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Water Quality Assessment of Manjra River- Review

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Abstract- Water quality is an important factor for preservation of human life as well as aquatic ecosystem. In rivers, water quality is affected by the environment, climate condition, seasonal variation, and land use pattern, natural and man-made pollution. Considering growth of water use for different consumption and discharge of pollution in rivers, several water quality parameters like physico-chemical parameters, biological parameters, and hydro-logical parameters are usually monitored along rivers in different periods and for different seasons. Manjra is one tributary of Godavari River which flows in various districts of Maharashtra, Karnataka, Telangana and Andhra Pradesh. In This research Paper, various works carried out on Manjra River related to water quality parameters is to be reviewed so that this information helps to know water quality of Manjra River.

Keywords: *Manjra River, Physico-chemical parameter, tributary, Water quality.*

I INTRODUCTION

Water is essential in every stage of life for living organism, population intensities and water viability many of times not compatible Freshwater is essential for human health life and its quality is a matter of global concern. The surface water quality is very important and critical issue in many countries worldwide [1]. Natural water is never pure water but it is complex mixture of dissolved inorganic and organic molecules and suspended particles [2]. Due to rapid economic development and urbanization, the quality and quantity of available water resources have become a serious issue [3]. Water quality is determined by the chemical, physical and biological parameters of water [5]. Rivers are one of main water resources for agricultural, drinking, and industrial use. Generally, surface water quality and groundwater quality assessment, physical, chemical and biological water quality parameters are required [6]. Maharashtra is the second most populous state and third largest state by area in India. There are 36 districts in Maharashtra and Mumbai is capital city of the state. The state of Maharashtra has major rivers such as Godavari, Krishna, Tapi- Purna, Bhima and Wardha-Wainganga etc besides many other rivers [13].

The River Manjra is a tributary of the Godavari River. It is flowing through the states of Maharashtra, Karnataka, Telangana and Andhra Pradesh. It originates from the Balaghat range of hills at an altitude of 823 meters Patoda tahsil of Beed district and empties in Godavari River [10]. The tributaries of Manjra Rivers are Tawarja, Terna, Rena, Gharni, Dev, Lendi, Manar, Tiru, karanja and Haldi [4] [8]. Terna River is the main tributary of Manjra which flows on the southern boundary of the Ausa taluka. Manar River takes its origin at Dharmapuri in Beed district and flows through the Ahmadpur taluka into Nanded district. Lendi has its origin in Udgir taluka and flowing through the Ahamadpur taluka joins the Tiru River in Nanded district. Gharni has its origin near Wadval and flows through Chakur taluka. Tawarja originates near Murud in Latur and joins the Manjra River at Shivani on the Latur-Ausa boundary [7]. Rena River flows through Renapur taluka and empties in Manjra at Bhatangali in Latur district. Karanja River has its origin near Kohir village in Andhra Pradesh and after flowing for about 110 Km. through the Andhra Pradesh, Karnataka State, Karanja joins river near Narda Sangam village in Bhalki Taluka, karnataka state [17]. Manjra River has a total catchment area of 30,844 square kilometers (3,084,400 ha) that is 15,667 Sq. kms in Maharashtra, 4,406 Sq. kms in Karnataka and 10,772 Sq. kms in Andhra Pradesh [18].

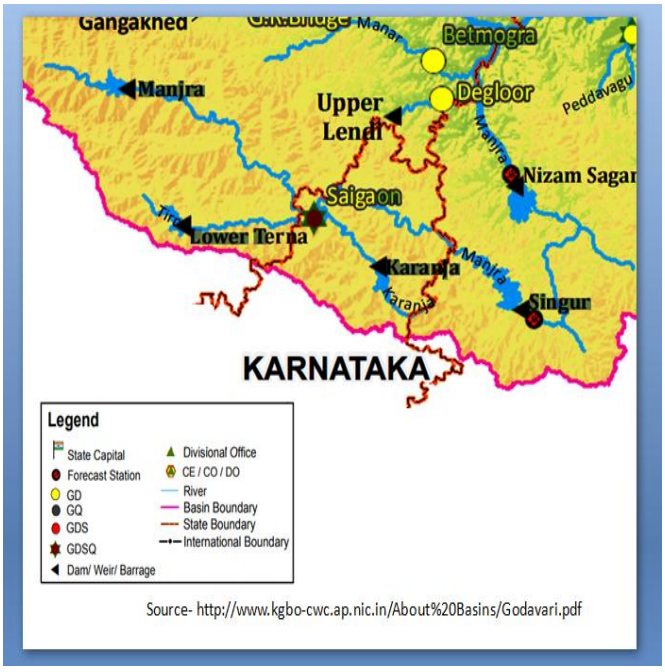

Figure 1 Manjra River

II LITERATURE REVIEW

Akuskar S. K. and Gaikwad A. V. (2006), carried out physico-chemical analysis of Manjra dam back water of Manjra River Dhanegaon, Maharashtra, India. They selected two sample location sites, one is Bhalgaon and second is storage point for the period between July to Dec 2003. Parameters like pH, DO, TDS, Conductivity, Turbidity, COD, alkalinity and total hardness were analyzed and found that pH varies between 6.8 to 7.8. conductivity varies between 400 to 650 µmho/cm. DO was found to be 4 to 9 mg/L. Total hardness observed in the range from 135 to 165 mg/L. COD was varied between 85 to 150mg/lit. From these physico-chemical parameters they concluded that water at both the points that is Bhalgaon point and storage water not potable and requires treatment.

