T&CP/MCI /Local bodies	Already under implementation	The condition of Rain Water Harvesting is given in building permission. So far 101 building owners have been directed to install above system. Rs. 8.93 lakhs has been received as guarantee money. Regular Process.
IV	**Flood Plain Zone (FPZ)**			
	(a) Plantation in Flood Plain Zone (FPZ)	State Forest Department /BMC/NP Nepa Nagar	Regular Process	In year 2019-20 : 10000 Nos plantation proposed. In year 2020-2021 : 10000 Nos. In years 2021-2022 : 10000 Nos
	(b) Checking encroachments in the FPZ of river Tapti	District/Local administration / Municipal Council Burhanpur & Nepa Nagar	Regular Checking	All the encroachments in the FPZ of river Tapti has been already removed by local administration
	(c) Prohibition of disposal of municipal plastic and	Municipal Council Burhanpur & Nepa Nagar	Within three months	1- Complied. The NP Nepa Nagar & BMC hospitals

	biomedical waste particularly in drains			have taken membership from M/s Hoswin incinerator Pvt. Ltd. Indore (Which is Authorized by M.P.P.C.B.) for the disposal of Biomedical Waste as per rule 2- Polythene carry bags has been Prohibited by the MP Government. As a regulatory measure seizer of polythene will be done.
	(d) Proper segregation, collection, transportation of MSW.	BMC Burhanpur	Dec. 2020	100 % door to door collection – Dec. 2019. Segregation – March 2020
	(e) Bio-Remediation of legacy waste about 5 lakhs tonnes.	BMC Burhanpur	02 Years	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction.
	(f) Installation of processing plant of MSW, MRF	BMC Burhanpur	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Processing Plant estimated cost – Rs. 20 Cr. Target date – Dec. 2020. MRF- Cost Rs. 10 Cr.Target date- Dec. 2020
	(g) Proper collection transportation & treatment of C&D waste.	BMC Burhanpur	01 Year	01 collection center proposed by BMC. Consultation with paver block unit being done to utilize C&D waste. The MOU is drafted to utilize the paver blocks by BMC its self.
	Nepa Nagar			
	(h) Proper segregation, collection, transportation of MSW.	NP Nepa Nagar	Dec. 2020	100 % door to door collection – Dec. 2019. Segregation – March 2020

	(i) Installation of processing plant of MSW, MRF	NP Nepa Nagar	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Processing Plant estimated cost – Rs. 2 Cr. Target date – Dec. 2020. MRF- Cost Rs. 1 Cr. Target date- Dec. 2020
	(j) Notification of Flood Plain Zone FPZ	State Government / District administration	Within three months	
V	**Environmental Flow (E-Flow and Irrigation Practices)**			
	(a) Measurement of flow of Tapti rivers and maintaining records	M.P. Irrigation Department /Nagar Nigam/ Local bodies	03 months	
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language	M.P. State Irrigation and Agriculture Departments.	Regularly	

ANNEXURE – 1

MADHYA PRADESH POLLUTION CONTROL BOARD, INDORE

Water Quality during Year - 2016-2017

Natural Water Resource : River Water

Description of Sampling Station: Tapti River at Nepa Nagar (Nawtha Intake Well)

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		21.4.16	26.5.16	29.6.16	26.7.16	26.8.16	25.9.16	13.10.16	29.11.16	26.12.16	27.01.17	27.02.17	25.03.17	-	-	-
2	Appearance		Clear	Clear	Clear	S.Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	S.Muddy	Clear
3	Temperature	oC	26	29	29	27	29	29	28	26	18	24	26	28	26.58	29.00	18.00
4	Turbidity	NTU	0.63	0.8	0.8	277.5	12.8	0.7	1	0.8	0.6	1.1	0.7	1.8	24.94	277.50	0.60
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.76	8.03	8.3	8.43	8.02	7.96	7.8	8.06	7.91	8.44	8.2	7.88	8.15	8.76	7.80
8	Sp. Conductivity	µMhos/cm	399	308	490	447	518	256	296	288	_	290.48	402	434	375.32	518.00	256.00
9	T. Solids	mg/1	300	231	274	416	376	198	203	186	230	210	288	314	268.83	416.00	186.00
10	D. Solids	mg/1	282	222	266	322	362	184	190	174	220	200	278	304	250.33	362.00	174.00
11	S. Solids	mg/1	18	9	8	94	14	14	13	12	10	10	10	10	18.50	94.00	8.00
12	Ammonia-N	mg/1	0.016	0.02	0.019	0.024	0.02	0.012	0.019	0.018	0.017	0.02	0.018	0.019	0.02	0.02	0.01
13	Nitrite N	mg/1	0.003	0.003	0.002	0.008	0.004	0.002	0.002	0.004	0.62	0.003	0.003	0.005	0.05	0.62	0.00
14	Nitrate N	mg/1	0.344	0.68	0.894	2.16	0.82	0.916	0.84	0.9	0.98	0.598	0.873	2.8	1.07	2.80	0.34
15	Phosphate (PO_4)	mg/1	0.015	0.016	0.011	0.019	0.018	0.008	0.006	0.018	0.016	0.014	0.015	0.018	0.01	0.02	0.01
16	Chloride	mg/1	23.14	26.39	38.56	21.21	44.98	33.5	25.43	28.28	39.98	23.14	39	48.21	32.65	48.21	21.21
17	Sulphate (SO_4)	mg/1	3.73	2.68	2.98	4.69	3.76	3.796	3.02	3.86	4.01	2.93	3.8	3.8	3.59	4.69	2.68
18	T. Alkalinity	mg/1	260	168	176	116	216	156	144	152	172	148	180	220	175.67	260.00	116.00
19	T. Hardness	mg/1	188	144	160	140	232	144	148	148	168	140	160	212	165.33	232.00	140.00
20	Ca-Hardness	mg/1	160	96	136	88	196	116	120	124	124	120	132	170	131.83	196.00	88.00
21	Mg-Hardness	mg/1	28	48	24	52	36	28	28	24	44	20	28	42	33.50	52.00	20.00
22	D. Oxygen	mg/1	7	7.2	7	6.6	7.4	7.2	7.3	7.4	7.9	8.3	7.2	7.5	7.33	8.30	6.60
23	B.O.D.	mg/1	1.1	1.1	1.2	1.4	1.2	1.2	1.1	1.2	1.1	1.2	1.3	1.2	1.19	1.40	1.10
24	C.O.D.	mg/1	13.98	9.6	16.79	17.78	18.08	13.72	12.58	13.55	9.88	14.82	18	18.39	14.76	18.39	9.60
25	Sodium	mg/1	18.2	17	18	24.6	20	18	14	16.08	15.2	18	19.6	24	18.56	24.60	14.00
26	Potassium	mg/1	1.53	1.8	1.8	2.3	1.6	1.4	1.8	1.68	1.26	2	1.7	2	1.74	2.30	1.26
27	T. Coliform	MPN/100ml	70	60	110	110	110	50	40	40	50	40	50	50	65.00	110.00	40.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
29	Fluoride	mg/1	0.88	0.81	0.87	0.78	0.88	0.68	0.73	0.68	0.71	0.69	0.77	0.74	0.77	0.88	0.68
30	FDS	mg/1	170	148	164	238	264	130	136	112	150	136	184	212	170.33	264.00	112.00
31	T.K.N.	mg/1	3.08	2.8	3.36	6.16	3.92	3.921	3.36	3.92	4.2	5.04	5.04	6.16	4.25	6.16	2.80
32	Boron	mg/1	0.002	-	0.003	0.006	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.00	0.006	0.002
	CATEGORY		"B"	"B"	"B"	"B"	"B"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"B"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, INDORE

Water Quality during Year - 2016-2017

Natural Water Resource : River Water

Description of Sampling Station: River Tapti at Nepa at Nepa Nager 100 M.D/S after Mixing Pandhar Nallah

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		21.4.16	26.5.16	29.6.16	26.7.16	26.8.16	25.9.16	13.10.16	29.11.16	16.12.16	27.01.17	27.02.17	25.03.17	-	-	-
2	Appearance		Clear	Clear	Clear	S.Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	S.Muddy	Clear
3	Temperature	oC	26	29	30	28	29	29	29	26	18	24	26	28	26.80	30.00	18.00
4	Turbidity	NTU	1.6	1.8	1.6	290	18.8	1.3	1.9	1.8	1.4	0.6	1.4	2.4	32.08	290.00	0.60
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.71	8.14	8.24	7.8	7.96	8.06	8	7.8	7.94	8	8.32	7.96	8.10	8.71	7.80
8	Sp. Conductivity	µMhos/cm	600	402	446	522	682	272	330	380	459	276	577	468	451.17	682.00	272.00
9	T. Solids	mg/1	436	293	315	467	502	212	246	238	280	202	408	340	328.25	502.00	202.00
10	D. Solids	mg/1	420	278	304	369	478	196	232	224	268	193	394	326	306.83	478.00	193.00
11	S. Solids	mg/1	16	15	11	98	24	16	14	14	12	9	14	14	21.42	98.00	9.00
12	Ammonia-N	mg/1	0.028	0.022	0.02	0.052	0.023	0.016	0.022	0.021	0.023	0.016	0.032	0.023	0.02	0.05	0.02
13	Nitrite N	mg/1	0.002	0.003	0.004	0.008	0.008	0.003	0.004	0.006	0.007	0.003	0.008	0.008	0.01	0.01	0.00
14	Nitrate N	mg/1	1.026	0.67	1.03	3.4	1.09	0.923	0.986	1.07	1.04	0.822	1.26	3.94	1.44	3.94	0.67
15	Phosphate (PO_4)	mg/1	0.014	0.014	0.016	0.02	0.02	0.011	0.016	0.024	0.025	0.011	0.02	0.02	0.02	0.03	0.01
16	Chloride	mg/1	61.71	23.04	48.21	63.63	49.98	38.28	29.35	33	37.98	33.74	50.15	54.85	43.66	63.63	23.04
17	Sulphate (SO_4)	mg/1	4.71	0.82	5.16	4.96	8.62	4.03	4.19	3.82	4.2	3.824	4.63	4.2	4.43	8.62	0.82
18	T. Alkalinity	mg/1	252	188	192	120	292	164	156	160	180	156	220	240	193.33	292.00	120.00
19	T. Hardness	mg/1	220	164	156	152	336	148	160	164	172	146	200	226	187.00	336.00	146.00
20	Ca-Hardness	mg/1	180	120	120	92	240	116	124	132	132	112	160	160	140.67	240.00	92.00
21	Mg-Hardness	mg/1	40	44	36	60	96	32	36	32	40	36	40	66	46.50	96.00	32.00
22	D. Oxygen	mg/1	6.8	6.7	7.1	6.5	7.4	7.1	6.8	7.2	7.5	8.1	6.9	7.2	7.11	8.10	6.50
23	B.O.D.	mg/1	1.8	1.2	1.4	1.8	1.8	1.3	1.3	1.6	1.4	1.7	1.7	1.4	1.53	1.80	1.20
24	C.O.D.	mg/1	34.48	23.04	20.74	23.71	21.89	15.6	23.23	21.29	20.74	16.79	25	20.32	22.2	34.48	15.60
25	Sodium	mg/1	21	21	22.4	27.3	26	20	21	20.18	22	19	22	26	22.32	27.30	19.00
26	Potassium	mg/1	1.3	2.4	2	2.4	2	1.8	2	1.84	1.9	1.6	2.9	2.8	2.08	2.90	1.30
27	T. Coliform	MPN/100ml	300	140	280	220	170	110	50	50	70	50	70	70	131.67	300.00	50.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	<2	<2	2	2
29	Fluoride	mg/1	0.97	0.82	0.88	0.82	1.02	0.71	0.79	0.78	0.79	0.73	0.89	0.86	0.84	1.02	0.71
30	FDS	mg/1	250	184	_	246	334	132	158	138	180	138	268	220	204.36	334.00	132.00
31	T.K.N.	mg/1	5.04	4.48	4.48	7.28	7.28	5.042	5.6	4.48	5.04	4.482	7	7.28	5.62	7.28	4.48
32	Boron		0.004	0.004	0.006	0.007	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.00	0.01	0.00
	CATEGORY		"B"	"B"	"B"	"B"	"B"	"B"	"A"	"A"	"B"	"A"	"B"	"B"	"B"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, INDORE

