International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Water Quality Study in the Area of Narmada River, Jabalpur Region (M.P.)

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ABSTRACT

Narmada Stream is the existence line of Madhya-pradesh. Stream water is utilized for different reason, for example, horticulture, homegrown and water system and so on. Jabalpur is the fundamental city of Focal India and customarily known as Mahakoushal. The WCR settle GCF, OFK and VFJ and furthermore a vital armed force base are arranged at Jabalpur. Narmada Water is involved by neighboring towns of concentrated on ghats in huge sum . Because of almost arranged Gelatin Manufacturing plant for example Narmada Gelatins,these ghats are likewise getting contaminated step by step. It is important to routinely screen the water quality by examination of different Physico-compound boundaries.The goal of present examination work is to concentrate on different water contaminations of stream Narmada.

Keywords: Narmada River pH,Conductivity‘Turbidity,BOD.

Introduction

Streams are normal water course typically new water, streaming towards a sea a lake or an ocean or another river.River are the piece of hydrological cycle. Streams are the images of self-recharging, self sanitizing life supporting pattern of issues. The Narmada stream is the fifth biggest waterway in India and biggest west streaming waterway of Indian promontory It begins from Maikal ranges at Amarkantak in Madhya Pradesh at an elavation of 900M. Jabalpur likewise called as Mahakoushal, is arranged practically in the focal point of India between the co-ordinates of 200 10' Scope and 79057' E Longitude and with an overall height of around 393 meters above (MSL).

The water nature of stream Narmada has been examined during the time of one year for example from Oct. 2010 to Sep. 2011, from inspecting station Lamhetaghat (S-1) to Testing station (S-5) Bhedaghat. Narmada, a Blessed stream is getting contaminated because of neighboring gelatin industrial facility arranged between testing station 4 and 5 for example Narmada Gelatins and different squanders, for example, cow-manure and other natural water from the close by towns. The physico-synthetic boundaries, for example, pH, conductivity, turbidity and Body are examined and on premise of these boundaries, water quality is assessed. A review of writing uncovers that great number of important commitments has been made during the last two thirty years from the focal district of India. Writing overview showed that there were sure examinations by laborers like Soni and Salahuddin (2013). Ashraf,M.P And Mukundan,M.M.(2007).

Aim of the Study

To notice the occasional varieties in Narmada stream water by assessing its physico-compound boundaries at five distinct stations based on which the nature and nature of water can be examined. Based on which water quality record can be determined and important moves can be initiated. Being familiar with the exact state of water quality as it is profoundly involved by neighboring towns for drinking is significant.

Review of Literature

Streams are the main wellspring of water to worldwide populace, Narmada is a blessed waterway and is the main stream in India that streams in a right valley.

Comparative investigations are finished by many explores. The water of lower Pool of Bhopal is utilized for drinking, water system and power supply yet shifts starting with one station then onto the next. The circumstance isn't excessively most awful however its disturbing (Ghosh et.al.,2014). Profound exploration is being finished by Kushram, Parvati (2013), Majumdar and Dutta, 2014 one Physico-Substance investigation of Narmada stream at Dindori (M.P.)

Varhasiya, A.R., Pamnai A.N., Patel N.R. (2016), considered the physico-compound water nature of Narmada stream (Gujrat).
Comparative work is finished by Kumari M, Mudgal
L.K. what's more, Singh A.K. (2013), on similar investigation of physico-synthetic boundaries of two reserviors of Narmada waterway at M.P.

Material and Methods

During the current investigation of Narmada waterway water in Jabalpur area from Oct 2010 to Sept 2011, review is finished in 5 examining spots (ghats) in particular Lamhetaghat (S — 1), (2) Laxminarayan Ghat (S-2),
(3) Gograghat (S-3), (4) Saraswati Ghat (S-4), (5) Bhedaghat (S-5) for physico-compound investigation covering every one of the seasons, water test have been gathered. All fluid examples were gathered with a volume of at least 100ml. A space of atleast 2.5m was passed on in the container to work with blending by shaking. Tests were gathered in a non-receptive jugs that had been cleaned and flushed cautiously. Taking the examples so as to survey the nature and level of contamination. The examples were gathered from just underneath the water surface by utilizing adjusted hales samplers of liter limit. For occasional varieties the examining is done consistently between 8.00 am to 10.00 am and to show diurnal varieties the day in a month was picked and around five readings were taken by keeping the hole of 4 hours (roughly) for each testing stations various dates were chosen. Not entirely set in stone by utilizing advanced PH meter, conductivity by conductivity meter, turbidity by utilizing turbidity meter. While Body and other physico-substance not entirely set in stone by taking on strategies given by APHA(1992).

