CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment, Forest and Climate Change)
"Parivesh Bhawan", East Arjun Nagar,
Delhi-110032
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CRITERIA FOR PRIORITISATION OF POLLUTED RIVER LOCATION (DRAFT)

1. Introduction

Water Quality monitoring is an essential component to maintain and restore the wholesomeness of resources by way of prevention and control of pollution as prescribed under the Water (Prevention and Control of Pollution) Act, 1974. However, the Act does not define the level of wholesomeness to be maintained or restored in different water bodies of the country. In view of the said reason. The Central Pollution Control Board (CPCB) has tried to define the wholesomeness in terms of protection of human uses, and thus, taken human uses of water as base for identification of water quality objectives for different water bodies in the country. It was considered ambitious to maintain or restore all natural water body at pristine level which is possible only by taking proper control measures. The level and degree of treatment required can be decided depending on the categorization of the polluted river stretch, as per the criteria given below:-

2. Identification of Polluted River Monitoring Location

The water quality data is required to be analyzed and primarily average values of Biochemical Oxygen Demand (BOD) and Faecal Coliform (FC) need to be estimated. Then, based on the total score estimated for the parameters BOD (weightage- 70 %) and FC (Weightage- 30 %), the monitoring location is identified as 'polluted' location. The polluted locations in a continuous sequence are defined as 'polluted river stretch', if the distance between two monitoring locations is less than 10 KMs. However, actual self-purification distance need to be estimated based on the requisite input parameters.

3. Prioritization of Polluted River Monitoring Location

The monitoring locations may be prioritized in five classes from Priority I to V i.e., critically polluted to non-polluted. Priority –I indicates 'critically polluted'; Priority-II indicates 'severely polluted'; Priority-III indicates 'moderately polluted', Priority-IV indicates 'less polluted' and Priority –V indicates 'non-polluted'.

Following **Table 1 to Table 3** gives the average BOD/Faecal coliform values or range and the corresponding scores as well as categorization of the monitoring location

Table 1. Observed Average BOD Values in mg/l and the Corresponding BOD Score

S. No	Average BOD (Weightage-70 %)	
	Average BOD Value in mg/l	BOD Score (X)
1	> 30	100
2	21-30	70
3	11-20	50
4	3 -10	30
5	< 3	10

Table 2. Observed Ave. Faecal Coliform in MPN/100 ml and the Corresponding FC Score

S.No	Faecal Coliform (Weightage -30 %)	
	Average Faecal Coliform in MPN/100 ml	FC Score (Y)
(1)	≥ 5000	100
(2)	3001 -5000	50
(3)	1001 to 3000	30
(4)	501 to 1000	20
(5)	≤500	10

Table 3. Total Score and the Corresponding Category of River Monitoring Location

S. No	Total Score* (Z')	Priority Class of the Monitoring location	Category of Monitoring location
(1)	>90	Priority-I	Critically Polluted or Very Poor
(2)	71-90	Priority-II	Severely Polluted or Poor
(3)	51-70	Priority-III	Moderately Polluted or Fair
(4)	21-50	Priority-IV	Less Polluted or Good
(5)	10-20	Priority-V	Very Good

Note:-   *(i) Above criteria must be considered only for the locations having monitored at least for 2 years and 8 observations in each year; and (ii) Please refer to the procedure for estimation of Total Score given in S.No. 4. For easy understanding flow chart given in **Figure 1** may also be referred*

4.   **Steps for Calculating the Total Score and Identification of Monitoring Location as the Polluted Monitoring Location:-**

*(i)   Depending on the average BOD measured value, assign the BOD score (X) as given in **Table 1.***

*(ii)   Similarly depending on the average FC measured value, assign the FC Score (Y) as given in **Table 2.***

*(iii)   Total score **(Z)** is estimated as : BOD Score **(X) X** (Weightage of BOD i.e., 70 %) + FC Score **(Y) X** (Weightage for FC i.e., 30 %).*

*(iv)   Now compare calculated Total Score (Z) with the **Z'** Value given in the Table 3 and the monitoring location is categorized suitably.*

> *E.g.: At a particular monitoring location, the average values of BOD and the FC values are observed as 32 mg/l and 1600 MPN/100 ml respectively. Then, the total score is calculated as*

> ➢   *X is the BOD Score corresponding to the average BOD value of 32 mg/l as per **Table 1** = 100*

> ➢   *Y is the FC Score corresponding to the average FC value of 1600 MPN/100 ml as per **Table 2** = 30*

> ➢   *Calculated Total Score **(Z)** = **X** X Weightage of BOD + **Y** X Weightage of FC i.e.,100 X 0.7 + 30 X 0.3   = 70 + 9= 79.*

> ➢   *Compare 79 value with the **Z'** values given in the **Table 3** to decide on the Priority Category of the Monitoring Location. In this case, it is 'Severely polluted',*