Water Quality during Year - 2016-2017

Natural Water Resource : River Water

Description of Sampling Station: Tapti River at Pipalghat, Burhanpur

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		22.4.16	26.5.16	29.06.16	26.7.16	27.8.16	25.09.16	13.10.16	29.11.16	26.12.16	27.01.17	06.02.17	27.03.17	-	-	-
2	Appearance		Clear	Clear	Sl.Turbid	S.Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	26	29	29	28	29	29	29	26	26	24	24	28	27.50	29.00	24.00
4	Turbidity	NTU	1.8	1.2	2.14	254.5	41.6	3.6	4.8	6.6	6.6	1.2	2.8	2.8	32.40	254.50	1.20
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.67	8.38	8.2	8.18	8.04	8.12	8.4	8.48	8.03	8.36	8.3	7.64	8.23	8.67	7.64
8	Sp. Conductivity	µMhos/cm	650.12	466	1104	550	592	302	314	320	517.08	314	451	510	507.52	1104.0	302.00
9	T. Solids	mg/1	466	334	780	457	437	227	225	248	301	231	297	356	363.25	780.00	225.00
10	D. Solids	mg/1	448	322	762	338	409	218	208	230	284	215	280	340	337.83	762.00	208.00
11	S. Solids	mg/1	18	12	18	69	28	15	17	18	17	16	17	16	21.75	69.00	12.00
12	Ammonia-N	mg/1	0.02	0.026	0.022	0.03	0.024	0.02	0.024	0.022	0.028	0.024	0.09	0.028	0.03	0.09	0.02
13	Nitrite N	mg/1	0.005	0.004	0.002	0.008	0.008	0.06	0.006	0.003	0.006	0.006	BDL	0.005	0.01	0.06	0.00
14	Nitrate N	mg/1	1.043	1.08	7.84	5.6	1.92	1.22	1.3	1.604	1.79	1.43	1.14	3.64	2.47	7.84	1.04
15	Phosphate (PO_4)	mg/1	0.017	0.018	0.018	0.022	0.022	0.016	0.02	0.02	0.024	0.019	0.037	0.022	0.02	0.04	0.02
16	Chloride	mg/1	57.85	52.78	77.13	84.85	44.98	43.071	37.17	33	49.98	30.85	39.13	42.42	49.43	84.85	30.85
17	Sulphate (SO_4)	mg/1	7.27	3.98	6.56	8.76	8.92	7.23	7.6	6.04	6.92	6.92	7.01	7.1	7.03	8.92	3.98
18	T. Alkalinity	mg/1	324	256	268	140	296	168	188	180	200	172	240	260	224.33	324.00	140.00
19	T. Hardness	mg/1	260	220	328	172	328	156	160	168	180	164	196	220	212.67	328.00	156.00
20	Ca-Hardness	mg/1	180	164	236	120	236	120	120	124	144	144	168	170	160.50	236.00	120.00
21	Mg-Hardness	mg/1	80	56	92	52	92	36	40	44	36	20	28	50	52.17	92.00	20.00
22	D. Oxygen	mg/1	6.8	6.8	6.6	6.2	7.3	6.9	6.8	7.6	7.6	8.2	8	6.7	7.13	8.20	6.20
23	B.O.D.	mg/1	2	1.2	3.2	2.6	2	1.6	1.4	1.4	1.5	1.4	2.2	2	1.875	3.20	1.20
24	C.O.D.	mg/1	28.89	23.04	35.58	34.58	27.6	19.6	22.26	24.2	22.72	20.74	21.29	22.26	25.23	35.58	19.60
25	Sodium	mg/1	22	23.6	31.8	30.3	28	22.4	23	22.86	23	23.4	24.01	28	25.20	31.80	22.00
26	Potassium	mg/1	2	2.3	3.6	2.8	2.6	1.9	2	2	1.9	2	2	2.2	2.28	3.60	1.90
27	T. Coliform	MPN/100ml	300	280	900	500	280	350	270	110	170	110	170	220	305.00	900.00	110.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.8
29	Fluoride	mg/1	0.91	0.94	1.08	1.02	1.18	0.88	0.91	0.8	0.86	0.96	0.8	1.02	0.95	1.18	0.80
30	FDS	mg/1	268	214	-	278	298	148	150	146	198	150	190	230	206.36	298.00	146.00
31	T.K.N.	mg/1	5.6	3.92	1.42	8.4	8.4	5.6	6.16	5.04	6.16	5.024	7.84	6.16	5.81	8.40	1.42
32	Boron	mg/1	0.004	BDL	0.006	0.012	0.01	0.006	0.004	0.006	0.006	0.006	0.006	0.006	0.01	0.01	0.00
	CATEGORY		"B"	"B"	"C"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"C"	"B"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, INDORE

Water Quality during Year - 2016-2017

Natural Water Resource : River Water

Description of Sampling Station: Tapti River at Hathnoor

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		22.4.16	26.5.16	29.6.16	26.7.16	27.8.16	25.09.16	13.10.16	29.11.16	29.11.17	27.01.17	07.02.17	27.03.17	-	-	-
2	Appearance		Clear	Clear	Sl.Turbid	S.Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	26	29	29.5	28	29	29	29	26	19	24	24	29	26.79	29.50	19.00
4	Turbidity	NTU	0.98	1.3	3.4	276.5	12.7	2.6	16.6	5.6	1.8	1.8	2.4	2.6	27.36	276.50	0.98
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.67	8.44	8.4	8.12	8.22	8.22	8.32	8.34	7.84	8.44	8.2	7.86	8.26	8.67	7.84
8	Sp. Conductivity	µMhos/cm	400.12	478	964	528	556	308	338	392	523.44	320	440	480	477.30	964.00	308.00
9	T. Solids	mg/1	292	356	682	446	395	229	235	260	355	237	284	334	342.08	682.00	229.00
10	D. Solids	mg/1	281	342	666	372	373	216	220	244	340	219	270	320	321.92	666.00	216.00
11	S. Solids	mg/1	11	14	16	74	22	13	15	16	15	18	14	14	20.17	74.00	11.00
12	Ammonia-N	mg/1	0.021	0.022	0.02	0.028	0.021	0.021	0.022	0.029	0.024	0.026	0.028	0.024	0.02	0.03	0.02
13	Nitrite N	mg/1	0.004	0.004	0.003	0.006	0.006	0.004	0.005	0.004	0.004	0.007	BDL	0.004	0.00	0.01	0.00
14	Nitrate N	mg/1	1.173	0.745	1.16	4.9	1.14	1.14	1.26	1.84	1.92	1.61	1.02	2.6	1.71	4.90	0.75
15	Phosphate (PO_4)	mg/1	0.014	0.017	0.015	0.022	0.019	0.013	0.019	0.018	0.018	0.02	0.03	0.018	0.02	0.03	0.01
16	Chloride	mg/1	32.78	26.88	67.49	79.06	54.98	43.071	27.39	28.28	47.98	43.93	31.3	40.49	43.64	79.06	26.88
17	Sulphate (SO_4)	mg/1	6.34	2.22	4.3	7.83	4.62	6.08	7.02	6.08	6.49	4.83	4.14	6.2	5.51	7.83	2.22
18	T. Alkalinity	mg/1	260	264	244	136	276	172	184	176	184	164	280	240	215.00	280.00	136.00
19	T. Hardness	mg/1	216	228	256	168	316	160	156	160	192	168	188	210	201.50	316.00	156.00
20	Ca-Hardness	mg/1	176	168	200	108	272	120	120	124	152	144	160	160	158.67	272.00	108.00
21	Mg-Hardness	mg/1	40	60	56	60	44	40	36	36	40	24	28	50	42.83	60.00	24.00
22	D. Oxygen	mg/1	6.9	6.4	6.7	6.7	7.3	7.2	7.1	7.2	6.8	8.2	8.1	6.9	7.13	8.20	6.40
23	B.O.D.	mg/1	1.4	1.5	2.8	1.6	1.3	1.3	1.4	1.4	1.8	1.6	1.6	1.4	1.59	2.80	1.30
24	C.O.D.	mg/1	17.7	26.88	29.64	22.72	23.8	17.64	21.9	22.26	21.73	22.72	23.23	19.36	22.47	29.64	17.64
25	Sodium	mg/1	24	23.4	36	30.4	24	19.6	22	21.89	24	22	20.91	26	24.52	36.00	19.60
26	Potassium	mg/1	1.9	2	1.9	2.6	2	1.8	2	1.88	1.9	2	1.8	2	1.98	2.60	1.80
27	T. Coliform	MPN/100ml	240	350	900	500	280	220	280	140	220	140	220	170	305.00	900.00	140.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.8
29	Fluoride	mg/1	0.9	0.88	1.04	0.89	0.92	0.78	0.84	0.76	0.82	1.04	1.04	0.98	0.91	1.04	0.76
30	FDS	mg/1	168	218	418	268	258	144	148	168	220	158	180	212	213.33	418.00	144.00
31	T.K.N.	mg/1	5.04	3.921	6.16	7.84	6.16	5.04	5.6	5.04	5.88	5.602	5.04	5.88	5.60	7.84	3.92
32	Boron		0.003	BDL	0.004	0.01	0.006	0.005	0.006	0.008	0.007	0.006	0.006	0.004	0.01	0.01	0.00
	CATEGORY		"B"	"B"	"C"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"C"	"B"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2017-18

