

**ACTION PLAN FOR RESTORATION OF
POLLUTED STRETCH OF
RIVER MANGALA ALONG PURI STRETCH**

1.0 Background

Water quality assessment of river Mangalahas been carried out by the State Pollution Control Board, Odisha under the project “National Water Quality Monitoring Programme” on regular basis at two locations, such as Malatipatpur (Mangala upstream) and Golasahi (Mangala Downstream since April, 2017. The maximum Biochemical Oxygen Demand(BOD) range in this stretch of Mangalariver during 2017 was observed to be in the range 3.4-5.7 mg/. BOD has exceeded the tolerance limit of 3.0 mg/l at Golasahi four times during the total period of observation and therefore has been identified as polluted river stretch by the Central Pollution Control Board (CPCB). The polluted river stretches are categorized under five different priorities based on the BOD values as per Central Pollution Control Board (CPCB) classification. Monitoring locations with BOD concentration exceeding 30 mg/l has been categorized as Priority-I. Monitoring locations with BOD concentrations in the range 20-30 mg/l, 10-20 mg/l, 6-10 mg/l and 3-6 mg/l are categorized as Priority-II, Priority-III, Priority-IV and Priority-V respectively. Based on this classification, Mangalariver stretch along Puri has been categorized under Priority-V.

2.0 Water quality of MangalaRiver

Mangalariver, a small tributary of Bhargavi river, originates near the upstream of Puritown , flows along Puri city and ultimately culminates with Bay of Bengal at Puri. Water quality monitoring stations are shown in Fig.1. Since the monitoring location at Golasahi is very close to the sea, water quality of the river at Golasahi is greatly influenced by tidal effect of the sea.