4.1   Criteria for Priority I – Critically Polluted: - If the Total score is > 90, then the monitoring location is categorized as **'Critically Polluted' or Very Poor.**

4.2   Criteria for Priority II – Severely Polluted: - If the Total score is 71 to 90, then the monitoring location is categorized as **'Severely Polluted'   or Poor**

4.3   Criteria for Priority III-Moderately Polluted: - If the Total score is 51 to 70, then the monitoring location is categorized as **'Moderately Polluted'   or Fair**

4.4   Criteria for Priority IV –Less Polluted: - If the Total score is 21 to 50, then the monitoring location is categorized as **'Less Polluted'. or Good**

4.5   Criteria for Priority V-Non-Polluted:-If the Total score is 10 to 20, then the monitoring location is categorized as **'Non-Polluted'** or **Very Good**
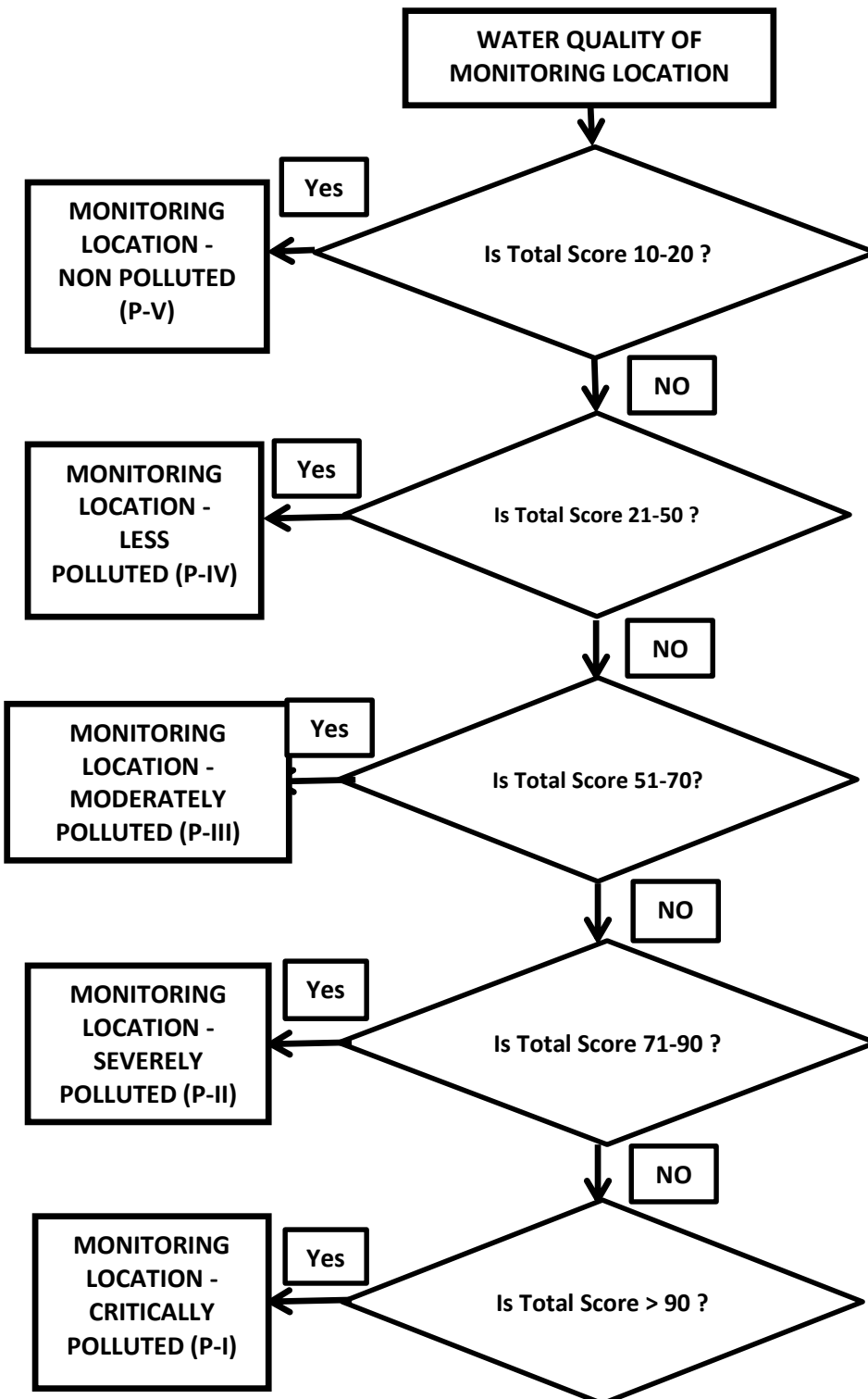
Figure 1. Flow Chart: Criteria for Prioritization of Polluted River Monitoring Location