Natural Water Resource : RIVER WATER

Description of Sampling Station: River Tapti at Nepa Nagar (Nawtha Intake Well)

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		08.04.17	09.05.17	03.06.17	22.07.17	04.08.17	05.09.17	02.10.17	30.11.17	20.12.1	23.01.1	10.02.1	08.03.1	-	-	-
2	Appearance		Clear	Clear	Clear	Muddy	Sl. Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	30	31.5	26	0	23	23	22	21	23	23	22	22.88	31.50	0.00
4	Turbidity	NTU	1.8	0.8	1.2	170.09	120	4	2.2	12.1	4.3	5	7.9	5.7	27.92	170.09	0.80
5	Colour	PCS	1	1	1	5	1	1	1	1	1	1	1	1	1.33	5.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	7.28	8.28	7.89	7.8	7.84	8.28	8.78	-	8.38	8.51	8.52	8.6	8.20	8.78	7.28
8	Sp. Conductivity	µMhos/cm.	400.33	298	398	566	588	401	496	469.4	419.87	455.11	443	616.98	462.64	616.98	298.00
9	T. Solids	mg/1	250	210	259	324	340	268	303	328	259	240	310	415	292.17	415.00	210.00
10	D. Solids	mg/1	240	204	249	230	261	260	293	319	251	235	300	406	270.67	406.00	204.00
11	S. Solids	mg/1	10	6	9	94	79	8	10	9	8	25	10	9	23.08	94.00	6.00
12	Amm. Nitrogen	mg/1	0.18	0.009	0.016	0.029	0.026	0.014	0.016	0.017	0.017	ND	0.018	0.029	0.03	0.18	0.01
13	Nitrite	mg/1	0.002	0.024	0.004	0.009	1.68	0.003	0.004	0.007	0.004	0.003	0.008	0.008	0.15	1.68	0.00
14	Nitrate	mg/1	0.579	0.67	0.86	2.16	0.016	0.79	0.86	0.737	0.869	0.958	0.821	0.893	0.85	2.16	0.02
15	Phosphate (PO_4)	mg/1	0.025	0.012	0.032	0.02	0.024	0.008	0.018	0.014	0.012	0.808	0.016	0.022	0.08	0.81	0.01
16	Chloride	mg/1	24.88	28.5	28.71	40	38.28	73.16	36.37	21.52	33.5	53.03	22.12	23.14	35.27	73.16	21.52
17	Sulphate (SO_4)	mg/1	4.972	2.24	3.14	5.6	6.4	3.86	4.96	4.72	4.437	8.67	6.22	5.732	5.08	8.67	2.24
18	T. Alkalinity	mg/1	196	152	180	160	180	180	212	176	164	230	188	212	185.83	230.00	152.00
19	T. Hardness	mg/1	184	140	168	140	160	160	140	168	172	210	180	200	168.50	210.00	140.00
20	Ca-Hardness	mg/1	124	108	132	112	130	124	100	132	124	120	140	28	114.50	140.00	28.00
21	Mg-Hardness	mg/1	60	32	36	28	30	36	40	36	48	90	40	72	45.67	90.00	28.00
22	D. Oxygen	mg/1	7.1	7.5	6.8	6.5	6.4	6.8	7.2	7.6	7.9	7.1	7.6	7.2	7.14	7.90	6.40
23	B.O.D.	mg/1	1.2	1.2	1.3	1.5	1.4	1.4	1.3	1.8	1.2	1.2	1.9	1.8	1.43	1.90	1.20
24	C.O.D.	mg/1	9.6	14.28	15	16	16	18	15.68	17.424	15.8	8	20.32	16.32	15.20	20.32	8.00
25	Sodium	mg/1	18	20.06	16.3	24	26.08	21.04	20.19	20.4	18.6	15.1	22.12	21.7	20.30	26.08	15.10
26	Potassium	mg/1	2	1.8	2.8	2.9	2.66	1.92	1.9	1.9	1.8	1.2	6.22	1.8	2.41	6.22	1.20
27	T. Coliform	MPN/100ml	50	50	50	60	50	40	40	40	40	40	50	50	46.67	60.00	40.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.1	<2	<2	<2	<2	<2
29	Fluoride	mg/1	0.407	0.76	0.63	0.8	0.75	0.8	0.68	0.79	0.62	0.81	0.83	0.82	0.72	0.83	0.41
30	FDS	mg/1	172	149	169	160	140	176	200	212	170	128	214	268	179.83	268.00	128.00
31	T.K.N.	mg/1	3.92	3.92	1.12	6.16	5.6	6.72	5.04	5.6	6.1	2.8	5.6	7	4.97	7.00	1.12
32	Boron	mg/1	0.003	0.006	0.006	0.007	0.005	0.004	0.006	0.003	0.002	0.004	0.005	0.004	0.00	0.01	0.00
	CATEGORY		"A"	"A"	"A"	"B"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2017-18

Natural Water Resource : RIVER WATER

Description of Sampling Station: River Tapti at Nepa Nagar 100 M.D/S after Mixing Pandhar Nallah

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		08.04.17	09.05.17	03.06.17	22.07.17	04.08.17	05.09.17	02.10.17	30.11.17	20.12.1	23.01.1	10.02.1	08.03.1	-	-	-
2	Appearance		Clear	Clear	Clear	Muddy	Sl. Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	30	31.5	26	24.5	23	23	23	20	22.5	23	23	24.96	31.50	20.00
4	Turbidity	NTU	2	1.6	1.8	190.01	32	4.4	4.6	9.7	4.2	3.3	8.8	5.9	22.36	190.01	1.60
5	Colour	PCS	1	1	1	5	1	1	1	1	1	1	1	1	1.33	5.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	7.53	8.4	8.06	7.41	8.23	8.48	8.4	-	8.29	8.64	8.82	8.58	8.26	8.82	7.41
8	Sp. Conductivity	µMhos/cm.	451.05	408	446	416	408	446	512	431.7	545.3	593	473	673	483.59	673.00	408.00
9	T. Solids	mg/1	288	291	316	348	324	308	324	302	391	403	318	455	339.00	455.00	288.00
10	D. Solids	mg/1	276	281	302	250	300	292	308	290	380	389	305	443	318.00	443.00	250.00
11	S. Solids	mg/1	12	10	14	98	24	14	16	12	11	14	13	12	20.83	98.00	10.00
12	Amm. Nitrogen	mg/1	0.02	0.013	0.019	0.028	0.015	0.018	0.02	0.02	0.018	0.022	0.022	0.026	0.02	0.03	0.01
13	Nitrite	mg/1	0.007	0.062	0.006	0.01	0.005	0.004	0.006	0.009	0.006	0.008	0.009	0.006	0.01	0.06	0.00
14	Nitrate	mg/1	0.464	0.88	1.08	4.12	0.78	0.88	0.8	0.81	0.899	0.866	0.92	0.84	1.11	4.12	0.46
15	Phosphate (PO_4)	mg/1	0.023	0.018	0.032	0.26	0.014	0.008	0.012	0.016	0.014	0.019	0.019	0.02	0.04	0.26	0.01
16	Chloride	mg/1	38.28	38	43.07	40	42.75	118.89	51.68	46.96	29.56	33.25	37.05	38.56	46.50	118.89	29.56
17	Sulphate (SO_4)	mg/1	5.514	4.84	4.13	5.92	7.7	4.74	5.89	5.13	5.78	8.26	8.34	6.23	6.04	8.34	4.13
18	T. Alkalinity	mg/1	200	180	216	152	208	188	200	184	220	232	208	208	199.67	232.00	152.00
19	T. Hardness	mg/1	192	160	196	172	168	168	188	172	228	248	200	220	192.67	248.00	160.00
20	Ca-Hardness	mg/1	132	108	140	140	140	128	116	132	168	200	144	156	142.00	200.00	108.00
21	Mg-Hardness	mg/1	60	52	56	32	28	40	72	40	68	48	56	64	51.33	72.00	28.00
22	D. Oxygen	mg/1	6.9	6.8	6.9	6.4	6.8	6.6	6.8	7.5	7.7	7.5	7.6	6.9	7.03	7.70	6.40
23	B.O.D.	mg/1	1.4	2.6	1.8	1.9	1.9	1.6	1.8	2.1	1.8	2.2	2.3	2	1.95	2.60	1.40
24	C.O.D.	mg/1	19.2	20.94	20	30	24	20	21.56	21.29	9.88	26	23.23	19.2	21.28	30.00	9.88
25	Sodium	mg/1	22	24.08	22.6	25.19	24.08	24.08	22.19	23.6	20.6	26.4	24.5	26.6	23.83	26.60	20.60
26	Potassium	mg/1	2.2	2	2.3	2.6	2.01	2.04	2.9	2	2	2	1.9	2.2	2.18	2.90	1.90
27	T. Coliform	MPN/100ml	50	170	70	70	50	50	40	60	50	50	70	50	65.00	170.00	40.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
29	Fluoride	mg/1	0.884	0.89	0.46	0.8	0.84	0.84	0.79	0.88	0.77	1.08	0.9	0.79	0.83	1.08	0.46
30	FDS	mg/1	174	186	200	170	200	180	214	182	250	260	190	226	202.67	260.00	170.00
31	T.K.N.	mg/1	6.16	6.44	3.92	7.28	6.16	7.28	4.48	6.16	6.16	5.6	6.723	8.12	6.21	8.12	3.92
32	Boron	mg/1	0.003	0.008	0.004	0.008	0.006	0.005	0.004	0.004	0.007	0.008	0.004	0.006	0.01	0.01	0.00
	CATEGORY		"A"	"B"	"B"	"B"	"A"	"A"	"A"	"B"	"A"	"A"	"B"	"A"	"B"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL
Water Quality during Year - 2017-18
Natural Water Resource : RIVER WATER
Description of Sampling Station: Tapti River at Pipalghat, Burhanpur

