National Water Quality Monitoring Programme

Objectives of Water Quality Monitoring

The preamble of Water (prevention and control of pollution) Act, 1974 stated that pollution control board both at States and Central level to restore and maintain the wholesomeness of water bodies in India.Water quality monitoring is therefore an imperative prerequisite in order to assess the extent of maintainance and restoration of water bodies.The water quality monitoring is performed with following main objectives in mind.

- Rational planning of pollution control strategies and their prioritisation
- To assess nature and extent of pollution control needed in different water bodies or their part
- To evaluate effectiveness of pollution control measures already in existence
- To evaluate water quality trend over a period of time
- To assess assimilative capacity of a water body thereby reducing cost on pollution control
- To understand the environmental fate of different pollutants
- To assess the fitness of water for different uses

Monitoring Network, Parameters and Frequency

The Central Pollution Control Board (CPCB) has established a network of monitorting stations on rivers across the country. The present network comprises of 2500 stations in 28 States and 6 Union Territories spread over the country. The monitoring network covers 445 Rivers, 154 Lakes, 12 Tanks, 78 Ponds, 41 Creeks/Seawater, 25 Canals, 45 Drains, 10 Water Treatment Plant (Raw Water) and 807 Wells. Among the 2500 stations, 1275 are on rivers, 190 on lakes, 45 on drains, 41 on canals, 12 on tanks, 41 on creeks/seawater, 79 on ponds, 10 Water Treatment Plant (Raw Water) and 807 are groundwater stations (Table 1.1).Presently the inland water quality-monitoring network is operated under a three-tier programme i.e. Global Environmental Monitoring System (GEMS), Monitoring of Indian National Aquatic Resources System (MINARS) and Yamuna Action Plan (YAP).The water samples are analysed for 9 core parameters and 19 general parameters. The monitoring agencies have also analysed the trace metals at few locations. Water body wise number of stations is depicted in Figure 1.1. The list of parameters identified under the National Water Quality Monitoring Programme is given in Table 1.2. The monitoring of water quality initiated during 1977-78 under Global Environmental Monitoring System (GEMS) and gradually increased the network to cover all the aquatic resources. The year wise growth of monitoring network is depicted in Figure 1.2.The monitoring is done on monthly basis in surface waters comprising of Rivers, lakes, tanks, ponds, creeks/sea water, canals & drains and on half yearly basis in case of ground water. The frequency of monitoring stations in each State/Union Territory is given in Table 1.3.In the present report data on core parameters is incorporated for interpretation and drawing inferences based on primary water quality criteria.

Figure 1.1 National Water Quality Monitoring Network (Water body wise number of stations)

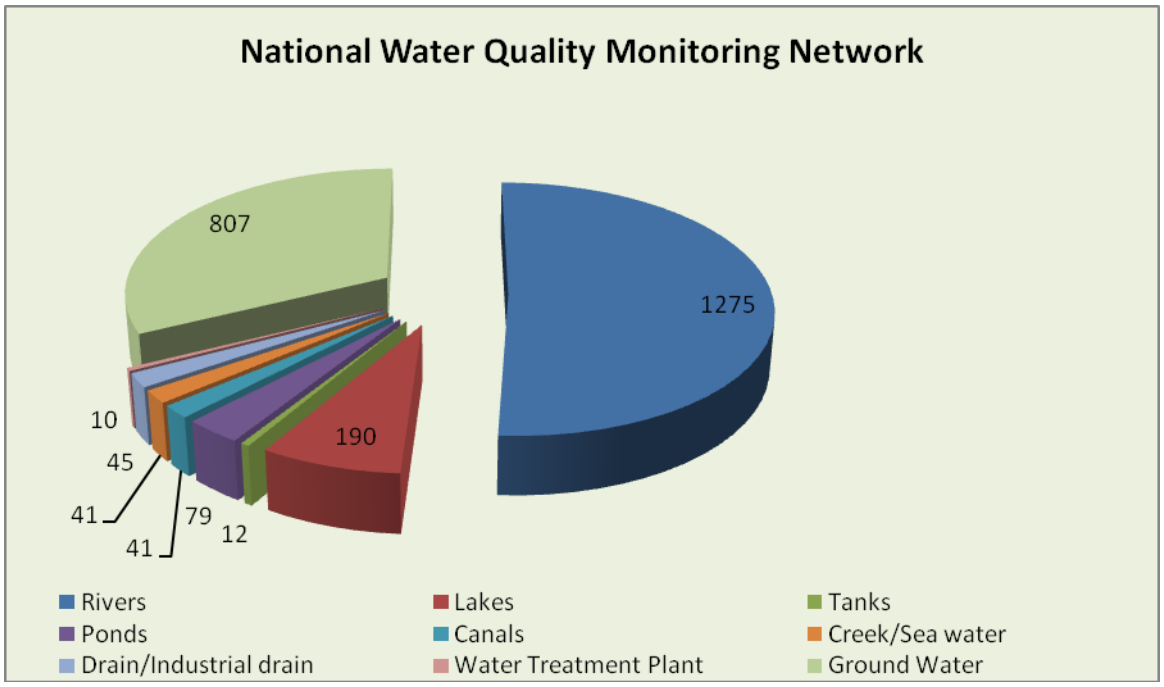


Figure 1.2 Year Wise Growth of Monitoring Network

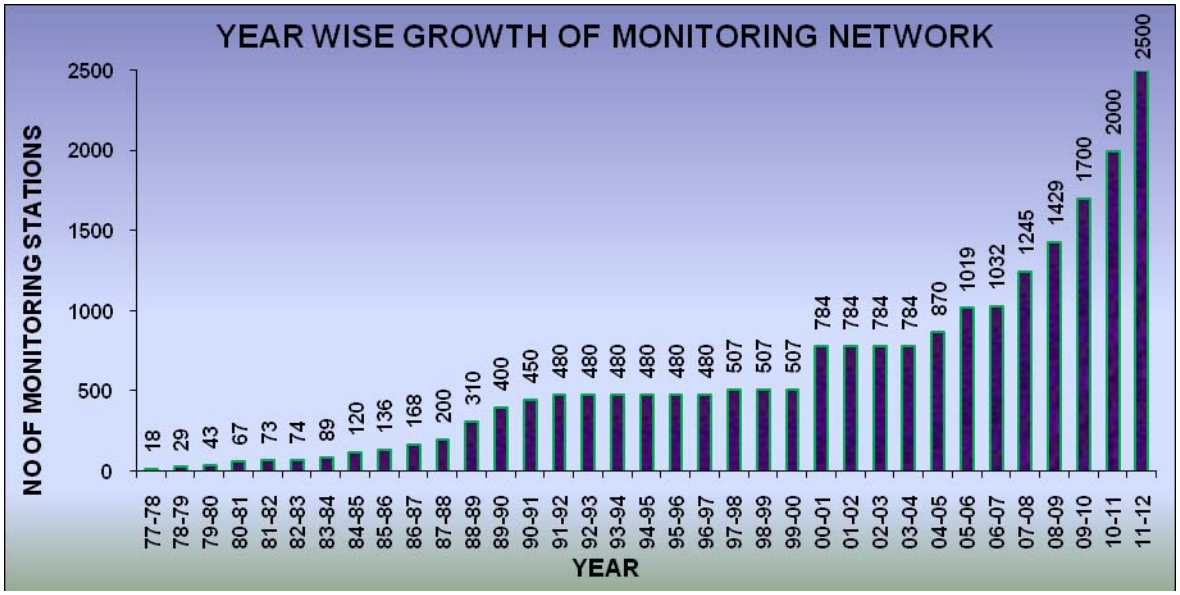


Table 1.3: State wise and water body wise Distribution of Water Quality Monitoring Stations

