ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 10, Issue, 05(E), pp. 32447-32450, May, 2019

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

MONTHLY VARIATION IN PHYSICO – CHEMICAL PARAMETER OF RANIPUR IRRIGATION DAM WATER

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DOI: http://dx.doi.org/10.24327/ijrsr.2019.1005.3472

ARTICLE INFO

Article History:
Received 4th February, 2019
Received in revised form 25th March, 2019
Accepted 23rd April, 2019
Published online 28th May, 2019

Key Words:

Water Sample, Analysis, Ranipur Irrigation Dam, Physico-chemical Parameter.

ABSTRACT

Present work focused on the physic-chemical parameter of water of Ranipur dam from July to March month (i.e. Monthly variation in the parameter is determined). The Physico-chemical parameter such as water temperature, pH, TDS, Dissolved O2, free Co2 total hardness, chloride, phosphate, etc. In the present study, the water sample was collected from three different sampling stations of Ranipur irrigation dam.

INTRODUCTION

India is most populous country, is gifted by freshwater to survive the life of Indians.Water is a natural resource need for each and every living thing. In Shahada taluka, Ranipur town is located between 74^0, $30^|$ degrees of northern latitude and 21^0, $41^|$ degrees of eastern longitude and 161 meters above from Sea level. The dam was constructed in 1999. The total population of Ranipur village 2940 and total house in the village is 551. The total length of the dam is 774 meter approximately 1 kilometer.Water resource available for household and drinking purpose with heavy element metal ions and contamination of harmful microorganism is one of the serious major health problems (Gupta, 2009). Agriculture is the most important source for people of village. Water is an important source for human being as well as a living animal. Dhanaji *et al.*,(2016) reported that,in total there are 1400 million billion liters of water, but most of this water is used as drinking purpose because 97 % is sea water and only 3% fresh water, out of which 2% is ledged in the polar ice caps and glaciers, only 1% of water is available for portable use for Human development like drinking, irrigation. Ranipur irrigation dam is the main source of drinking water as well as for agriculture in Ranipur village. The quality of portable water depends on water source like a river and lake etc. The condition of drinking water may be polluted with a pathogen, toxic metal, a chemical compound such as industrial wastes, herbicides, insecticides, pesticides and other contaminants become waterborne outbreaks (Begum and Harikrishna, 2008).Human being use water for living and other domestic purpose.

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In the present investigation, important constituents like temperature, total dissolved solids, pH, Co_2, dissolved oxygen, total alkalinity, total hardness, phosphate, sulphate and nitrate from Ranipur dam of Shahada tahsil were analyzed. Water was analyzed every month. The present study helps to find out the properties of water from study area.

METHODOLOGY

Sample Collection Site: Three water sampling sitewere selected from the Ranipur dam to check the Physico-chemical properties of water. Water sample were collected in plastic bottleswith 5-liter capacity. Before sampling all the bottles/cane where washed with distilled water, ethanol or tap water. Then sample were sent to Reliable Analytical laboratories, Manpada, Thane-West (Maharashtra) India to analyze the Physico-chemical properties. Obtained data were summarized in graphs.

RESULT AND DISCUSSION

The water sample of the dam is analyzed for Physico–chemical characteristics. The parameter where estimated namely Temperature, pH, TDS, Dissolved O_2, Co_2, Total hardness, sulfate, phosphate, nitrate.

Temperature

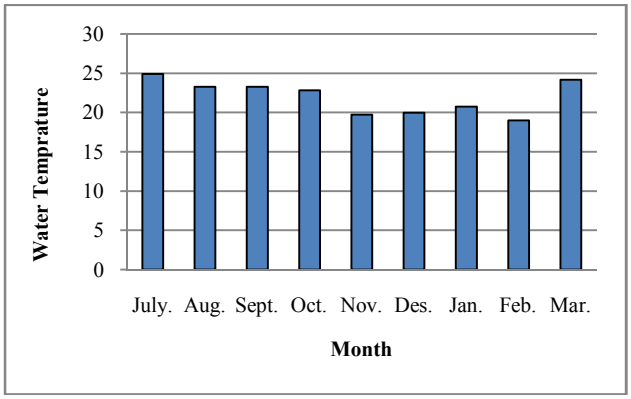

Fig 1 Monthly variation of Temperature

The temperature of the water is estimated by the thermometer. The fluctuation of dam water temperature was observed (fig-1). Abipathy (2006) reported that, the temperature depends on the geographic location, sampling time and season. The water temperature maximum in July was 24.5 ^{0}C and minimum in February was 19^{0}C. The variation in the temperature depends on the surrounding environment.

