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STUDY OF WATER QUALITY PARAMETERS OF LIMBOTI DAMIN LOHA TALUKA, DISTRICT NANDED, MAHARASHTRA, INDIA.

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ABSTRACT
The present study is focused on the determination of Chemical Parameters, such as Chloride, Phosphate, Nitrate, Dissolved Oxygen, Biochemical Oxygen Demand and Chemical Oxygen Demand, were investigated during the year June 2019 to May 2020. Analysis was performed on 06 different parameters. In conclusion present the water quality of Limboti Dam should be extensively monitored since deterioration of water quality was clearly observed, hence its water is mainly used for drinking, irrigation, fish culture and other domestic purposes.
Keywords: Limboti Dam, DO, BOD, COD, Chloride, Phosphate, Nitrate.

INTRODUCTION
Water is one of the important and abundant compounds of the Ecosystem. All living organisms on the earth need water for their survival and growth. As of now only earth is the planet having about 70% of water. The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. It is difficult to understand the biological phenomenon fully because the chemistry of water revels much about the metabolism of the ecosystem and explain the general hydro-biological relationship (Basavaraja et al. 2011), Patil et al. (2012), ArivoliAppavu et al. (2016). Water quality also affects the biodiversity of aquatic organisms. Therefore its quality should be good. Water quality is the physical, chemical and biological characters of water. Water is most vital resource for all kinds of life on this planet. Life cannot exist without water. They use physic-chemical parameters of water, fish and macro invertebrates as indices. Analysis of Physico-Chemical Parameters to evaluate the drinking water quality in the state of perak in Malaysia was done by Rahmaniah et. al. (2015), RupendraBhagd et. al. (2016), (Pawar 2017, 2018). Significance of this study is that latest data and status of water quality of Limboti Dam.

The water of the dam drinking is supplied to the three taluka namely Kandhar, Loha and Ahmadpur. The water of dam is used irrigation, fish culture and drinking purposes. There is wide scope for the further development in the fisheries sector 6000 hector field comes under irrigation of this dam. The under capacity of this dam is 3.5 T.M.

MATERIAL AND METHODS
From the **s**tudy site the water samples were collected for Physico-Chemical analysis from four station, (A, B, C and D) at the regular intervals of one month during the year June 2018 to May 2019. The samples are well mixed and stored in two liter plastic can. Sample collection was usually completed during morning hours between 6:00 to 9:00 am every time for further analysis. The dissolved oxygen were estimated on the spot at the time of sampling while other parameters were estimated in the

laboratory. Standard methods as prescribed APHA (1992), Kodarkar et. al. (1998). were followed for examination of various chemical parameters of water.

RESULTS AND DISCUSION

The seasonal variations in Chemical parameters are given table no.1 and 2.

Chloride: The chloride value were found to be in the ranged from 40.6 to 74.5 mg/l. The maximum values were during summer while minimum values were during winter season. The aquatic bodies in due to rainfall and substances carried from catchment. Chlorides are troublesome in irrigation water and also harmful to aquatic life (Rajkumar, 2004). The chloride content showed very narrow changes in sampling points between four sites. The recorded values of east site 260 mg/l. Higher concentration of chloride is hazardous to human consumption and creates health problems. Desirable limit of chloride by ISI (1991) for drinking purpose is 250 mg/l.

Phosphate: The phosphate value were found to be in the ranged from 0.23 to 0.92 mg/l. The maximum values were during summer while minimum values were during winter. Phosphate is rarely found in high concentrations in waters as it is actively taken up by plants. High concentrations of phosphates can indicate the presence of pollution and are largely responsible for entropic conditions (WHO 1993). The anthropogenic additions of phosphorus to the river have a considerable effect on the quality of the water. Such phosphate is derived mainly from domestic sewage and the runoff from agricultural areas.

Nitrate: The nitrate value were found to be in the range from 15.2 to 43.2 mg/l. The maximum values were during summer while minimum values were during winter season. Nitrate helps plants develop and produce seeds. Nitrate test can be detected through urine and blood test. Nitrates can charge normal hemoglobin to met hemoglobin. Nitrate is naturally occurring inorganic ions present our environment. Eating foods containing nitrates preservative, such as processed meats. Nitrogen is less soluble in water than oxygen. Nitrates can be make it so that less oxygen is available for the body to function property. Rana et. al.,(2016),recommended that it should not exceed 0.2 mg L-1 in fresh water and 0.125 mg L-1 in seawater.

Dissolved Oxygen: The dissolved oxygen was varied from 3.9 to 9.7 mg/l. during study. The dissolved oxygen was found to be maximum values were during winter while minimum values were during summer season. Dissolved oxygen in water at a given temperature depends on factors like temperature of water. The dissolved oxygen almost all plants and animals need for respiration.Dissolved oxygen is the most important indicator of the health of water bodies and its capacity to support a balanced aquatic ecosystem of plants and animals. Dissolved oxygen may play a large role in the survival of aquatic life in temperature lakes and reservoir during summer month. If a sufficient level of DO is not maintained, animal will succumb to stress and become vulnerable to disease and parasitic outbreaks leading to their death. The fish pond should possess DO at least above 5 ppm (Gupta and Gupta 2013).