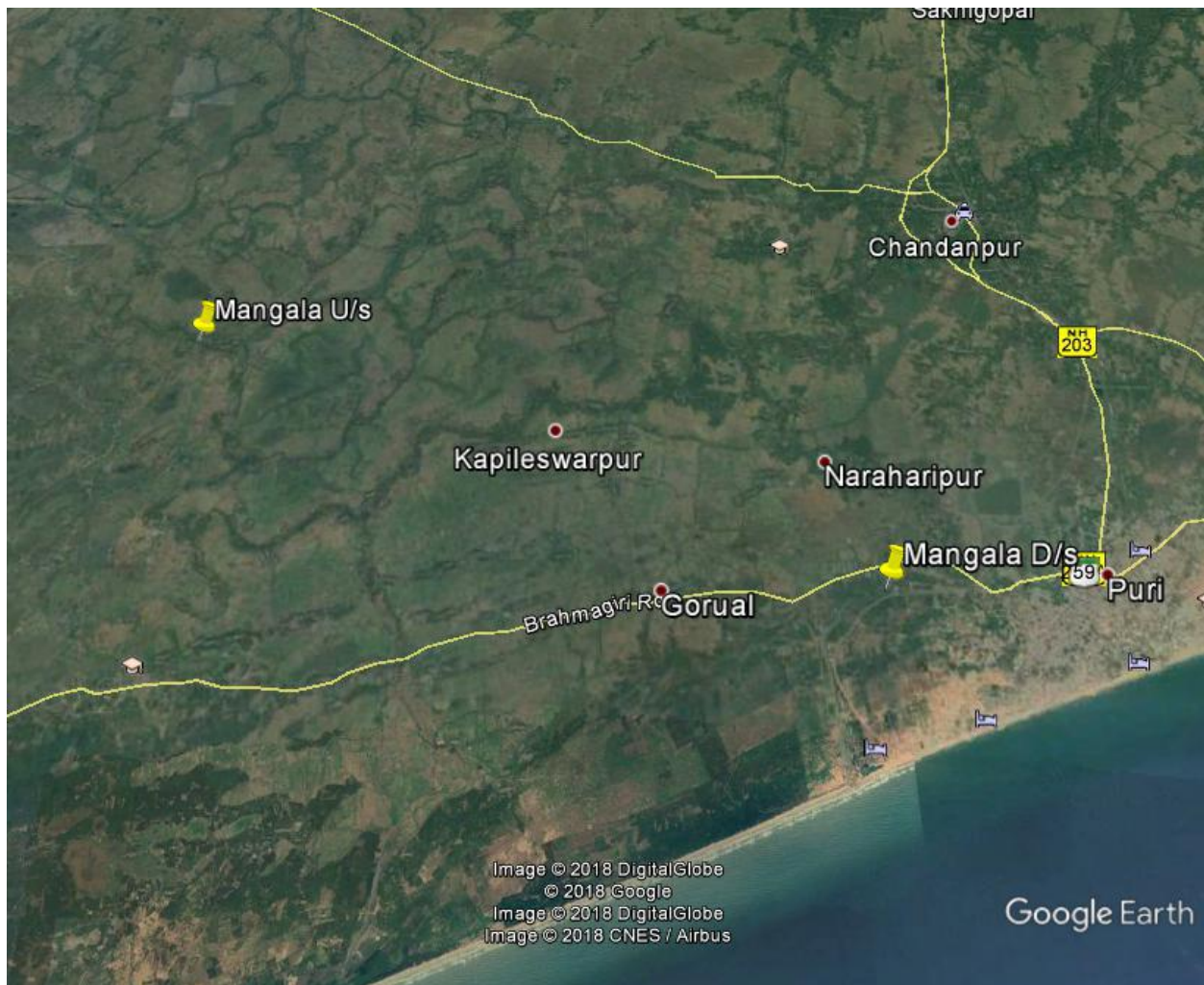


Fig. 1 Monitoring stations on Mangalariver

Monthwise water quality data of river Mangala river with respect to Biochemical Oxygen Demand (BOD) during the year 2017 is given in Table-1. The data show that BOD values have been exceeded the tolerance limit of 3.0 mg/l four times at Mangaladownstream during period of monitoring.

Table-1 Monthwise BOD (mg/l) in Mangalariver during 2017

| Month | BOD, mg/l | |
|--------------------------|----------------------------------|--------------------------------|
| | Mangala Upstream at Malatipatpur | Mangala Downstream at Golasahi |
| April | 0.9 | - |
| May | 1.3 | 5.7 |
| June | 2.3 | 4.3 |
| July | 0.3 | 4.9 |
| August | 0.9 | 1.7 |
| September | 1.9 | 2.1 |
| October | 1.2 | 3.4 |
| November | 0.9 | 2.8 |
| December | 1.3 | 1.6 |
| Minimum BOD, mg/l | 0.3 | 1.6 |
| Maximum BOD, mg/l | 2.3 | 5.7 |

3.0 Sources of Pollution

Deterioration of water quality in the river may be attributed to the insignificant flow during lean period, riparian activities and tidal impact of the sea. Further, a 15 MLD sewage treatment plant has been established at Mangalaghat to treat the domestic wastewater of Puri town prior to discharge into the Mangalariver. Even though the STP effluent quality meets the stipulated discharge norm, the insignificant flow in the river is not capable of diluting the discharged effluent to maintain the BOD level of the river at 3.0 mg/l most of the time. Therefore, during non-monsoon period, marginal water quality deterioration has been observed.

4.0 Action plan for restoration of Water quality of MangalaRiver

Hon'ble National Green Tribunal (NGT) Principal Bench have mentioned the suggestions of the CPCB in Para 42 in the order of the Case No. 673/2018 for implementation of following a two-fold concept for restoration of polluted river stretches.

1stconcept : To target enhancement of river flow through interventions on the water sheds/ catchment areas for conservation and recharge of rainwater for subsequent release during lean flow period in year. This concept will work on dilutions of pollutants in the rivers and streams to reduce concentration to meet the desired level of water quality.

2ndconcept : Regulation and enforcement of standards in conjunction with the available flow in rivers/ streams and allocation of discharges with stipulated norms.

Since the BOD deviations are observed to be marginal as well as frequency of deviation is few, the water quality of the river can be improved by enhancement of river flow through interventions of the river catchment area for conservation and recharge of rainwater for subsequent release during lean flow period in the year.

Further, stipulation of stringent discharge limit for the STP may improve the water quality of the river.

the basis for identification of polluted river stretches in the State of Odisha. The polluted river stretches are categorized under different priorities based on the BOD values as per Central Pollution Control Board (CPCB) classification. Based on BOD concentrations, CPCB has categorised the river stretches under five priorities. Monitoring locations with BOD concentration exceeding 30 mg/l has been categorized as Priority-I. Monitoring locations with BOD concentrations in the range 20-30 mg/l, 10-20 mg/l, 6-10 mg/l and 3-6 mg/l are categorized as Priority-II, Priority-III, Priority-IV and Priority-V respectively.

CPCB has identified the polluted river stretches in the country based on the water quality data during the period 2009-2012 and published in the Report "River stretches for restoration of Water Quality" (Series : MINARS/37/2014-15). Out of the 12 numbers of pollutedriver stretches identified in the State of Odisha, Rourkela stretch along Brahmani river is one of the polluted river stretch under priority category IV.

Further, CPCB has prepared another report in the year 2017 "Restoration of Polluted River Stretches-Concept and Plan-July, 2017" in which 18 numbers of river stretches of the State has been identified as polluted and Rourkela stretch is one of them.

The State Pollution Control Board, Odisha has been monitoring the water quality of Brahmani river from its origin in Odisha at Vedvyas to Pottamundai, before it joins with river Baitarani and named as Dhamra river. Based on the BOD values during the period 2009-2017, Brahmani river has been observed to be polluted along the Rourkela stretchunder priority category IV.