Description of Sampling Station:																		
S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		08.04.17	10.05.17	03.06.17	22.07.17	04.08.17	05.09.20	02.10.17	30.11.17	20.12.1	23.01.1	10.02.1	08.03.1	-	-	-
2	Appearance		Clear	Greenish	Sl. Turbid	Muddy	Muddy	Muddy	Clear	Clear	Clear	Clear	Clear	sl.turbid	Clear	Muddy	Clear
3	Temperature	oC	30	30.5	31.5	26	0	24	24	23	19.4	23	23	22	23.03	31.50	0.00
4	Turbidity	NTU	2.6	12.8	120	200.02	160	6.9	40	26.4	27	6	29.4	9.62	53.40	200.02	2.60
5	Colour	PCS	1	1	1	5	1	1	1	1	1	1	1	1	1.33	5.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	7.74	9.14	8.32	7.8	8.24	8.64	7.88	8	8.52	8.66	8.77	8.69	8.37	9.14	7.74
8	Sp. Conductivity	µMhos/cm.	541.3	834.9	832	445	560	580	580	570	596	640	694	1019	657.68	1019.00	445.00
9	T. Solids	mg/1	338	500	480	380	430	392	410	392	424	436	403	684	439.08	684.00	338.00
10	D. Solids	mg/1	324	478	406	270	354	382	385	378	408	422	387	670	405.33	670.00	270.00
11	S. Solids	mg/1	14	22	74	110	76	10	25	14	16	14	16	14	33.75	110.00	10.00
12	Amm. Nitrogen	mg/1	0.032	0.032	0.032	0.03	0.032	0	0.035	0.03	0.034	0.042	0.036	0.062	0.03	0.06	0.00
13	Nitrite	mg/1	0.002	0.113	0.022	(BDL)	0.018	0.048	0.018	0.016	0.02	0.012	0.018	0.012	0.03	0.11	0.00
14	Nitrate	mg/1	1.688	2.236	5.86	6.76	1.68	2.73	1.7	1.32	1.82	1.862	1.84	1.143	2.55	6.76	1.14
15	Phosphate (PO_4)	mg/1	0.057	0.026	0.47	0.02	0.03	0.022	0.032	0.024	0.028	0.034	0.027	0.043	0.07	0.47	0.02
16	Chloride	mg/1	53.6	66.5	76.57	42	52.64	109.75	67	29.35	35.47	38.47	40.55	77.13	57.42	109.75	29.35
17	Sulphate (SO_4)	mg/1	8.661	7.24	68.14	6.94	7.24	4.38	7.74	9.81	10.4	23.21	12.4	12.58	14.90	68.14	4.38
18	T. Alkalinity	mg/1	248	240	136	144	150	240	168	200	212	256	228	324	212.17	324.00	136.00
19	T. Hardness	mg/1	208	200	320	172	190	220	180	184	192	236	204	252	213.17	320.00	172.00
20	Ca-Hardness	mg/1	144	148	168	132	160	180	150	136	132	168	156	172	153.83	180.00	132.00
21	Mg-Hardness	mg/1	64	52	152	40	30	40	30	48	60	68	48	80	59.33	152.00	30.00
22	D. Oxygen	mg/1	6.7	9.8	3	6.3	6.5	6.2	6.8	7.7	8	7.2	7.5	6.8	6.88	9.80	3.00
23	B.O.D.	mg/1	2.4	6	8	2.3	2.4	1.8	2.2	2.3	2.8	2.8	2.6	1.7	3.11	8.00	1.70
24	C.O.D.	mg/1	25.92	28.56	100	40	30	28	26.46	27.1	38	26	32.9	15.36	34.86	100.00	15.36
25	Sodium	mg/1	26	26	52.7	32.02	30.84	26.6	26.88	26.4	30	24.8	28.4	27.4	29.84	52.70	24.80
26	Potassium	mg/1	2.8	2.6	5.4	2.6	2.82	2.4	2.55	2.8	3	2.2	3	2.2	2.86	5.40	2.20
27	T. Coliform	MPN/100ml	70	500	900	220	240	70	220	110	130	80	220	220	248.33	900.00	70.00
28	F. Coliform	MPN/100ml	<2	<2	17	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	<2	<2
29	Fluoride	mg/1	0.706	0.882	1.2	1.14	0.86	1.16	0.82	1.04	1.11	1.02	1.08	1.02	1.00	1.20	0.71
30	FDS	mg/1	232	336	213	172	160	234	156	238	232	274	242	442	244.25	442.00	156.00
31	T.K.N.	mg/1	9.52	9.52	8.96	10.08	8.4	8.12	8.4	7.283	-	7.84	7.84	8.12	8.55	10.08	7.28
32	Boron	mg/1	0.006	0.08	0.008	0.012	0.022	0.008	0.02	0.005	0.008	0.008	0.008	0.005	0.02	0.08	0.01
	CATEGORY		"B"	"B"	"C"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"C"	"B"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2017-18

Natural Water Resource : RIVER WATER

Description of Sampling Station: Tapti River at Hathnoor

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		08.04.17	10.05.17	27.06.17	22.07.17	04.08.17	05.09.17	02.10.1	30.11.17	20.12.1	23.01.1	10.02.18	08.03.1	-	-	-
2	Appearance		Clear	Greenish	Sl. Turbid	Muddy	Sl. Muddy	Sl.Muddy	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	31	30.5	26	28	24	24	23	22	23	23	23	25.63	31.00	22.00
4	Turbidity	NTU	4.4	12.9	14.6	84.6	0.8	7.6	0.7	4.3	2.6	2.8	14.2	12.3	13.48	84.60	0.70
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	7.47	8.68	7.96	8.16	8.31	8.49	8.31	-	8.56	8.52	8.52	8.72	8.34	8.72	7.47
8	Sp. Conductivity	µMhos/cm.	404	880	716	374.12	530	524	524	548.4	463.42	562	606	1078.8	600.90	1078.80	374.12
9	T. Solids	mg/1	298	615	496	295	332	360	338	373	320	560	388	699	422.83	699.00	295.00
10	D. Solids	mg/1	282	590	467	253	324	346	330	362	312	348	375	682	389.25	682.00	253.00
11	S. Solids	mg/1	16	25	29	42	8	14	8	11	8	12	13	17	16.92	42.00	8.00
12	Amm. Nitrogen	mg/1	0.033	0.022	0.021	0.028	0.021	0.015	0.024	0.027	0.022	0.029	0.028	0.076	0.03	0.08	0.02
13	Nitrite	mg/1	0.089	0.084	0.03	0.08	0.005	0.008	0.014	0.011	0.08	0.008	0.012	0.014	0.04	0.09	0.01
14	Nitrate	mg/1	1.209	4.6	0.862	2.73	2.01	1.63	2.2	0.926	1.829	1.824	1.024	1.232	1.84	4.60	0.86
15	Phosphate (PO_4)	mg/1	0.04	0.043	0.019	0.043	0.668	0.022	0.46	0.022	0.016	0.022	0.025	0.049	0.12	0.67	0.02
16	Chloride	mg/1	71.78	68.4	34.485	13.99	33.25	73.16	33.5	56.74	39.42	42.72	47.92	86.78	50.18	86.78	13.99
17	Sulphate (SO_4)	mg/1	3.68	12.5	34.485	8.8	4.11	6.868	7.29	7.36	10.45	26.4	10.64	14.58	12.26	34.49	3.68
18	T. Alkalinity	mg/1	200	300	5.66	168	200	248	210	188	240	248	224	268	208.31	300.00	5.66
19	T. Hardness	mg/1	188	268	208	148	190	268	190	180	204	216	184	272	209.67	272.00	148.00
20	Ca-Hardness	mg/1	148	188	156	108	100	220	110	28	152	156	128	172	138.83	220.00	28.00
21	Mg-Hardness	mg/1	40	80	52	40	90	48	80	52	52	60	56	100	62.50	100.00	40.00
22	D. Oxygen	mg/1	6.6	8	6.6	6.7	6.9	6.1	6.6	7.6	7.8	7.2	7.5	6.6	7.02	8.00	6.10
23	B.O.D.	mg/1	1.6	4.6	1.6	1.6	1.6	1.6	1.8	2.6	1.6	2.6	2.2	2.2	2.13	4.60	1.60
24	C.O.D.	mg/1	18.24	28.56	24.5	20	8	24	24.5	29.04	17.78	28	30	24	23.05	30.00	8.00
25	Sodium	mg/1	26.81	32	23	28	12.12	22.08	22.4	24.8	26.6	24.4	25.4	30.6	24.85	32.00	12.12
26	Potassium	mg/1	1.2	3	1.9	3	1.5	2.06	2.2	2.4	2.2	2.2	2.8	2.9	2.28	3.00	1.20
27	T. Coliform	MPN/100ml	80	500	140	110	40	60	170	90	60	70	140	240	141.67	500.00	40.00
28	F. Coliform	MPN/100ml	<2	<2	<2	<2	<2	<2	<1.8	<2	<2	<2	<2	<2	<2	0.00	<2
29	Fluoride	mg/1	0.89	0.78	0.83	1.73	0.68	0.86	0.62	0.96	0.84	1.1	1.06	1.14	0.96	1.73	0.62
30	FDS	mg/1	190	416	320	158	181	210	156	230	202	228	240	450	248.42	450.00	156.00
31	T.K.N.	mg/1	8.4	16.24	5.042	6.72	2.8	6.16	5.6	6.16	8.12	7.28	6.723	11.76	7.58	16.24	2.80
32	Boron	mg/1	0.006	0.08	0.008	0.006	0.004	0.004	0.004	0.004	0.006	0.007	0.009	0.006	0.01	0.08	0.00
	CATEGORY		**"B"**	**"B"**	**"B"**	**"B"**	**"A"**	**"B"**	**"B"**	**"B"**	**"B"**	**"B"**	**"B"**	**"B"**	**"B"**	**"B"**	**"A"**