Biochemical Oxygen Demand: The BOD value were found to be in the ranged from 3.18 to 22.70 mg/l. The maximum values were during summer while minimum values were during winter BOD is an indicator of organic pollution in fresh water bodies. BOD is a measure of the oxygen in the water that is required by the aerobic organisms. The biodegradation of organic materials exerts oxygen tension in the water and increases the biochemical oxygen demand (Abida, 2008), (Pawar 2018). BOD is the amount of dissolved oxygen required for the biochemical decomposition of organic compounds and the oxidation of certain inorganic materials (e.g. iron, sulphites).

Chemical Oxygen Demand: The COD value were found to be in the ranged from 64 to 151 mg/l. The maximum values were during summer while minimum values were during winter chemical oxygen demand is an

Table 1: Water Quality Parameter of Water Sample Collection from Four Sampling Station Limboti Damduring the Year June 2018 to May 2019.

Parameters	Chloride (mg/l.)				Phosphate (mg/l)				Nitrate (mg/l)			
Station	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
June	71.3	72.9	73.6	72.4	0.89	0.86	0.81	0.85	40.5	41.6	42.3	41.9
July	65.6	67.6	68.3	69.2	0.78	0.73	0.79	0.75	36.2	36.8	36.5	37.2
August	60.2	61.5	63.2	66.1	0.64	0.68	0.71	0.64	31.4	32.5	32.9	33.2
September	55.5	58.3	59.4	56.9	0.52	0.56	0.50	0.59	25.7	26.3	27.6	28.1
October	50.4	53.3	57.4	55.9	0.41	0.43	0.48	0.46	21.3	21.9	22.2	22.5
November	43.3	45.5	47.1	46.4	0.33	0.38	0.40	0.35	17.1	17.7	17.9	18.1
December	40.6	41.2	41.8	42.3	0.23	0.27	0.31	0.29	15.2	15.8	16.1	15.6
January	48.3	49.5	46.1	48.8	0.30	0.32	0.37	0.28	20.3	20.9	21.6	21.1
February	51.2	53.5	58.4	59.9	0.47	0.41	0.49	0.39	25.1	25.7	25.9	26.1
March	62.3	66.1	68.4	65.9	0.68	0.63	0.58	0.51	35.6	36.2	37.5	38.1
April	71.3	70.4	69.9	70.8	0.81	0.77	0.75	0.79	42.1	40.3	41.5	40.8
May	74.5	73.4	72.8	74.1	0.92	0.89	0.87	0.85	43.2	42.3	42.9	43.1

Table 2: Water Quality Parameter of Water Sample Collection from Four Sampling Station Limboti Dam during the Year June 2018 to May 2019.

Parameters	Dissolved Oxygen (DO) (mg/l)				Biochemical Oxygen Demand (BOD) (mg/l)				Chemical Oxygen Demand (COD) (P^H)			
Station	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
June	4.1	4.5	4.2	4.4	18.7	18.4	19.3	20.1	140	147	138	142
July	4.7	4.9	4.5	4.3	16.4	16.9	16.2	17.1	121	127	133	123
August	5.1	5.8	5.4	5.9	14.6	14.3	15.1	15.5	109	111	117	115
September	6.2	6.7	6.3	6.8	12.5	12.9	13.6	13.9	97	100	103	99
October	7.7	7.3	7.6	7.9	8.7	9.5	9.9	10.1	89	84	85	81
November	8.9	8.6	8.3	8.1	5.61	5.33	6.6	7.5	78	76	70	73
December	9.7	9.3	9.1	9.6	3.18	3.30	3.38	4.51	64	69	72	78
January	8.2	8.7	8.5	7.9	7.4	7.9	8.3	8.9	81	87	91	93
February	7.6	7.8	8.1	8.3	9.9	10.5	10.9	10.6	94	99	103	109
March	6.1	6.7	6.9	7.2	12.7	13.5	14.5	15.7	125	119	110	121
April	4.7	5.2	5.7	5.1	18.5	19.1	20.1	18.7	131	128	135	132
May	3.9	4.2	4.8	4.5	22.70	21.15	20.5	22.2	151	149	145	138

important water quality parameter because, similar BOD, it provides an index to assess the effect discharged wastewater will have on the receiving environment. The chemical oxygen demand test procedure is based on the chemical decomposition of organic and inorganic contaminants, dissolved or suspended in water. In the present investigation the recorded low value of DO andhigher values of BOD and COD can be described to the discharge of effluents and non-point source of pollution in the coastal area and mangrove station (Mahesh Kumarand Prabhahar 2012).

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