



Physico-Chemical Analysis of Lower Wardha Project Near Mangrul Dastgir, District Amravati, (Ms)

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ABSTRACT:-

Aquatic ecosystem can be well preserved and protected by monitoring water quality. Biotic component of any freshwater resources depend solely on physico-chemical condition.

Monthly changes in physical and chemical parameters such as water temp, PH, conductivity, dissolved oxygen, free CO₂, Alkalinity, total hardness, total dissolved solid, chloride, phosphate, sulphate, nitrate, silicate were analyzed for a period of one year from 1st Aug 2014 to 1st July 2015. Therefore, the present study is aimed to generate data about water qualities.

Key word:- Physico-chemical parameters.

Introduction

All living organism on the earth need water for survival and growth. Water play a key role in different vital activities. Water is inevitable for all living organism as it has a great social and economical value ultimately affecting human health (Kesre, 2011). Now-a-days freshwater has become a scarce commodity due to overexploitation and pollution. Hence it is necessary to evaluate quality of water in order to assess its suitability for various uses. The physico-chemical means are used in detecting effect of pollution on the water quality therefore, the present study aimed to generate data about water qualities.

Materials and Methods :-

Every month, the water sample were collected from lower wardha dam, in a plastic bottle for the analysis of different physico-chemical parameters. The temp and PH were estimated on the spot by using thermometer and pocket digit PH meter. And rest of parameters were estimated in the laboratory by using Indian standard procedure (Trivedy and Goel-1986, Saxena-1990, APHA-1992, Diwakar- 1995, Gupta-2007).

Result and Discussion :-

The physico-chemical parameters of the lower wardha dam have been given in table no.1
 The average range of temp found to be in between 27.7 °c to 41.6°c. The temp was found maximum 41.6°c (April) in summer while minimum in 27.7°c (Oct) in Winter. These result is supported by (Salve and Hiware, 2008). The PH is range in between 7.2 to 7.6. The minimum pH is recorded 7.2 in (Dec and Jan) and maximum PH is 7.6 in month of (Sep). The research supported by (Kamble *et al.*, 2009) on Ruti Dam in Beed, (Mohd

Abdur Raaeq and Khan, 2002; Shaikh and Yeragi, 2003; Pawar and Pulle, 2005) stated that the PH of water is important for the biotic communities because most of plant and animal species can survive in narrow range of PH from slightly acidic to slightly alkaline condition. Determination of DO is very essential as it plays important role in productivity of aquatic ecosystem. The present value of dissolved oxygen ranged in between 2 mg/lit to 2.5 mg/lit. The maximum value is 2.5 mg/lit recorded in month of (May) and minimum value is 2 mg/lit (Oct) was observed. The present finding is supported by (Kodam *et al.*, 2007). The value of free CO₂ were significantly ranging in between 0.3 mg/lit to 0.8 mg/lit. The maximum value of CO₂ is 0.8mg/lit in month of (Oct) and minimum value is 0.3mg/lit (Dec). Total Alkalinity range from 6.2 mg/lit to 7.4 mg/lit. The maximum value in month of May in summer while the minimum value in month of Feb. The value of total hardness fluctuate in between 8.2 mg/lit to 12mg/lit. The minimum value of total hardness in month of Sep and maximum value in month of May. The total dissolved solid value is fluctuate in between 0.2 mg/lit to 0.6 mg/lit. The chloride value is ranging from 0.6 mg/lit to 1.9 mg/lit. The maximum value was 1.9 mg/lit was recorded in month of May and Minimum value is 0.6 mg/lit in month of Feb. The value of phosphate range fluctuate from 0.02 mg/lit to 0.04 mg/lit in month of Aug. The value of Nitrate range from 0.03 mg/lit to 0.08 mg/lit. The maximum value in month of Aug and minimum in month of Jan. Sulphate is produced by biological oxidation of sulphur content of organic matter. The value of sulphate is range from 0.04mg/lit to 0.06 mg/lit.