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2018-19

Natural Water Resource : RIVER WATER

Description of Sampling Station: River Tapti at Nepa Nagar (Nawtha Intake Well)

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		11/14/18	11.05.18	11.06.18	11.07.18	11.08.18	10.09.18	11.10.18	15.11.18	14.12.18	19.01.19	13.02.19	12.03.19	-	-	-
2	Appearance		Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	30	27	24	26	23	25	24	23	18	19	20	24.08	30.00	18.00
4	Turbidity	NTU	4.7	3.8	2.6	253.6	2.2	1.3	1.01	1.4	2.4	2.8	1.4	1.9	23.26	253.60	1.01
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.5	8.31	8.36	7.6	7.99	8.62	8.51	8.61	8.68	8.4	8.31	8.21	8.34	8.68	7.60
8	Sp. Conductivity	µMhos/cm.	529.5	501	599.47	262	367	457	394.39	385	391	360	360	390	416.36	599.47	262.00
9	T. Solids	mg/1	324	332	370	254	235	305	248	249	265	259	226	280	278.92	370.00	226.00
10	D. Solids	mg/1	317	325	360	136	220	298	238	242	258	250	216	270	260.83	360.00	136.00
11	S. Solids	mg/1	7	7	10	118	15	7	10	7	7	9	10	10	18.08	118.00	7.00
12	Amm. Nitrogen	mg/1	0.024	0.027	0.027	0.0284	0.018	0.008	0.012	0.018	0.008	0.014	0.012	0.02	0.02	0.03	0.01
13	Nitrite	mg/1	0.008	0.004	0.003	0.014	0.004	0.002	0.008	0.005	0.004	0.003	0.01	0.004	0.01	0.01	0.00
14	Nitrate	mg/1	1.03	0.691	0.67	2.116	0.84	0.69	2.016	0.8	0.82	0.614	0.74	0.58	0.97	2.12	0.58
15	Phosphate (PO_4)	mg/1	0.02	0.014	0.038	0.0208	0.014	0.009	0.026	0.016	0.018	0.041	0.01	0.02	0.02	0.04	0.01
16	Chloride	mg/1	29.35	22.29	37.15	27.99	30.62	19.28	30	30.62	33.74	24.99	30.85	23.92	28.40	37.15	19.28
17	Sulphate (SO_4)	mg/1	3.72	9.49	4.61	27.41	5.14	5.06	10.44	5.09	6.2	2.68	6.06	4.02	7.49	27.41	2.68
18	T. Alkalinity	mg/1	208	196	200	160	140	208	220	172	188	180	160	192	185.33	220.00	140.00
19	T. Hardness	mg/1	136	172	160	156	132	168	208	160	168	168	120	172	160.00	208.00	120.00
20	Ca-Hardness	mg/1	104	148	120	112	100	124	120	124	136	140	96	136	121.67	148.00	96.00
21	Mg-Hardness	mg/1	32	24	40	44	32	44	88	36	32	28	24	36	38.33	88.00	24.00
22	D. Oxygen	mg/1	6.7	6.9	6.2	6.9	7.2	6.9	7	7.3	7.5	7.3	7.6	7.7	7.10	7.70	6.20
23	B.O.D.	mg/1	1.4	1	1.8	2	1.9	1.1	1	1.3	1.4	1.2	1	1.2	1.36	2.00	1.00
24	C.O.D.	mg/1	16.18	7	16	24.5	12.48	10.78	6	12.74	13.83	13.83	11.76	11.61	13.06	24.50	6.00
25	Sodium	mg/1	18	22	23	24	22.01	16	12.1	20.09	16.06	21.62	17.19	15	18.92	24.00	12.10
26	Potassium	mg/1	2	1.8	2	2.3	1.8	1.5	1.21	1.6	1.48	1.46	1.4	1.9	1.70	2.30	1.21
27	T. Coliform	MPN/100ml	47	40	47	170	49	40	36	49	41	46	49	94	59.00	170.00	36.00
28	F. Coliform	MPN/100ml	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
29	Fluoride	mg/1	0.81	0.72	0.68	1.09	0.73	0.52	0.61	0.69	0.64	0.66	0.8	0.79	0.73	1.09	0.52
30	FDS	mg/1	210	200	216	98	152	180	-	158	152	154	148	150	165.27	216.00	98.00
31	T.K.N.	mg/1	5.04	7	3.36	6.16	5.6	3.36	2.8	4.48	3.92	5.88	4.48	3.92	4.67	7.00	2.80
32	Boron	mg/1	0.003	0.004	0.004	0.014	0.006	0.002	0.003	0.002	0.004	0.004	0.004	0.003	0.00	0.01	0.00
33	Iron	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
34	Mangenese	mg/1	0.066	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.066	0.066	0.066
35	Zinc	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
36	Total Chromium	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
37	Copper	mg/1	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001	0.001	0.001
38	Nickel	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
39	Lead	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
40	Cadmium	mg/1	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	CATEGORY		"A"	"A"	"A"	"B"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"B"	0.002	0.002	0.002
															"B"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2018-19

Natural Water Resource : RIVER WATER

Description of Sampling Station: River Tapti at Nepa Nagar 100 M.D/S after Mixing Pandhar Nallah

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		11.04.18	11.05.18	11.06.18	11.07.18	11.08.18	11.09.18	11.10.18	15.11.18	14.12.18	19.01.19	13.02.19	12.03.19	-	-	-
2	Appearance		Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	29	27	24	26	23	25	24	23	18	19	22	24.17	30.00	18.00
4	Turbidity	NTU	2.3	4	1.8	288	2.6	1.1	1.51	2	4.7	3.2	2.3	2.1	26.30	288.00	1.10
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.16	8.3	8.24	7.59	8.24	8.56	8.12	8.57	8.63	8.53	8.68	8.9	8.38	8.90	7.59
8	Sp. Conductivity	µMhos/cm.	670	533	637.5	279	382	492	442.3	418	567	375	362	408	463.82	670.00	279.00
9	T. Solids	mg/l	435	358	394	309	246	318	292	270	376	280	254	296	319.00	435.00	246.00
10	D. Solids	mg/l	427	350	382	169	226	310	282	261	368	268	242	283	297.33	427.00	169.00
11	S. Solids	mg/l	8	8	12	140	20	8	10	9	8	12	12	13	21.67	140.00	8.00
12	Amm. Nitrogen	mg/l	0.019	0.026	0.02	0.032	0.02	0.008	0.014	0.02	0.009	0.019	0.018	0.023	0.02	0.03	0.01
13	Nitrite	mg/l	0.007	0.005	0.002	0.018	0.008	0.002	0.008	0.006	0.006	0.011	0.006	0.005	0.01	0.02	0.00
14	Nitrate	mg/l	0.96	0.714	0.647	3.206	0.88	0.62	1.854	0.9	0.96	0.602	0.82	0.64	1.07	3.21	0.60
15	Phosphate (PO_4)	mg/l	0.02	0.016	0.039	0.021	0.016	0.011	0.021	0.02	0.02	0.026	0.014	0.022	0.02	0.04	0.01
16	Chloride	mg/l	39.18	33.43	37.15	27.99	36.37	19.28	30	34.45	38.56	34.98	34.71	28.71	32.90	39.18	19.28
17	Sulphate (SO_4)	mg/l	11.3	10.51	6.764	20.66	6.2	5.2	10.31	10.12	7.76	3.98	7.08	4.96	8.74	20.66	3.98
18	T. Alkalinity	mg/l	200	220	200	164	144	204	184	180	200	188	172	200	188.00	220.00	144.00
19	T. Hardness	mg/l	220	180	190	188	140	184	180	176	180	192	140	180	179.17	220.00	140.00
20	Ca-Hardness	mg/l	180	152	132	112	112	132	120	124	148	140	120	152	135.33	180.00	112.00
21	Mg-Hardness	mg/l	40	28	60	76	28	52	60	52	32	52	20	28	44.00	76.00	20.00
22	D. Oxygen	mg/l	7	6.9	6.8	7.2	7.1	6.8	7	7	7.3	7.8	7.7	7.6	7.18	7.80	6.80
23	B.O.D.	mg/l	1.6	2	2.4	2.4	2	1.2	1.5	1.3	1.5	1.4	1.4	1.6	1.69	2.40	1.20
24	C.O.D.	mg/l	1.6	8	20	30.38	18.62	12.74	8	14.7	15.8	17.78	12.74	14.52	14.57	30.38	1.60
25	Sodium	mg/l	25.16	28	21	28	24.12	17	11.84	24.45	18.24	24.6	16.18	17	21.30	28.00	11.84
26	Potassium	mg/l	2.04	2.2	2	2.2	2.01	1.4	1.8	10.12	1.62	1.82	1.8	2	2.58	10.12	1.40
27	T. Coliform	MPN/100ml	50	40	21	210	49	49	-	63	48	48	58	110	67.82	210.00	21.00
28	F. Coliform	MPN/100ml	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	-	<1.8	<1.8	<1.3	<1.8	<1.8	<1.8	<1.8	<1.8
29	Fluoride	mg/l	1.06	0.64	0.73	1.16	0.8	0.56	0.67	0.9	0.73	0.69	0.6	0.88	0.79	1.16	0.56
30	FDS	mg/l	380	220	250	112	160	188	168	164	190	158	170	180	195.00	380.00	112.00
31	T.K.N.	mg/l	7.84	7	3.92	7.84	6.16	4.2	1.854	5.6	5.6	7	5.04	4.2	5.52	7.84	1.85
32	Boron	mg/l	0.004	0.006	0.006	0.016	0.006	0.002	0.004	0.004	0.006	0.008	0.006	0.004	0.01	0.02	0.00
33	Iron	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
34	Mangenese	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
35	Zinc	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
36	Total Chromium	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
37	Copper	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
38	Nickel	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
39	Lead	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
40	Cadmium	mg/l	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	CATEGORY		"A"	"A"	"A"	"B"	"A"	"A"	"A"	"B"	"A"	"A"	"A"	"B"	"B"	"B"	"A"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2018-19