State	River	Lake	Tank	Pond	Canal	Creek/Sea water	Drain/Industrial Drain	Water Treatment Plant	Well	Total
ANDHRA PRADESH	54	15	10	10	3	-	16	-	32	140
ARUNACHAL PRADESH	18	-	-	-	-	-	-	-	-	18
ASSAM	43	2	1	23	-	-	-	-	32	101
BIHAR	62	2	-	2	-	-	-	-	70	136
CHANDIGARH	-	1	-	-	-	-	3	-	7	11
CHHATISSGARH	29	1	-	1	-	-	-	-	8	39
DAMAN, DIU, DADRA AND NAGAR HAVELI	12	-	-	-	-	-	-	-	12	24
DELHI	5	5		3	3	-	10	6	70	102
GOA	28	8	-	-	3	1	-	-	10	50
GUJARAT	53	21	1	2	2	3	-	-	83	165
HARYANA	8	2	-	-	11	-	-	2	-	23
HIMACHAL PRADESH	58	5	-	-	-	-	-	-	41	104
JAMMU & KASHMIR	45	25	-	-	-	-	-	-	12	82
JHARKHAND	31	4	-	1	-	-	-	-	-	36
KARNATAKA	61	2	-	-	-	-	-	-	-	63
KERALA	73	16	-	2	3	-	-	-	34	128
LAKSHDWEEP	-	-	-	1	-	-	-	-	15	16
MADHYA PRADESH	96	19	-	8	-	-	-	-	32	155
MAHARASHTRA	156	-	-	-	-	34	10	-	50	250
MANIPUR	41	5	-	13	1	-	-	-	10	70
MEGHALAYA	40	7	-	-	-	-	-	-	7	54
MIZORAM	4	-	-	-	-	-	-	-	2	6
NAGALAND	16	2	-	-	-	-	-	-	10	28
ORISSA	64	2	-	6	3	3	-	-	15	93
PONDICHERRY	5	2	-	-	-		-	-	15	22
PUNJAB	38	3	-	-	-	-	6	-	22	69
RAJASTHAN	17	16	-	-	3	-	-	-	87	123

SIKKIM	14	-	-	-	-	-	-	-	-	14
TAMIL NADU	45	8	-	-	-	-	-	-	2	55
TRIPURA	29	3	-	5	5	-	-	-	21	63
UTTAR PRADESH	64	2	-	2	1	-		2	40	111
UTTRANCHAL	28	2	-	-	1	-	-	-	19	50
WEST BENGAL	38	10	-	-	2	-	-	-	49	99
Total	**1275**	**190**	**12**	**79**	**41**	**41**	**45**	**10**	**807**	**2500**

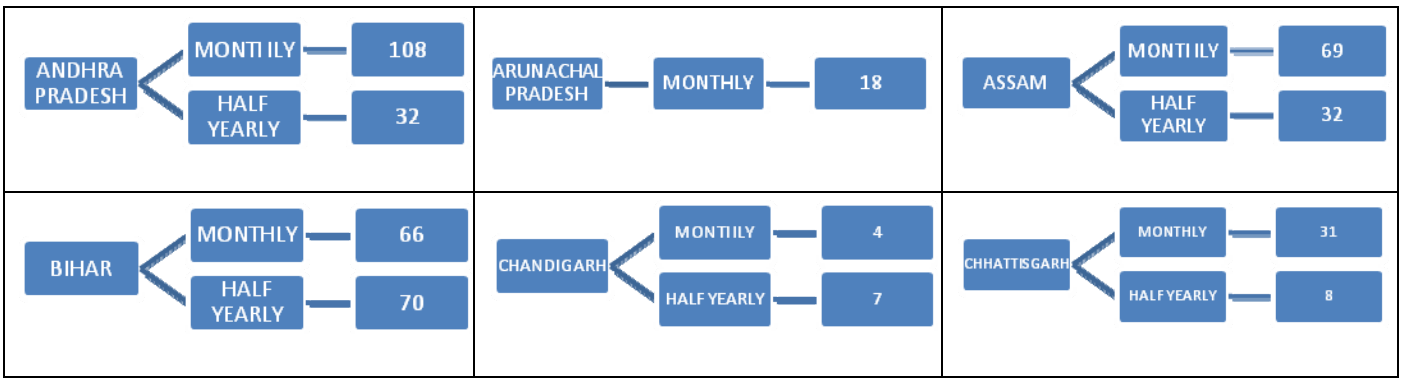
Table- 1.1: Water Body Wise Number of Stations

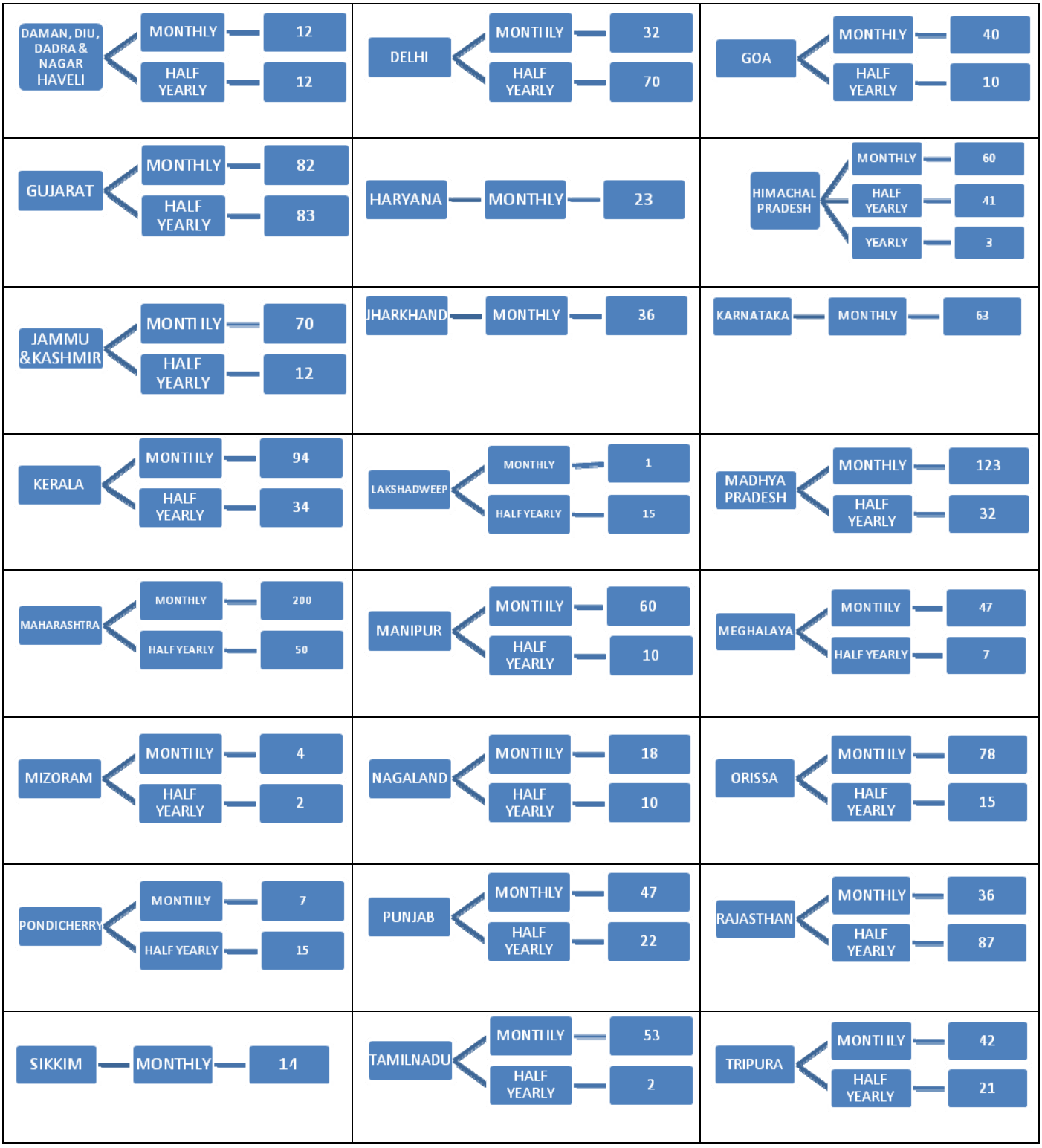
TYPE OF WATER BODIES	NUMBER OF WATER BODIES	NUMBER OF STATIONS
RIVERS	445	1275
LAKES	154	190
TANKS	12	12
PONDS	78	79
CANALS	25	41
CREEKS/SEA WATER	41	41
DRAINS	45	45
WELLS	807	807
WATER TREATMENT PLANT	10	10
TOTAL		2500

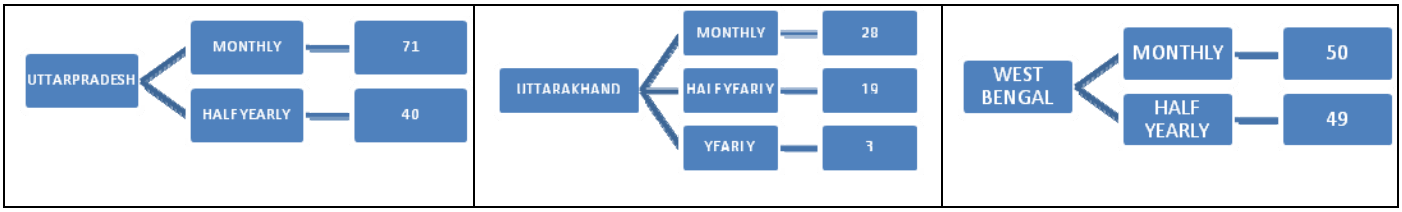
Table-1.2 List of Parameters under National Water Quality Monitoring Programme