pH of water

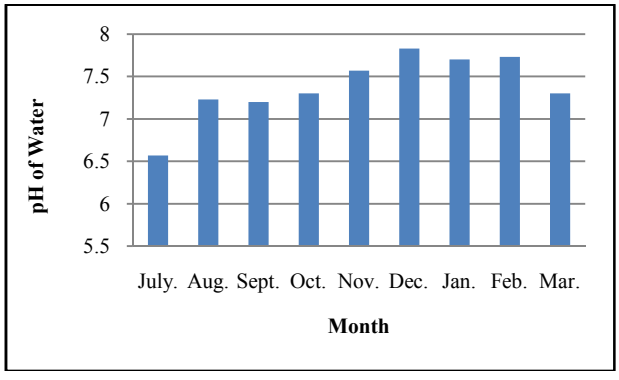

Fig 2 Monthly Variation of pH

pH is a negative logarithm of H+ ion concentrated. The pH range is 0 to 14. 7 being neutral and less than 7 is acidic. And above than 7 is basic. The pH is recorded with the help of standard pH paper strip. The strip of paper is deep in a sample of collected water and the specific color is developed than those color compared with the standard color code is given. In the laboratory, pH is recorded with the help of pH meter in the month of July. 6.57 is the pH of water is very low compared with the month of December i.e. 7.83 pH value of water.

FreeCO_2

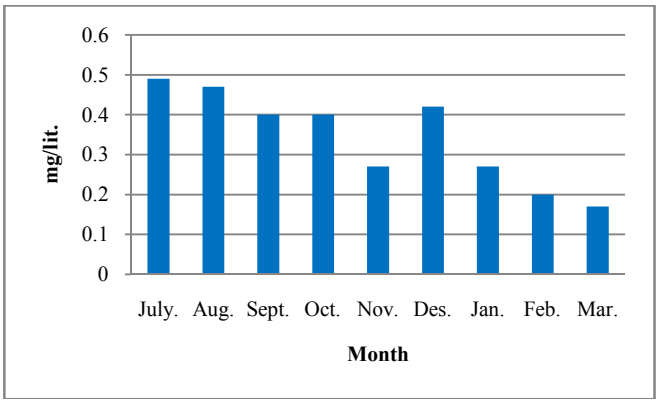

Fig 3 Monthly Variation of FreeCO_2

Free CO_2 is an important factor of water in an aquatic ecosystem. Sources of CO_2 are community respiration and decomposition while it is consumed in the photosynthesis depending upon the pH and other biological conditions. CO_2 was found in the form of free CO_2, CO_3, etc. at the month of October, September and Feb. the free$CO_2$is less than other.

Dissolved Oxygen (DO)

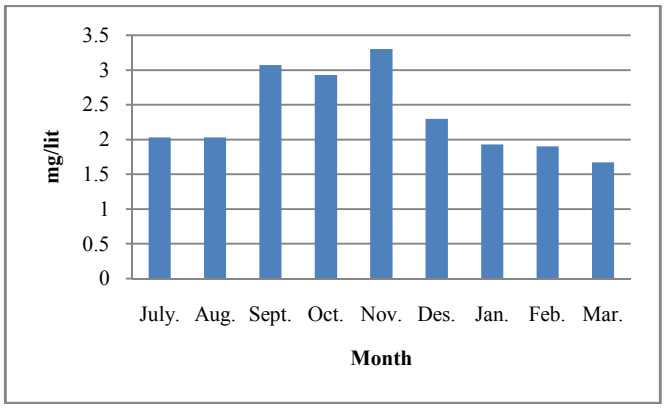

Fig 4 Monthly variation of Dissolved O2

At the month of January, February and March the dissolved oxygen were decreased. With compare to another month in the month of September the dissolved O_2 in water is 3.07 higher than other all month. The DO level depends on the physical, chemical and biological activities of the water body.When the temperature increased simultaneously the DO level was decreased. The analysis of DO plays a key role in water pollution control and waste treatment. Winkler method was used to determine DO.

Total Hardness

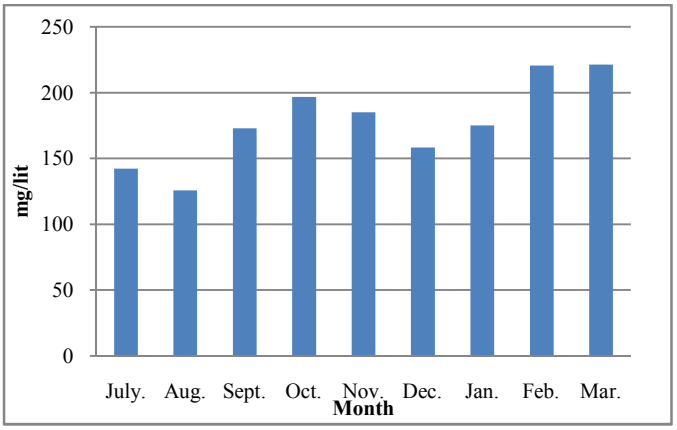

Fig 5 Monthly Variation of Total Hardness

The hardness of H_2O is not a pollution parameter, but indicates water quality mainly in terms of Ca^{2+}& mg^{+2} the analysis done by complex metric titration. The total hardness of H_2O is approximately 162.2. In the month of March, the average of total hardness become 221.4

Phosphate (mg/lit.)

