

Physico-Chemical Parameters of Rankala Lake

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ABSTRACT: The Rankala lake is one of the famous and historical lake situated in Kolhapur city in Maharashtra. Earlier been used as source of drinking and irrigational purposes. Presently lake is famous picnic spot and famous tourist destination. The present paper is aimed to evaluate physico-chemical parameters like pH, Acidity, Alkalinity, Chloride content, Hardness, DO, BOD, COD, Nitrate, Phosphate were analysed. Overall physico-chemical parameters were analysed but continuous supply of sewage is increase in water pollution.

KEYWORDS: Physico-chemical parameters, sewage supply, sampling points.

I. INTRODUCTION

Rankala Lake having an area of 107 Hectares and average depth 10 meter, the same was impounded during 1877 – 1883. The said Rankala Lake is an important bird area. Seven species of insects are found around lake water. Around 24 different types of fishes are found in the said lake. The said Rankala provides irrigation water for about 80 Hectares land in and around the city of Kolhapur. The area of catchment is 700 Hectares. The total storage capacity of the lake is about 4353141 m³. The useful capacity of the lake water is 2745042 m³. According to present condition we selected 8 sampling points. On the bases of drainage inlet, activities take place, on the sampling point and to cover maximum area of Rankala.^[1]

The selected sampling points are as follows:

1. S1: Sandhya math.
2. S2: Dattoba Tambat Kaman.
3. S3: Juna Washi Naka.
4. S4: Khan Vihar
5. S5: Blue ridge
6. S6: Boating point
7. S7: Chaupati
8. S8: Rajghat



II. METHODOLOGY

The physico-chemical parameters are used for determination of water quality index for overall quality of water. For this first survey of lake was done in order to most polluted points of Rankala lake. In second step the water samples were collected by the guidelines of APHA. In third step the tests for physico-chemical parameters like pH, Acidity, Alkalinity, Chloride content, Hardness, DO, BOD, COD, Nitrate, Phosphate were analysed. These tests were completed under the guidelines of APHA (American Public Health Association).

III. EXPERIMENTAL RESULTS

Water parameter	Std. Limits.	S1	S2	S3	S4	S5	S6	S7	S8
pH value	6.5-8.5	7.84	7.59	7.46	7.75	8.71	8.96	7.5	7.4
Alkalinity(mg/l)	200-600	250	230	330	320	320	350	300	270
Acidity(mg/l)	15	Ab	50	100	50	50	100	50	50
Chloride Content(mg/l)	250-1500	30.487	26.23	29.78	29.07	28.36	28.36	29.07	30.49
Hardness(mg/l)	200-600	102	111	114	104	99	96	98	100
DO (mg/l)	6-5	7.8	8.52	11.4	9.06	8.46	8.4	8.0	7.34
BOD (mg/l)	30	0.6	0.66	4.4	3.72	1.12	1.8	1.46	0.86
COD (mg/l)	250	122.4	734.4	81.6	163.2	122.2	244.8	326.4	163.2
Nitrate(mg/l)	0-45	18.29	20.85	19.35	21.57	20.98	15.00	18.66	21.46



Phosphate(mg/l)	0-5	10.08	12.19	7.56	12.25	11.14	8.19	9.53	16.35
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Table no. 1: Pysico-chemical parameters according to sampling points.

IV. CONCLUSION

- The pH of lake water found to be 7.4-8.96 which is favourable for growth of flora and fauna.
- The acidity of water at all points above permissible limit. This can contribute to corrosiveness and influence chemical reaction rate, chemical balance and biological processes.
- The Hardness at sampling points S1, S2, S3 & S4 is above permissible limit.
- The DO is higher only at sampling point S3.
- BOD is under permissible limit at all points.
- COD at sampling point S3, & S7 are above permissible limit. Higher the COD value indicate the excessive presence of organic matter which can give higher pollutant load in water.
- Phosphate content is higher at all points which can lead to growth of water hyacinth.
- The results obtained for water quality index is shown in Table. Overall lake water is poor for drinking.

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