Natural Water Resource : RIVER WATER

Description of Sampling Station: Tapti River at Pipalghat, Burhanpur

Description of Sampling Station:

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		11/14/18	11.05.18	11.06.18	11.07.18	11.08.18	11.09.18	11.10.18	15.11.18	14.12.18	19.01.19	13.02.19	12.03.19	-	-	-
2	Appearance		Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	30	27	24	26	23	25	24	23	20	19	20	24.25	30.00	19.00
4	Turbidity	NTU	3.2	10	34.1	132.4	4	1.6	1.92	3.2	4.5	6.6	1.3	2.2	17.09	132.40	1.30
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.4	8.49	7.98	7.76	8.3	8.29	8.02	8.39	8.89	8.61	8.63	8.74	8.38	8.89	7.76
8	Sp. Conductivity	µMhos/cm.	1678	1009	1402	263.84	350	495	423.16	565	418	592	522	840	713.17	1678.00	263.84
9	T. Solids	mg/1	531	631	789	405	222	332	275	358	298	354	344	603	428.50	789.00	222.00
10	D. Solids	mg/1	516	620	772	293	210	322	265	348	287	340	336	588	408.08	772.00	210.00
11	S. Solids	mg/1	15	11	17	112	10	10	10	10	11	14	8	15	20.25	112.00	8.00
12	Amm. Nitrogen	mg/1	0.036	0.018	0.042	0.026	0.02	0.012	0.022	0.026	0.024	0.039	0.02	0.043	0.03	0.04	0.01
13	Nitrite	mg/1	0.008	0.006	0.055	0.012	0.008	0.003	0.005	0.008	0.006	0.312	0.007	0.008	0.04	0.31	0.00
14	Nitrate	mg/1	12.306	1.87	1.214	2.113	1.2	0.69	2.8	1	1.09	2.08	0.92	1.62	2.41	12.31	0.69
15	Phosphate (PO_4)	mg/1	0.082	0.023	0.052	0.029	0.02	0.014	0.0311	0.02	0.032	0.052	0.02	0.062	0.04	0.08	0.01
16	Chloride	mg/1	68.48	72.44	78.94	25.99	30.62	21.21	28	30.62	33.74	59.98	50.14	33.5	44.47	78.94	21.21
17	Sulphate (SO_4)	mg/1	12.9	20.81	6.6	20.421	6.18	8.2	10.41	9.16	7.64	6.8	12.08	16.72	11.49	20.81	6.18
18	T. Alkalinity	mg/1	320	372	420	196	150	204	220	200	208	220	216	244	247.50	420.00	150.00
19	T. Hardness	mg/1	420	320	460	24	128	192	200	220	180	200	192	240	231.33	460.00	24.00
20	Ca-Hardness	mg/1	348	280	340	148	88	120	124	160	140	148	152	148	183.00	348.00	88.00
21	Mg-Hardness	mg/1	72	40	120	48	40	72	76	60	40	52	40	92	62.67	120.00	40.00
22	D. Oxygen	mg/1	6.5	5	5.7	6.8	7.2	6.6	6.7	6.9	8	8	7.8	6.7	6.83	8.00	5.00
23	B.O.D.	mg/1	3	2.1	6	2.4	2	1.4	2	1.4	1.8	2	1.8	2	2.33	6.00	1.40
24	C.O.D.	mg/1	28.8	38	40	9.8	20.16	20.58	10	22.54	18.77	19.76	17.64	24.2	22.52	40.00	9.80
25	Sodium	mg/1	26.14	28	28	24	25.01	19	13.1	25.96	22.08	22.06	50.14	28	25.96	50.14	13.10
26	Potassium	mg/1	2.08	2.3	3.2	2.2	1.9	1.9	2.05	1.8	2.4	2.4	12.08	3	3.11	12.08	1.80
27	T. Coliform	MPN/100ml	500	350	170	170	63	70	70	70	140	120	110	140	164	500.00	63.00
28	F. Coliform	MPN/100ml	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
29	Fluoride	mg/1	1.22	1.24	0.89	1.14	0.88	0.69	0.67	0.96	0.86	0.86	0.7	1.02	0.93	1.24	0.67
30	FDS	mg/1	320	460	540	200	148	194	168	224	172	212	236	340	267.83	540.00	148.00
31	T.K.N.	mg/1	12.6	8.4	5.6	11.76	6.16	6.16	2.014	7.84	7.84	7.28	5.6	8.12	7.45	12.60	2.01
32	Boron	mg/1	0.022	0.005	0.012	0.011	0.004	0.004	0.004	0.02	0.008	0.009	0.007	0.006	0.01	0.02	0.00
33	Iron	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
34	Mangenese	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
35	Zinc	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
36	Total Chromium	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
37	Copper	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
38	Nickel	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
39	Lead	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
40	Cadmium	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	CATEGORY		"C"	"C"	"C"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"B"	"C"	"B"

Classification of River water based on IS - 2296 - 1982

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL

Water Quality during Year - 2018-19

Natural Water Resource : RIVER WATER

Description of Sampling Station: Tapti River at Hathnoor

S.No.	Characteristic	Unit	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	Max.	Min.
1	Sampling Date		11.04.18	11.05.18	30.06.18	11.07.18	11.08.18	11.09.18	05.10.18	15.11.18	14.12.18	19.01.19	13.02.19	12.03.19	-	-	-
2	Appearance		Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Muddy	Clear
3	Temperature	oC	30	29	28	24	26	23	24	24	23	20	19	22	24.33	30.00	19.00
4	Turbidity	NTU	35.3	13	15.8	138.4	4.8	1.2	2.2	3.6	4.6	3.8	1.9	24	20.72	138.40	1.20
5	Colour	PCS	1	1	1	1	1	1	1	1	1	1	1	1	1.00	1.00	1.00
6	Odour	T. No	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less	O.less
7	pH	pH Unit	8.33	8.69	8.19	7.68	8.28	8.61	8.63	8.65	8.94	8.91	8.59	8.21	8.48	8.94	7.68
8	Sp. Conductivity	µMhos/cm.	1766	1464	660	362	370	477	404	460	631	486	502	903	707.08	1766.00	362.00
9	T. Solids	mg/1	1135	838	531	400	254	316	281	388	413	312	310	622	483.33	1135.00	254.00
10	D. Solids	mg/1	1108	822	489	310	240	308	272	380	400	302	302	603	461.33	1108.00	240.00
11	S. Solids	mg/1	27	16	42	90	14	8	9	8	13	10	8	19	22.00	90.00	8.00
12	Amm. Nitrogen	mg/1	0.084	0.025	0.06	0.049	0.018	0.014	0.052	0.024	0.024	0.032	0.019	0.059	0.04	0.08	0.01
13	Nitrite	mg/1	0.016	0.008	0.008	0.014	0.006	0.004	0.004	0.005	0.008	0.027	0.009	0.01	0.01	0.03	0.00
14	Nitrate	mg/1	14.28	9.397	6.93	1.143	0.9	0.76	0.852	0.94	0.16	1.82	0.86	1.8	3.32	14.28	0.16
15	Phosphate (PO_4)	mg/1	0.324	0.028	0.02	0.036	0.014	0.016	0.012	0.02	0.036	0.05	0.014	0.069	0.05	0.32	0.01
16	Chloride	mg/1	48.98	91.02	66.87	40.24	40.2	19.28	43.07	34.45	48.21	49.98	52.06	44.02	48.20	91.02	19.28
17	Sulphate (SO_4)	mg/1	18.7	26.08	19.18	12.26	5.92	4.9	8.768	5.09	8.34	4.67	13.06	11.9	11.57	26.08	4.67
18	T. Alkalinity	mg/1	440	380	260	128	132	212	144	248	228	200	172	272	234.67	440.00	128.00
19	T. Hardness	mg/1	600	400	300	164	140	204	176	200	200	212	180	260	253.00	600.00	140.00
20	Ca-Hardness	mg/1	408	340	260	128	112	132	104	140	136	140	140	180	185.00	408.00	104.00
21	Mg-Hardness	mg/1	192	60	40	36	28	72	72	60	64	72	40	80	68.00	192.00	28.00
22	D. Oxygen	mg/1	4.3	4	5.9	6.3	6.8	6.7	6.8	6.8	7.4	7.8	7.8	5	6.30	7.80	4.00
23	B.O.D.	mg/1	5	2	1.9	2.3	1.9	1.2	1.2	1.8	2	1.6	1.6	2.3	2.07	5.00	1.20
24	C.O.D.	mg/1	33.88	42	12.84	23.52	15.36	4.2	17.68	22.54	21.73	15.8	20.58	28.07	21.52	42.00	4.20
25	Sodium	mg/1	28.8	31	22.01	30.14	26.01	18	18.64	24.01	24	19.08	18.02	32	24.31	32.00	18.00
26	Potassium	mg/1	2.02	2.8	1.9	3	2	1.7	1.62	1.9	2.38	2.04	2.01	3.2	2.21	3.20	1.62
27	T. Coliform	MPN/100ml	900	380	170	170	60	49	70	49	170	70	170	150	200.67	900.00	49.00
28	F. Coliform	MPN/100ml	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
29	Fluoride	mg/1	1.3	1.36	1.06	1.19	0.94	0.61	0.82	0.84	0.92	0.72	0.8	1.09	0.97	1.36	0.61
30	FDS	mg/1	860	500	320	202	140	190	170	248	238	204	210	358	303.33	860.00	140.00
31	T.K.N.	mg/1	15.12	10.64	7.28	6.163	5.04	6.16	4.48	6.16	3.92	7	6.72	8.96	7.30	15.12	3.92
32	Boron	mg/1	0.032	0.006	0.009	0.011	0.004	0.004	0.005	0.004	0.012	0.004	0.007	0.008	0.01	0.03	0.00
33	Iron	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
34	Mangenese	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
35	Zinc	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
36	Total Chromium	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
37	Copper	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
38	Nickel	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
39	Lead	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
40	Cadmium	mg/1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	CATEGORY		"C"	"B"	"B"	"B"	"B"	"A"	"B"	"A"	"B"	"B"	"B"	"B"	"B"	"C"	"A"

Classification of River water based on IS - 2296 - 1982

:: कार्यालय नगर परिषद नेपानगर, बुरहानपुर (म.प्र.) ::

क्रमांक–प्रोजेक्ट / निर्माण / 2019 / 1704 नेपानगर, दिनांक 09 / 05 / 2019

प्रति,

कलेक्टर
जिला–बुरहानपुर
बुरहानपुर म.प्र.