FIELD OBSERVATIONS (7)	CORE PARAMETERS (9)	GENERAL PARAMETERS (19)	BIO-MONITORING (3)	TRACE METALS (9)	PESTICIDES (15)
•Weather	•PH	•Turbidity, NTU	•Saprobity Index	•Arsenic, µg/L	•Alpha BHC, µg/L
•Depth of main stream/depth of water table	•Temperature	•Phenolphthalein Alkalinity, as $CaCO_3$	•Diversity Index	•Cadmium, µg/L	•Beta BHC, µg/L
•Colour and intensity	•Conductivity, µm hos/cm	•Total Alkalinity, as $CaCO_3$	•P/R Ratio	•Copper, µg/L	•Gama BHC (Lindane) , µg/L
•Odour	•Dissolved Oxygen, mg/L	•Chlorides, mg/L		•Lead, µg/L	•O P DDT, µg/L
•Visible effluent discharge	•BOD, mg/L	•COD, mg/L		•Chromium (Total) , µg/L	•P P DDT, µg/L
•Human activities around station	•Nitrate – N , mg/L	•Total Kjeldahl - N, as N mg/L		•Nickel, µg/L	•Alpha Endosulphan, µg /L
•Station detail	•Nitrite – N, mg/L	•Ammonia - N, as N mg/L		•Zinc, µg/L	•Beta Endosulphan, µg /L
	•Faecal Coliform, MPN/100 ml	•Hardness, as $CaCO_3$		•Mercury, µg/L	•Aldrin, µg/L
	•Total Coliform, MPN/100 ml	•Calcium, as $CaCO_3$		•Iron (Total) , µg/L	•Dieldrin, µg/L
		•Sulphate, mg/L			•Carboryl(Carbamate) , µg/L
		•Sodium, mg/L			•2-4 D, µg/L
		•Total Dissolved Solids, mg/L			•Malathian, µg/L
		•Total Fixed Dissolved Solids, mg/L			•Methyl Parathian, µg/L
		•Total suspended Solid, mg/L			•Anilophos, µg/L
		•Phosphate, mg/L			•Chloropyriphos, µg/L
		•Boron, mg/L			
		•Magnesium, as $CaCO_3$			
		•Potassium, mg/L			
		•Fluoride, mg/L			

Table: 1.3 Frequency of monitoring stations in States/UTs




DAMAN, DIU, DADRA & NAGAR HAVELI
MONTHLY
12
HALF YEARLY
12
DELHI
MONTHLY
32
HALF YEARLY
70
GOA
MONTHLY
40
HALF YEARLY
10
GUJARAT
MONTHLY
82
HALF YEARLY
83
HARYANA
MONTHLY
23
HIMACHAL PRADESH
MONTHLY
60
HALF YEARLY
41
YEARLY
3
JAMMU &KASHMIR
MONTHLY
70
HALF YEARLY
12
JHARKHAND
MONTHLY
36
KARNATAKA
MONTHLY
63
KERALA
MONTHLY
94
HALF YEARLY
34
LAKSHADWEEP
MONTHLY
1
HALF YEARLY
15
MADHYA PRADESH
MONTHLY
123
HALF YEARLY
32
MAHARASHTRA
MONTHLY
200
HALF YEARLY
50
MANIPUR
MONTHLY
60
HALF YEARLY
10
MEGHALAYA
MONTHLY
47
HALF YEARLY
7
MIZORAM
MONTHLY
4
HALF YEARLY
2
NAGALAND
MONTHLY
18
HALF YEARLY
10
ORISSA
MONTHLY
78
HALF YEARLY
15
PONDICHERRY
MONTHLY
7
HALF YEARLY
15
PUNJAB
MONTHLY
47
HALF YEARLY
22
RAJASTHAN
MONTHLY
36
HALF YEARLY
87
SIKKIM
MONTHLY
14
TAMILNADU
MONTHLY
53
HALF YEARLY
2
TRIPURA
MONTHLY
42
HALF YEARLY
21



Parameters observed

The water samples are analysed for 9 core parameters and 19 general parameters. The monitoring agencies have also analysed the trace metals at few locations. The list of parameters identified under the National Water Quality Monitoring Programme is given in Table 1.4.

Table 1.4-List of Parameters under National Water Quality Monitoring Programme

Core Parameters (9)	**Trace Metals (9)**
PH	Arsenic, µg/L
Temperature	Cadmium, µg/L
Conductivity, µmhos/cm	Copper, µg/L
Dissolved Oxygen, mg/L	Lead, µg/L
BOD, mg/L	Chromium (Total) , µg/L
Nitrate – N , mg/L	Nickel, µg/L
Nitrite – N, mg/L	Zinc, µg/L
Faecal Coliform, MPN/100 ml	Mercury, µg/L
Total Coliform, MPN/100 ml	Iron (Total) , µg/L
General Parameters (19)	**Pesticides (28)**
Turbidity, NTU	AlphaBHC, µg/L
Phenolphthalein Alkalinity, as $CaCO_3$	BetaBHC, µg/L
Total Alkalinity, as $CaCO_3$	GamaBHCLindane, µg/L
Chlorides, mg/L	OP_DDT, µg/L
COD, mg/L	PP_DDT, µg/L
Total Kjeldahl - N, as N mg/L	DDT_DDE_DDD, µg/L
Ammonia - N, as N mg/L	AlphaEndosulphan, µg/L
Hardness, as $CaCO_3$	BetaEndosulphan, µg/L
Calcium, as $CaCO_3$	Aldrin, µg/L
Sulphate, mg/L	Dieldrin, µg/L
Sodium, mg/L	P_24D, µg/L
Total Dissolved Solids, mg/L	Chloropyriphos, µg/L
Total Fixed Dissolved Solids, mg/L	Corbamat, µg/L
Total suspended Solid, mg/L	MethylParathion, µg/L
Phosphate, mg/L	Anilophos, µg/L
Boron, mg/L	HCH_Alpha_Beta_Delta, µg/L
Magnesium, as $CaCO_3$	Isoprofuron, µg/L
Potassium, mg/L	Alachlor, µg/L
Fluoride, mg/L	Atrazine, µg/L

Field Observations (7)	Monochorotophos, µg/L
Weather	Ethion, µg/L
Depth of main stream/depth of water table	Phorate, µg/L
Colour and intensity	Butachlor, µg/L
Odour	Chlorandane, µg/L
Visible effluent discharge	Heptachlor, µg/L
Human activities around station	Hexachlorobenzene, µg/L
Station detail	Phosphamidon, µg/L
Bio-Monitoring (3)	DiomethoateDiazinon, µg/L
Saprobity Index	
Diversity Index	
P/R Ratio	

Frequency of monitoring

The frequency of monitoring stations in each State is given in Table 1.5. It is observed from the table that 68% stations have the frequency on monthly basis, 32 % on half yearly basis and 0% on yearly basis.

Figure: Frequency Wise Water Quality Monitoring Stations (In Numbers)