S. Hussain et al (2012), studied variation in physicochemical parameters of Manjra dam water for a period of one year during Aug 2009 to July 2010. The Manjra dam has constructed across the river of Manjra at Dhanegaon. Manjra dam has special importance because water is supplied to some area of beed district and especially to Latur district. Parameters like pH, DO, TDS, Conductivity, Turbidity, Sulphate, chloride, calcium, Magnesium and total hardness were analyzed. They found that pH is range between 7.8 to 8.72 and pH is highest in February month and lowest in June. Conductivity varies between 98 to 462 µmho/cm. DO is found to be 4 to 8.2 mg/L, sulphate varies from 13 to 56 mg/L. Total hardness observed in range from 65 to 136 mg/L. Thus from the above physico-chemical parameters it was inferred that water from Manjra dam is not polluted but require primary treatment because parameters are very close to desire limit.

P. C. Mane et al (2013) studied "Spectrophotometric determination of chromium and copper content from Manjra Dam of Maharashtra, India during period of 2009- 2011. they carried out study on the Manjara dam which is situated at Dhanegaon, village of Kaij Taluka, Beed District, Maharashtra, India.They found highest amount of chromium 0.018 mg/L and lowest amount as 0.0013 mg/L and the highest amount of copper was recorded as 0.0035 mg/L and lowest amount as 0.0086 mg/L.

N. M. Sahajrao and R. G. Pawale (2015) Carried out "Assessment Of Some Selected Heavy Metals From Manjra River Water At Biloli In Nanded District, Maharashtra, India" to determine heavy metals iron, zinc, manganese and copper for Manjara River at Biloli taluka in Nanded District, Maharashtra state of India during the period of January to December in 2013. Study concluded that the observed values of pH were within the permissible limit 6.5 to 8.5. The concentration of heavy metals from Manjara River at Biloli exhibiting the order Zn > Fe >Mn > Cu. It observed that the concentration of heavy metals was higher in summer season and lower in the rainy season due to the dilution effect of rain water and surface water runoff.

V. V Naiknaware and S. Abed (**2015**) Carried out "Physico-chemical analysis of Manjra River at Kallam" during period of December 2011.they were collected water from five locations. Water Parameters like temperature, pH, chloride, fluorides, alkalinity, total solids and total hardness were analyzed. It has been found that pH varies between 6.9 to 7.4, temperature varied between 26^0c to 32^0c. Total hardness observed in range from 120 to 340 mg/L. Fluoride concentration varied between 0.28 to 0.40mg/lit. Chloride concentration varied between 12 to 124mg/lit. From these physico-chemical parameters they concluded that water at bhoigalli points and Malegaon point were more polluted.

MPCB Report- MPCB observed parameters like pH, DO, BOD, Feacal coliform, total coliform, ammonia, and nitrate. According to their report they calculated water quality index by using National Sanitation Foundation Method. In that report they used modified CPCB weights for calculation of WQI of Manjra River. They choose two station one is Bhatkheda dist Latur having station id 2673 and other is Manjra River at Dhanegaon having station id 2157.

Table 1: Summary of parameters Studied on Manjra River by Maharashtra Pollution Control Board (MPCB)

Sr. no	Parameters	MPCB Report (2007-2008)	MPCB Report (2009-11)	MPCB Report (2011-12)	MPCB Report (2014-2015)
1	pH	✓	✓	✓	✓
2	DO	✓	✓	✓	✓
3	BOD	✓	✓	✓	✓
4	TDS	✓	✓	-	-
5	Feacal coliform	-	✓	✓	✓
6	Total Coliform	-	✓	-	-
7	Ammonia	✓	✓	-	-
8	Nitrate	✓	✓	-	-

Table 2 Summary of parameters Studied on Manjara River at different location by various Authors

Sr. no.	Parameters	Authors				
		Akuskar, S.K. & Gaikwad, A.V. (2006)	S. Hussain, V. Mane, T. Surendra, and M. Farooqui (2012)	P. C. Mane, D. D. Kadam, R.D.Chaudhari, and A. B. Bhosle (2013)	N. M. Sahajrao and R. G. Pawale (2015)	V. V. Naiknaware and S. Abed (2015)
1	pH	✓	✓	✓	✓	✓
2	DO	✓	✓	-	-	-
3	BOD	✓	-	-	-	-
4	TDS	✓	✓	-	-	-
5	Chloride	✓	✓	-	-	✓
6	Turbidity	✓	✓	-	-	-
7	Total Hardness	✓	✓	-	-	✓
8	Total Alkalinity	✓	-	-	-	✓
9	EC	✓	✓	-	-	-
10	Total Solids	-	-	-	-	✓
11	Calcium	-	✓	-	-	-
12	COD	✓	-	-	-	-
13	Magnesium	-	✓	-	-	-
14	Iron	-	-	-	✓	-
15	Fluoride	-	-	-	-	✓
16	Zinc	-	-	-	✓	-
17	Manganese	-	-	-	✓	-
18	Copper	-	-	✓	✓	-
19	Temperature	-	-	-	✓	✓
20	TDS	-	✓	-	-	-
21	Chromium	-	-	✓	-	-

III CONCLUSION

Different works related with water quality, carried out on Manjra River are reviewed. It is observed that the water quality of Manjra River is deteriorating due to domestic, various human activities, industrial effluents and agricultural runoff. Very less work is carried on Manjra River. Therefore, spatial and seasonal water quality monitoring program is essential. Consistent monitoring of the river water quality is required for protection of water resources.

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