विषय :– माननीय हरित अधिकरण द्वारा प्रकरण क्र. 673 / 2018 : ताप्ती शुद्धीकरण योजना संबंधित ।

––00––

उपरोक्त विषय में बारे में माननीय हरित अधिकरण द्वारा प्रकरण क्र. 673 / 2018 के संबंध में नगर परिषद नेपानगर, जिला– बुरहानपुर से संबंधित ताप्ती शुद्धीकरण योजना बाबत दिनांक 04.05.2019 में दिये गये निर्देशानुसार कार्ययोजना तैयार कर संलग्न प्रेषित है ।

संलग्न : उपरोक्तानुसार ।

मुख्य नगर पालिका अधिकारी,
नगर परिषद, नेपानगर,
बुरहानपुर

पृ.क्रमांक–प्रोजेक्ट / निर्माण / 2019 / 1705 नेपानगर, दिनांक 09 / 05 / 2019

प्रतिलिपि–

1. क्षेत्रीय अधिकारी, म.प्र. प्रदूषण नियंत्रण बोर्ड, इन्दौर की ओर कार्ययोजना की एक प्रति आवष्यक कार्यवाही हेतु संलग्न प्रेषित ।

मुख्य नगर पालिका अधिकारी,
नगर परिषद, नेपानगर,
बुरहानपुर

Nagar Parishad Nepanagar, District-Burhanpur

Proposed Action Plan for Rejuvenation of River Tapti

Sl No.	Action plan for rejuvenation of river Tapti	Organization/Agency Responsible for Execution of the Action Plan	Time Target& Cost (For Preparation of Scheme)	Present Status
I	**Sewage Treatment & Disposal Plan**			
	Interception of Sewage going into various nallas of Nepanagar joining River Tapti : Conveyance System for City Sewage & STP			
	(a) Laying of Sewer lines of 50 km. in the Municipal area of Nepanagar, Lift station & Terminal Sewage pumping station for 18 MLD sewage considering flow of 2047.	UADD/NP Nepanagar	3 Years	Project. DPR of Rs. 36.83 Cr. Submitted to govt. of M.P., UADD considering estimation of waste up to 2047. After receiving sanction & funds the work will be completed in 03 years.
	(b) Sewage Treatment Plant - 18 MLD	UADD/NP Nepanagar	3 Years	
	(e) To ensure rain water harvesting by the industrial commercial and other institutions and groundwater recharging with only clean water be encouraged by CGWB/CGWA	NP Nepanagar	Already under implementation	The condition of Rain Water Harvesting is given in building permission. So far 3 building owners have been directed to install above system.
IV	**Flood Plain Zone (FPZ)**			
	(a) Plantation in Flood Plain Zone (FPZ) (b) dhar river bridge way to head work	State Forest Department /NP Nepanagar/ Nepa Ltd. Nepanagar	Regular Process	In year 2019-20 : 5000 Nos plantation proposed. In year 2020-2021 : 5000 Nos. In years 2021-2022 : 5000 Nos
	(c) Checking encroachments in the FPZ of river Tapti	District/Local administration / Municipal Council Burhanpur & Nepanagar	-	All the encroachments in the FPZ of river Tapti has been already removed by local administration
	(d) Prohibition of disposal of municipal plastic and biomedical waste particularly in drains	MPPCB	Within three months	1- Complied. The NP Nepanagar hospital, taken membership from M/s Hoswin incinerator Pvt. Ltd. Indore (Which is Authorized by M.P.P.C.B.) for the disposal of Biomedical Waste

				as per rule 2- **Solid Waste Management-** The total 08 TPD is generated. After Collection & Segregation it is taken to trenching ground for further processing. However the improvement in collection, segregation & treatment facility is required. 3- Polythene carry bags has been Prohibited by the MP Government. As a regulatory measure seizer of polythene will be done.
	(e) Proper segregation, collection, transportation of MSW.	NP Nepanagar	Dec. 2020	100 % door to door collection – Dec. 2019. Segregation – March 2020
	(f) Bio-Remediation of legacy waste about 5 lakhs tonnes.	NP Nepanagar	02 Years	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction.
	(g) Installation of processing plant of MSW, MRF	NP Nepanagar	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Processing Plant estimated cost – Rs. 2 Cr. Target date – Dec. 2020. MRF- Cost Rs. 1 Cr. Target date- Dec. 2020

Septage management (..... KLD) shall be done through the tankers using proposed STP.

SUB ENGG
Nagar Palika Parishad
Nepanagar

:: कार्यालय नगर पालिक निगम, बुरहानपुर म.प्र. ::

क्रमांक–प्रोजेक्ट / निर्माण / 2019 बुरहानपुर, दिनांक : 04 / 05 / 2019

प्रति,

कलेक्टर
जिला–बुरहानपुर
बुरहानपुर म.प्र.

विषय :– माननीय हरित अधिकरण द्वारा प्रकरण क्र. 673 / 2018 : ताप्ती शुद्धीकरण योजना संबंधित ।

––00––

उपरोक्त विषय में बारे में माननीय हरित अधिकरण द्वारा प्रकरण क्र. 673 / 2018 के संबंध में नगर पालिक निगम बुरहानपुर से संबंधित ताप्ती शुद्धीकरण योजना बाबत दिनांक 04.05.2019 में दिये गये निर्देशानुसार कार्ययोजना तैयार कर संलग्न प्रेषित है ।

संलग्न : उपरोक्तानुसार ।

आयुक्त
नगर पालिक निगम,
बुरहानपुर

पृ.क्रमांक–प्रोजेक्ट / निर्माण / 2019 / 1339 बुरहानपुर, दिनांक : 03 / 05 / 2019

प्रतिलिपि–

1. क्षेत्रीय अधिकारी, म.प्र. प्रदूषण नियंत्रण बोर्ड, इन्दौर की ओर कार्ययोजना की एक प्रति आवश्यक कार्यवाही हेतु संलग्न प्रेषित ।

आयुक्त
नगर पालिक निगम,
बुरहानपुर

Proposed action plan- Short term & Long term action and the identified authorities for initiating actions and the time limits for ensuring compliance.

The short term and long term action plans and the implementing agencies responsible for execution of the action plans and the time limits are given in table as below :-

Proposed Short Term and Long Term Action Plan for Rejuvenation of River Tapti

SI No.	Action plan for rejuvenation of river Tapti	Organization/Agency Responsible for Execution of the Action Plan	Time Target & Cost (For Preparation of Scheme)	Present Status
	Burhanpur : Industrial Pollution Control			
1	(a) CETP (Common Effluent Treatment Plant) for Udhyog Nagar Industrial Area, Burhanpur	BMC Burhanpur	Scheme recently completed. Commissioning to be done in 03 months	CETP already constructed however the proper Commissioning shall be done in 03 months.
	(b) Construction of Effluent Conveyance System.	BMC Burhanpur	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Presently the waste shall be taken through tankers.
	(c) Up- gradation of CETP : Installation of MGF & ACF.	BMC Burhanpur	01 Year	Proposal to be prepared in 06 months & Implementation in 01 Years after sanction.
	(d) Ensuring automobiles service station and Hotels/Restaurants/Dairy particularly located on road side should have a treatment system and levy of fine case found violations.	MPPCB/ Municipal Council Burhanpur and District Administration	Within three month	
2	**Sewage Treatment & Disposal Plan**			
	Interception of Sewage going into various nallas of Burhanpur joining River Tapti : Conveyance System for City Sewage & STP			
	(a) Laying of Sewer lines in the Municipal area of Burhapur (Zone 3 : 17 wards completely and 17 wards partly covered).	UADD/BMC Burhanpur	16.02.2020	Work in progress. About 72 km. sewer line laid out of 95.8 km. Distribution line of 200 km. work in progress. Out of which 45 km. laid. Total Cost of the project is Rs. 81.79 Cr, Sanctioned under AMRUT Project.
	(b) STP near (Renuka mata Temple Road, Nagar Palika Nigam Burhanpur) - 21 MLD	UADD/BMC Burhanpur	16.02.2020 (STP work 32% completed)	

	(c) Laying of the Sewer line in rest of the remaining wards (Zone 1 : 95.614 km, Zone 2 : 8.42 km. & Augmentation of STP capacity for 17 MLD.	UADD/BMC Burhanpur	2 Years	DPR of Rs. 154 Cr. Submitted to govt. of M.P. under AMRUT project for over all sewerage network considering estimation of waste up to 2033. Out of above, sanction of Rs. 81.79 Cr. received. After receiving Rs. 72.31 Cr, The work will be completed in 02 years.
	(d) Estimation of area wise sewage generation for 20 villages which are proposed to be included in limit of municipal corporation, assessment of existing treatment capacities, quantum of disposal of sewage presently through drains and the gaps in sewage treatment capacity.	UADD/BMC Burhanpur	2 Years	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction.
	(e) To ensure rain water harvesting by the industrial commercial and other institutions and groundwater recharging with only clean water be encouraged by CGWB/CGWA	CGWA/M.P. Ground Water Department/T&CP/MCI/Local bodies	Already under implementation	The condition of Rain Water Harvesting is given in building permission. So far 101 building owners have been directed to install above system. Rs. 8.93 lakhs has been received as guarantee money. Regular Process.
IV	**Flood Plain Zone (FPZ)**			
	(a) Plantation in Flood Plain Zone (FPZ)	State Forest Department /BMC	Regular Process	In year 2019-20 : 10000 Nos plantation proposed. In year 2020-2021 : 10000 Nos. In years 2021-2022 : 10000 Nos
	(b) Checking encroachments in the FPZ of river Tapti	District/Local administration / Municipal Council Burhanpur & Nepanagar	-	All the encroachments in the FPZ of river Tapti has been already removed by local administration
	(c) Prohibition of disposal of municipal plastic and biomedical waste particularly in drains	MPPCB	Within three months	1- Complied. The BMW of Burhanpur city is about 0.123 MTD . All hospital,