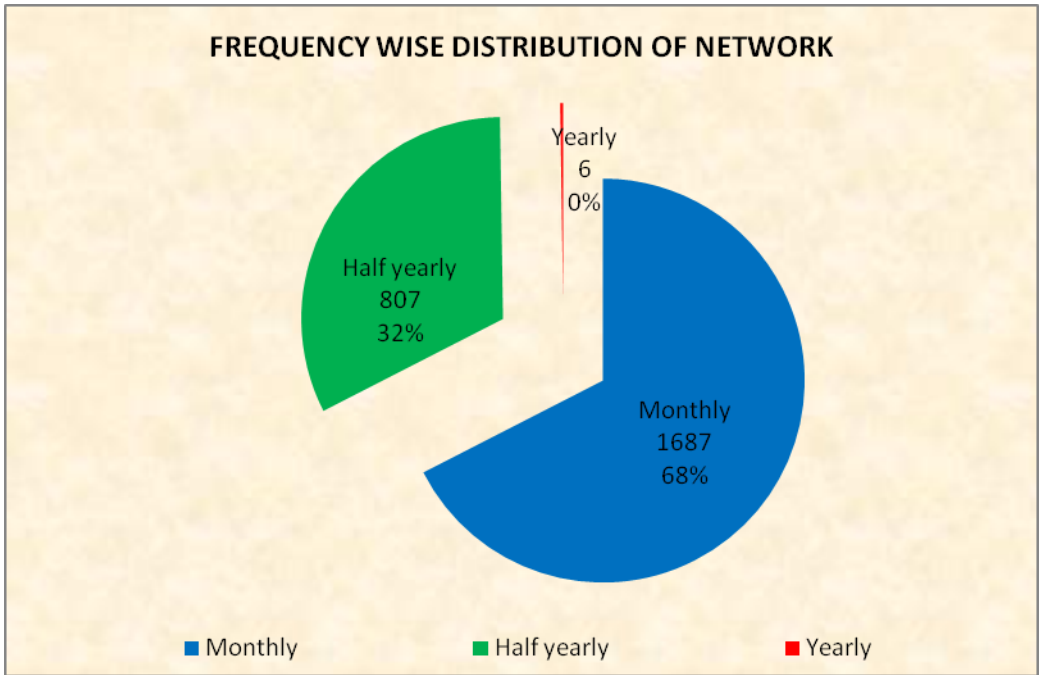


Table 1.5: Frequency of Water Quality Monitoring Stations

State	Monthly	Half yearly	Yearly	Total
ANDHRA PRADESH	108	32	-	140
ARUNACHAL PRADESH	18	-	-	18
ASSAM	69	32	-	101
BIHAR	66	70	-	136
CHANDIGARH	4	7	-	11
CHHATTISGARH	31	8	-	39
DAMAN, DIU, DADRA AND NAGAR HAVELI	12	12	-	24
DELHI	32	70	-	102
GOA	40	10	-	50
GUJARAT	82	83	-	165
HARYANA	23	-	-	23
HIMACHAL PRADESH	60	41	3	104
JAMMU & KASHMIR	70	12	-	82
JHARKHAND	36	-	-	36
KARNATAKA	63	-	-	63
KERALA	94	34	-	128
LAKSHADWEEP	1	15	-	16
MADHYA PRADESH	123	32	-	155
MAHARASHTRA	200	50	-	250
MANIPUR	60	10	-	70
MEGHALAYA	47	7	-	54
MIZORAM	4	2	-	6
NAGALAND	18	10	-	28
ORISSA	78	15	-	93
PONDICHERRY	7	15	-	22
PUNJAB	47	22	-	69
RAJASTHAN	36	87	-	123
SIKKIM	14	-	-	14
TAMIL NADU	53	2	-	55
TRIPURA	42	21	-	63
UTTAR PRADESH	71	40	-	111
UTTARANCHAL	28	19	3	50
WEST BENGAL	50	49	-	99
Total : -	**1687**	**807**	**6**	**2500**

Approach to Water Quality Management

The water quality management in India is accomplished under the provision of Water (Prevention and Control of Pollution) Act, 1974. The basic objective of this Act is to maintain and restore the wholesomeness of national aquatic resources by prevention and control of pollution. It was considered ambitious to maintain or restore all natural water body at pristine level. Planning pollution control activities to attain such a goal is bound to be deterrent to developmental activities and cost prohibitive. Since the natural water bodies have got to be used for various competing as well as conflicting demands, the objective is aimed at restoring and/or maintaining natural water bodies or their parts to such a quality as needed for their best uses.

Thus, a concept of "designated best use" (DBU) was developed. According to this concept, out of several uses a water body is put to, the use which demands highest quality of water is termed as "designated best use", and accordingly the water body is designated. Primary water quality criteria for different uses have been identified. A summary of the use based classification system is presented in Table 1.6.

Table 1.6:-Use based classification of surface waters in India

Designated-Best-Use	Class of water	Criteria
DrinkingWater Source without conventional treatment but after disinfection	A	1. Total Coliforms OrganismMPN/100ml shall be 50 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 6mg/l or more 4. Biochemical Oxygen Demand 5 days 20^{o}C 2mg/l or less
Outdoor bathing (Organised)	B	1. Total Coliforms Organism MPN/100ml shall be 500 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 5mg/l or more 4. Biochemical Oxygen Demand 5 days 20^{o}C 3mg/l or less
Drinking water source	C	1. Total Coliforms Organism MPN/100ml shall be 5000
after conventional		2. or less
treatment and		pH between 6 to 9
		3. Dissolved Oxygen 4mg/l or more
disinfection		
		4. Biochemical Oxygen Demand 5 days 20oC 3mg/l or
		less
Propagation of Wild	D	1. pH between 6.5 to 8.5
life and Fisheries		2. Dissolved Oxygen 4mg/l or more
		3. Free Ammonia (as N) 1.2 mg/l or less

Irrigation, Industrial	E	1.	pH between 6.0 to 8.5
Cooling, Controlled		2.	Electrical Conductivity at 25oC micro mhos/cm
Waste disposal			Max.2250
		3.	Sodium absorption Ratio Max. 26
		4.	Boron Max. 2mg/l

The water resources of the country were classified according to their designated best uses and a "Water Use Map" was prepared. In order to identify the water bodies or their parts where water quality is at variance with water quality criteria, it was felt important to measure water quality of that water body or its part. It would help in preparation of "Water Quality Map" of India. The idea was to superimpose "Water Quality Map" on "Water Use Map" to identify the water bodies or their parts, which are in need of improvement (restoration). Subsequently through a wide network of water quality monitoring, water quality data are acquired. A large number of water bodies were identified as polluted stretches for taking appropriate measures to restore their water quality. Today almost all policies and programmes on water quality management are based on this concept including the Ganga Action Plan and National River Action Plans.

Water Quality Criteria for Bathing Reaches in River

Water Quality Criteria for bathing reaches in Rivers is notified by Ministry of Environment & Forests (MoEF) and is given in Table 1.7.

Table 1.7:- Primary Water Quality Criteria for Bathing

CRITERIA	RATIONALE
1. Faecal Coliform (desirable) MPN/100ml : 2500 (Maximum Permissible) 2. Faecal Streptococci (desirable) MPN/100ml : 500 (Maximum	To ensure low sewage contamination. Faecal coliform and faecal streptococci are considered as they reflect the bacterial pathogenicity. The desirable and permissible limits are suggested to allow for fluctuation inenvironmental conditionssuch as seasonal changes, changes in flow conditions etc.

Permissible)	
3. pH: Between 6.5-8.5	The range provides protection of the skin and delicate organs like eyes, nose, ears etc. which are directly exposed during outdoor bathing.
4. Dissolved Oxygen: 5 mg/l or more	The minmum dissolved oxygen concentration of 5 mg/l ensures reasonable freedom from oxygen consuming organic pollution immediately U/s which is necessary for preventing production of anaerobic gases (obnoxious gases) from sediments
5.Biochemical Oxygen Demand 3 day, 27^{o}C: 3 mg/l or less	The Biochemical Oxygen Demand of 3 mg/l or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases.

Water Quality Trend in India

Water Quality Trend

The water quality monitoring results obtained during 1995 to 2011 indicate that the organic and bacterial contamination are continued to be critical in water bodies. This is mainly due to discharge of domestic wastewater mostly in untreated form from the urban centres of the country. The municipal corporations at large are not able to treat increasing load of municipal sewage flowing into water bodies without treatment. Secondly the receiving water bodies also do not have adequate water for dilution. Therefore, the oxygen demand and bacterial pollution is increasing day by day.

The water quality monitoring results were analysed with respect to indicator of oxygen consuming substances (Bio-chemical Oxygen Demand) and indicator of pathogenic bacteria (Total coliform and Faecal coliform). The result of such analysis shows that there is gradual degradation in water quality. The number of observations having BOD and Coliform density has increased during 1995 to 2011. The water quality status for the period 1995 to 2011 in terms of number of observations having values of parameters in different ranges are given in the figure 1 to figure 3.

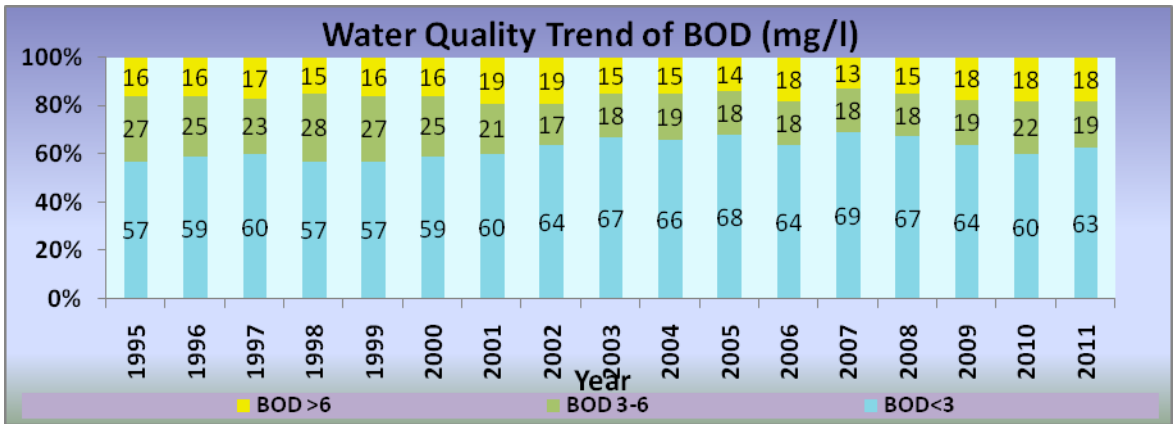
Biochemical Oxygen Demand (BOD)

The numbers of observed BOD values less than 3 mg/l were between 57-69% during year 1995 to 2011. The maximum value of 69% was observed during 2007. It was observed that there was a gradual decrease in number of observations having BOD < 3.

