Water Quality of Reservoir in Mandsour Disrict, Madhya Pradesh

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(Received: April 30, 2011; Accepted: June 11, 2011)

ABSTRACT

Shivna river is an important tributary of chambal river. It is Originated in Rajasthan and flows along border of madhyapradesh and enters in mandsour district near achera. the famas templs of lord shiva is situated form mandsour of the river Shivna. the present study has been made to investigate the Physico-chemichal parameters of the river Shivna .the present study was carried out form the month of Dec. 2008 to Sep. 2010.Sample were collected on seasonal basis form three sampling sites of mandsour i.e. Ramghat dam,Mirzapur dam and Pashpatinath Pond.

The Physico-chemichal parameters like temprature ,PH, Depth of visibility total hardness,conductivity,T.D.S. nitrate phosphate dissolved oxygen etc. were analysed during the course of study. the study revealed the Pashpatinath site showd higher concentration of nitrate ,phosphate due to many domestic activities as compare to other site eutrophication is increasing.

Key words: Water quality, Mandsaur. physico-chemical parameters.

INTRODUCTION

The water quality of pond and dam are deteriorating mainly duetue rapid increasing nearor to these places. deforastration, grazing and removal of vegetation cover in the water shed result in silting of reservoir. The agricultural practices in the catchment area not only increase the siltation problem but are also responsible the addition of large quantites of nutreitonts,pesticites and organic metter . The knowledge of physico-chemichal characterstics of water bodies help in planing and succesful management of water bodies to fulfil these criteria present investigation carried out.

S.No.	Parameters	Method/Equipment utilized
1	Temperature	LCD Portable digital multistem thermometer
2	PH	Ph meter (HANNA)
3	Hardness	Titrimetric method
4	Conductivity	Conductivity meter
5	T.D.S.	T.D.S. meter
6	Alkalinity	Tltrimetric method
7	D.O.	Winkler's method
8	Depth of visibility	Standard sacchi disc
9	Nitrate	Spectrophotometer
10	phosphate	Spectrophotometer

Table 1: Method used to evaluate parameters

ю́	Parameter	Rŝ	amgha	at	Z	lirzapu	-	Pashi	upatin	ath	œ	amgh	at	Σ	irzapu	F	Pas	hupati	nath
No		×	s	Σ	8	s	Σ	8	s	Σ	≥	s	Σ	×	s	Σ	Ν	S	¥
-	Air Temperature	24	31	26.6	23	32	26	25	318	27.4	2.3	33	29	22	33.5	2.9	23	32.5	28
2	Water Temperature	19.3	23	27	21	31	24.8	23	29	25.8	20	27	26	22	31.4	27.8	22	31.4	27.1
ю	Ηd	7.9	ω	7.3	8.2	8.3	7.5	8.1	8.1	ø	7.6	8.0	7.4	7.9	8.0	7.8	8.2	8.4	7.9
4	Total Hardness	12.	145	189	120	160	140	133	150	140	86	135	102	135	138	130	128	148	136
5	Conductivity	0.223	0.38	0.160	0.223	0.240	0.150	0.221	0.253	0.149	0.270	0.260	0.251	0.268 (0.261	0.148	0.268	0.261	0.154
9	T.D.S.	134	139	104	150	160	145	180	188	200	161	172	152	152	170	145	178	184	194
7	Total Alkalinity	50	54	70	53	60	68	64	73	85	68	70	77	57	63	72	67	75	88
ø	D.O.	8.2	6.2	7	8.6	6.5	7.3	8.2	7.6	7.4	9.4	6.3	7.2	6	6.7	7.4	8.3	7.7	7.1
6	Depth of Visibility	23	29	21	23	30	29	22	29	27	27	28	23	26	32	28	26	34	29
10	Nitrate	.177	.144	.229	0.15	0.146	0.22	0.24	0.18	0.33	.189	.147	.464	0.25	0.16	0.35	0.22	0.19	0.482
1	Phosphate	05183	.417	0.484	.501	.46	.51	0.58	0.48	02.52	0.36	0.51	0.484	.58	.76	.71	0.6410	.8432	0.7312

Table 2 : Physico Chemical Parameter of mandsour Dist During December 2008 to September 2010

MATERIAL AND METHODS

Water sample were collected from three sampling sites.Ramghat dam, Mirzapur dam and Pashupatinath pond. as a seasonal sampling during study period for estimation of various physicochemichal parameters.

The sample were collected and analyzed according to APHA(1998)1 the sample were analysed within few hours of collection.the PH,temprature and D.O,T.D.S.,were measured on the spot while determination of chlorides, phosphates, nitrates,total Hardness etc.were carried out by standerd method given in Table.1

RESULTS AND DISSCUSION

variation of physicochemichal characterstics during Dec2008 to Sep2010 are given in Table -2

Temprature effect many chemichal and biological activities so it is very important.during the study period the temperature of reservoir from 22'c to33.5'c,maximum temperature was recorded in summer 2010 at mirzapur dam while it was minimum in winter 2010 at the same site.Depth of visibility and PHwas maximum i.e.34(c.m) 8.9 respectivly at Pashupatinath pond during summer 2010.it was minimum i.e.21(c.m.) 7.3 respectivly at monsoon 2009 at Ramghat dam. Conductivity was minimum in 0.148(ms/ cm) in monsoon 2010 at Mirzapur dam and maximum 0.270(ms/cm) was recorded in winter 2010 at Ramghat site ,the D.O. ranges between 6.2 mg/l to 9.4 mg/l . it was maximum in winer 2010 in ramghat dam site and minimum 6.2 mg/l at the same site. It shows a unique relationship with temperature it means that water has grater capacity to hold D.O.(Hutchinson1957) T.D.S shows maximum 200 mg/l in monsoon 2009 at Pashupatinath while it was minimum 104 mg/l in monsoon2009 at Ramghat dam.

Total alkalinity ranges between 52 to 88 ppm total hardness was found in between 86 to 160 ppm it was minimum in winter 2010 at Ramghat site while maximum in summer 2009 at mirzapur dam site. Phosphates are essential nutrients the presens of these nutrient makes the water bodies suitable for growth of planktons and other fresh water communities the observation revealed that maximum value of phosphate was in Pashupatinath water durring summer 2010 on the other hand lowest value 0.36 mg/l was observed in Ramghat site during winter 2010 .value of nitrate ranges between 0.144 to .482 mg/l the maximum value was recorded the mansoon 2010 at Pashupatinath dam site. It was minimum in summer 2009 at Ramghat dam site it show that the water of Pashupatinath pond is much more polluted as compared to other as it is involved in several human and domestic activities

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