Results and Discussion

The outcomes investigated structure the water tests gathered from various examining stations of stream Narmada, Jabalpur area during the review time frame (Oct. 2010 to Sep. 2011) is available in Tables and Chart 1,2,3 and 4.

Hydrogen Ion Concentration

It is the proportion of the general corrosiveness or alkalinity and addresses the negative logarithm of the grouping of free hydrogen particles in an answer. The 'P' of pH means the force of the hydrogen particle action in mole per liter. In the year 2010-2011 of the review, the yearly pH mean qualities were recorded on S1 :Lamhetaghat - 8.23, S-2 : Laxminarayan Ghat -
7.81. S-3: Grograghat - 8.27, S-4: Saraswati Ghat - 7.77, S-5: Bhedaghat - 7.1 Comparable work has been accounted for by Pahwa and Mehrotra (1966) with pH scope of 7.4 to 8.3 in waterway Ganga.

Conductivity

It is the proportion of the general corrosiveness or alkalinity and addresses the negative logarithm of the grouping of free hydrogen particles in an answer. The 'P' of pH means the force of the hydrogen particle action in mole per liter. In the year 2010-2011 of the review, the yearly pH mean qualities were recorded on S1 :Lamhetaghat - 8.23, S-2 : Laxminarayan Ghat -
7.81. S-3: Grograghat - 8.27, S-4: Saraswati Ghat - 7.77, S-5: Bhedaghat - 7.1 Comparable work has been accounted for by Pahwa and Mehrotra (1966) with pH scope of 7.4 to 8.3 in waterway Ganga.

Turbidity

Turbidity in water is brought about by the substances not present in that frame of mind of genuine arrangements. Turbidity makes the water unsuitable for homegrown reason. The estimation of turbidity is the critical trial of water quality. Liquids can contain suspended strong matter comprising of particles of a wide range of sizes. While some suspended material will be sufficiently enormous and weighty enough to settle quickly to the lower part of the holder in the event that the fluid example is passed on to stand. Tiny particles will settle, truth be told, gradually. There little strong particles make the fluid seem turbid. In the year 2010-2011, the yearly turbidity mean qualities were recorded as S1: Lamhetaghat - 14.81, S-2: Laxminarayan Ghat - 15.09. S-3: Grograghat - 13.54, S-4: Saraswati Ghat - 15.02, S-5 : Bhedaghat - 13.52.

Biological Oxygen Demand

Natural oxygen request is how much oxygen expected by high-impact microorganisms to deteriorate the natural matter of base water and contaminated water. In the review year 2010-2011, Body is viewed as high in examining stations S2, S4 and S5. The yearly Body implies values were recorded as -
S1: Lamhetaghat - 8.6, S-2: Laxminarayan Ghat - 8.75. S-3: Grograghat - 7.75, S-4: Saraswati Ghat - 8.41, S-5: Bhedaghat - 11.5. The high Body values are because of less weakening and waste water. The stormy season shows the Body is less because of weakening by downpour water as contrast with winter and summer seasons that has high Body.

Sources of Pollutants

The principal source adding to the contamination of Heavenly waterway Narmada at these five staions are "Narmada Gelatin Production line", Trash through adjacent towns, ceremonial reasons, Cow-waste and so forth. These by and large add to the change in physico - synthetic boundaries, for example, pH, turbidity, Body and so on. A few boundaries showed tremendous changes bringing about disintegration of water quality. Accordingly,

making the water ill suited for drinking and different purposes as well. Comparable investigations on water nature of stream has been depicted Malviya et.al (2010). It was demonstrated by this trial that the human exercises alongside creature squanders and all are adding an incredible level of pessimism to the water quality, which at long last prompts the obliteration of verdure. As Narmada waterway is a blessed stream. In this way, government alogwith a few Non-legislative associations ought to make a suitable move to limit the terrible effect on Narmada water.