The number of observed BOD values ranges from 3-6 mg/l was between 17-28% during year 1995 to 2011, the maximum value of 28% was observed in the year 1998. It was observed that there was a gradual decrease in number of observations having BOD between 3-6 mg/l.

The numbers of observed BOD value> 6 mg/l were between 13 and 19% during year 1995-2011 and the maximum value of 19% was observed in the year 2001 and 2002. It was observed that there was a gradual decrease and in 2011 the percentage observation was 18 % having BOD >6.

Water Quality Trend (BOD, mg/l)



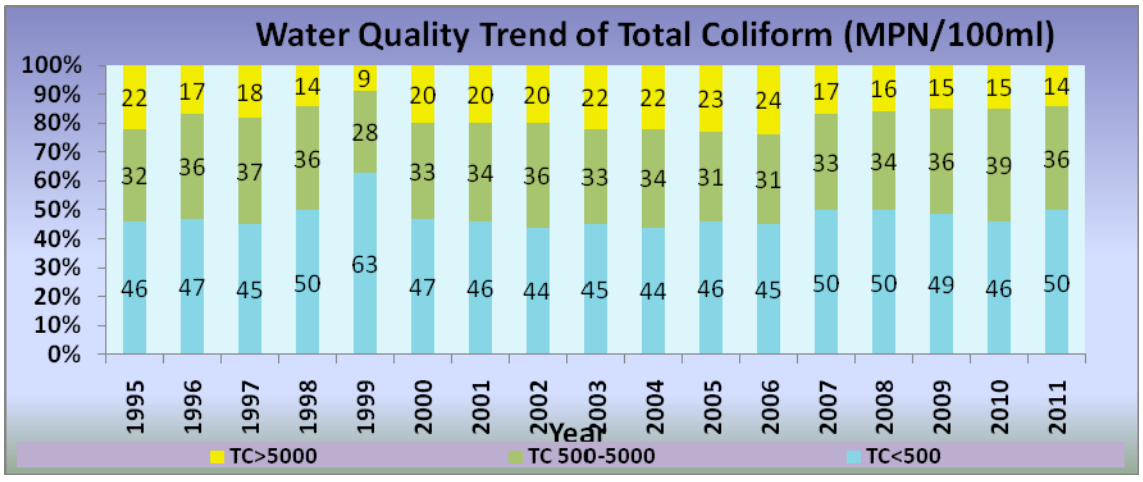
Total Coliform (TC)

The numbers of observed TC values < 500 MPN/100 ml were between 44-63% during 1995-2011. The highest percentage of observations was observed as 63% in year 1999 which decreases to 50% during 2011.

The numbers of observed TC values ranges from 500-5000 were between 28-39% during year 1995-2011 the maximum value of 39% was observed in 2010.

The numbers of observed TC values > 5000 were between 9-24% during year 1995-2011. Minimum value of 9% was observed during the year 1999. The maximum value of 24% was observed in the year 2006. During 2011 it was observed as 14% indicating decreasing trend.

Water Quality Trend (Total Colliform, MPN/100 ml)



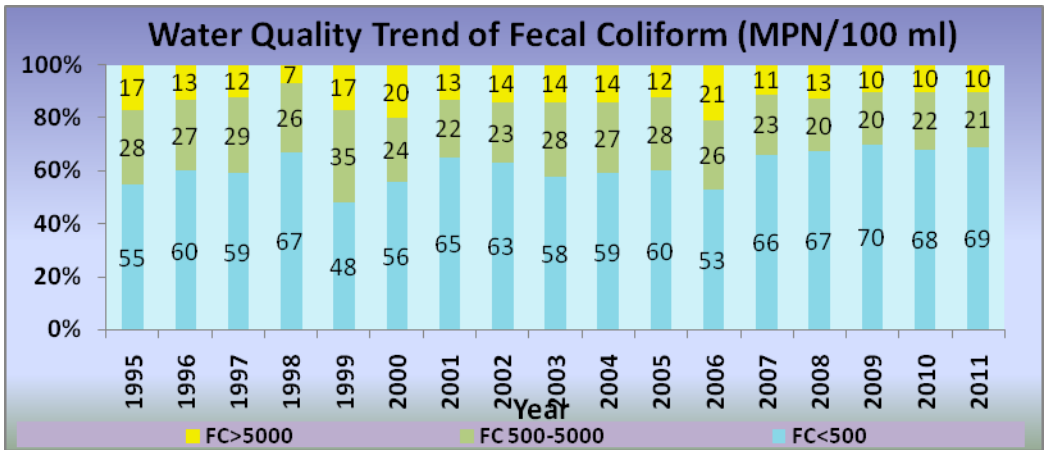
Faecal Coliform (FC)

The numbers of observed FC values <500 MPN/100 ml was between 48-70% during year 1995-2011. The maximum value of 70% was observed in the year 2009.

The numbers of observed FC values ranges from 500-5000 MPN/100 ml was between 20-35% during year 1995 to 2011. The maximum value of 35% was observed in the year 1999, which decreases to 21% in the year 2011.

The numbers of observed FC values > 5000 MPN/100 ml was between 7-21% during year 1995-2011. The maximum value of 21% was observed in 2006, which decreases to 10% in the year 2011.

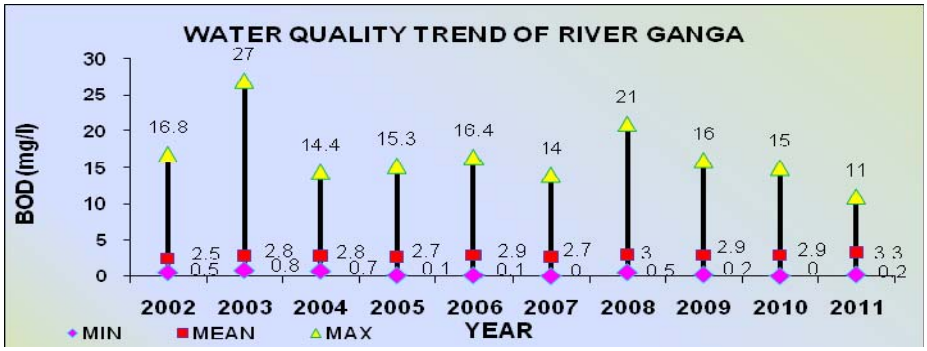
Water Quality Trend (Faecal Coliform, MPN/100 ml)



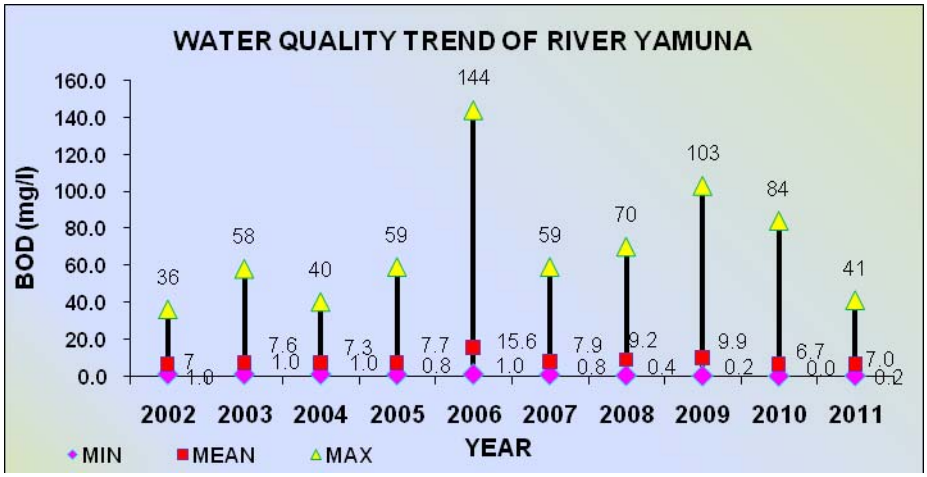
Water Quality trend of BOD in Rivers

The Water Quality trend of BOD in River Ganga, Yamuna, Sabarmati, Mahi, Tapi, Narmada, Godavari, Krishna, Cauvery, Mahanadi, Brahmani, Baitarni, Subarnarekha, Brahmaputra, Satluj, Beas, Pennar and Ghaggar depicting the data from 2002 to 2011 is presented in figure below.