				Nursing Home & Pathology Lab of Burhanpur & Nepanagar have taken membership from M/s Hoswin incinerator Pvt. Ltd. Indore (Which is Authorized by M.P.P.C.B.) for the disposal of Biomedical Waste as per rule 2- **Solid Waste Management**- The total 88 TPD is generated. After Collection & Segregation it is taken to trenching ground for further processing. However the improvement in collection, segregation & treatment facility is required. 3- Polythene carry bags has been Prohibited by the MP Government. As a regulatory measure seizer of polythene will be done.
	(d) Proper segregation, collection, transportation of MSW.	BMC Burhanpur	Dec. 2020	100 % door to door collection – Dec. 2019. Segregation – March 2020
	(e) Bio-Remediation of legacy waste about 5 lakhs tonnes.	BMC Burhanpur	02 Years	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction.
	(f) Installation of processing plant of MSW, MRF	BMC Burhanpur	02 Year	Proposal to be prepared in 06 months & Implementation in 02 Years after sanction. Processing Plant estimated cost – Rs. 20 Cr. Target date – Dec. 2020. MRF- Cost Rs. 10 Cr. Target date- Dec. 2020

	(g) Proper collection transportation & treatment of C&D waste.	BMC Burhanpur	01 Year	01 collection center proposed by BMC. Consultation with paver block unit being done to utilize C&D waste. The MOU is drafted to utilize the paver blocks by BMC its self.

Septage management shall be done through the tankers using 21 MLD proposed STP, which is under construction.

Commissioner
Municipal Corporation
Burhanpur

ANNEXURE - 3

Chief Medical & Health Officer, Burhanpur

D. No. 557/CMHO/ 2019 Burhanpur, Date : 04/5/19

Health Status of the Public in the Catchment of Polluted River Stretch Tapti

Name of Disease	District Nehru Hospital Burhanpur		
	2016-17	2017-18	2018-19
Gastro entities	45	78	32
Diarrhea	1172	1248	1271
Renal (Kidney) Mal functioning	24	36	39
Cancer	104	91	113

Municipal Corporation Burhanpur is supplying safe drinking water with proper treatment to the citizen of Burhanpur. Hence the problem of water born diseases can not be correlated with the polluted river stretch & ground water pollution.

Seal & Signature of CMHO

ANNEXURE - 4

कार्यालय कलेक्टर, जिला–बुरहानपुर

क्र0/जि.प./स्टेनो/19/1938 बुरहानपुर, दिनांक 4/5/19

कार्यालय आदेश

माननीय राष्ट्रीय हरित अधिकरण प्रिंसिपल बैंच नई दिल्ली द्वारा प्रकरण क्र0 ओए नं. 673/2018 में दिनांक 20.09.2018 को दिये गये आदेशानुसार ताप्ती नदी को "पॉल्यूटेड रिवर स्ट्रेच– नेपानगर से बुरहानपुर (प्राथमिकता क्रम–4)" की श्रेणी में शामिल किया गया है। इस संबंध में माननीय राष्ट्रीय हरित अधिकरण के आदेशों के अनुसार ताप्ती नदी के पुनरूद्धार हेतु शार्ट टर्म एवं लांग टर्म योजना बनाई जाना है तथा जिला स्तरीय मॉनिटरिंग कमेटी का गठन कर समय–समय पर रिव्यू बैठक आयोजित की जाना है। अतः एतद् द्वारा निम्नानुसार जिला स्तरीय मॉनिटरिंग कमेटी का गठन किया जाता है :–

1. कलेक्टर, बुरहानपुर – अध्यक्ष
2. मुख्य कार्यपालन अधिकारी जिला पंचायत, बुरहानपुर – सदस्य
3. कार्यपालन यंत्री, जल संसाधन विभाग, बुरहानपुर
4. परियोजना अधिकारी, नगरीय विकास विभाग, बुरहानपुर – संयोजक
5. कार्यपालन यंत्री, लोक स्वास्थ्य यांत्रिकी विभाग, बुरहानपुर
6. वनमण्डलाधिकारी , वन विभाग, बुरहानपुर
7. अधीक्षण यंत्री, म.प्र. पश्चिम क्षेत्र विद्युत वितरण कंपनी, बुरहानपुर
8. उप संचालक, नगर तथा ग्राम निवेश विभाग, बुरहानपुर/इन्दौर
9. जिला प्रभारी–बुरहानपुर, म.प्र. प्रदूषण नियंत्रण बोर्ड, इन्दौर
10. आयुक्त, नगर निगम, बुरहानपुर
11. महाप्रबंधक, जिला उद्योग एवं व्यापार केन्द्र, बुरहानपुर
12. मुख्य नगर पालिक अधिकारी नगर परिषद नेपानगर
13. महाप्रबंधक, नेपा लिमिटेड नेपानगर

कलेक्टर
जिला–बुरहानपुर

पृ0क्र0/जि.प./स्टेनो/19/1939 बुरहानपुर, दिनांक 4/5/19

प्रतिलिपि :–

1. मुख्य कार्यपालन अधिकारी जिला पंचायत, बुरहानपुर की ओर सूचनार्थ।
2. कार्यपालन यंत्री, जल संसाधन विभाग, बुरहानपुर की ओर सूचनार्थ।
3. परियोजना अधिकारी, नगरीय विकास विभाग, बुरहानपुर की ओर सूचनार्थ।
4. कार्यपालन यंत्री, लोक स्वास्थ्य यांत्रिकी विभाग, बुरहानपुर की ओर सूचनार्थ।
5. डी.एफ.ओ., वन विभाग, बुरहानपुर की ओर सूचनार्थ।
6. अधीक्षण यंत्री, म.प्र. पश्चिम क्षेत्र विद्युत वितरण कंपनी, बुरहानपुर की ओर सूचनार्थ।
7. जिला प्रभारी बुरहानपुर, म.प्र. प्रदूषण नियंत्रण बोर्ड, इन्दौर की ओर सूचनार्थ।
8. उप संचालक, नगर तथा ग्राम निवेश विभाग, बुरहानपुर/इन्दौर की ओर सूचनार्थ।
9. मुख्य नगर पालिका अधिकारी, नगर परिषद, नेपानगर की ओर सूचनार्थ।
10. आयुक्त, नगर निगम, बुरहानपुर की ओर सूचनार्थ।
11. महाप्रबंधक, जिला उद्योग एवं व्यापार केन्द्र, बुरहानपुर की ओर सूचनार्थ।
12. स्टेनो टू कलेक्टर जिला बुरहानपुर की ओर सूचनार्थ।
13. महाप्रबंधक, नेपा लिमिटेड नेपानगर

कलेक्टर
जिला–बुरहानपुर

Attendance Sheet

Meeting for Action Plan for Tapti River Rejuvenation Committee meeting: Date 0[illegible].04.2019

S. No.	Officer Name & Designation	Department	Mobile No.	E-mail	Signature
1	श्री उमेश कुमार, कलेक्टर	कलेक्टर बुरहानपुर	7587980300	dmburhanpur@nic.in	
2	श्री रोहन सक्सेना	सी.ई.ओ. जिला पंचायत बुरहानपुर	9827281765		
3	आर.के. गुप्ता क्षेत्रीय अधिकारी	म.प्र. प्रदूषण नियंत्रण बोर्ड इंदौर	9425096862		
4	कमोडोर ए.एन सोनसेल	अध्यक्ष एवं प्रबंध निदेशक नेपा लिमिटेड	7350589381	cmd@nepamills.nic.in	
5	सुरेन्द्र मेहता	वरिष्ठ प्रबंधक (तकनीकी एवं पर्या)	7693058655	technical@nepamills.nic.in	
6	विजय फेगडे	पर्यावरण प्रकोष्ठ	9407481666	technical@nepamills.nic.in	
7	DR. Vikram S. Verma, CMHO	Health	9826824531		
8	व्ही. के. मण्डलोई कार्यपालन यंत्री	जल संसाधन विभाग	9826745495	wrdburhanpur@yahoo.co.in	
9	रामदास कालडे वनक्षेत्रपाल	वन विभाग	9424793133	-	
10	Pradeep Sharma	UADD	9425075057		
11	M.S. Bhatore	E.E. PHE	7974920732	msbhatore@gmail.	

S. No.	Officer Name & Designation	Department	Mobile No.	E-mail	Signature
12	K. K. Khedp CEO	J.P. Burahanpur	9425092427		
13	HARISH TRIPATHI G.M. PPC	Indorly	9406822041	2579 4eig Tripathi @ gmail.com	
14	B. D. Bhumarkar Commi.	Bhur. Municipal co.	9826334353		
15	Mohd Shoeb Ansari Field Engineer WAPCOS	WAPCOS BURHANPUR	8103646890	Shoebaz@gmail.com	
16	Mohd. Mohsin Ansari Field Engineer WAPCOS	WAPCOS Burhanpur	9993519338	mansari.ce15@gmail.com	
17	Zakir, S. Ansari E.E. (WAPCOS)	WAPCOS BURHANPUR	8103161502	zakirshafique.ansari @ gmail.com	
18	Vaghela. Mahendrasinh F.E. (Ankita construction)	Ankita consl: Burhanpur	7600788247	AnkitaBurhanpur 510@gmail.com	
19	Mohd. Salim Khan Poldude / Asstt. Commissioner	Nagar Nigam Burhanpur	9425642688	Salimkhan961@gmail.com	
20	S.N. Patil Chief Chemist	MPPCB Indore	9993349890	Sn.patil026@gmail.com	
21					
22					