Conclusion

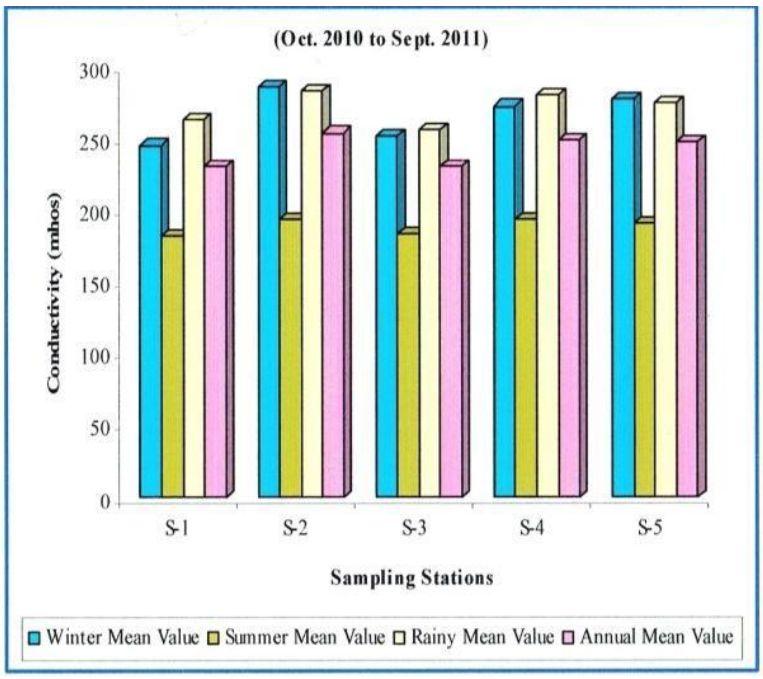
The result of sampling programme clearlydetermines the water quality of Narmada is a bit unfit for drinking purpose as well as irrigation and other uses too. All the undertaken parameters are exceeding the permissible limits. The pollution of river is increasing sharply and can cause serious problems in future. It is suggested that state Government along with the help of non-governmental organization should take appropriate actions and should start some abhiyan's to help Narmada, to be a holy river once again with a good quality water.

Table – 1 Seasonal and Annual Means Variation in pH at Different Sampling Stations of River Narmada (Oct.2010 to Sep. 2011.)