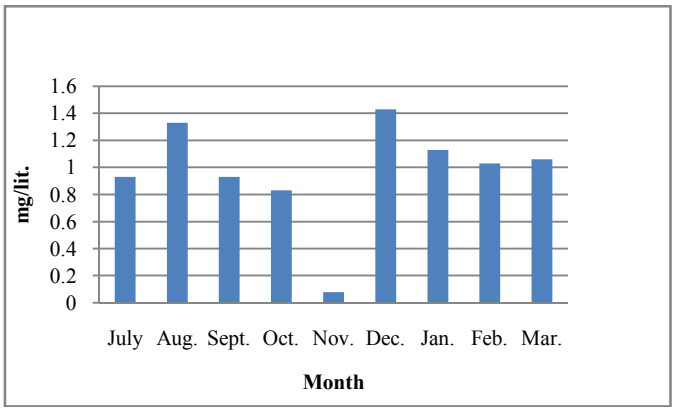

Fig 6 Monthly variation of phosphate

The high concentration of phosphate can indicate the high presence of pollution and are largely responsible for eutrophic condition (WHO 1993). Phosphate is rarely found in water of Ranipur dam, water phosphate is easily found at the month of December i.e. 1.43(mg/lit)

Total Dissolved Solid (TDS)

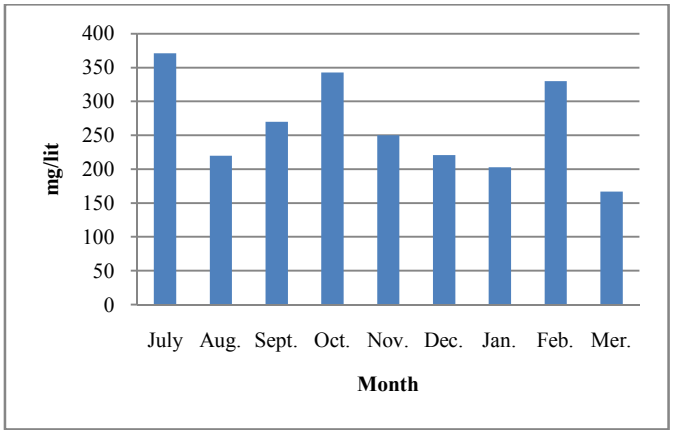

Fig 7 Monthly variation of TDS

Total dissolved solids in Ranipur irrigation dam water is approximately 264 mg /l. The TDS is increased in the month of July of the salt sand and a variety of organic substance is soluble in water. The TDS is estimated by Gravimetric method in mg/lit.

Chloride

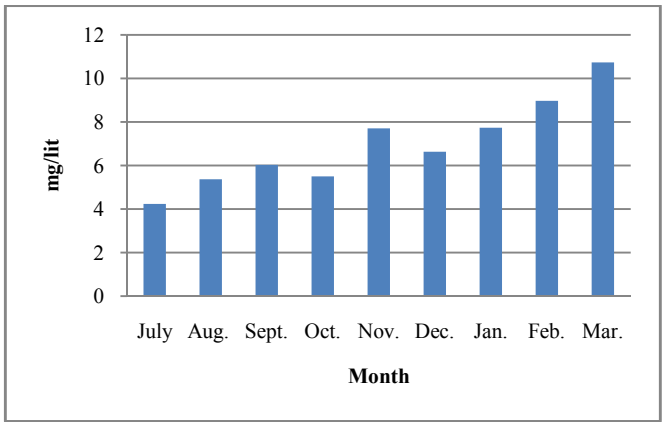

Fig 8 Monthly variation of chloride

The chloride naturally occurs in water. The high amount of chloride is shown the pollution of water produced by animal waste. In the Ranipur dam, the average chloride is 6.96 mg/ lit. In March chloride level is high because of summer season and animal waste. Due to a high temperature most of the animals regularly in contact with water. So water pollution is ultimately produced.

CONCLUSION

The present investigationundertaken to account to bring and acute awareness among the people about water quality.This paper will give the great help to the farmer for choosing right agriculture practice and exact composition of fertilizers because the farmer is utilizing this water from irrigation of Ranipur dam.

Acknowledgement

Author sincerely thankful to Satpuda Shikshan Prasarak Mandal Sub Division office Shahada. Mrs. Sau. Varsha S.Jadhav (Secretary), Sonamai Shikshan Prasarak Mandal, Shahada, Dist. Nandurbar. Author also thankful to Reliable Analytical laboratories, Manpada, Thane, Maharashtra to analyze water sample. I am also Thankful to Dr. Sahebrao S. Ishi to help in the present research work.

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How to cite this article:

Jadhav H.S. and Jadhav S. P., 2019, Monthly Variation in Physico – Chemical Parameter of Ranipur Irrigation Dam Water. *Int J Recent Sci Res.* 10(05), pp. 32447-32450. DOI: http://dx.doi.org/10.24327/ijrsr.2019.1005.3472

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