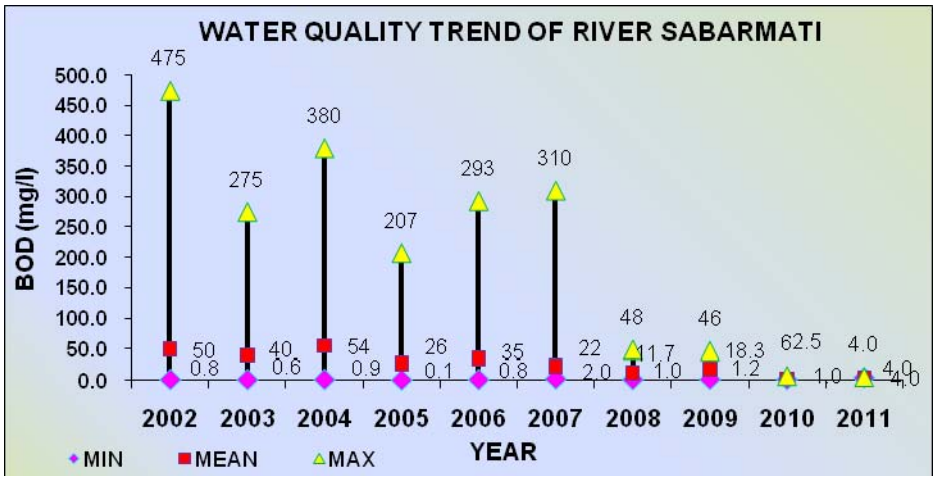
Water Quality Trend of BOD in River Ganga



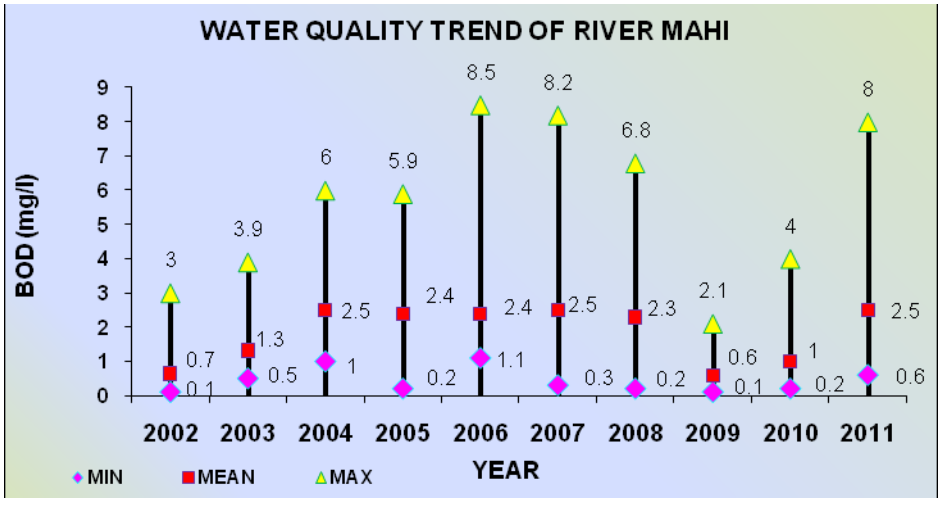
Water Quality Trend of BOD in River Yamuna



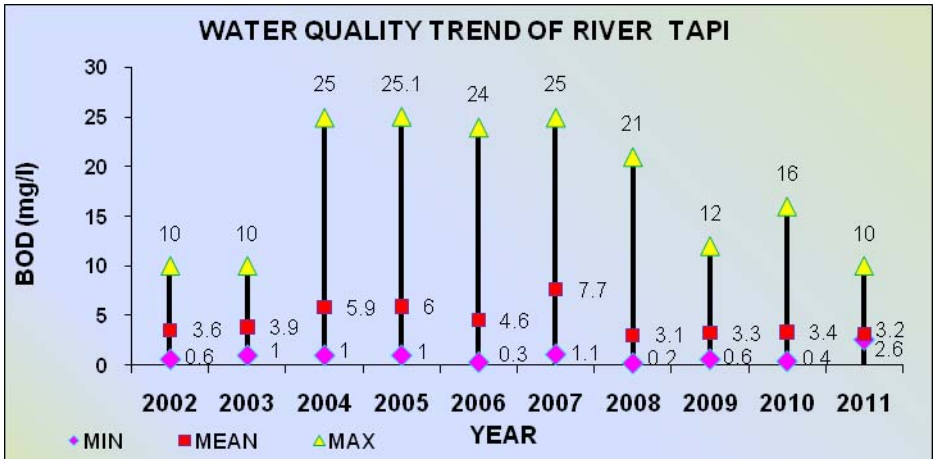
Water Quality Trend of BOD in River Sabarmati



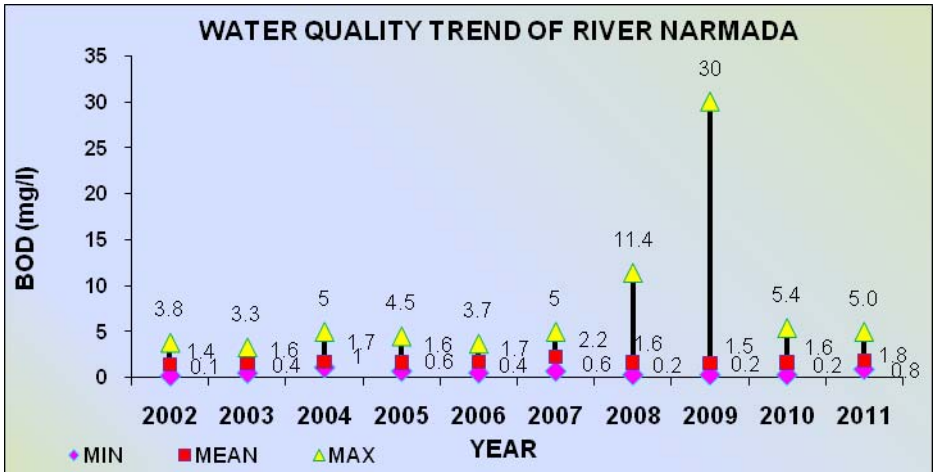
Water Quality Trend of BOD in River Mahi



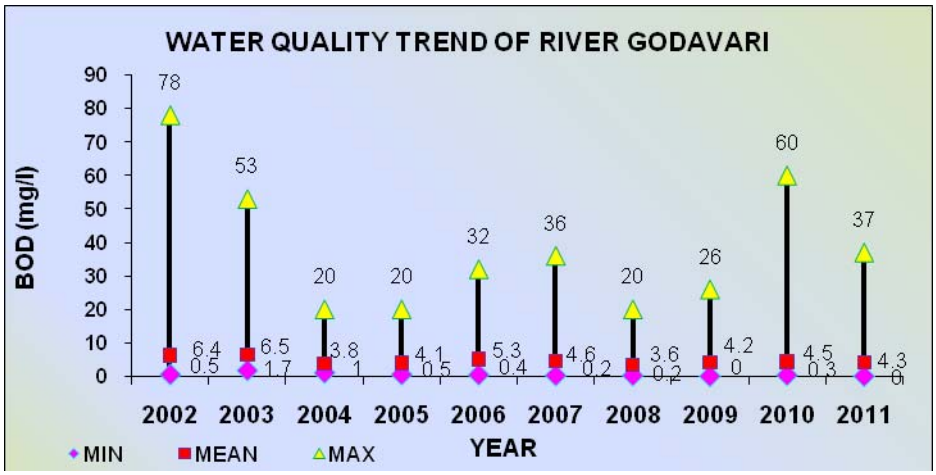
Water Quality Trend of BOD in River Tapi



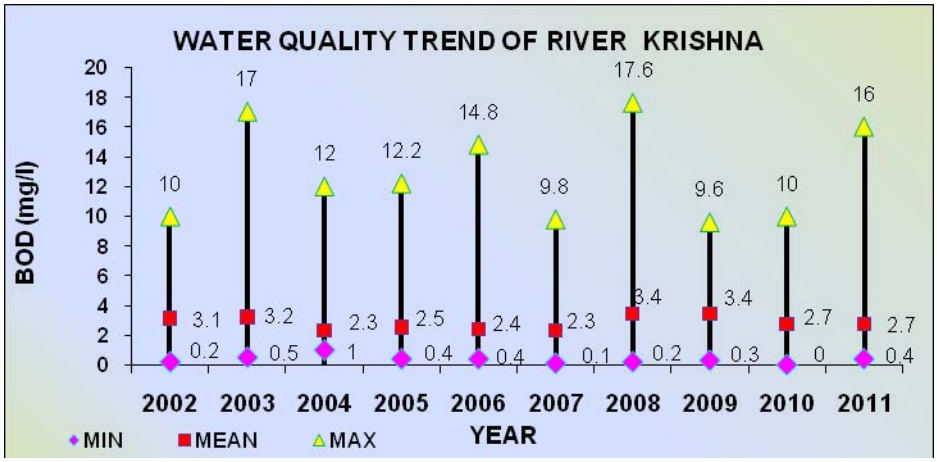
Water Quality Trend of BOD in River Narmada