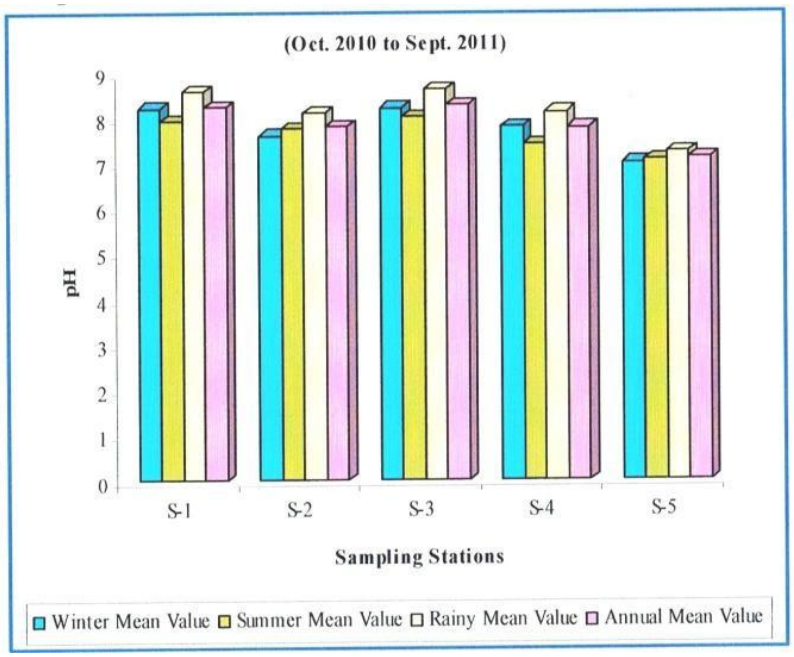
Sampling stations	**Oct-10**	**Nov-10**	**Dec-10**	**Jan-11**	**Winter Mean Value**	**Feb-11**	**Mar-11**	**Apr-11**	**May-11**	**Summer mean value**	**Jun-11**	**Jul-11**	**Aug-11**	**Sep-11**	**Rainy mean value**	**Annual Mean Value**
Lamheta Ghat	8.1	8.4	8.2	8.1	8.2	8.1	8.2	7.6	7.8	7.92	8.6	8.2	8.6	8.9	8.57	8.23
Laxmina rayan Ghat	7.3	7.6	7.6	7.9	7.6	7.4	7.9	7.8	7.9	7.75	7.9	8	8.2	8.3	8.1	7.81
Gograghat	8.1	8.2	8.2	8.3	8.2	8	8.3	7.6	8.1	8	8.5	8.2	8.7	9.1	8.62	8.27
Saraswati Ghat	7.4	7.8	7.7	8.3	7.8	7.4	7.5	7.3	7.4	7.4	8.1	8.3	8	8.1	8.12	7.77
Bhedaghat	6.8	7.2	7.1	6.9	7	6.6	7.2	6.9	7.5	7.05	7.1	7.3	7.2	7.4	7.25	7.1

Table – 2 Seasonal and Annual Means Variation in Conductivity at Five Different Sampling Stations of River Narmada (Oct.2010 to Sep. 2011.)

Sampling stations	Oct-10	Nov-10	Dec-10	Jan-11	**Winter Mean Value**	Feb-11	Mar-11	Apr-11	May-11	**Summer mean value**	Jun-11	Jul-11	Aug-11	Sep-11	**Rainy mean value**	**Annual Mean Value**
Lamheta Ghat	349	241	221	170	245.5	180	182	163	202	181.75	258	252	260	282	263	230
Laxminarayan Ghat	374	278	264	226	285.5	183	183	179	227	193	270	283	285	295	283.25	253.91
Gograghat	360	244	228	173	251.25	180	169	177	206	183	246	245	261	270	255.5	229.91
Saraswati Ghat	371	258	249	212	272.5	182	192	181	220	193.75	278	275	276	291	280	248.75
Bhedaghat	375	254	270	211	277.5	180	176	182	266	191	268	271	270	289	274.5	247.66



Graph – 1 Seasonal and Annual Means Variation in Ph at Different Sampling Stations of River Narmada (Oct. 2010to Sep. 2011.)



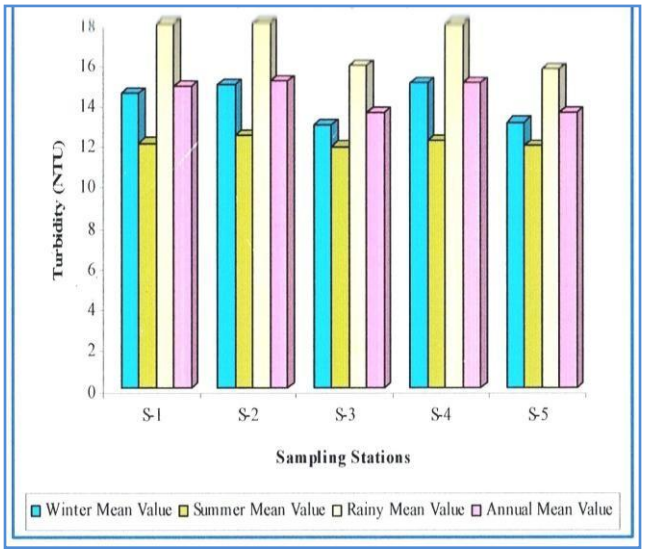
Graph– 2 Seasonal and Annual Means Variation in Conductivity at Five Different Sampling Stations of River Narmada (Oct.2010toSep. 2011.