Table No. 1 Physico-chemical parameters showing means and std. Deviation of the lower Wardha ±Dam have been given:-

Month s→ Parameters↓	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Temp^o C	28 ± 0	28.1 ±	27.7 ± 4.35	31.2 ± 0	28.4 ±4.3 5	29.2 ±0.0 5	28.5 ±0	31.9 ±0.0 5	40.5 ±0.0 5	37± 0	30±0	28.4 ±4.3 5
PH	7.4± 1.08	7.6± 1.08	7.4± 1.08	7.4± 1.08	7.2± 0	7.2± 0	7.4± 1.08	7.4± 1.08	7.4± 1.08	7.6± 1.08	7.4± 1.08	7.4± 1.08
Condu ctivity mg/lit	0.02 ±0	0.02 ±0	0.02 ±0	0.02 ±0	0.2± 3.39	0.3± 0	0.2± 3.39	0.3± 0	0.3± 0	0.03 ±0	0.02 ±0	0.02 ±0
DO mg/lit	2.5± 0.05	2.2± 0	2±0. 05	2.4± 0	2.3± 0	2.2± 0	2.1± 0.05	2.4± 0	2.4± 0.05	2.5± 0	2.4± 0.05	2.3± 0.05
Co₂ mg/lit	0.7± 1.35	0.6± 0.05	0.8± 1.35	0.4± 0.05	0.3± 0	0.3± 0.05	0.3± 0.05	0.3± 0.05	0.6± 0.05	0.6± 0.05	0.7± 1.35	0.5± 0.05
Alkalin ity mg/lit	7.2± 0.05	6.8± 0.05	6.4± 1.08	7.2± 0	6.9± 1.08	6.8± 0	6.2± 0.05	6.8± 0.05	8.3± 0.05	7.4± 1.08	6.8± 0	6.5± 0.05
Total Hardn ess	11.1 ±0	8.2± 0	11.6 ±0	11.1 ±0	11±0 .57	11.1 ±0	9.2± 0.05	11.6 ±0	8.2± 0	11.1 ±0	11±0	9.8± 0
Calciu m Hardn ess mg/lit	4.4± 0	4.5± 0	3±0	4.5± 0	4.8± 0.05	4.4± 0.05	4.3± 0.11	4.5± 0	3±0	4.5± 0	4.4± 0	4.5± 0
TDS mg/lit	0.2± 3.39	0.2± 3.39	0.4± 6.79	0.4± 6.79	0.2± 3.39	0.6± 0	0.6± 0	0.6± 0	0.2± 3.39	0.4± 6.79	0.6± 0	0.2± 3.39
Chlori de mg/lit	1.7± 0	1.5± 0	1.9± 2.71	1.5± 0	1±0. 05	1.5± 0	0.6± 0	1.2± 0.05	1.9± 2.71	1.9± 2.71	1.7± 0	1.5± 0
Phosp hate mg/lit	0.04 ±0	0.03 ±0	0.03 ±0	0.02 ±0	0.03 ±0	0.02 ±0	0.02 ±0	0.02 ±0	0.03 ±0	0.03 ±0	0.03 ±0	0.04 ±0
Sulpha te mg/lit	0.04 ±0	0.04 ±0	0.04 ±0	0.05 ±8.4 9	0.05 ±8.4 9	0.05 ±8.8 4	0.03 ±0	0.05 ±8.4 9	0.05 ±8.4 9	0.04 ±0	0.06 ±0	0.04 ±0
Nitrate mg/lit	0.08 ±0	0.06 ±0	0.04 ±0	0.08 ±0	0.05 ±8.4 9	0.03 ±0	0.08 ±0	0.04 ±0	0.04 ±0	0.04 ±0	0.05 ±8.4 9	0.05 ±8.4 9
Silicat e mg/lit	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0	0.01 ±0

Physico-chemical parameters of Lower Wardha Dam during 2015-2016

Conclusion:-

Higher values of pH indicated slightly alkaline nature of water and its suitability for drinking purpose. Dissolved oxygen point out photosynthetic activities happening into the water while nutrients like Sulphates and Nitrates and Chlorides provide suitable environment for the biota in the dam however further study is needed to confirm the exact status of water quality of the dam

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