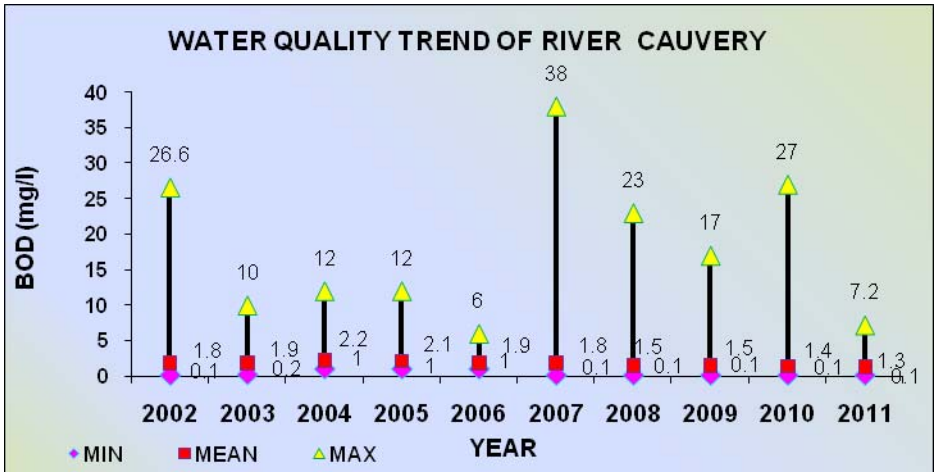
Water Quality Trend of BOD in River Godavari



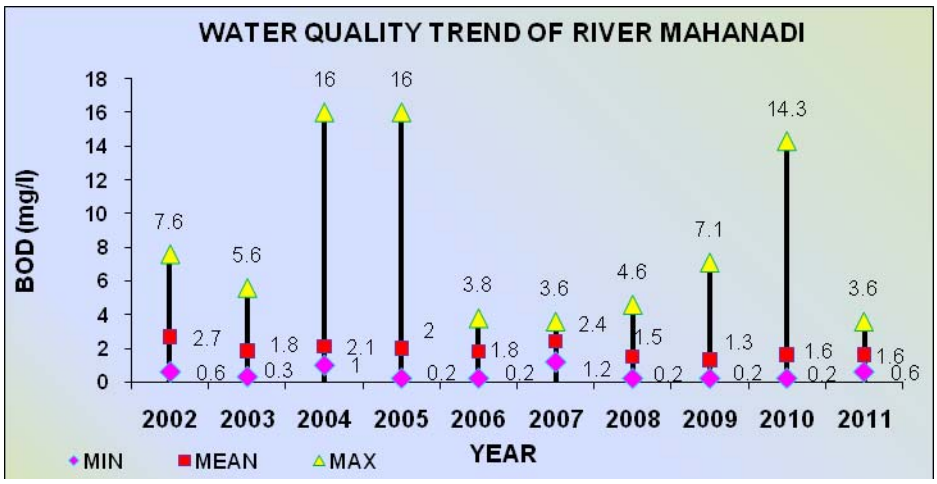
Water Quality Trend of BOD in River Krishna



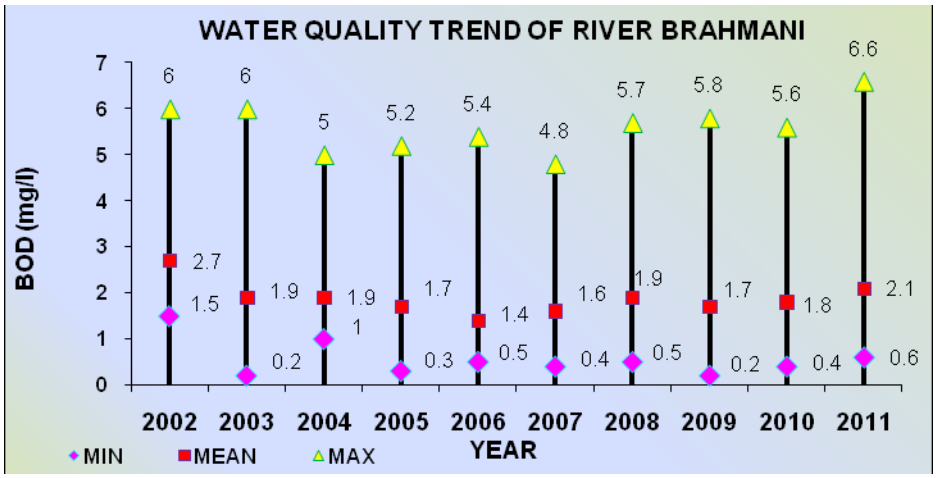
Water Quality Trend of BOD in River Cauvery



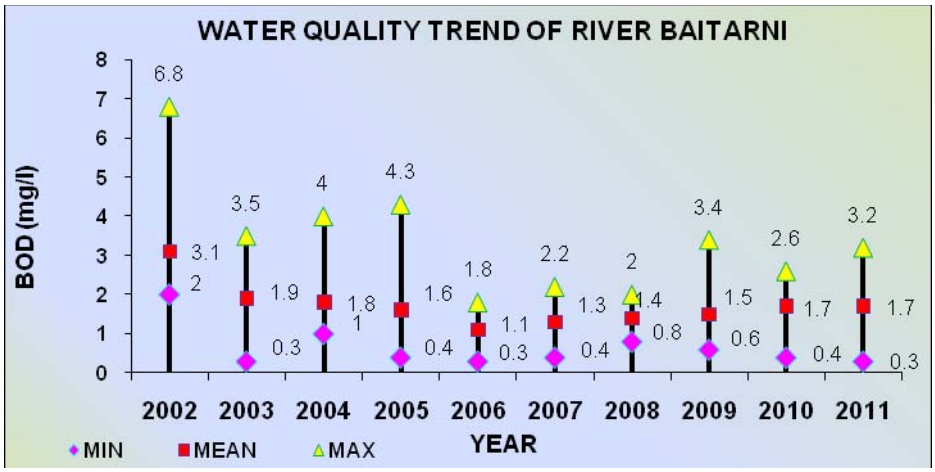
Water --Quality Trend of BOD in River Mahanadi



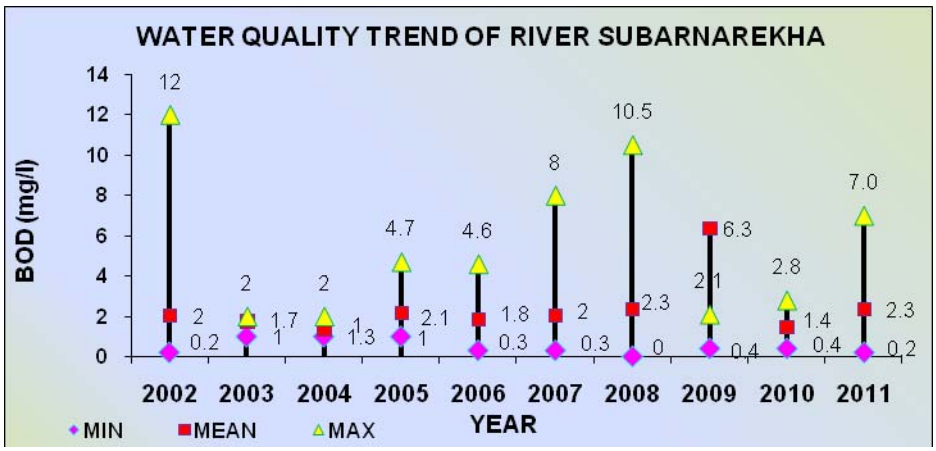
Water Quality Trend of BOD in River Brahmani