Table – 3 Seasonal and Annual Means Variation in Turbidity (NTU) at Different Sampling Stations ofRiver Narmada(Oct. 2010toSep. 2011.)

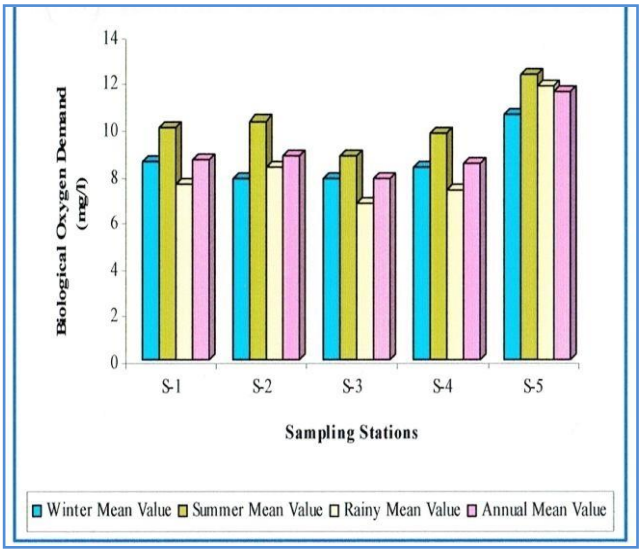
Sampling stations	**Oct-10**	**Nov-10**	**Dec-10**	**Jan-11**	**Winter Mean Value**	**Feb-11**	**Mar-11**	**Apr-11**	**May-11**	**Summer mean value**	**Jun-11**	**Jul-11**	**Aug-11**	**Sep-11**	**Rainy mean value**	**Annual Mean Value**
Lamheta Ghat	15.2	14.5	14	14.2	14.47	12.2	12.1	12.3	11.5	12.02	15.5	19	19.1	18.2	17.95	14.81
Laxminarayan Ghat	15.4	15.6	14.3	14.3	14.9	12.2	12.1	12.3	13	12.4	15.4	19.2	19.4	17.9	17.97	15.09
Gograghat	12.9	13.5	12.8	12.4	12.9	12.1	11.6	11.8	11.9	11.85	14.4	16.2	16.3	16.6	18.87	13.54
Saraswati ghat	15.8	14.2	14.4	15.5	14.97	12.6	12.2	12.1	11.7	12.15	14.6	19.9	19	18.3	17.95	15.02
Bhedaghat	13.2	13.8	13.3	11.9	13.05	12.3	11.6	11.1	12.5	11.87	14.2	16.3	16	16.1	15.65	13.52

Table – 4 Seasonal and Annual Means Variation in BiologicalOxygen Demand (BOD) at Five Different Sampling Station sof River Narmada (Oct.2010to Sep.2011.)

Sampling stations	**Oct-10**	**Nov-10**	**Dec-10**	**Jan-11**	**Winter Mean Value**	**Feb-11**	**Mar-11**	**Apr-11**	**May-11**	**Summer mean value**	**Jun-11**	**Jul-11**	**Aug-11**	**Sep-11**	**Rainy mean value**	**Annual Mean Value**
Lamheta Ghat	9	8	8	9	8.5	9	11	11	9	10	11	6	7	6	7.5	8.6
Laxminarayan Ghat	7	8	7	9	7.75	8	10	11	12	10.25	10	6	8	9	8.25	8.75
Gogra ghat	8	9	7	7	7.75	9	7	11	8	8.75	10	6	5	6	6.75	7.75
Saraswati Ghat	9	9	8	7	8.25	10	11	8	10	9.75	10	7	10	6	7.25	8.41
Bheda ghat	10	12	11	9	10.5	12	13	12	12	12.25	6	12	10	11	11.25	11.5



Graph – 3 Seasonal and Annual Means Variation in Turbidity (NTU) at Different Sampling Stations of River Narmada(Oct.2010 to Sep.2011.)



Graph– 4 Seasonal and Annual Means Variation in Biological Oxygen Demand (BOD) at Five DifferentSampling Stations of River Narmada (Oct. 2010 toSep.2011.)

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