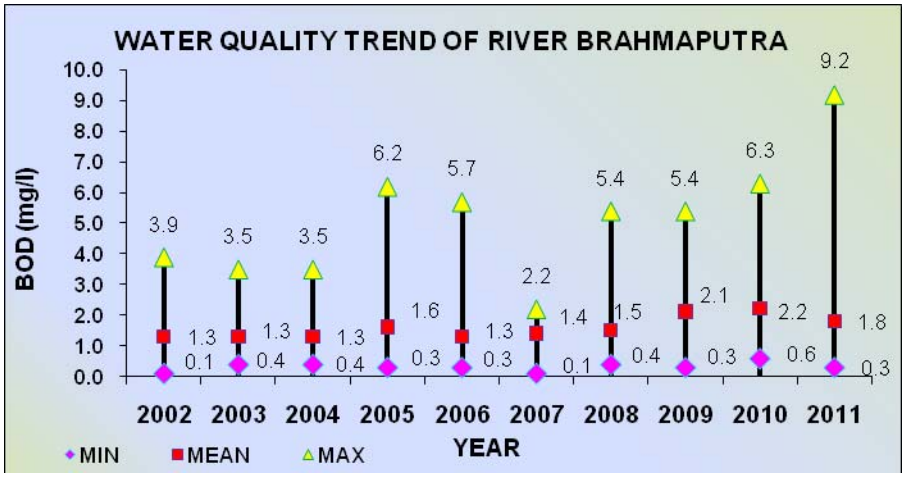
Water Quality Trend of BOD in River Baitarni



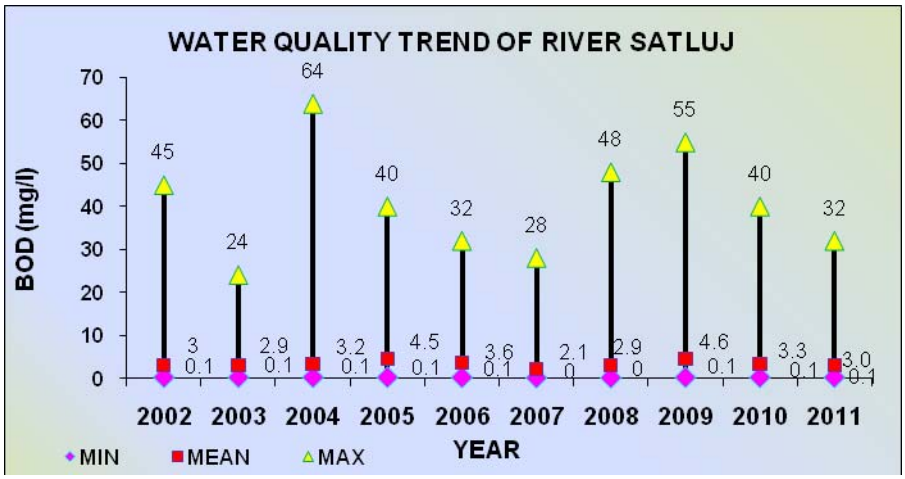
Water Quality Trend of BOD in River Subarnarekha



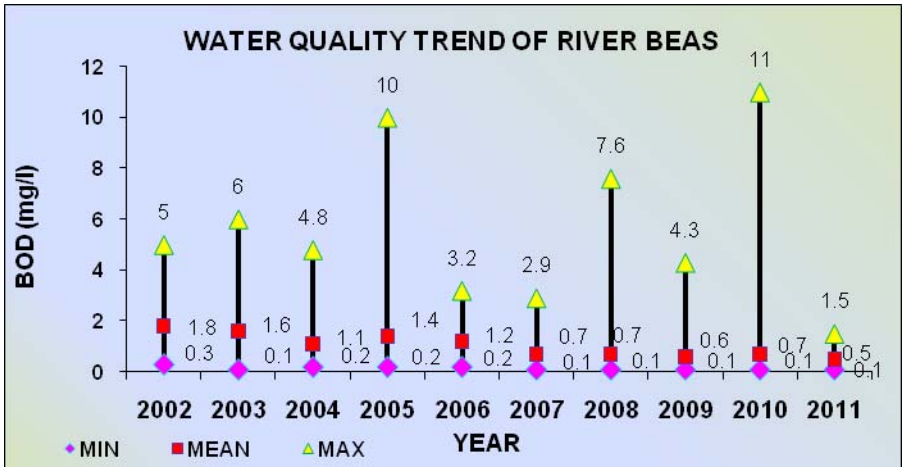
Water Quality Trend of BOD in River Brahmaputra



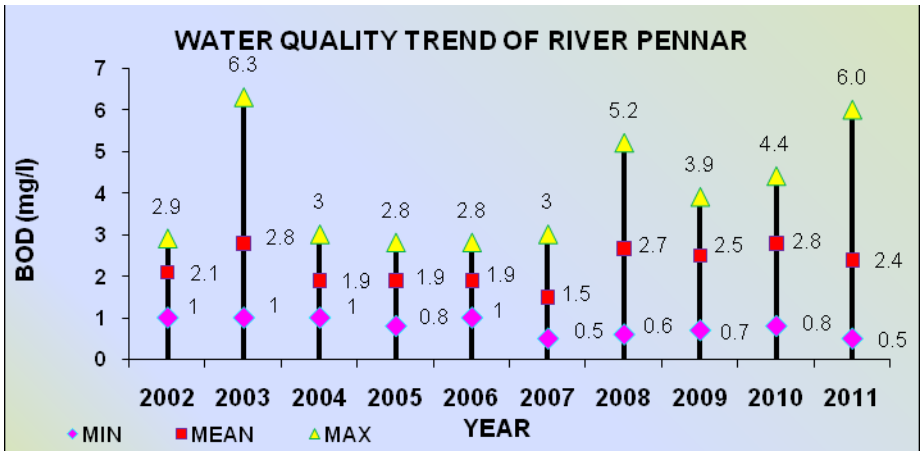
Water Quality Trend of BOD in River Satluj



Water Quality Trend of BOD in River Beas



Water Quality Trend of BOD in River Pennar



Water Quality of Rivers at a Glance

The monitoring results obtained during 2011 under National Water Quality Monitoring Programme reflect that organic matter & bacterial population of faecal origin continue to dominate the water pollution problem in India. The major water quality concerns as revealed from the monitoring results are pathogenic pollution as reflected through indicators i.e. Total Coliforms (TC) & Faecal Coliform (FC), organic matter as reflected through Biochemical Oxygen Demand (BOD) and salinity as reflected through conductivity.

The monitoring results obtained during 2011 indicate that organic pollution continues to be the predominant pollution of aquatic resources.The organic pollution measured in terms of bio-chemical oxygen demand (BOD) & Coliform bacterial count gives the indication of extent of water quality degradation in different parts of our country. It is observed that nearly 63% of the observations are having BOD less than 3 mg/l, 19% between 3-6 mg/l & 18% above 6 mg/l. Similarly Total & Faecal coliform which indicate presence of pathogens in water are also a major concern. About 50% observations are having Total Coliforms and 69% observations are having Faecal Coliform less than 500 MPN /100 ml.

Statewise Ground water Quality

To assess the problem of groundwater quality deterioration, network of groundwater quality monitoring is extended to 807 locations. The State-wise number of groundwater monitoring locations is given below in Table-I.

The groundwater quality assessment in 23 States/UTs with respect to conductivity & nitrate and is summarised in Table-II.

Table I: State wise Distribution of Groundwater Monitoring Stations

State	Well
ANDHRA PRADESH	32
ASSAM	32
BIHAR	70
CHANDIGARH	7
CHHATISSGARH	8
DAMAN, DIU, DADRA AND NAGAR HAVELI	12
DELHI	70
GOA	10
GUJARAT	83
HIMACHAL PRADESH	41
JAMMU & KASHMIR	12
KERALA	34
LAKSHDWEEP	15
MADHYA PRADESH	32
MAHARASHTRA	50
MANIPUR	10
MEGHALAYA	7
MIZORAM	2
NAGALAND	10
ORISSA	15
PONDICHERRY	15
PUNJAB	22
RAJASTHAN	87
TAMIL NADU	2
TRIPURA	21
UTTAR PRADESH	40
UTTRAKHAND	19
WEST BENGAL	49
Total	**807**

Table-II: Statewise Groundwater Quality Ranges (Conductivity and Nitrate+Nitrite-N)		
States/UTs	Conductivity (µmhos/cm)	Nitrate + Nitrite-N (mg/l)
Andhra Pradesh	211-6995	0.2-63.6
Assam, Meghalaya, Mizoram and Tripura	59-348	0.0-34.0
Chattisgarh & Madhya Pradesh	340-2182	0.0-8.5
Himachal Pradesh, Chandigarh and Punjab	226-1409	0.0-6.6
Kerala	54-891	0.1-7.6
Orissa	120-1396	0.5-11.8
Pondicherry and Tamil Nadu	143-3417	0.05-9.4
Daman & Dadra Nagar Haveli	515-2506	0.3-5.1
Maharashtra	50-5670	0.1-23.5
Gujarat	546-12018	0.26-50
Rajasthan	685-21500	0.08-9.8
Uttar Pradesh and Uttarakhand	225-3163	0.0-34.5
Bihar	356-1015	0.0-0.07
West Bengal	123-8600	0.0-25.5